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Australian Institute of  
Health and Welfare

# Australia's health

# 2016





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The Hon Sussan Ley MP  
Minister for Health, Minister for Aged Care, Minister for Sport  
Parliament House  
Canberra ACT 2600

Dear Minister

On behalf of the Board of the Australian Institute of Health and Welfare, I am pleased to present to you *Australia's health 2016*, as required under Subsection 31(1) of the *Australian Institute of Health and Welfare Act 1987*.

The Institute has maintained the high standards of the past. I am sure the quality, format and detail will make this another indispensable resource for the Health Sector.

I commend this report to you as a significant contribution to national information on health-related issues, and to the development and evaluation of health policies and programs in Australia.

Yours sincerely

Dr Mukesh C Haikerwal AO  
Chair  
AIHW Board

16 May 2016

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# Preface

Every 2 years the Australian Institute of Health and Welfare (AIHW) is required to compile a national report card on the health of Australians and their health system, and I am delighted to introduce our 15th report in the series, *Australia's health 2016*.

Over the past 3 decades, *Australia's health* has become an indispensable resource for anyone who seeks health information that is reliable, timely and accurate.

This year, as in past editions, the report answers fundamental questions about our health status and conditions that cause ill health, and assesses the performance of our health system against agreed national indicators.

Current health issues are discussed in 18 analytical feature articles that cover a broad range of topics—from premature mortality, and illicit drug use, to health spending, and safety and quality in Australian hospitals. New topics include changing patterns in hospital care, health care use by older Australians, and an analysis of how geography affects Aboriginal and Torres Strait Islander women's access to maternal health services. For the first time, we also include an article on end-of-life care, and highlight the findings from the Australian Burden of Disease Study undertaken by the AIHW.

The feature articles are underpinned by a collection of 43 short statistical 'snapshots' that profile leading types of illness, risk factors, health behaviours, and the services available to help prevent and treat ill health.

The report shows that health is not the same for everyone—Indigenous Australians, people living outside major cities and in low socioeconomic areas, people with mental illness or disability, and prisoners generally have higher rates of illness, health risk factors and death than other Australians.

Although national health information collections have improved, gaps still remain. These data gaps, and opportunities for further improvements, are discussed in 'What is missing from the picture?' sections throughout the report.

*Australia's health 2016* is accompanied by an *Australia's health 2016—in brief* mini report that summarises statistics and concepts from the main report, and online resources.

I would like to take this opportunity to thank all the AIHW staff who worked on this significant report and the many experts who provided the AIHW with valuable advice. Their contributions are recognised in the Acknowledgments section.

The AIHW is committed to improving the usefulness and relevance of its biennial flagship reports, and welcomes feedback on *Australia's health 2016*.

**Andrew Kettle**  
Acting Director

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- Australian Bureau of Statistics
- Department of Health
- Department of the Prime Minister and Cabinet
- Department of Social Services
- Australian Organ and Tissue Donation and Transplantation Authority.

## Quality assurance

The report content was largely prepared by AIHW staff, and was subject to a rigorous internal review and clearance process. Additional external peer reviewers were used to validate and strengthen the content of the report.

### Data sources

The best available information has been used to inform the report, drawn from a range of data sources that are referenced throughout the report. Most of the data sources are national collections managed by the AIHW and the Australian Bureau of Statistics (ABS). These are supplemented by other data collections, as appropriate.

Each of the data sources used in the report has strengths and limitations that affect how the data can be used and what can be inferred from the results. The AIHW takes great care to ensure that data used are correct and that the conclusions drawn are robust.

Although this report is published in 2016, many of the statistics refer to 2014 or earlier. This is because some data, such as population-based surveys, are collected every 3–5 years or even less often. Also, it can often take some time before data are fully processed and provided to the AIHW. Finally, the AIHW often needs time to analyse the data and ensure the statistics are accurate and of high quality.

Given the comprehensive nature of this report, and the time it takes to prepare a compendium report of this scale, it is possible that some other reports may be released by the AIHW or others with more recent data. Readers are referred to the latest releases in the 'Where do I go for more information?' sections of articles and snapshots.

## Terminology

### Common terms

Common concepts and terms that appear throughout *Australia's health 2016* are described briefly here. Other concepts and terms are defined in the Glossary at the end of the report.

**Admitted patient/hospitalisation:** A hospital patient who has undergone a formal admission process to begin an episode of care. May involve an overnight stay or be same day. In this report, admitted patient episodes of care are referred to as hospitalisations.

**Age-standardisation:** A statistical procedure to adjust for different age structures of populations being compared.

**Burden of disease:** A term referring to the quantified impact of a disease or injury on a population, using a summary measure that combines the burden of premature death with the burden of living with ill health.

**Comorbidity:** The presence of two or more diseases in a person at the same time.

**Health determinant:** Something that can influence health in a positive way (protective factor) or negative way (risk factor). Includes social and environmental factors and health behaviours.

**Incidence:** A measure of the number of new cases of a disease or characteristic in a population in a specified period.

**Prevalence:** A measure of the level of the disease or characteristic in a population at a specific point in time.

**Remoteness:** A classification of areas across Australia based on physical distance to the nearest urban centre and its population size. These areas are defined as Remoteness Areas by the Australian Statistical Geographical Standard (ASGS). Remoteness Areas include *Major cities, Inner regional, Outer regional, Remote* and *Very remote*.

### Describing socioeconomic disadvantage

Socioeconomic factors, including associated disadvantage, are important determinants of health and wellbeing in Australia. The higher a person's income, education or occupation level, the healthier they tend to be on average.

The ABS defines socioeconomic disadvantage in terms of people's 'access to material and social resources, and their ability to participate in society' (ABS 2013).

Socioeconomic disadvantage is commonly determined using composite measures that take into account multiple determinants of health, for example the ABS's Socio-Economic Indexes for Areas (SEIFA). Socioeconomic disadvantage can also be measured using a single characteristic such as a person's education or occupation. However, because such individual measures are not always available, measures based on geographic areas, such as SEIFA, are frequently used.

The SEIFA comprises four indexes that each focus on a different aspect of socioeconomic advantage and disadvantage. This report primarily uses one of these indexes—the Index of Relative Socio-economic Disadvantage (IRSD).

The IRSD represents the socioeconomic position of Australian communities by measuring aspects of disadvantage, such as low income, low educational attainment, high unemployment, and jobs in relatively unskilled occupations. Areas are then ranked according to their level of disadvantage.

When the IRSD is used in this report, people living in the 20% of areas with the greatest overall level of disadvantage are described as living in the '**lowest socioeconomic areas**'. The 20% of people at the other end of the scale—those living in areas with the least overall level of disadvantage—are described as living in the '**highest socioeconomic areas**'.

It is important to note that the IRSD reflects the overall or average socioeconomic position of the population of an area; it does not show how individuals living in the same area might differ from each other in their socioeconomic position.

(See Chapter 4.1 'Social determinants of health', Chapter 5.1 'Health across socioeconomic groups').

## Readers' guide

### Effects of rounding

Entries in columns and rows of tables may not add to the totals shown, because of rounding. Unless otherwise stated, derived values are calculated using unrounded numbers.

### Presenting dates and time spans

Periods based on full calendar years (1 January to 31 December) are written as, for example, 2001 for 1 year. When there are 2 or more calendar years in the period, the first and final years are written in full. For example, 2010–2011 is a 2 calendar-year span and 2009–2011 covers 3 calendar years.

Periods based on financial years (1 July to 30 June, as with hospital statistics) are written with a second number which is abbreviated: for example, 2010–11 for 1 financial year, 2009–11 for 2 and 2008–11 for 3. A longer span of financial years is written as ‘In the 10 years from 2000–01 to 2010–11...’.

Some surveys may be based on other 12-month spans—for example, the general practice Bettering the Evaluation of Care and Health (BEACH) survey is based on collection periods from 1 April to 30 March. These are presented as for financial years; for example, 2010–11 would be a ‘year’ or 12-month period.

### Use of icons

Icons and infographics are visual representations of data that are intended to present complex information quickly and clearly. Generally, these graphics simplify information so it can be easily understood and, as such, carry a risk of generalising or stereotyping. This is not the intention of the AIHW, which endeavours to use icons only to improve the clarity and accessibility of information.

### Use of italics

Italics are used in this report:

- for remoteness categories derived using the ASGS (see ‘Remoteness’, in common terms). The main categories are *Major cities*, *Inner regional*, *Outer regional*, *Remote* and *Very remote*
- for report titles
- to indicate terms that are part of a formal medical category/classification scheme. For example, triage categories: *Emergency*, *Urgent*, *Semi-urgent* and *Resuscitation*.

## Additional material online

This edition of *Australia’s health* has a comprehensive online presence, including links to related web pages and supplementary tables that present the data underlying the charts in each chapter.

*Australia’s health 2016* is available online in HTML and PDF formats. Individual PDFs are available for individual articles and snapshots, for easy downloading and printing.

Visit *Australia’s health 2016* online at [www.aihw.gov.au/australias-health/](http://www.aihw.gov.au/australias-health/).

### References

ABS (Australian Bureau of Statistics) 2013. SEIFA tutorial 1—transcript. Introduction to SEIFA. Canberra: ABS. Viewed 16 March 2016, <<http://www.abs.gov.au/websitedbs/censushome.nsf/home/seifatutorialtranscript1?opendocument&navpos=260>>.



# Chapter 1

An overview of Australia's health



# 1.0 Introduction

Good health is important—it influences not just how we feel, but how we go about our everyday lives. The vast majority of Australians aged 15 and over report their health as ‘good’ or better, but this can mean different things to different people.

It is now widely accepted that health is much more than the presence or absence of disease. It reflects genetic, lifestyle and environmental factors; cultural influences; socioeconomic conditions; and the availability and quality of health care programs and services.

To this end, *Australia's health 2016* examines health from a variety of perspectives, including the leading types of ill health that affect us as a nation; specific risks and health inequalities faced by different groups within our population; and the services that are provided to people to prevent illness, or to treat and support them in times of illness. It also provides an overview of the health system.

Topical issues featured in the report include chronic disease, mental health, illicit drug use, health spending, access to health services, end-of-life care, and trends in hospital care.

The report contains a lot of good news: our life expectancy is one of the highest in the world, and the incidence of heart attacks and the death rate from cardiovascular disease have improved. A much smaller proportion of people smoke today than 20 years ago, and overall alcohol consumption has fallen to its lowest level in 50 years.

Despite this good news, in 2014–15 more than 11 million Australians had at least one of eight chronic conditions, and some—including people living in rural and remote areas, people living in the lowest socioeconomic areas, Aboriginal and Torres Strait Islander Australians, and people living with disability—fare worse than others in terms of their health and longevity. For this reason, inequality in health is one of the important themes highlighted in this edition.

# 1.1 What is health?

What does it mean when we say a person is 'healthy' or 'unhealthy'?

At a simple level, one can view the concept of health by focusing on the individual and on the presence, or absence, of disease and medically measured risk factors.

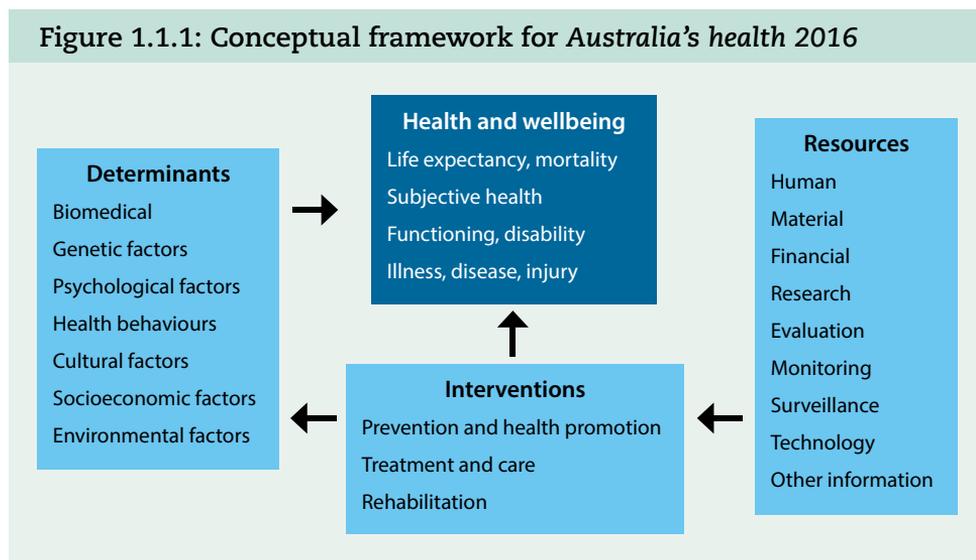
A broader and more widely accepted view sees health as multidimensional: defining health 'as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity' (WHO 1946).

This multidimensional model incorporates:

- genetic, lifestyle and environmental factors
- cultural influences
- socioeconomic conditions
- provision of, access to, and use of health care services and programs.

*Australia's health 2016* takes this broader view of health and functioning—a conceptual framework outlined in Figure 1.1.1. This figure shows that a person's health and wellbeing depend on two general factors: 'determinants' (things that influence health) along with 'interventions' and the required resources (what can be done to improve a person's health).

**Figure 1.1.1: Conceptual framework for Australia's health 2016**



As this figure illustrates, a person's health and wellbeing result from a complex interplay between biological, lifestyle, socioeconomic, societal and environmental factors—many of which can be modified to some extent by health care and other interventions.

Many things can affect how healthy we are, ranging from the macro to the molecular: from society-wide influences (for example, the prevalence of drug and alcohol use), to highly individual factors such as genetic make-up. And, of course, our health can also be significantly affected by the quality and timeliness of the health care we receive, including preventive health care such as screening and immunisation (see 'Chapter 6.1 Prevention and health promotion').

# Measures of health

There are many measures used to ascertain the health status of a person and a population. Box 1.1.1 explains some of the main measures that are featured throughout this report.

## Box 1.1.1: Common measures of health

- **Life expectancy:** a measure of length of life. It is often expressed as either the number of years a newborn baby is expected to live, or as the expected number of years of life remaining for a person at a given age.
- **Mortality:** the number of deaths in a population in a given period.
- **Morbidity:** refers to ill health in an individual and to levels of ill health within a population or group.
  - **Comorbidity:** the occurrence of two or more diseases in a person at any one time.
  - **Incidence:** the number of new cases occurring in a given period. For example, in 2016, it is estimated that 130,500 new cases of cancer will be diagnosed in Australia.
  - **Prevalence:** the number or proportion of cases in a population at a given time. For example, at the end of 2009, the 5-year prevalence for all cancers was 370,474—that is, 370,474 people were alive who had been diagnosed with cancer in the previous 5 years.
- **Disability-adjusted life year (DALY):** a year of healthy life 'lost', either through dying early or through living with disability due to illness or injury. It combines the estimates of **years of life lost (YLL)**—which measures the years lost between the age at which a person dies and the number of years they could have potentially gone on to live—and **years lived with disability (YLD)**, to arrive at the total years of healthy life lost from living with disease and injury (see 'Chapter 3.1 Burden of disease and injury in Australia').
- **Self-assessed health status:** this measure is based on a person's own opinion about how they feel about their health, their state of mind and their life in general. It is commonly sourced from population surveys.

## Determinants

As shown in Figure 1.1.1, a range of factors influence a person's health—from biomedical factors such as blood pressure, cholesterol levels and body weight, to behavioural factors such as smoking, alcohol consumption and exercise. Health can also be affected by social determinants: the social, economic, political, cultural and environmental 'conditions into which people are born, grow, live, work and age' (WHO 2015). For detailed discussion of these factors, see 'Chapter 4 Determinants of health'.

# About Australia's health 2016

This report encompasses the ideas that health is an important part of how people feel and function; that it contributes to social and economic wellbeing; that there are degrees of good health as well as of bad health; that health can vary over time; and that health should be seen in a broad social context. To this end, *Australia's health 2016* examines health through a variety of different 'lenses', including the leading types of ill health that affect us as a nation; the burden of disease in the Australian population; specific risks and health inequalities faced by different groups within our population; the role of preventive health care; and the services that are provided to people in times of illness. It also provides an overarching view of how the health system functions.

## Where do I go for more information?

More information on health definitions, social determinants of health, global health actions and data can be obtained from the [World Health Organization](#) website. See also 'Chapter 3.1 Burden of disease and injury in Australia'; 'Chapter 3.3 Chronic disease and comorbidities'; and 'Chapter 4.1 Social determinants of health'.

## References

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# 1.2 Australians: who we are

Our estimated population in **2016 is 24.4 million**, of which:



**4.6 million** are aged 0–14

**3.1 million** are aged 15–24

**3.6 million** are aged 25–34

**3.3 million** are aged 35–44

**3.2 million** are aged 45–54

**2.8 million** are aged 55–64

**3.7 million** are aged 65 or older  
(ABS 2013)



In 2014:



**3.0%** of Australians were Aboriginal and Torres Strait Islander—714,000 people  
(ABS 2014b)



**28%** were born overseas—6.6 million people (ABS 2015f)



**71%** lived in *Major cities*—16.6 million people



**18%** lived in *Inner regional* areas—4.3 million people



**8.9%** lived in *Outer regional* areas—2.1 million people



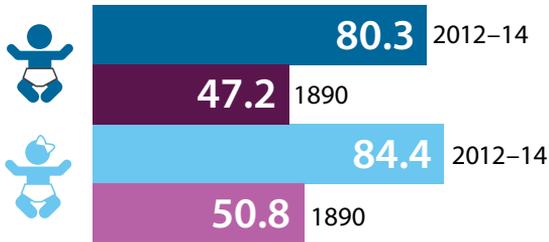
**1.4%** lived in *Remote* areas—324,000 people



**0.9%** lived in *Very remote* areas—208,000 people (ABS 2015g)

Australia's population ranks it **56th** most populous in the world. The most populous country is China, with 1.37 billion people, followed by India (1.25 billion) and the United States with 321.4 million (CIA 2013).



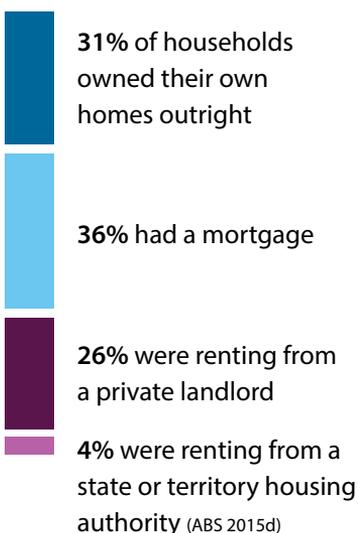


A boy born between 2012 and 2014 can expect to live to **80.3 years** and a girl to **84.4 years** (ABS 2015a).

This compares with 47.2 and 50.8 years, respectively, in 1890 (ABS 2014a).



In 2013-14:



In 2015, **76%** of people aged 15-64 held a Year 12 or non-school qualification at Certificate II level or above (ABS 2015b).



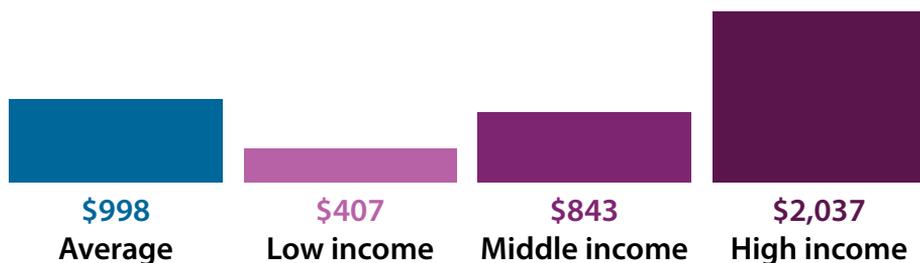
In 2014, the labour force participation rate for Australians aged 15-64 was **76%** (ABS 2015e).



**Almost 1 in 3 (30%)** employed people aged 15-64 worked part-time (ABS 2015e).



In 2013-14, in real terms, the average disposable household income (after adjusting for the number of people in the household) was \$998 per week. Low-income households had an income of \$407 per week, middle-income households \$843 per week and high-income households \$2,037 per week (ABS 2015c).



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# 1.3 How healthy are Australians?

There is a lot of good news on the health front in Australia: our life expectancy is one of the highest in the world; death rates have continued their long-term downward trend; and our health generally compares well with that of the populations of comparable Organisation for Economic Co-operation and Development (OECD) countries.

This article examines how healthy we are by looking at some of the common measures outlined earlier in this chapter—life expectancy, morbidity, mortality, incidence and prevalence rates, disability-adjusted life years (DALY) and self-assessed health status (see ‘Chapter 1.1 What is health?’). It also compares Australia’s health with that of other OECD countries.

It highlights the growing impact of chronic disease, and the crucial role that lifestyle risk factors such as smoking, alcohol and obesity will play in our health outcomes now and in the future.

It also discusses the health inequalities faced by some population groups, such as Aboriginal and Torres Strait Islander Australians and people living outside our urban centres, and whether progress is being made in narrowing these ‘health gaps’.

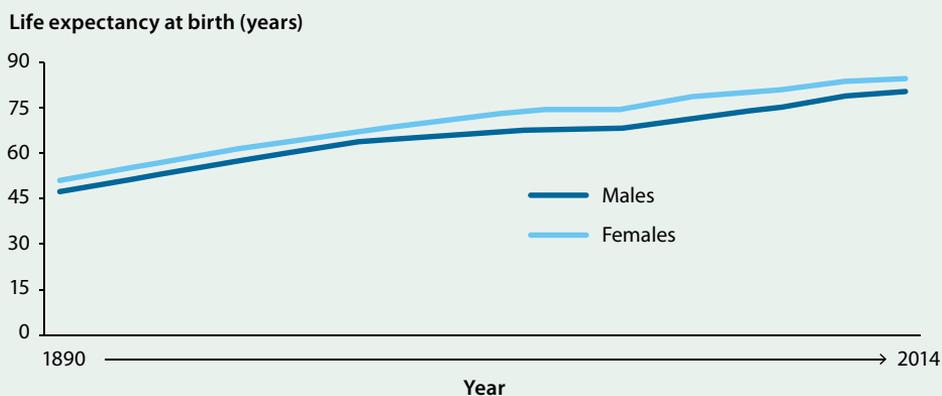
## By many measures, we are doing well

### We are living longer

Life expectancy is one of the most commonly used measures of the overall health of a population. It can be defined as how long, on average, a male or female at a given age can expect to live, based on current death rates (AIHW 2014a).

Life expectancy at birth in Australia has climbed steadily over time, and is now more than 30 years longer than it was in the late 1800s (Figure 1.3.1). For example, life expectancy for males and females born in 2014 was 80.3 years and 84.4 years respectively (ABS 2015c), whereas males and females born in 1890 could expect to live to 47.2 years and 50.8 years respectively (ABS 2014b).

**Figure 1.3.1: Life expectancy at birth, by sex, Australia, 1890–2014**



Sources: ABS 2014b, 2015c.

Males who had survived to the age of 65 in 2014 could expect to live, on average, another 19.4 years (to 84.4 years) and females an extra 22.2 years (to 87.2) (ABS 2015c).

## We are living longer free of disability

The concept of what it means to be 'healthy' encompasses not just how many years a person lives, but whether those years are lived with disability, chronic illness, or other health conditions that affect quality of life.

In 2012, a newborn boy in Australia could expect to live 62.4 years without disability and another 17.5 years with some form of disability, and a newborn girl 64.5 years without disability and 19.8 years with some form of disability (see Glossary) (AIHW 2014b).

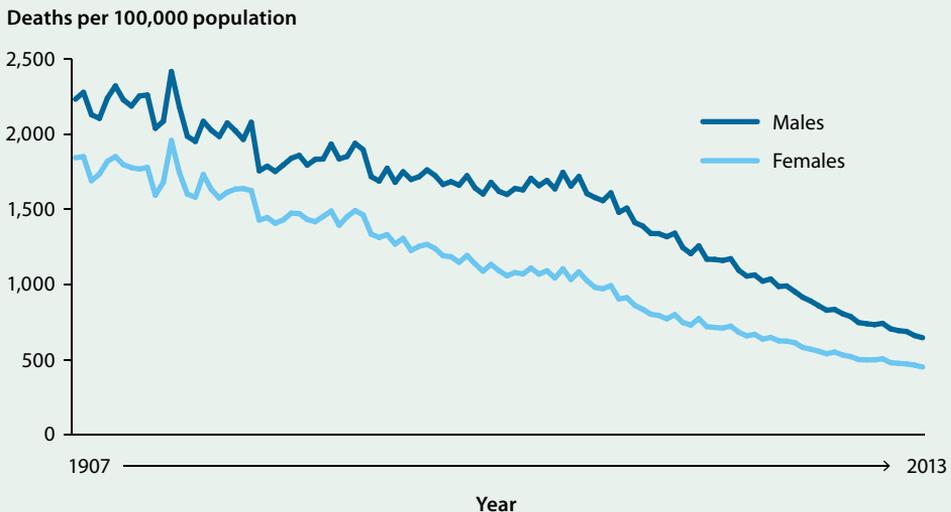
Between 1998 and 2012, the disability-free life expectancy for males rose by 4.4 years, which was more than the gain in male life expectancy over that period (4 years). However, the increase in years free of disability for females was 2.4 years, compared with a 2.8 years gain in female life expectancy (AIHW 2014b).

## Our death rates continue to fall

In 2013, there were nearly 147,700 deaths registered in Australia—about 600 more than in 2012 and nearly 15,400 more than in 2003. Since 2003, the number has risen by around 1.0% per year on average for males and by 1.2% for females (ABS 2014c).

Despite an increase in the absolute number of deaths, there has been a long and continuing fall in death rates per 100,000 population in Australia. From 1907 to 2013, the age-standardised death rate for males and females fell by 71% and 76% respectively (AIHW 2015d) (see Figure 1.3.2).

**Figure 1.3.2: Age-standardised death rates by sex, Australia, 1907–2013**

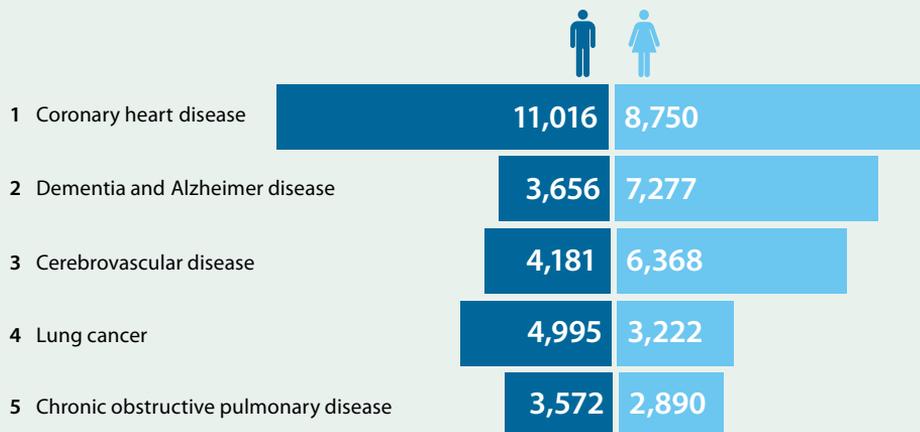


Source: AIHW 2016b.

In 2013, children aged 5–9 and 10–14 had the lowest rates of death (9 and 10 per 100,000 population respectively). The rate gradually increased from the age of 15–19 (32 per 100,000) and by the age of 60–64 was 613 per 100,000 population. The highest death rate was for people aged 85 and over (13,088 per 100,000). Death rates have remained higher for males than for females for all age groups (AIHW 2016b).

In 2013, coronary heart disease was the leading underlying cause of death in Australia (see Glossary), followed by dementia and Alzheimer disease, and cerebrovascular disease (predominantly stroke). The fourth leading underlying cause of death was lung cancer and the fifth was chronic obstructive pulmonary disease (COPD) (AIHW 2015a) (see Figure 1.3.3).

**Figure 1.3.3: Leading causes of death, by sex, Australia 2013**



*Note:* Leading causes of death are based on underlying causes of death and classified using an AIHW-modified version of Becker et al. 2006.

*Source:* AIHW National Mortality Database.

When considering broad groups of diseases, such as all types of cancer combined or all cardiovascular disease (which includes coronary heart disease, stroke and heart failure), cancer contributed to the most deaths in 2013. This was the first time that the total number of deaths due to all types of cancer combined surpassed the total number of deaths due to all cardiovascular disease (44,100 and 43,600 respectively) (AIHW 2015d, 2016a).

#### **Different age groups have different leading causes of death**

Coronary heart disease was the most common underlying cause of death in Australia for people over age 45.

Land transport accidents were the leading underlying cause of death among people aged 1–14, at 14%. Suicide was the leading underlying cause of death among people aged 15–24 (28%) and 25–44 (18%) (AIHW 2015a) (see ‘Chapter 5.3 How healthy are Australia’s children?’ and ‘Chapter 5.4 Health of young Australians’).

Among infants aged under 1, certain conditions originating in the perinatal period and congenital conditions were responsible for most deaths (76%). This was followed by sudden infant death syndrome (SIDS), which accounted for 6% of infant deaths (AIHW 2015a) (see ‘Chapter 5.3 How healthy are Australia’s children’).

#### **Premature death rates have fallen**

In 2013, more than 1 in 3 deaths (34%) in Australia were ‘premature’ (that is, they occurred before the age of 75)—substantially lower than the 43% in 1997 (AIHW 2015b).

The three leading causes of premature death for all Australians were coronary heart disease, lung cancer and suicide. Nearly 1 in 5 deaths (18%) among people aged 25–44 were due to suicide (AIHW 2015b).

The rate of premature deaths among Indigenous Australians is higher than among non-Indigenous Australians for both males and females across every age group. Between 2009 and 2013, 81% of all Indigenous deaths were of people aged under 75, compared with 34% for non-Indigenous Australians (ABS 2015b) (see 'Chapter 3.2 Premature mortality').

## Overall burden of disease has fallen

'Burden of disease' is the impact of a disease or injury on an individual or a population. Burden of disease analysis quantifies the gap between a population's actual health and an 'ideal' level of health—that is, every individual living in full health to the maximum possible life span—for all diseases at the same time. It measures both the burden of living with ill health as well the burden of dying prematurely, using disability-adjusted life years (DALY) as the unit of measurement. One DALY is one year of 'healthy life' lost due to illness/death.

Overall, in 2011 there were 201 years of healthy life lost, due to dying or to living with disease or injury, for every 1,000 people in Australia. This is equivalent to 4.5 million DALY in total. Cancer, cardiovascular disease, mental and substance-use disorders, musculoskeletal disorders and injury contributed the most burden in Australia in 2011. Together they accounted for around two-thirds of the disease burden.

After accounting for population increase and ageing, the burden of disease for the Australian population decreased between 2003 and 2011, from 211 to 190 DALY per 1,000 people (see 'Chapter 3.1 Burden of disease and injury in Australia').

## Most Australians report their health as 'good' or better

According to the Australian Bureau of Statistics (ABS) 2014–15 National Health Survey (NHS), 85% of Australians aged 15 and over report their health as 'good' or better, which is similar to the previous survey in 2011–12 (ABS 2015e).

Internationally, Australia is one of the leading countries on this measure—among 34 OECD countries it ranks behind only New Zealand (90%), Canada (89%) and the United States (88%), and ranks higher than the OECD average of 69% (OECD 2015).

More than half (56%) of Australians rated their health as 'excellent' or 'very good'. Just over 1 in 10 (10.4%) Australians rated their health as 'fair' (10.7% in 2011–12), and 4.4% as 'poor' (4.0% in 2011–12) (ABS 2015e).

By comparison, only 39% of Indigenous Australians rated their health as 'excellent' or 'very good', 37% as 'good', 17% as 'fair' and 6.9% as 'poor' in 2012–13 (ABS 2014a).

## But there are concerns

While there are positive signs and progress on many fronts, it is clear that Australia is not healthy in every way, and some patterns and trends give cause for concern.

## Chronic disease

Chronic diseases such as cancer, coronary heart disease and diabetes are becoming increasingly common in Australia due to a population that is increasing and ageing, as well as to social and lifestyle changes. Improvements in medical care have also enabled us to live longer with illnesses and diseases, and have provided access to treatments not available in the past (AIHW 2012).

In the early 20th century, people ate fewer processed and energy-dense foods, walked more, performed more manual labour and lived with few labour-saving appliances and gadgets. Today, we may be less likely than our parents and grandparents to smoke, but we are more likely to be sedentary and spend more time in front of televisions or other electronic screens.

In terms of health burden, chronic diseases are the leading cause of ill health and death in Australia, and have been for some decades—largely replacing the infectious diseases of 50–100 years ago, such as pneumonia and tuberculosis (see ‘Chapter 3.1 Burden of disease and injury in Australia’).

In 2014–15, based on self-reported data from the NHS, more than 11 million Australians (50%) had at least one of eight selected chronic conditions (arthritis, asthma, back problems, cancer, chronic obstructive pulmonary disease, cardiovascular disease, diabetes mellitus, or a mental or behavioural condition) (ABS 2015e). Of these people, 5.3 million had two or more of the eight conditions (see ‘Chapter 3.3 Chronic disease and comorbidities’).

There is some good news in the chronic diseases story—for example, the death rates from coronary heart disease and stroke fell by 75% and 67% respectively between 1983 and 2013 (see ‘Chapter 3.5 Coronary heart disease’ and ‘Chapter 3.6 Stroke’). However, some findings give cause for concern:

- In 2014–15, based on self-reported data from the NHS, incidence of coronary heart disease and acute coronary events was 1.7 times as high in men as in women (ABS 2015d).
- In 2014–15, again based on self-reported data from the NHS, an estimated 1.2 million Australians (5.1%) had diabetes (ABS 2015e) (see ‘Chapter 3.7 Diabetes’).
- The number of new cancer cases diagnosed (excluding common non-melanoma skin cancers) more than doubled between 1982 and 2016—from 47,400 to an expected 130,500. This increase can be partly explained by the ageing and increasing size of the population and by improvements in the technologies and techniques used to identify and diagnose cancer (see ‘Chapter 3.4 Cancer’).

## Inequalities in health

Presenting a broad picture of health status can mask the fact that some groups in our community are not faring as well, including people living in rural and remote areas, the lowest socioeconomic groups, Indigenous Australians and people living with disability.

### Health in rural and remote areas

Australians living in rural and remote areas tend to have lower life expectancy and higher rates of disease and injury than people living in *Major cities* (see ‘Chapter 5.11 Rural and remote health’).

In 2009–2011, people living in *Remote* and *Very remote* areas had mortality rates 1.4 times as high as people living in *Major cities*. For nearly all causes of death, rates were higher for people living outside *Major cities*, with people in *Remote* and *Very remote* areas faring the worst. For example, the rate of dying due to a land transport accident was more than 4 times as high in *Remote* and *Very Remote* areas as in *Major cities*.

People in regional and remote areas are more likely to die prematurely than their *Major city* counterparts. While fewer than 3 in 10 people (29%) live in regional and remote areas, deaths in these areas accounted for almost 2 in 5 (38%) of premature deaths in 2011–13.

The premature mortality rate among people living in *Remote* areas was 1.6 times as high as the rate among people in *Major cities*, and in *Very remote* areas it was 2.2 times as high (see 'Chapter 3.2 Premature mortality').

Disease prevalence is generally higher in rural and remote areas of Australia than in *Major cities*. In 2014–15, based on self-reported data from the NHS, people living in *Inner regional* and *Outer regional/Remote* areas of Australia were more likely than people in *Major cities* to have arthritis, asthma, COPD, and a number of other chronic health conditions (ABS 2015e).

People living in rural and remote areas are, on average, also more likely than their urban counterparts to engage in lifestyle behaviours that can lead to adverse health outcomes (such as smoking, insufficient physical activity, and risky alcohol consumption).

These poorer health outcomes may also reflect a range of social and other factors that can be detrimental to health, including a level of disadvantage with regard to educational and employment opportunities; income; and access to goods and services.

### **Socioeconomic groups**

In general, the higher a person's income, education and/or occupation level, the healthier they tend to be (see 'Chapter 4.1 Social determinants of health' and 'Chapter 5.1 Health across socioeconomic groups').

On a range of health measures, people living in the lowest socioeconomic areas (that is, areas of most disadvantage) tend to fare worse than people living in the highest socioeconomic areas (that is, areas of least disadvantage). For example, according to AIHW analysis of the ABS Australian Health Survey, in 2011–12, people living in the lowest socioeconomic areas were 1.6 times as likely to have chronic kidney disease and 2.2 times as likely to have coronary heart disease as people living the highest socioeconomic areas.

### **Aboriginal and Torres Strait Islanders**

Health outcomes for Aboriginal and Torres Strait Islander people have improved in recent years in a number of key areas, including life expectancy and child mortality (see 'Chapter 5.7 How healthy are Indigenous Australians?'). However, as a population group, they continue to experience greater health disadvantage—they are more likely to die at younger ages and to have a higher prevalence of many chronic health conditions.

Indigenous males born in 2010–12 could expect to live to 69.1 years—10.6 years less than non-Indigenous males. For females, the gap was 9.5 years (a life expectancy of 73.7 and 83.2 years, respectively) (ABS 2013). (See 'Chapter 5.8 Main contributors to the Indigenous life-expectancy gap'.)

There are large gaps between Indigenous and non-Indigenous Australians on many other health measures. For example, after adjusting for differences in age structure:

- according to the ABS 2012–13 Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS), 29% of Indigenous Australians rated their health as either ‘fair’ or ‘poor’, which was more than double the non-Indigenous rate of 14% (see ‘Chapter 5.7 How healthy are Indigenous Australians?’)
- Indigenous Australians have higher rates of diabetes: prevalence, hospitalisation and death rates are 3–4 times as high as for non-Indigenous Australians (see ‘Chapter 3.7 Diabetes’)
- according to the 2012–13 AATSIHS, 36% of Indigenous Australians (an estimated 228,000 people) have some form of disability (AIHW 2015c). Based on age-standardised rates of 44% and 29%, respectively, this is 1.5 times the rate experienced by non-Indigenous Australians (see ‘Chapter 5.7 How healthy are Indigenous Australians?’)
- Indigenous Australian women are twice as likely to die from complications of pregnancy or childbirth as non-Indigenous women (14 compared with 6.6 maternal deaths per 100,000 women, respectively, non age-standardised) (see ‘Chapter 5.2 Trends and patterns in maternal and perinatal health’)
- after adjusting for differences in age structure, in the period from 2009 to 2013, the mortality rate for Indigenous Australians who died from all potentially avoidable causes was more than 3 times the rate for non-Indigenous Australians (351 and 110 deaths per 100,000 population, respectively) (see ‘Chapter 5.7 How healthy are Indigenous Australians?’).

### People living with disability

People with disability experience significantly poorer health than those without disability. In 2011–12, according to the ABS NHS, half (51%) of people aged 15–64 with severe or profound core activity limitation (that is, sometimes or always needing help with activities of self-care, mobility or communication) reported ‘poor’ or ‘fair’ health, compared with 5.6% for those without disability.

Further:

- about 1 in 5 people aged under 65 with severe or profound core activity limitation had arthritis (21%) compared with about 1 in 20 (5.3%) of people without disability
- people aged 15–64 with severe or profound core activity limitation were twice as likely as those without disability to be current daily smokers (31% versus 15%) and 1.7 times as likely as people without disability to be obese (43% versus 25%) (see ‘Chapter 5.9 Health of Australians with disability’).

### Risk factors

Many chronic diseases share common lifestyle risk factors that are largely preventable—for example, tobacco smoking, excessive alcohol consumption and excess body weight. According to results of the Australian Burden of Disease Study, in 2011, a large proportion (31%) of the burden of disease experienced by the population could be prevented by reducing the exposure to modifiable risk factors.

The five risk factors included in the study that caused the most burden were tobacco use, high body mass, high alcohol use, physical inactivity and high blood pressure (see ‘Chapter 3.1 Burden of disease and injury in Australia’).

Monitoring risk factor trends is therefore crucial to help guide prevention programs, which will help reduce the future health burden of chronic disease on individuals and society (see 'Chapter 4 Determinants of health').

### **Smoking rates continue to fall**

Smoking rates in Australia are still falling, continuing a long-term downward trend over the past 50 years that the OECD has described as 'remarkable progress' (OECD 2014).

In 2013, 13% of people aged 14 or older smoked daily, compared with 15% in 2010 and 24% in 1991 (see 'Chapter 4.7 Tobacco smoking'). This was one of the lowest smoking rates in the world; the OECD average daily smoking rate for people aged 15 and older was 20% (OECD 2015).

### **Drinking levels are lower**

While excessive alcohol consumption remains a major health and social concern in Australia, the overall volume of alcohol people drink and the proportion of people who drink every day have fallen.

In 2013–14, Australians consumed 9.7 litres of pure alcohol per person aged 15 and over, compared with 10.8 litres in 2007–08. This new level was the lowest in 50 years (ABS 2015a) but is still higher than the OECD average of 8.8 litres per person in 2013 (OECD 2015).

Between 2010 and 2013, the proportion of people aged 14 and over who drank every day fell from 7.2% to 6.5% and the proportion of people who drank at levels putting them at lifetime risk of harm (more than two standard drinks per day on average) fell from 20% to 18% (see 'Chapter 4.6 Alcohol risk and harm').

### **Overweight and obesity**

According to the 2014–15 NHS, an estimated 11 million people aged 18 and over (63% of Australian adults) were overweight or obese—4.9 million of whom were obese. Only about one-third (35%) of Australian adults were in the normal weight range (ABS 2015e).

While the proportion of overweight or obese adults rose from 56% to 63% between 1995 and 2011–12, there was a much smaller increase between 2011–12 and 2014–15 (62.8% to 63.4% respectively) (ABS 2015e).

In 2014–15, just over 1 in 4 (26%) of children aged 5–14, and nearly 4 in 10 (37%) of young people aged 15–24, were overweight or obese (ABS 2015d).

In 2013, Australia was the fifth most obese country in the OECD (28% of the population aged 15 and over), behind the United States (35%), Mexico (32%), New Zealand (31%) and Hungary (29%) (OECD 2015).

### **Nutrition and physical activity**

A healthy diet and regular physical activity are important factors in maintaining a healthy weight. According to the 2014–15 NHS, the vast majority of adults (95%) (ABS 2015e) and children aged 5–14 (98%) do not eat the recommended daily serves of fruit and vegetables (ABS 2015d). (For further information on the recommended daily serves of fruit and vegetables, see the [Australian Dietary Guidelines](#).)

In 2014–15, just over half (56%) of Australians aged 18–64 undertook sufficient physical activity per week. This proportion was little changed from 2011–12 (55%) (ABS 2015e).

## How do we compare internationally?

There is a lot of good news on the health front in Australia—we have one of the highest life expectancies in the developed world; our overall burden of disease has fallen; and most of us rate our health as ‘good’ or better.

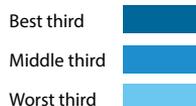
When ranked against other OECD countries, we rate better than average for mortality from coronary heart disease, cancers and suicide, and we have one of the lowest rates of tobacco smoking.

However, as highlighted in Table 1.3.1, there is room for improvement in a number of other areas.

Table 1.3.1 shows how Australia ranks against other OECD countries on a selected group of health measures. For rankings on other health measures, visit the [OECD website](#).

**Table 1.3.1: Australia’s performance against OECD average, selected health indicators, 2013 (or nearest year)**

| Indicator  | OECD average | Australia | Group        |
|--|--------------|-----------|--------------|
| Life expectancy at birth (males)   | 77.8         | 80.1      | Best third   |
| Life expectancy at birth (females)   | 83.1         | 84.3      | Best third   |
| Coronary heart disease mortality (per 100,000)                               | 117.4        | 98.2      | Middle third |
| Cancer mortality (per 100,000)   | 205.6        | 197.7     | Middle third |
| Suicide rate (per 100,000)   | 12.0         | 10.1      | Best third   |
| Infant mortality rate (per 1,000 live births) <sup>(a)</sup>                 | 3.8          | 3.1       | Middle third |
| Low birthweight babies <sup>(b)</sup>  | 6.6          | 6.2       | Middle third |
| Daily smoking in adults (% of people aged 15 and over)                       | 19.7         | 12.8      | Best third   |
| Alcohol consumption (litres per person, aged 15 and over)                    | 8.8          | 9.9       | Middle third |
| Obesity (% aged 15 and over, combination of self-reported and measured data) | 19.0         | 28.3      | Worst third  |
| Overweight/obesity among children (boys)                                     | 24.3         | 22.0      | Middle third |
| Overweight/obesity among children (girls)                                    | 22.1         | 24.0      | Worst third  |



(a) The data for most countries are based on a minimum threshold of 22 week birthweight to remove the impact of different registration practices of extremely premature babies across countries.

(b) ‘Low birthweight babies’ refers to number of babies weighing less than 2,500 grams per 100 live births.

### Notes

1. Data for Australia reflect those in the OECD database and may differ from data presented elsewhere in this report.
2. For mortality data, the rates have been directly age-standardised to the 2010 OECD population to remove variations arising from differences in age structures across countries and over time.
3. Cancer rates are age-standardised and provided to the OECD by GLOBOCAN. GLOBOCAN estimates may differ from national estimates due to differences in methods.

Source: OECD 2015.

## Where do I go for more information?

The remaining chapters in *Australia's health 2016* provide comprehensive data and analysis on all of the topics mentioned. In addition, more information on the health status of Australians overall can be obtained from the [ABS National Health Survey](#) website. For more detailed data on nutrition and physical activity, visit the [Australian Health Survey](#) website. For more statistics on diabetes, cancer, burden of disease and a range of other health conditions, visit the [AIHW](#) website.

For more information on global health statistics, visit [OECD health statistics 2015](#).

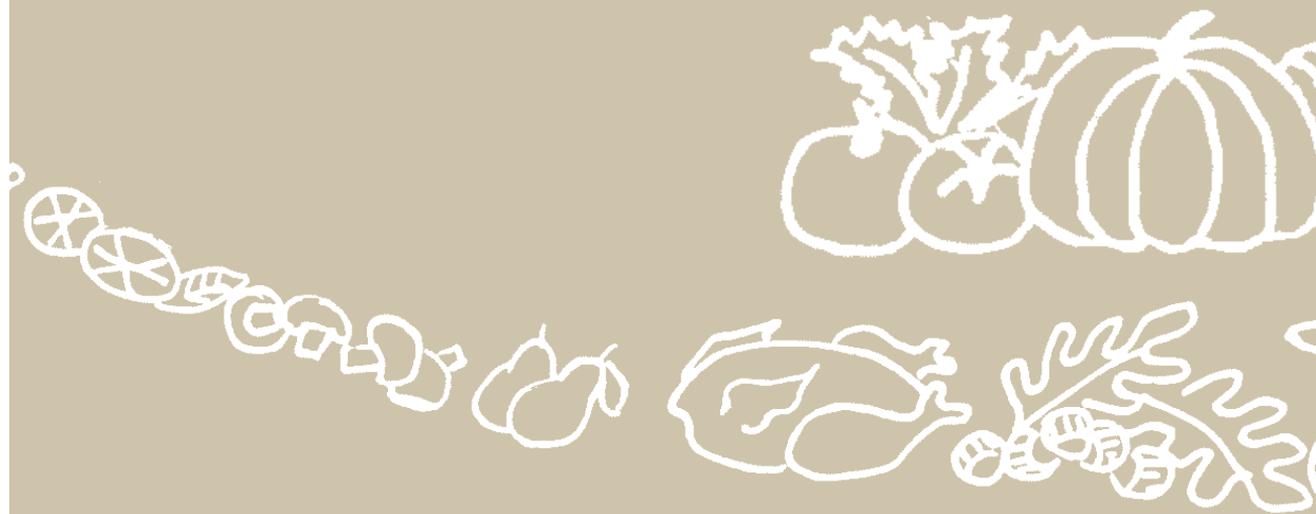
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# Chapter 2

## Australia's health system



## 2.0 Introduction

Australia's health system is a multifaceted network of services and settings, involving a variety of public and private providers, funding arrangements, participants and regulatory mechanisms.

This chapter looks at how much money is spent on the health system; where the funding comes from; and who works in the sector. It also provides a broad overview of how the system works.

The governance, coordination and regulation of Australia's health services are complex, and are the joint responsibilities of all levels of government. Planning and delivery of services are shared between the government (public) and non-government (private) sectors.

Public-sector health services are provided by the Australian, state and territory and local governments. Private-sector health service providers include private hospitals and medical practitioners in private practices.

In 2013–14, health spending in Australia was estimated at \$155 billion—more than two-thirds of which came from governments. While health expenditure has tended to grow steadily from year to year in recent decades, data show that the latest 2 years of growth have been relatively slow.

The health workforce in Australia is large and diverse, covering many occupations, from highly qualified professionals to support staff and volunteers. Nurses and midwives are the largest group in the workforce: the number of full-time equivalent nurses and midwives employed is almost 3 times that of the next largest health profession, medical practitioners.

'Chapter 6 Preventing and treating ill health' provides more comprehensive coverage of health care services, including those delivered by hospitals and some specialised treatment services.

# 2.1 How does Australia's health system work?

## Australia's health system

What do we mean by the 'health system'?

The World Health Organization says it is 'all the activities whose primary purpose is to promote, restore and/or maintain health' (WHO 2013b). A good health system is one that 'delivers quality services to all people, when and where they need them' (WHO 2013a).

While the organisation of services varies around the world, common elements include 'a robust financing mechanism; a well-trained and adequately paid workforce; reliable information on which to base decisions and policies; well-maintained facilities and logistics to deliver quality medicines and technologies' (WHO 2013a).

Australia's health system is a multifaceted web of public and private providers, settings, participants and supporting mechanisms.

In 2013–14, health spending was estimated at \$155 billion, of which \$145 billion was recurrent health expenditure (AIHW 2015b) (see 'Chapter 2.2 How much does Australia spend on health care?'). There are divided responsibilities for funding that involve all levels of government (federal, state and territory, and local) as well as non-government organisations, private health insurers, and individuals who pay for some services out of their own pockets.

Health services are provided by a variety of organisations and health professionals, including medical practitioners, nurses, allied and other health professionals, hospitals, clinics, pharmacies, and government and non-government agencies. Together, they deliver a wide range of services, from public health and preventive services in the community, to primary health care, emergency health services, hospital-based treatment in public and private hospitals, and rehabilitation and palliative care.

These health services are supported by many other agencies. For example: research and statistical bodies provide information for disease prevention, detection, monitoring, diagnosis, treatment, care and associated policy; consumer and advocacy groups contribute to public debate and policy development; and universities and health services (among others) contribute to the training of health professionals. Voluntary and community organisations and agencies also make important contributions, including raising money for health services and research, running educational and health promotion programs, coordinating voluntary care, and funding and delivering a range of health services.

## Government responsibilities

Australia's federal, state and territory and local governments share responsibility for health and they have many roles (funders, policy developers, regulators and service deliverers) (PM&C 2014).

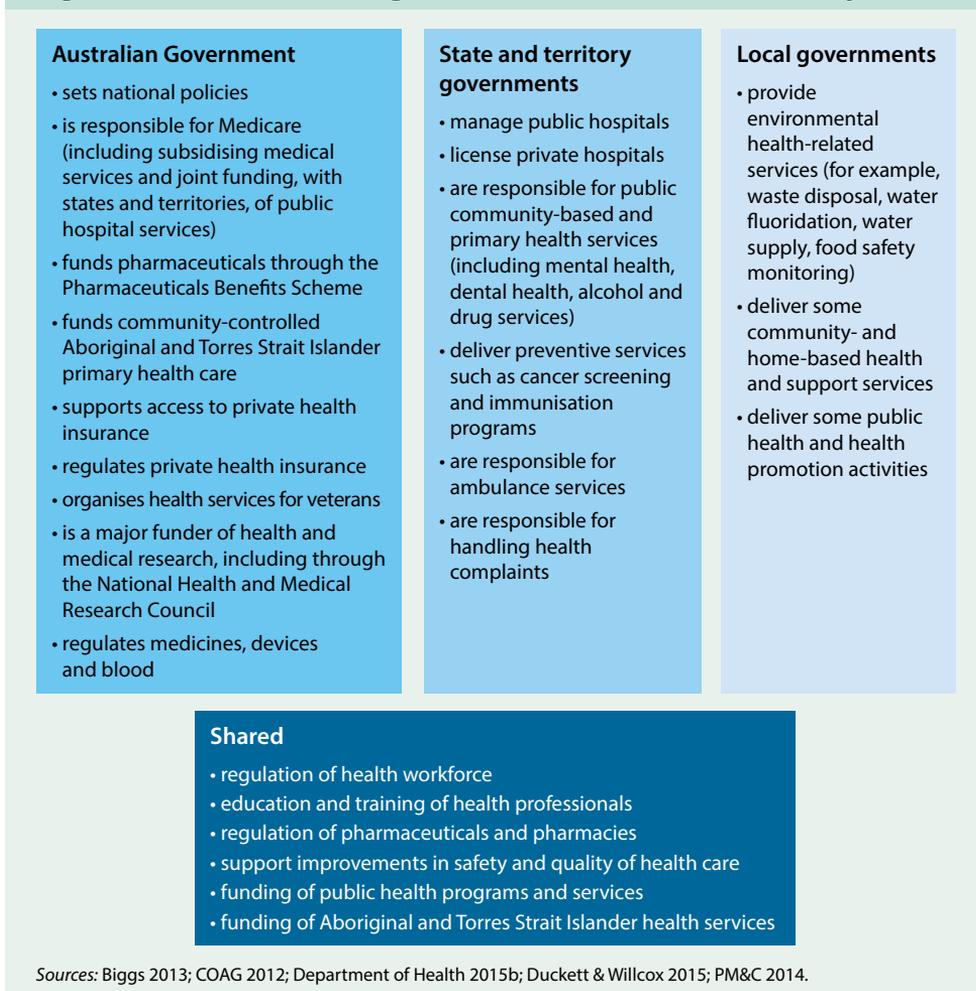
Private sector health service providers include private hospitals, medical practices and pharmacies.

Public hospitals are funded by the state, territory and Australian governments, and managed by state and territory governments. Private hospitals are owned and operated by the private sector but licensed and regulated by governments.

The Australian Government and state and territory governments fund and deliver a range of other services, including population health programs, community health services, health and medical research, and Aboriginal and Torres Strait Islander health services. The Australian Government has responsibility for the universal public health insurance scheme, Medicare (including subsidising medical services and providing funding for primary health networks).

Local governments, in addition to providing community-based health and home care services, have a significant role in public health and health promotion activities (for example, the provision of immunisation services; smoking cessation, nutrition awareness and weight loss programs; child and maternal health services; and promoting safety and physical activity) and may also deliver environmental health-related services (including water fluoridation, sanitation services, water and food inspection and food safety monitoring) (ALGA 2010; LGNSW 2016) (see Figure 2.1.1).

**Figure 2.1.1: Main roles of government in Australia's health system**



# Major types of health care

## Primary health care

Primary health care is typically a person's first contact with the health system (Department of Health 2015f), and broadly encompasses care that is not related to a hospital visit. It includes a range of activities, such as health promotion, prevention, early intervention, treatment of acute conditions, and management of chronic conditions.

Services provided by primary health care vary, from prevention and health promotion activities (see 'Chapter 6.1 Prevention and health promotion' and 'Chapter 6.2 Cancer screening') to the treatment and management of illness.

The primary health care system can provide community-based, patient-centred care by a team of health professionals. Because of this, primary health care is often the 'best setting for the prevention and management of chronic and complex health conditions' (PHCAG 2015:5).

Primary health care is delivered in a variety of settings, including general practices, community health centres, allied health practices, and through communication technology such as telehealth and video consultations.

Primary health care services are delivered by various health professionals, including general practitioners, nurses, nurse practitioners, allied health professionals, midwives, pharmacists, dentists, and Aboriginal and Torres Strait Islander health workers.

Primary health care accounted for around 38% (\$55 billion) of the \$145 billion recurrent health expenditure in 2013–14, compared with around 40% (\$59 billion) spent on hospital services (see 'Chapter 2.2 How much does Australia spend on health care?'). For more information on primary health care, see 'Chapter 6.3 Primary health care'.

### Primary Health Networks

On 1 July 2015, the Australian Government established 31 Primary Health Networks (PHNs). (For a map of PHNs, visit the [Department of Health](#) website.)

PHNs work directly with GPs, other primary health care providers, hospitals, and the broader community. They aim to:

- increase the efficiency and effectiveness of medical services for patients, particularly those at risk of poor health outcomes
- improve coordination of care to ensure patients receive the right care in the right place at the right time (Department of Health 2015c).

The PHNs have six priorities for targeted work: mental health, Aboriginal and Torres Strait Islander health, population health, the health workforce, eHealth, and aged care (Department of Health 2015c).

Where possible, PHN boundaries align with Local Hospital Networks (LHNs) or equivalents, or clusters of LHNs. This arrangement aims to facilitate collaborative working relationships, reduce duplication of effort, and assist with the management of patients with complex or chronic conditions (Department of Health 2015c).

## Secondary health services

The primary health sector does not operate in isolation. It is part of a larger system involving other services and sectors and so can be considered the 'gateway' to the wider health system. Individuals can be directed from one primary care service to another, and from primary services into secondary and other health services, and back again.

'Secondary care' is medical care provided by a specialist or facility upon referral by a primary care physician (Merriam-Webster 2015).

## Hospitals

In Australia, hospital services are provided by both public and private hospitals.

In 2013–14, there were 1,359 hospitals—747 public and 612 private. Of the 9.7 million hospital admissions that year, 59% were same-day hospitalisations (AIHW 2015a) (see 'Chapter 6.8 Overview of hospitals').

Hospital emergency departments are a critical component of hospitals and of the health system. They provide care for patients who have an urgent need for medical or surgical care. In 2014–15, almost 7.4 million emergency department presentations were reported by public hospitals—just over 20,000 each day (see 'Chapter 6.11 Emergency department care'). Australian public hospitals also provided around 18 million occasions of service for outpatient care in 2013–14 (excluding Victoria, which provided 3.7 million occasions of service in 2012–13) (AIHW 2015c).

In 2013–14, spending on public hospitals accounted for 31% of total recurrent health spending—\$45.7 billion (see 'Chapter 2.2 How much does Australia spend on health care?').

For more detail on private hospital spending and services, see 'Chapter 2.2 How much does Australia spend on health care?' and 'Chapter 6.8 Overview of hospitals'.

### Local Hospital Networks

LHNs are independent authorities set up by the states and territories to manage public hospital services and funding. There are more than 135 LHNs in Australia and they are directly accountable for hospital performance. (For information on LHNs, visit the health department website for your state or territory.)

Although most LHNs are responsible for the provision of public hospital services in a defined geographical area, in some jurisdictions a small number of LHNs provide services across a number of areas, for example, children's hospitals.

Jurisdictions often have their own names for LHNs. For example, in New South Wales, they are known as 'Local Health Districts'; in Queensland they are known as 'Hospital and Health Services'; in South Australia they are known as 'Local Health Networks'; and in Tasmania they are known as 'Tasmanian Health Organisations'.

## How the health system is funded

In 2013–14, health expenditure in Australia was estimated at \$155 billion, or 9.8% of gross domestic product, compared with \$150 billion in 2012–13 and nearly \$95 billion in 2003–04 (adjusted for inflation) (AIHW 2015b).

Almost 68% of total health expenditure during 2013–14 was funded by governments, with the Australian Government contributing 41% and state and territory governments nearly 27%. The remaining 32% (\$50 billion) was paid for by individuals through out-of-pocket expenses (18%), by private health insurers (8.3%) and through accident compensation schemes (6.1%) (AIHW 2015b) (see 'Chapter 2.2 How much does Australia spend on health care?').

The distribution of funding between government and the non-government sector varies, depending on the type of health goods and services being provided. Public hospitals are funded by the state and territory and Australian governments, but are largely owned and managed by the state and territory governments. Private hospitals are largely owned and operated by private (non-government) organisations—either for-profit companies, or not-for-profit organisations (AIHW 2015a).

The Australian Government provides a large amount of funding for medical services and subsidised medications, with the balance sourced from the non-government sector. The state and territory governments provide most of the funding for community health services. Non-government sources (such as private health insurers and individuals), as well as private hospitals, provide large portions of the funding for dental services, aids and appliances, some medications, and other health practitioner services.

Figure 2.1.2 provides a picture of the main services, funding responsibilities and providers. Health funding and the composition of the workforce are covered in detail in a separate article and snapshot in this chapter, but an overview is provided here to outline the main elements of Australia's health system.

The inner segments show the relative size of the recurrent expenditure in each of the main sectors of the health system: hospitals, primary health care, and other services. The 'hospitals' sector includes all services provided by public and private hospitals. 'Primary health care' includes a range of front-line health services delivered in the community (as described earlier), and also includes the cost of medications provided through the Pharmaceutical Benefits Scheme (PBS), as well as over-the counter and non-PBS prescription medications. The category 'other services' includes medical services other than those provided by GPs, medical research, health aids and appliances, patient transport services and health administration. It is important to note that these examples are not exhaustive, and each group of services consists of many types of activities.

The middle ring indicates the relative expenditure on the specific service types within each sector, and who delivers the service; the colour coding shows whether the service is provided by the private sector, public sector, or both. The outer ring shows the funding source for the different services and the relative size of the funding.

## Medicare

The Australian Government's funding contributions include a universal public health insurance scheme, Medicare. Medicare was introduced in 1984 to provide free or subsidised access to public hospital services and to treatment by health professionals (including doctors, optometrists and some other health professionals) (DHS 2015a).

The Medicare system has three parts: hospital, medical and pharmaceutical. Coverage of pharmaceuticals predates Medicare, with the PBS introduced in 1948.

Figure 2.1.2: Health services—funding and responsibility, 2013–14



**Share of recurrent expenditure**

- Hospitals
- Primary health care
- Other services

**Responsibility for services**

- Combined public and private sector
- State and territory governments
- Private providers

**Source of funding**

- Australian Government
- State and territory governments
- Private

*Note:* The inner segments indicate the relative size of expenditure in each of the three main sectors of the health system ('Hospitals', 'Primary health care', and 'Other services'). The middle ring indicates both the relative expenditure on each service in the sector (shown by the size of each segment) and who is responsible for delivering the service (shown by the colour code). The outer ring indicates both the relative size of the funding (shown by the size of each segment) and the funding source for the difference services (shown by the colour code). For more detail, refer to the main text.

Medicare is funded by taxpayers who, in addition to general income tax, pay a levy of 2.0% of their taxable income and a further surcharge of 1.0–1.5% of an individual taxpayer's income for a single taxpayer earning above \$90,000 and for families earning over \$180,000 who choose not to take out a specified level of private hospital cover (ATO 2015).

Medicare benefits are not available for medical treatment a person receives overseas. However, the Australian Government has signed Reciprocal Health Care Agreements to help cover the cost of essential medical treatment for Australians visiting certain countries: New Zealand, the United Kingdom, the Republic of Ireland, Sweden, the Netherlands, Finland, Italy, Belgium, Malta, Slovenia and Norway (DHS 2014).

### **Medicare and hospital treatment**

Medicare offers fee-free treatment as a public patient in a public hospital, by a doctor appointed by the hospital (DHS 2015a).

It also covers 75% of the Medicare Benefits Schedule (MBS) fee for services and procedures for private patients in a public or private hospital (DHS 2015a).

### **Medicare and medical services**

MBS fees are set by the Australian Government. Medical practitioners are not required to adhere to the recommended schedule and can charge more than the scheduled fee for private patients. If the practitioner charges more than this fee, the patient is required to pay the extra amount, which is known as a 'gap' payment.

When a person visits a doctor outside a hospital, Medicare will reimburse 100% of the MBS fee for a GP and 85% of the MBS fee for a specialist. If the doctor bills Medicare directly (bulk billing), the patient will not have to pay anything (DHS 2015b). If the doctor charges more than the MBS fee, the patient has to pay the gap.

Medical costs not usually covered by Medicare include:

- ambulance services
- most dental examinations and treatment
- most physiotherapy and other allied health services
- glasses and contact lenses.

In 2014–15, 21 million Australians (90% of the population) accessed more than 368 million individual services on the MBS—more than 1 million services a day (Department of Health 2015a).

### **Pharmaceutical Benefits Scheme**

The Australian Government subsidises a wide range of prescription pharmaceuticals under the PBS. Under the PBS, the amount paid by the patient varies, up to a maximum of \$38.30 for general patients and \$6.20 for those with a concession card (Department of Health 2015e).

There are two safety net thresholds that operate on a calendar year. The general patient threshold is about \$1,475. When a person and/or their family's co-payments reach this amount, they may then pay the concessional rate for prescriptions. The concessional safety net threshold is \$372. When a patient and/or their family's total co-payments reach this amount, they may get their subsequent medications for free for the rest of the calendar year (Department of Health 2015e).

If a medicine is not listed on the PBS schedule, the consumer has to pay the full price as a private prescription (Department of Health 2015d). In some cases, these costs may be reimbursed by private insurance funds. Pharmaceuticals provided in public hospitals are generally provided to public patients for free, with the cost covered as part of the hospital treatment. Public hospitals are allowed to prescribe pharmaceuticals under the PBS to certain patients and in this situation the same co-payments apply as for pharmaceuticals prescribed in the community.

### Repatriation Pharmaceutical Benefits Scheme

The Repatriation Pharmaceutical Benefits Scheme provides access to a range of pharmaceuticals and dressings at a concessional rate for the treatment of eligible war veterans, war widows/widowers and their dependants (DVA 2012).

### Private health insurance

Private health insurance is available for those who wish to fully or partly cover the costs of being admitted to hospital as a private patient and/or the costs of other ancillary health services (Private Healthcare Australia 2015).

At June 2015, 11.3 million Australians (47% of the population) had some form of private patient hospital cover, and 13.3 million (56%) had some form of general treatment cover (APRA 2015).

Part of the cost of a hospital admission as a private patient is also covered by the Australian Government through Medicare.

A person can choose to be treated as a public patient in a public hospital, even if they have private health insurance. Private health insurance is not compulsory, and people can mix and match the levels and type of cover to suit their individual circumstances. The Australian Government offers a means-tested rebate for people with private health insurance.

## Who governs health services?

Overall coordination of the public health care system is the responsibility of the Australian Government and state and territory government health ministers. Managing the individual national and state and territory health systems is the responsibility of the relevant health minister and health department in each jurisdiction.

The health ministers are collectively referred to as the Health Council, which comes under the auspices of the Council of Australian Governments—the peak intergovernmental forum in Australia. Membership of the Health Council also includes the Australian Government Minister for Veterans' Affairs and the New Zealand Health Minister (COAG Health Council 2014b).

The Health Council's responsibility is to 'provide a forum for cooperation on health issues, especially primary and secondary care, and consider increasing cost pressures' (COAG Health Council 2014c).

The Health Council is supported by the Australian Health Ministers' Advisory Council, which comprises the heads of the Australian Government health department, all state and territory health departments, the New Zealand health department, and the Australian Government veterans' affairs department (COAG Health Council 2014a).

## Regulation

Health regulation is a government responsibility. The Australian Government's regulatory roles include overseeing the safety and quality of pharmaceutical and therapeutic goods and appliances, while the state and territory governments license or register private hospitals, and have legislation for the operation of public hospitals.

The licensing of pharmacy premises and pharmacy ownership restrictions is also the responsibility of the states and territories. State and territory governments are also largely responsible for health-related industry regulations, such as for the sale and supply of alcohol and tobacco products.

Both levels of government jointly regulate some areas, including food standards, safety and quality of health care, and the health workforce.

## Registration of health professionals

A National Registration and Accreditation Scheme for health practitioners started on 1 July 2010. Fourteen professions have joined the scheme, including medical practitioners, nurses and midwives, pharmacists and other allied health professions (AHPRA 2015a) (see 'Chapter 2.3 Who is in the health workforce?').

Each profession in the scheme is represented by a National Board that is responsible for registering practitioners and students, and for setting the standards that all registered health professionals must meet (AHPRA 2015b).

The scheme is implemented by national boards, which are supported by an independent body, the Australian Health Practitioner Regulation Agency.

One of the objectives of the scheme is to protect the public by ensuring that only health practitioners who are suitably trained and qualified are registered (AHPRA 2015a).

In 2015, health ministers approved a National Code of Conduct for the non-registered health care workers, currently operating in New South Wales, Queensland, and South Australia. Once implemented in each state and territory, the code will provide protection for the public by setting minimum standards expected of anyone who delivers a health service; and will also provide national prohibition orders.

For some health practitioner disciplines not regulated under the National Registration and Accreditation Scheme (such as dietitians, naturopaths, massage therapists and optical technicians), professional associations provide guidance on professional standards, with some associations having a formal credentialing or accreditation process that sets benchmarks for expected practice for individual practitioners.

## How does Australia's health system compare internationally?

The results presented here show how Australia compares with members of the Organisation for Economic Co-operation and Development (OECD), an international organisation of 34 countries. The rankings are based on analysis that uses OECD methodology.

(For information on how Australia ranks internationally on selected health indicators, see 'Chapter 1.3 How healthy are Australians?')

## Health expenditure

Using OECD calculations methods, in 2013, Australia's spending on health as a proportion of GDP was 9.4%, slightly higher than the OECD average of 9.3%. This ranked Australia in the middle (10th) of the 22 OECD countries with available data. The United States was by far the biggest spender on health care, at 17.1% of GDP (AIHW 2015b) (see also 'Chapter 2.2 How much does Australia spend on health care?').

Australia's health expenditure per person (\$5,060) was higher than the OECD average (\$4,561); 9th out of 22 countries. Again, the United States was the biggest spender, at \$10,963 per person (AIHW 2015b). (Note: spending has been converted to Australian dollars using GDP purchasing-power parities.)

## Health care resources

A substantial increase has occurred in the medical workforce in Australia since 2000 that coincided with a rise in the number of medical graduates. In 2013, Australia had 3.4 practising physicians per 1,000 population, up from 2.5 in 2000, which was slightly above the OECD average (3.3) (OECD 2015b).

Australia had 11.5 nurses per 1,000 population, up from 10.1 in 2000, which was above the OECD average (9.1) and 3.7 hospital beds per 1,000 population, down from 4.0 in 2000, and lower than the OECD average of 4.8 (OECD 2015b).

## Challenges for the health system

The health system faces a number of challenges. An ageing population, increases in consumer expectations, more expensive technologies, and a growing burden of chronic conditions are among the factors driving an increased demand for services and rising health expenditure (PM&C 2014).

In a recent report, the OECD noted that this 'health shift' of ageing populations and people living longer with multiple chronic and disabling conditions had 'important implications for how care is best organised and provided; where new treatment innovations can be expected; and future cost pressures on governments' (OECD 2015a:20).

The complexity of Australia's health system also presents challenges, particularly for people with complex health conditions who may be under the care of multiple health professionals and who move from one health service to another with little or no continuity of care (PHCAG 2015; PM&C 2014).

In 2015, the Australian Government established a Primary Health Care Advisory Group to investigate possible reforms to primary health care to improve the management of people with complex and chronic disease (Department of Health 2015g).

The group noted that patients often experienced 'a fragmented system, with providers and services working in isolation'; uncoordinated care; difficulty finding services they needed; duplication of services; and 'feelings of disempowerment, frustration and disengagement' (PHCAG 2015:5).

The health sector also has strong connections to the welfare sector, which may also make integration of care, and funding responsibility, difficult (see Box 2.1.1).

### Box 2.1.1: The interface between health and welfare services

The health sector is a complex interaction of public and private service providers, settings, participants and supporting mechanisms. Many people will have experienced this complexity first hand as they have attempted to navigate the system for themselves or for someone for whom they are caring.

But the complexity doesn't end there—particularly for more vulnerable groups, such as older people, people with disability or the homeless. Not only do people need to navigate specific and separate service sectors (such as aged care), they also need to negotiate the interface between these sectors and the health sector. In many instances this is not a single transition, as they dip in and out of sectors and services as the need arises.

An example is people in residential aged care who may need treatment in a hospital. The AIHW report *Movement between hospital and residential aged care 2008–09* (AIHW 2013) showed that, of the 1.1 million hospitalisations of people aged 65 and over, 9% of the admissions were from residential aged care, and 11% of the discharges were to residential aged care—about 200,000 total movements between the hospital sector and the residential aged care sector.

The health–welfare interface has been brought into sharper relief over the course of this decade because of major national reforms in hospital services, primary care, aged care and disability support (the latter through the introduction of the National Disability Insurance Scheme). Associated with many of these reforms have been changes in the relative responsibilities in policy, program and funding between the Australian Government and state and territory governments.

Hence it is critical that robust policies, information systems and monitoring programs are in place—and are further developed—so that all Australians, and particularly those with special and complex needs, can benefit from an integrated, responsive, efficient, effective, safe health and welfare services system.

### What is missing from the picture?

Currently it is not easy to profile how a person interacts with the health system—that is, the different services they use, the treatment and care provided, and the health outcome. Initiatives such as eHealth and the creation of an integrated records system for each person may provide some of this information in the future. Such information could also provide insights into the overall effectiveness and efficiency of the health system, and help prevent duplication of testing and procedures.

### Where do I go for more information?

Individual aspects of the health system are discussed in more detail throughout this report.

Detailed information on health spending and the health workforce is available at [www.aihw.gov.au/expenditure](http://www.aihw.gov.au/expenditure) and [www.aihw.gov.au/workforce](http://www.aihw.gov.au/workforce) respectively.

Detailed information on Australian hospitals is available at [www.aihw.gov.au/hospitals](http://www.aihw.gov.au/hospitals).

More information on health reform, health practitioner registration and Australian Government health policies is available from the [Department of Health](http://www.health.gov.au) website.

More information on intergovernmental arrangements and agreements is available at the [COAG](http://www.coag.gov.au) website.

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## 2.2 How much does Australia spend on health care?

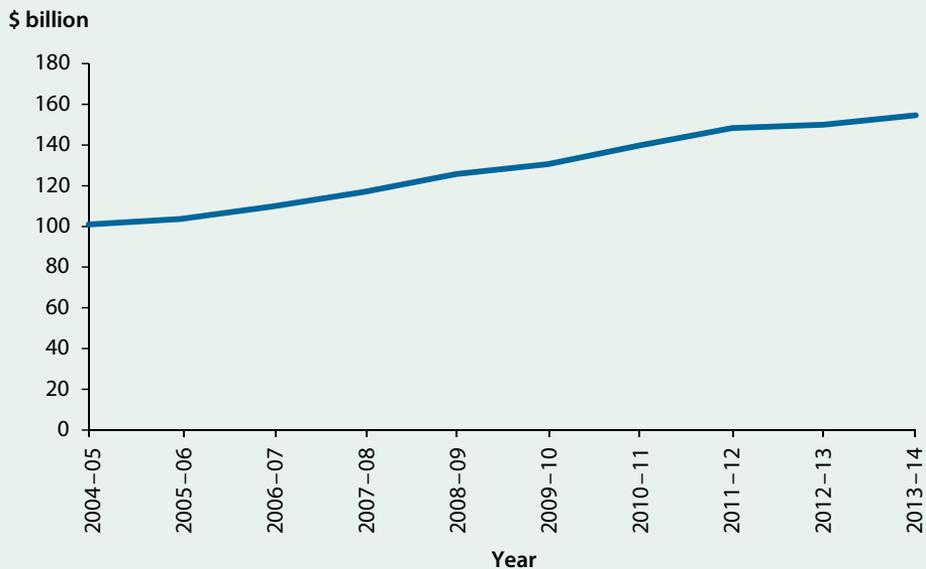
Health expenditure is money spent on health goods and services. It includes money spent by governments as well as by individuals and other non-government funders, such as private health insurers. The providers of health goods and services include hospitals, primary health care providers such as general practitioners (GPs), and other health professionals.

Over recent decades, health expenditure has grown relatively steadily from year to year. Over the decade from 2003–04 to 2013–14, health expenditure grew faster in real terms than overall gross domestic product (GDP), with an average annual real growth of 5.0%—2.2 percentage points higher than the 2.8% growth in GDP.

Using Organisation for Economic Co-operation and Development (OECD) methods, the ratio of Australia's health expenditure to GDP was 9.4% in 2013, near to the average for OECD countries (9.3%). It is a higher proportion than that of the United Kingdom (8.8%) and a lower proportion than in Canada (10.7%) and New Zealand (11.0%). The United States was by far the highest spender, with the health sector making up 17.1% of GDP in 2013.

Total expenditure on health (that is, recurrent and capital expenditure combined) has grown each year, in real terms (after adjusting for inflation) from \$95 billion in 2003–04 to an estimated \$155 billion in 2013–14 (see Figure 2.2.1).

**Figure 2.2.1: Total health expenditure 2004–05 to 2013–14, adjusted for inflation**



*Note:* Inflation-adjusted prices expressed in terms of 2013–14 prices.

*Source:* AIHW health expenditure database.

## Where is the money spent?

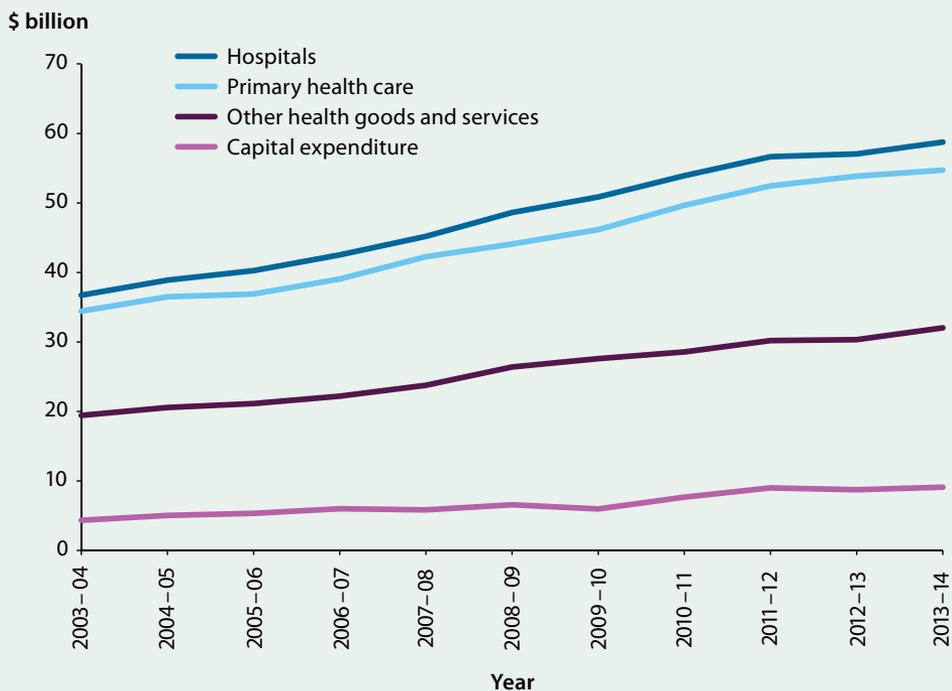
Of the \$155 billion spent in 2013–14, \$145 billion was recurrent health expenditure. In 2013–14, \$59 billion was spent on *Hospitals* in Australia, increasing in real terms from \$37 billion in 2003–04 (Figure 2.2.2). The share of recurrent expenditure accounted for by *Hospitals* remained relatively constant over the decade, at around 40%.

*Primary health care* expenditure was \$55 billion in 2013–14, around 38% of recurrent expenditure. This was an increase, adjusted for inflation, from \$34 billion in 2003–04. In 2012–13 and 2013–14, *Unreferred medical services* (largely GP services) attracted the highest share of *Primary health care* expenditure, at 19.1% and 19.3% respectively. *Unreferred medical services* cost \$10.6 billion in 2013–14, with \$8.7 billion funded by the Australian Government. Expenditure on pharmaceuticals through the Pharmaceutical Benefits Scheme (PBS) and Repatriation Pharmaceutical Benefits Scheme (RPBS), referred to as *Benefit-paid pharmaceuticals*, and included in the *Primary health care* group, was \$10.1 billion in 2013–14.

In 2013–14, \$32 billion was spent on *Other health goods and services*, an increase in real terms from \$19 billion in 2003–04. The share of recurrent expenditure accounted for by *Other health goods and services* was around 22% in 2013–14. Around 50% of *Other health goods and services* expenditure was for *Referred medical services* (largely specialist medical services), with an expenditure of \$16 billion in 2013–14.

*Capital expenditure* increased in real terms from \$4.3 billion in 2003–04 to \$9.1 billion in 2013–14.

**Figure 2.2.2: Total health expenditure, by broad area of expenditure, adjusted for inflation, 2003–04 to 2013–14**



Note: Inflation-adjusted prices expressed in terms of 2013–14 prices.

Source: AIHW health expenditure database.

## Who pays for what?

In 2013–14, governments were responsible for \$105 billion, or nearly 68% of total health expenditure of \$155 billion in Australia. Of the government contribution, the Australian Government contributed \$63.5 billion, or 41% of total health expenditure, and state and territory governments contributed \$41 billion, or nearly 27% of total health expenditure.

The Australian Government provides a large amount of the funding for medical services—\$21 billion in 2013–14, or 78% of medical services expenditure—with the balance sourced from the non-government sector. The Australian Government also spent \$8.4 billion for benefit-paid medications, covering 84% of benefit paid medication expenditure in 2013–14.

State and territory governments on the other hand provide most of the funding for community health services, contributing \$6.2 billion in 2013–14, or 79% of community health service expenditure.

Most funding provision for public hospital services is shared between Australian, state and territory governments. The Australian Government provided 37% of recurrent funding for public hospital services in 2013–14 (\$17 billion), while the state and territory governments, which have primary responsibility for operating and regulating public hospitals, provided 54% (\$25 billion).

Total non-government expenditure was nearly \$50 billion in 2013–14, or 32% of the share of total health expenditure. Funding by individuals was \$27.5 billion in 2013–14, which accounted for nearly 55% of estimated non-government funding and nearly 18% of total health expenditure. Nearly 93% of funding for non-subsidised medicines (\$9.0 billion) in 2013–14—such as over-the counter medications, private prescriptions and under co-payment level medicines—was funded by individuals. Nearly 60% of dental services expenditure in 2013–14 was funded by individuals (\$5.3 billion).

Private health insurance funds provided \$13 billion of total health expenditure in 2013–14, while the balance of \$9.4 billion came from other non-government sources, mainly in the form of payments by compulsory motor vehicle third-party and workers' compensation insurers.

The majority of private health insurance funding was for hospital services, with \$7.3 billion spent in 2013–14.

For further information on the Australian health system, including an overview of health expenditure, see 'Chapter 2.1 How does Australia's health system work?'

## Changes in expenditure over recent years

Average annual growth in health expenditure over the past decade was 5.0%, but the rate slowed in recent years. In real terms the rate from 2011–12 to 2012–13 was 1.1%, and 3.1% from 2012–13 to 2013–14.

Since *Australia's Health 2014* was released, growth in the government contribution to health expenditure also slowed and in some areas expenditure declined. The 68% of total spending sourced from governments in 2013–14 was lower than in 2011–12, when governments funded nearly 70% of total health expenditure. The areas of expenditure that most affected the slowdown in growth included *Public health, Benefit-paid pharmaceuticals, Administration* and *Patient transport* expenditure.

In real terms, adjusted for inflation, funding by the Australian Government decreased by 2.5% between 2011–12 and 2012–13. It then increased by 2.4% between 2012–13 and 2013–14. This was lower than average annual growth over the decade (4.4%) and, for the 2 years combined, there was a real decrease of 0.1% from 2011–12 to 2013–14. The main drivers of the decrease in Australian Government expenditure from 2011–12 to 2012–13 were changes to the PBS, to private health insurance premium rebates, and to the medical expenses tax rebate.

PBS expenditure followed a similar pattern to overall Australian Government expenditure, with a decline of 2.1% between 2011–12 and 2012–13 followed by a relatively small increase the following year of 1.7% (Department of Health 2015). This followed the introduction of a generic medicines initiative, which affects the negotiated price of listed pharmaceuticals through the listing of off-patent generic drugs, as well as price disclosure changes (Department of Health 2010). This decrease in expenditure did not necessarily mean fewer services provided. The number of subsidised prescriptions dispensed over this time increased from 208 million in 2011–12 to 223 million in 2013–14.

Changes to the private health insurance rebate income testing arrangements reduced the share of funding provided by the Australian Government through the rebate scheme. Coinciding with this, the proportion of expenditure funded by private health insurers increased from 7.4% in 2011–12 to 8.3% in 2013–14.

From July 2012, the medical expenses tax rebate became income tested. Expenditure on the medical expenses tax rebate declined in real terms, from \$574 million in 2011–12 to \$226 million in 2013–14.

In 2012–13 and 2013–14, growth in state and territory government spending, another major source of health expenditure funding, was also relatively slow. The state and territory government share of total health expenditure declined from 26.9% in 2011–12 to 26.6% in 2013–14.

The two fastest growing areas of expenditure between 2011–12 and 2013–14 were *All other medications* (private prescriptions, over-the-counter prescriptions and under co-payment pharmaceuticals) and *Aids and appliances*. The share of total health expenditure that related to *All other medications* increased from 5.9% in 2011–12 to 6.3% in 2013–14, with a cost of \$9.7 billion in 2013–14. The share of total health expenditure relating to *Aids and appliances* increased from 2.4% in 2011–12 to 2.6% in 2013–14 (\$4.0 billion in 2013–14).

Non-government recurrent expenditure grew in real terms, from \$41 billion in 2011–12 to nearly \$46 billion in 2013–14, and the share of total expenditure rose from 30% to 32%.

## Expenditure for admitted patients

To better understand the drivers of the expenditure trends outlined above, the AIHW periodically conducts additional studies into the purposes for the expenditure and the characteristics of the people for whom the expenditure is incurred, in terms of the diseases or conditions managed, their age, sex and Indigenous status.

The AIHW has analysed admitted patient care expenditure, for both public and private hospitals, for the years 2004–05 to 2012–13. Expenditure on admitted patient services represents around 70% of total hospital expenditure, with the remainder being for emergency departments and non-admitted care.

For each hospital stay (referred to as a hospital ‘separation’ or ‘hospitalisation’), expenditure was allocated to the diagnoses that were likely to have influenced the cost, including diseases or conditions that the patient had on admission to hospital, and any arising after admission.

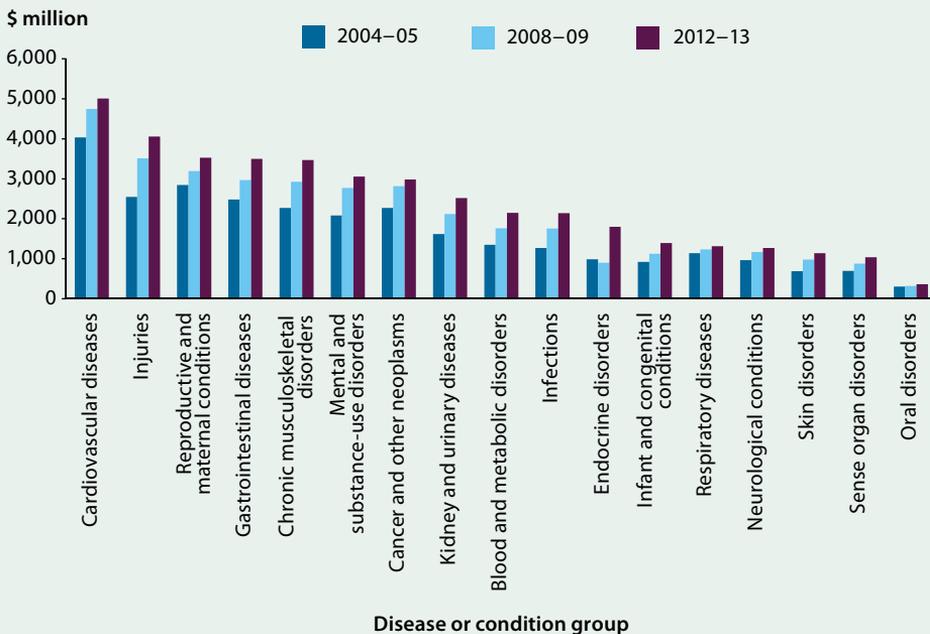
These data may be affected by different admission and data recording practices over time. The data do, however, provide significant insight into the key trends in expenditure for admitted patients over the period. A broad overview of these trends is provided in the following sections.

To assist with comparisons with the analysis presented in Chapter 3.1 ‘Burden of disease and injury in Australia’, the data have been presented in terms of burden of disease or condition groups.

## What disease or condition groups were responsible for the most expenditure for admitted patients?

The *Cardiovascular diseases* group was responsible for the most expenditure in the years 2004–05, 2008–09 and 2012–13 (see Figure 2.2.3). In 2012–13, around \$5 billion of total admitted patient expenditure (11.1%) was related to *Cardiovascular diseases*.

**Figure 2.2.3: Disease or condition group expenditure, 2004–05, 2008–09 and 2012–13, adjusted for inflation**



### Notes

1. Inflation adjusted prices expressed in terms of 2012–13 prices.
2. There was a large growth in expenditure on the *Endocrine disease* group, which includes diabetes, from 2008–09 to 2012–13. Changes to the Australian Coding Standard for *Diabetes mellitus and intermediate hyperglycaemia* (formerly *Diabetes mellitus and impaired glucose regulation*) on 1 July 2012 have affected the comparability, over time, of data reported for diabetes.

Source: AIHW disease expenditure database.

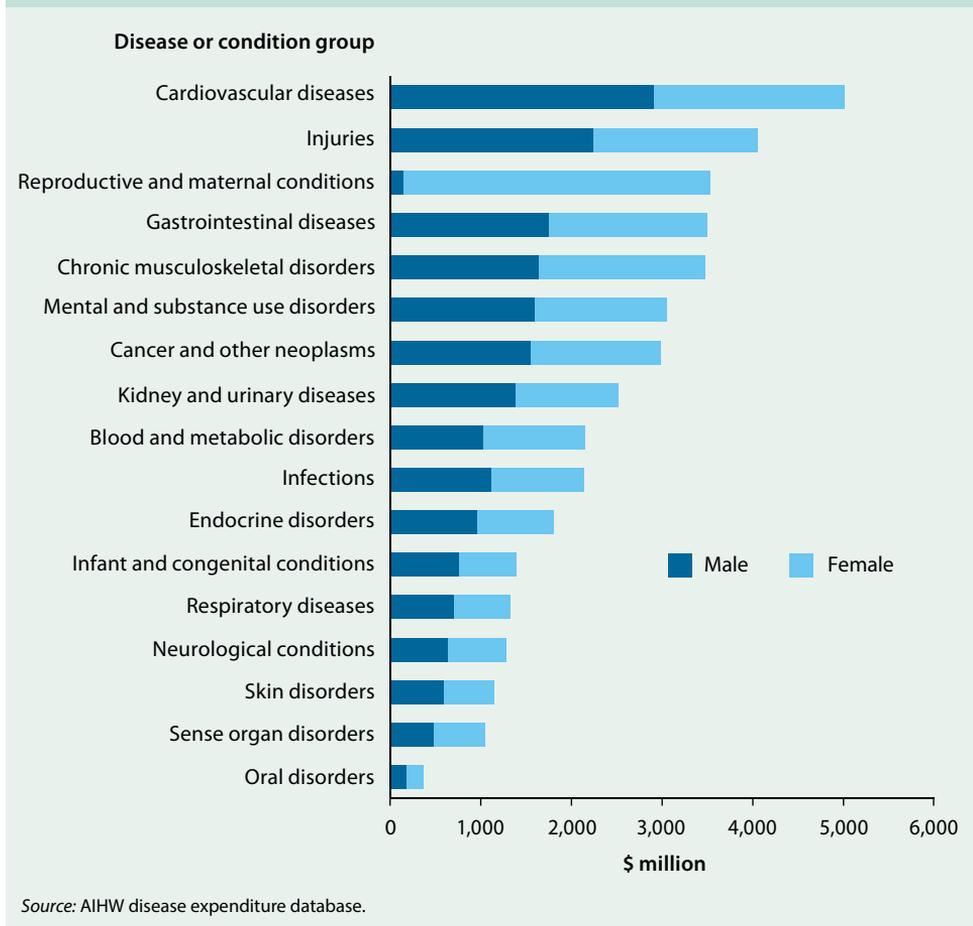
Other high-expenditure disease or condition groups included *Injuries*, *Reproductive and maternal conditions* and *Gastrointestinal diseases*. The *Reproductive and maternal conditions* group includes costs associated with healthy newborns as well as costs associated with the mother.

## Age and sex differences in expenditure

*Cardiovascular diseases* was a high-expenditure group for both men and women but the expenditure for men is higher, with \$2.9 billion of admitted patient expenditure spent on men in 2012–13 and \$2.1 billion on women (Figure 2.2.4). Other disease or condition groups that had higher expenditure for men were *Injuries* (with 55% of expenditure for men), *Mental and substance-use disorders* (55%), *Kidney and urinary diseases* (55%), *Endocrine disorders* (54%), *Infections* (53%) and *Cancer and other neoplasms* (52%).

As would be expected, admitted patient expenditure for *Reproductive and maternal conditions* had the highest proportion of expenditure allocated to women, at 96%, and was the group with the highest expenditure for women, with \$3.4 billion spent for admitted patient care in 2012–13. Other high-expenditure groups where there was a higher proportion of expenditure allocated to women were *Chronic musculoskeletal disorders* (53%) and *Blood and metabolic disorders*, such as anaemia (52%).

**Figure 2.2.4: Disease or condition group expenditure, by sex, 2012–13**

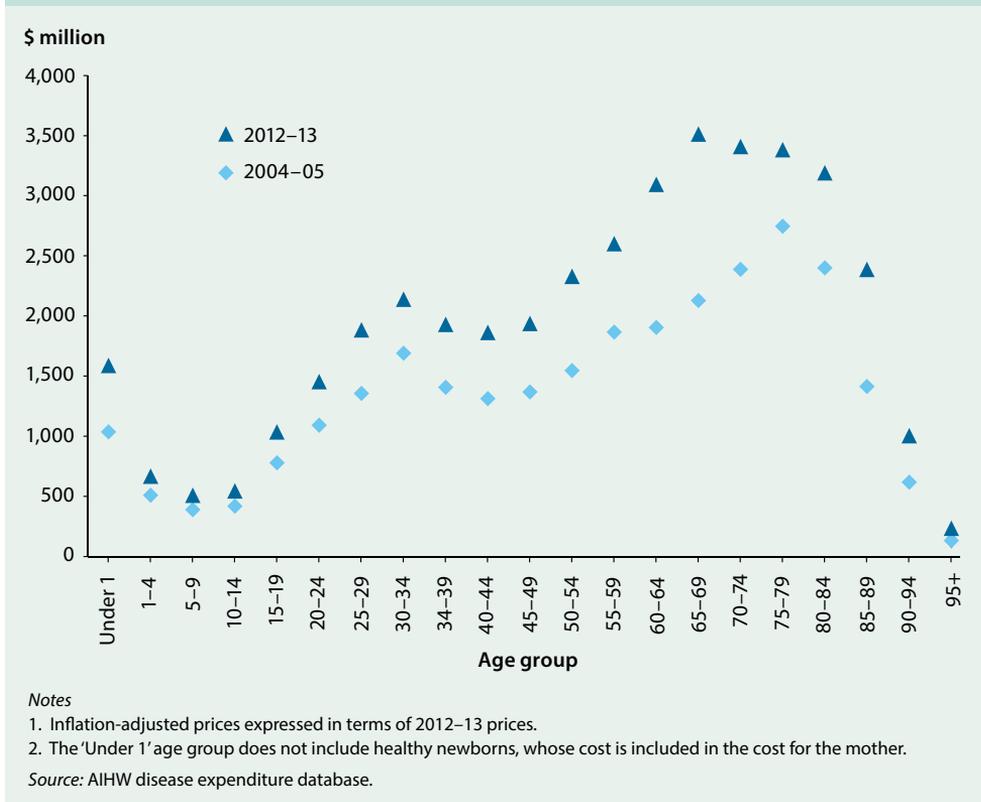


The pattern of expenditure by age group is different for males and females. For males in 2012–13, the expenditure increased from the 10–14 age group and reached a peak in the 65–69 age group (\$1,979 million). Expenditure was lower for age groups older than 65–69, with the lowest amounts for those aged 95 and over.

In 2012–13, the point of highest expenditure for women occurred in an older age group than for men. The highest expenditure was in the 80–84 age group, with expenditure of \$1,620 million. The 25–39 age group also had relatively high expenditure, due to expenditure in the *Reproductive and maternal conditions* group.

Figure 2.2.5 shows how the admitted patient expenditure by age group changed between 2004–05 and 2012–13. This change was most prominent in the 50 and older age groups, and for children aged under 1, where there was much greater expenditure in 2012–13 compared with 2004–05 (See 'Chapter 6.9 Changes in the provision of hospital care' for further information on trends in hospital care for older people).

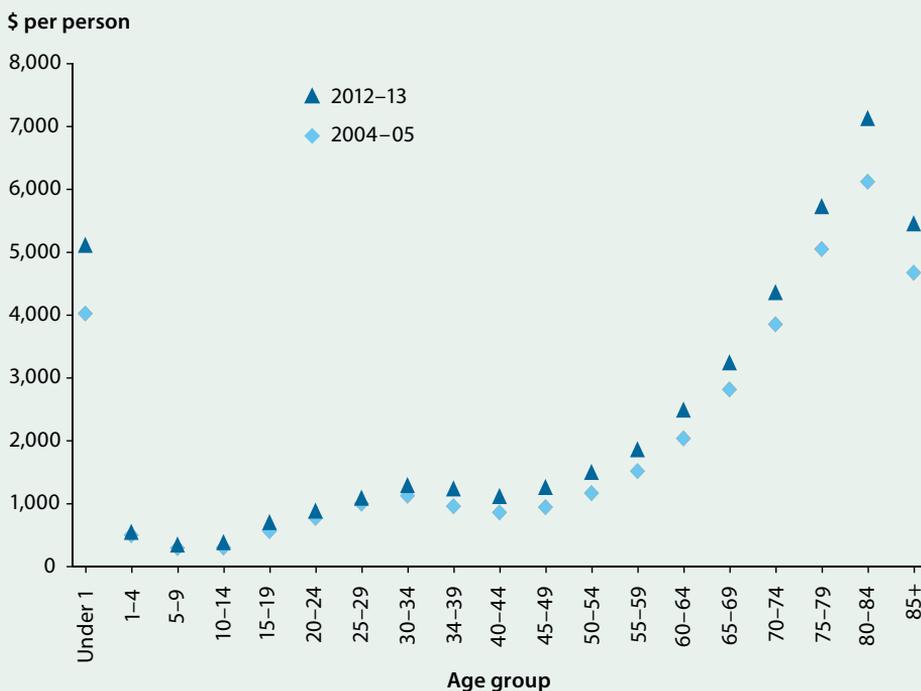
**Figure 2.2.5: Admitted patient expenditure, by age, 2004–05 and 2012–13, adjusted for inflation**



## Expenditure per person

Admitted patient expenditure per person was higher in 2012–13 than in 2004–05 in all age groups, for both men and women, with relatively large increases in the older age groups (Figure 2.2.6). The increase in expenditure in the older age groups was, therefore, related both to there being more spent per person as well as there being more people in each age group. (For further information on older Australians, see 'Chapter 6.17 Health care use by older Australians:') This was true of the under 1 age group as well.

**Figure 2.2.6: Admitted patient expenditure per person, by age group, 2004–05 and 2012–13, adjusted for inflation**



**Notes**

1. Inflation-adjusted prices expressed in terms of 2012–13 prices.
2. The 'Under 1' age group does not include healthy newborns, whose cost is included in the cost for the mother.

Source: AIHW disease expenditure database.

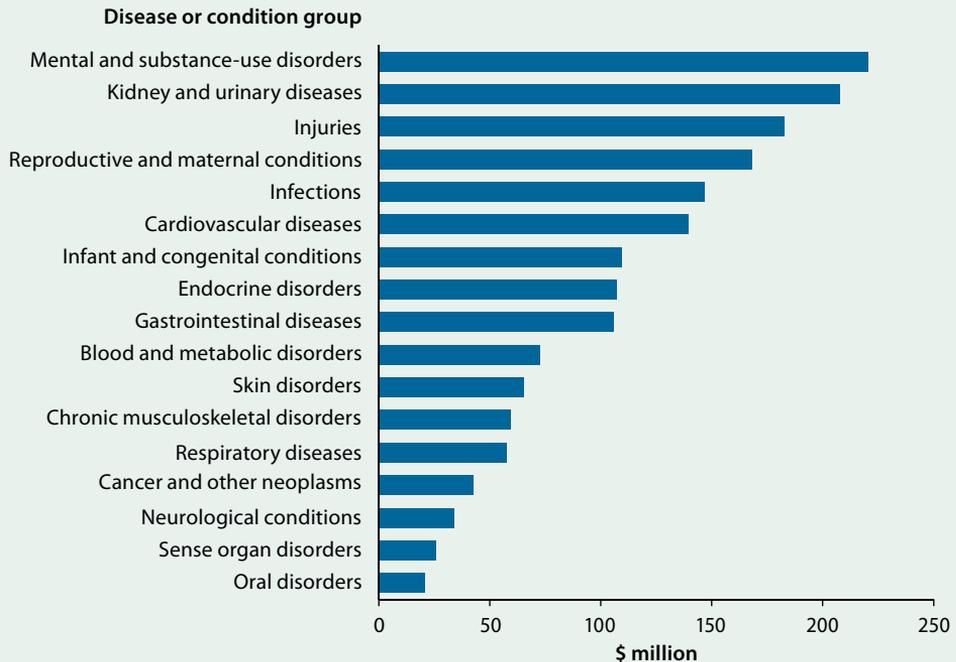
## Expenditure for Indigenous Australians

Indigenous Australians have an expenditure profile that is different from that of non-Indigenous Australians. *Mental and substance-use disorders* and *Kidney and urinary diseases* were the disease or condition groups with the highest expenditure, both with an expenditure of over \$200 million in 2012–13 (see Figure 2.2.7). These disease or condition groups were ranked as the 7th and 8th highest groups, respectively, for non-Indigenous Australians.

The *Infections* group ranked higher for Indigenous than for non-Indigenous Australians, but the *Chronic musculoskeletal disorders* and *Gastro-intestinal diseases* groups ranked higher for non-Indigenous than for Indigenous Australians.

*Cancer and other neoplasms* was one of the lowest expenditure groups for Indigenous people, but ranked 6th highest for non-Indigenous Australians. For further information on Indigenous Australians, see 'Chapter 5.7 How healthy are Indigenous Australians?'

**Figure 2.2.7: Disease or condition group expenditure for Indigenous Australians, 2012–13**



Source: AIHW disease expenditure database.

## What is the AIHW doing?

This detailed information on admitted patient expenditure has resulted from a redevelopment of the AIHW's health expenditure data infrastructure, which is ongoing. This work will enable the AIHW to release more detailed information on expenditure by disease, age, sex, Indigenous status and location, as well as opening these data up to researchers and policymakers more broadly.

## What is missing from the picture?

Health expenditure data do not include health data from local authorities. If local government authorities received funding for health care from a state or territory government, this expenditure was included in that jurisdiction's expenditure. Data for programs self-funded by local governments (such as public health initiatives funded and run by local authorities or councils) were not collected for inclusion in the AIHW health expenditure database. Health-related costs from the Australian Defence Force or from correctional and detention facilities are also not included in the health expenditure database collection. Not all expenditure by non-government organisations is included, such as initiatives run from private donations to the organisations.

The analysis of expenditure by disease, age, sex and Indigenous status only focuses on admitted patient expenditure data. Expenditure in non-admitted, primary care or other areas has not been included.

## Where do I go for more information?

More information on health expenditure is available at [www.aihw.gov.au/health-expenditure/](http://www.aihw.gov.au/health-expenditure/). The report *Health expenditure Australia 2013–14* and other recent publications are available for free download.

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## 2.3 Who is in the health workforce?

The health workforce in Australia is large and diverse, covering many occupations, and ranging from highly qualified professionals to support staff and volunteers. Health workforce occupations comprise workers who diagnose and treat physical and mental illnesses and conditions, or recommend, administer and dispense medications and treatment to promote or restore good health.

Many health practitioners must register through the National Registration and Accreditation Scheme (NRAS) to work in the health system. The information presented here focuses on this registered workforce, which includes medical practitioners, nurses and midwives and other health professionals such as dentists, physiotherapists and psychologists.

Nurses and midwives are the largest group in the registered health workforce, with about 353,000 registered and almost 301,000 nurses and midwives employed in 2014 (Table 2.3.1). The number of full-time equivalent (FTE) nurses and midwives employed for every 100,000 people is almost 3 times that of the next largest health profession, medical practitioners (Figure 2.3.1). In 2014, there were 1,134 full-time equivalent nurses and midwives (or 1 in 88 people was an employed nurse or midwife), 387 medical practitioners and 508 other health professionals employed for every 100,000 people.

More female health practitioners are entering the workforce. For example, in 2014, over 53% of medical practitioners in the youngest age group (20 to 34 years) were women. Women made up half (50.4%) of all specialists-in-training in 2014, which was far greater than 28.7% of women who were practising specialists in 2014.

**Table 2.3.1: Key workforce statistics and full-time equivalent rates for selected health professions**

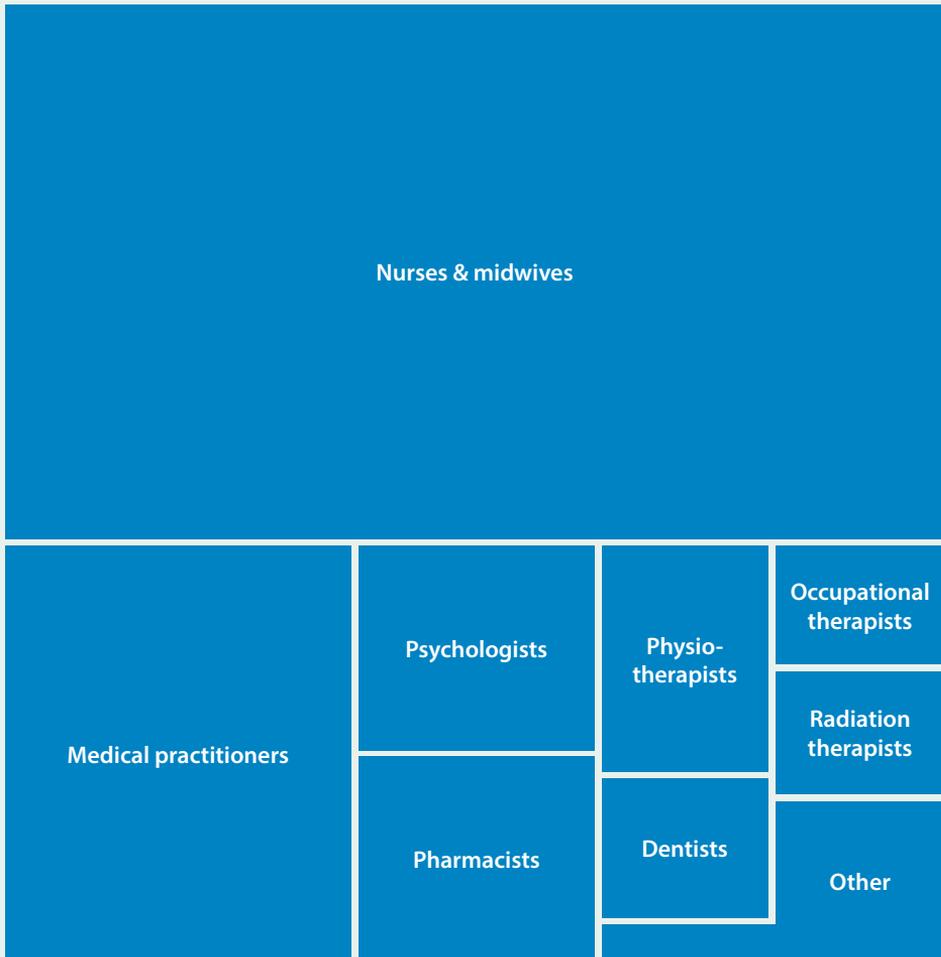
|                               | Two largest professions  |   | Two selected professions  |  |
|-------------------------------|--|---|---|--|
|                               | <br>Nurses and midwives | <br>Medical practitioners <sup>(a)</sup> | <br>Dentists | <br>Optometrists |
| <b>Employed</b>               | <b>300,979</b> employed in 2014, up 5.0% from 286,706 in 2011  | <b>85,510</b> employed in 2014, up 7.4% from 79,653 in 2012   | <b>13,979</b> employed in 2014, up 11.0% from 12,599 in 2011                                  | <b>4,337</b> employed in 2014, up 7.5% from 4,034 in 2011  |
| <b>FTE per 100,000 people</b> | <b>1,134</b> in 2014, up 2.4% from 1,107 in 2011   | <b>387</b> in 2014, up 3.6% from 374 in 2012  | <b>56</b> in 2014, about the same as in 2011—55   | <b>17.4</b> in 2014, about the same as in 2011—17.1  |
| <b>Percentage of women</b>    | <b>89%</b> in 2014, about the same as in 2011—90%  | <b>39%</b> in 2014, about the same as in 2012—38%   | <b>39%</b> in 2014, up from 35% in 2011   | <b>50%</b> in 2014, up from 46% in 2011  |

**Full-time equivalent per 100,000 people in 2014**

|   | <b>1,145</b> | <b>437</b> | <b>63</b> | <b>19</b> |
|---|--------------|------------|-----------|-----------|
| <br>Major cities           |              |            |           |           |
| <br>Inner regional areas  | <b>1,096</b> | <b>292</b> | <b>43</b> | <b>15</b> |
| <br>Outer regional areas | <b>1,077</b> | <b>272</b> | <b>38</b> | <b>12</b> |
| <br>Remote areas         | <b>1,239</b> | <b>264</b> | <b>25</b> | <b>8</b>  |
| <br>Very remote areas    | <b>1,233</b> | <b>264</b> | <b>25</b> | <b>8</b>  |

(a) Comparison is based on 2012 data due to the inclusion of provisional registrants prior to that year.

Figure 2.3.1: Total number of employed registered health practitioners, 2014



*Note:* 'Other' includes Optometrists, Chiropractors, Podiatrists, Chinese medicine practitioners, Osteopaths, Dental hygienists, Dental practitioners, Oral health therapists, Dental therapists, Aboriginal and Torres Strait islander health practitioners.

*Source:* AIHW National Health Workforce Data Set 2014.

### What is missing from the picture?

The information on health practitioners who register through the NRAS through the mandatory national registration process does not include all health professionals. There are several categories of health professions, such as dieticians, sonographers and speech therapists, that are not required to register with NRAS and for whom limited data are available.

### Where do I go for more information?

More information on the health workforce is available via the AIHW web pages at [www.aihw.gov.au/workforce](http://www.aihw.gov.au/workforce).

# Chapter 3

Leading causes of ill health



## 3.0 Introduction

Australia has one of the highest life expectancies in the world and the majority of Australians consider themselves to be in good health.

But while death rates continue to decline and the burden of disease in the population has improved (including both fatal and non-fatal impacts), not all Australians are as healthy as they could be.

Chronic diseases are the leading cause of ill health and death in Australia. In 2014–15, more than 11 million Australians had at least one of eight selected chronic diseases, and one-quarter of the population had two or more of them. The effects of chronic disease can be profound, both on an individual's health and wellbeing and on the health care system.

This chapter profiles the leading causes of ill health in Australia, both physical and mental, and the impact of these illnesses. It includes a feature article on the key results from the Australian Burden of Disease Study recently undertaken by the AIHW.

According to these results, cancer, cardiovascular diseases, mental and substance-use disorders, musculoskeletal disorders and injuries account for around two-thirds of the burden in Australia.

About 31% of the burden of disease could have been prevented by reducing exposure to modifiable risk factors such as tobacco use, harmful alcohol use, high body mass, physical inactivity and high blood pressure. These risk factors are covered in more detail in 'Chapter 4 Determinants of health'.

This chapter also examines premature mortality—that is, deaths before the age of 75. Even though the premature mortality rate has fallen dramatically over the past 100 years or so, one-third of deaths in Australia in 2013 were considered premature.

It also looks at vaccine preventable diseases, such as influenza and pertussis (whooping cough), and how they affect different population groups in our community.

# 3.1 Burden of disease and injury in Australia

## Introduction

While the health of the population is monitored using separate measures of morbidity and mortality (as described elsewhere in this publication), it is important for health policy-making and service planning to be able to combine information on both of these measures. This enables health policymakers and service planners to be able to recognise and assess the varying impact of morbidity and mortality for different diseases, injuries and risk factors.

The Australian Burden of Disease Study (ABDS) recently undertaken by the AIHW provides information on the burden of disease for the whole population, as well as for the Aboriginal and Torres Strait Islander population (Box 3.1.1). The study builds on the AIHW's previous burden of disease studies and disease monitoring work and provides Australian-specific burden of disease estimates for 200 diseases and injuries, grouped into 17 disease groups, and for 29 risk factors, for 2003 and 2011.

This feature article highlights the key results of the ABDS for the Australian population as a whole. (The Indigenous component was still being finalised at time of preparation of this feature article.) It also provides a comparison of burden between Australia and other Organisation for Economic Co-operation and Development (OECD) countries, using international burden of disease data.

## Health loss across the life course

Overall, in 2011 there were 201 years of healthy life lost due to dying or living with disease or injury for every 1,000 people in Australia. This is equivalent to 4.5 million DALY in total.

As expected, the overall disease burden increased with age, except for over 85 where it was much lower due to the smaller population (Figure 3.1.1).

Males experienced more burden than females, but the age distribution of burden is very similar for males and females.

Children (aged under 15 years) and adolescents and young adults (15–24 years) experienced a similar number of DALY in 2011, although the sources of this burden are quite different. In children, the burden is evenly shared between fatal burden (due to dying prematurely) and non-fatal burden (due to ill health), whereas in adolescents and young adults, ill health accounts for more burden than dying prematurely.

The total burden increased with increasing age, and was highest in those aged 65–84. The increased burden between the ages of 25 and 84 was mostly due to the increased burden of dying prematurely, as the burden from ill health was similar across these age groups.

While the total burden for very old Australians (those aged 85 and over) is quite low, the rate of burden (that is, the number of DALY per 1,000 population) in this age group is the highest.

**Box 3.1.1: What is burden of disease and why is it useful?**

Burden of disease analysis quantifies the gap between a population's actual health and an ideal level of health in a given year—that is, every individual living in full health to the theoretical maximum life span—for all diseases at the same time. It does this by measuring both the burden of living with ill health as well as the burden of dying prematurely. It also quantifies the contribution of various risk factors to this burden. Because the same methods are used for all diseases, it means that the health impacts of different diseases and injuries can be validly compared, which is valuable for informing health policy and service planning.

Non-fatal burden is expressed as years lived with disability (YLD). YLD measures the proportion of healthy life lost due to living with a disease in a given year. Total YLD are influenced by the number of people with each disease, how long they spend living with its effects and how severe those effects are.

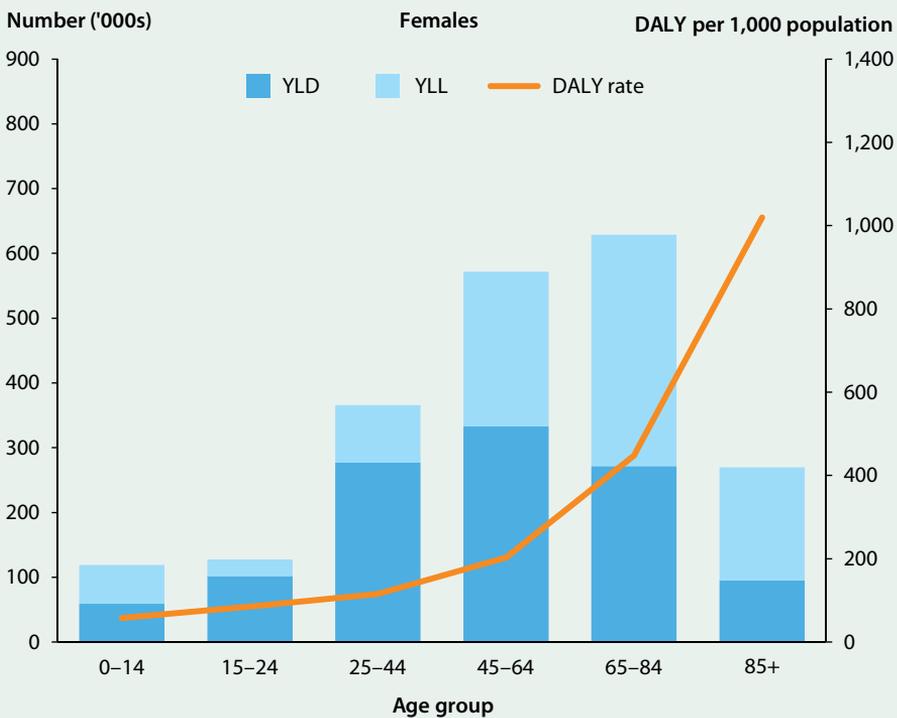
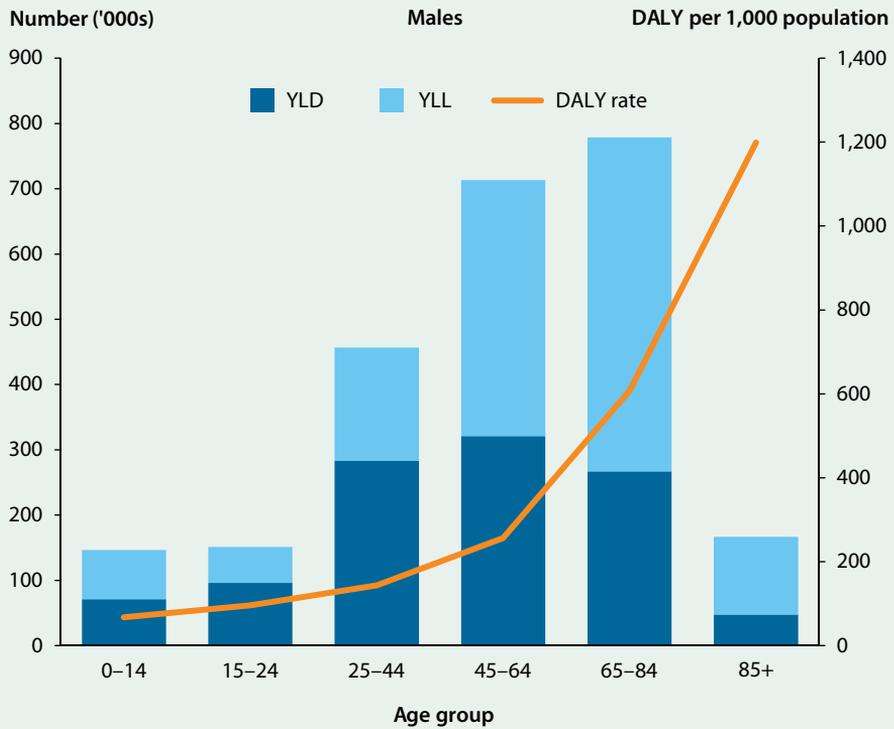
Fatal burden, which is expressed as years of life lost (YLL), measures the years lost between the age at which a person dies and the number of years they could have potentially gone on to live, based on the current best life expectancy across the world. Total YLL are influenced by both the number of deaths and the ages at which the deaths occur. (Note that YLL is different to 'premature mortality', described in 'Chapter 3.2 Premature mortality', which specifies an age cut-off in order to identify early deaths.)

Non-fatal and fatal burden are added together to produce a single summary measure called disability-adjusted life years (DALY). One DALY is one year of 'healthy life' lost due to illness and/or death—the more DALY associated with a disease or injury, the greater the burden. DALY are estimated for every occurrence of every disease and then added together for the whole population, to indicate the total disease burden.

The attributable burden is the amount of burden that could be avoided if the risk factor were removed. There are 29 separate risk factors analysed in the ABDS 2011. These were selected because they are modifiable and there is strong evidence that they are linked to diseases that occur in Australia. While it is an extensive list, it does not cover all potential risk factors.

Details on the methods used to calculate burden of disease are contained in the report [\*Australian Burden of Disease Study: impact and causes of illness and death in Australia 2011\*](#).

**Figure 3.1.1: Composition of total burden and DALY rate, by age and sex, 2011**

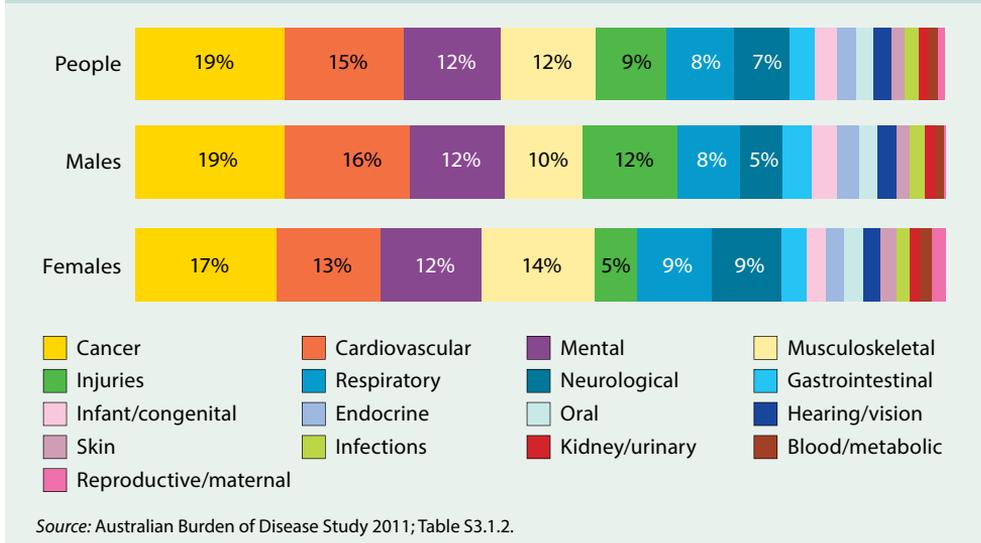


Source: Australian Burden of Disease Study 2011; Table S3.1.1.

## Chronic diseases and injuries dominate

At the disease group level, cancer, cardiovascular disease, mental and substance use disorders, musculoskeletal disorders, and injuries contributed the most burden in Australia in 2011. Together, they accounted for around two-thirds of the disease burden (69% of males and 62% of females) (Figure 3.1.2). The patterns of disease group contribution for males and females were largely similar, although there were a few exceptions; for example, injuries accounted for a higher proportion of burden in males than females.

**Figure 3.1.2: Burden of disease, by disease group and sex, 2011**

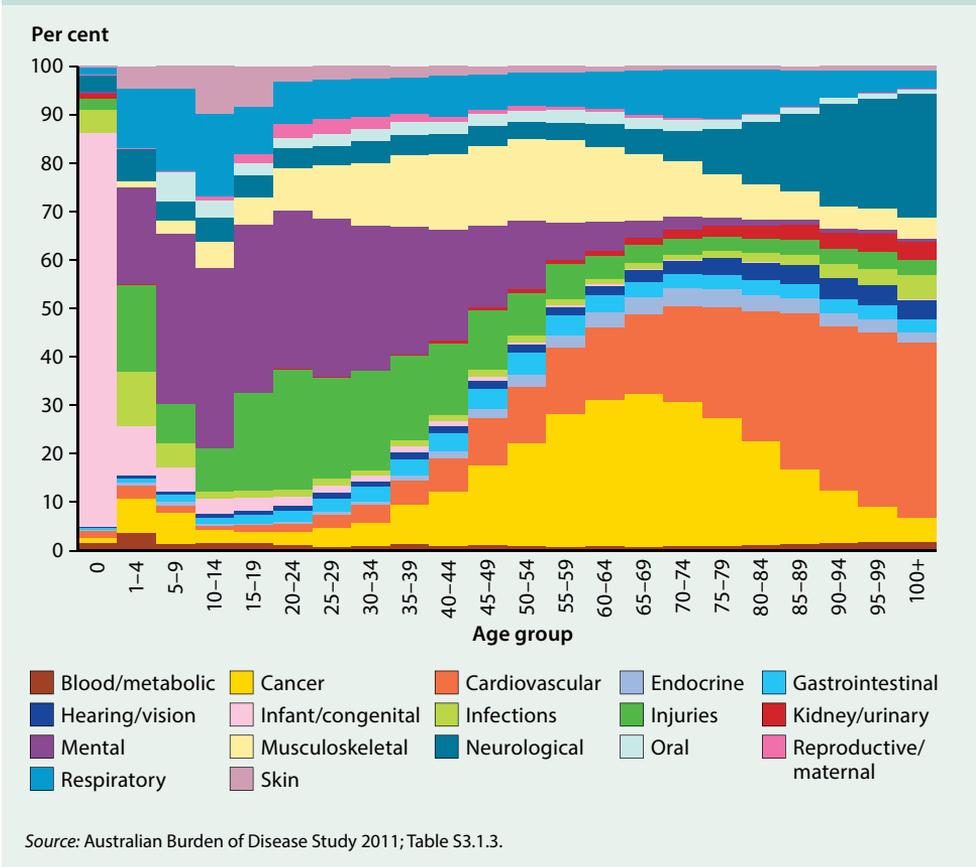


Among the five highest-burden disease groups, the total burden from cancer, cardiovascular disease and injuries was mainly due to people dying early, while the burden from mental and substance use disorders and musculoskeletal disorders was mainly due to people living with the various conditions. The small contribution of fatal burden in these two groups highlights the importance of including non-fatal health outcomes when measuring population health.

The share of burden between males and females also varied by disease group. Males experienced almost three-quarters (72%) of the burden from injury and a greater share of the burden from cardiovascular (59%), endocrine and infant and congenital diseases (57% each), and from cancer (56%). Females experienced a greater share of the burden from blood and metabolic disorders (59%), neurological conditions (58%) and musculoskeletal conditions (55%).

Across the life course, there is a change in the disease groups that cause the majority of burden. Infant and congenital conditions were the main causes of burden in infancy (Figure 3.1.3), while mental and substance use disorders were the main causes in late childhood, adolescence and adulthood to age 49. Cancer caused the most burden for those aged 50–79, while cardiovascular disease was the major cause of burden in older Australians. Other major causes of burden included respiratory conditions in children, adolescents and young adults; injuries in ages 15–44; musculoskeletal conditions in ages 25–74 and neurological conditions in older Australians.

Figure 3.1.3: Burden of disease, by disease group and age, 2011



## Specific diseases causing the most burden

The diseases and injuries causing the most burden were generally similar for males and females, although there are some differences in specific age groups (Figure 3.1.4).

Infant and congenital conditions (specifically pre-term birth complications, birth trauma and asphyxia, sudden infant death syndrome, cardiovascular defects and other disorders of infancy) make up a large proportion of burden in children under 5 years.

Asthma was the main cause of burden in boys aged 5–14, followed by anxiety disorders, whereas in girls this order was reversed. Suicide and self-inflicted injuries were the main causes of health loss for males (15–44 years) but for females it continued to be anxiety disorders.

For men aged 45 and over, coronary heart disease was the leading cause of burden, followed by lung cancer for those aged 45–74, chronic obstructive pulmonary disease (COPD) for those aged 75–84 and dementia for those aged 85 and over. Other musculoskeletal disorders was the leading cause of burden in women aged 45–64, while coronary heart disease was the leading cause of burden in women aged 65–84. Dementia was the leading cause of burden in women aged 85 and over.

Stroke, COPD and diabetes were also responsible for a large proportion of burden in older Australians.

Figure 3.1.4: Leading causes of total burden, by age and sex, 2011

|         |   | Age group                   |                              |                                 |                        |                                 |                        |                        |                        |                        |                        |
|---------|---|-----------------------------|------------------------------|---------------------------------|------------------------|---------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|         |   | Under 5                     | 5–14                         | 15–24                           | 25–44                  | 45–64                           | 65–74                  | 75–84                  | 85+                    |                        |                        |
| Males   | 1 | Pre-term/lbw complications  | Asthma                       | Suicide/self-inflicted injuries | Coronary heart disease | Coronary heart disease          | Coronary heart disease | Coronary heart disease | Coronary heart disease | Coronary heart disease | Coronary heart disease |
|         | 2 | Birth trauma/asphyxia       | Anxiety disorders            | Alcohol use disorders           | Back pain and problems | Lung cancer                     | Lung cancer            | COPD                   | COPD                   | COPD                   | Dementia               |
|         | 3 | Other disorders of infancy  | Autism spectrum disorders    | RTI/motor vehicle occupant      | Alcohol use disorders  | Other musculoskeletal           | COPD                   | COPD                   | Dementia               | Stroke                 | Stroke                 |
|         | 4 | SIDS                        | Conduct disorder             | Depressive disorders            | Poisoning              | Back pain and problems          | Diabetes               | Diabetes               | Stroke                 | COPD                   | COPD                   |
|         | 5 | Other congenital conditions | Depressive disorders         | Asthma                          | Depressive disorders   | Suicide/self-inflicted injuries | Bowel cancer           | Lung cancer            | Lung cancer            | Prostate cancer        | Prostate cancer        |
| Females | 1 | Birth trauma/asphyxia       | Anxiety disorders            | Anxiety disorders               | Anxiety disorders      | Other musculoskeletal           | Coronary heart disease | Coronary heart disease | Coronary heart disease | Coronary heart disease | Dementia               |
|         | 2 | Pre-term/lbw complications  | Asthma                       | Depressive disorders            | Depressive disorders   | Breast cancer                   | Lung cancer            | Dementia               | Coronary heart disease | Coronary heart disease | Stroke                 |
|         | 3 | Other disorders of infancy  | Depressive disorders         | Asthma                          | Back pain and problems | Back pain and problems          | COPD                   | COPD                   | COPD                   | Stroke                 | Stroke                 |
|         | 4 | SIDS                        | Dental caries                | Suicide/self-inflicted injuries | Other musculoskeletal  | Anxiety disorders               | Other musculoskeletal  | Stroke                 | Stroke                 | COPD                   | COPD                   |
|         | 5 | Cardiovascular defects      | Upper respiratory conditions | Bipolar affective disorder      | Asthma                 | Lung cancer                     | Breast cancer          | Breast cancer          | Lung cancer            | Lung cancer            | Diabetes               |

Source: Australian Burden of Disease Study 2011; Table S3.1.4.

## Changes since 2003

There was a 6.9% increase in the number of DALY between 2003 and 2011, from 4.2 million to 4.5 million. However, after taking the impact of the increasing age of the population into account (by using age-standardised rates), overall burden decreased from 211 to 190 DALY per 1,000 people—a decrease of 10%. Most of this improvement came from decreases in the rate of fatal burden (15%), by preventing or delaying deaths from particular diseases or injuries. There was also a smaller (3.8%) improvement in the non-fatal burden. This suggests that, overall, the impact from gains in life expectancy for the population is not outweighed by more ill health.

Comparison of age-specific rates indicates that there was little change in overall burden between 2003 and 2011 for those aged 1–50. However, the burden was lower in 2011 for infants and those aged 55–89, but higher for those aged 95 or more. The increase in the number of DALY experienced by those aged 55–89 is due to the increased population in this group relative to 2003 (Figure 3.1.5).

**Figure 3.1.5: Number and rates of total burden, by age, 2003 and 2011**

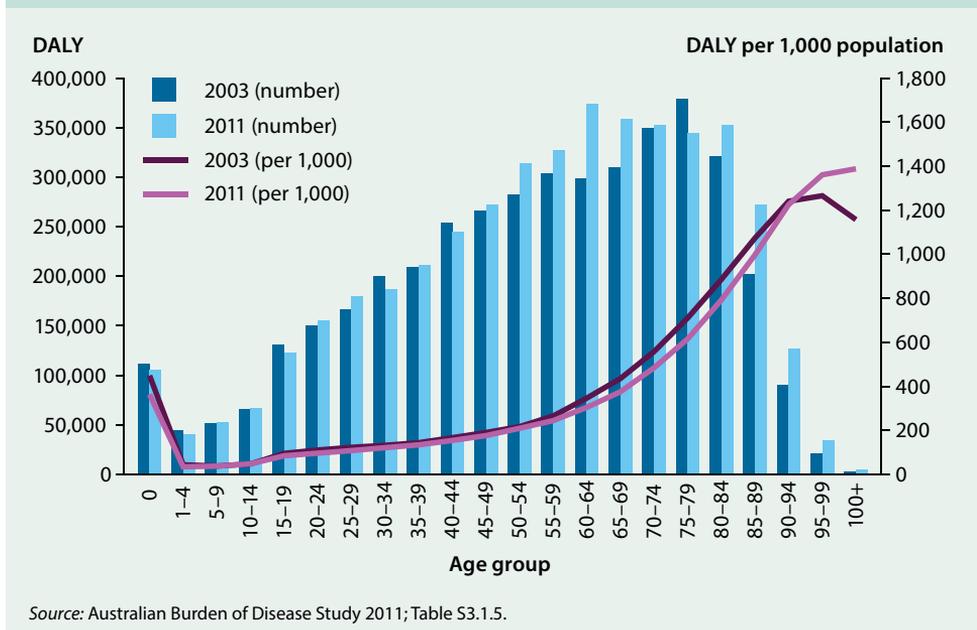


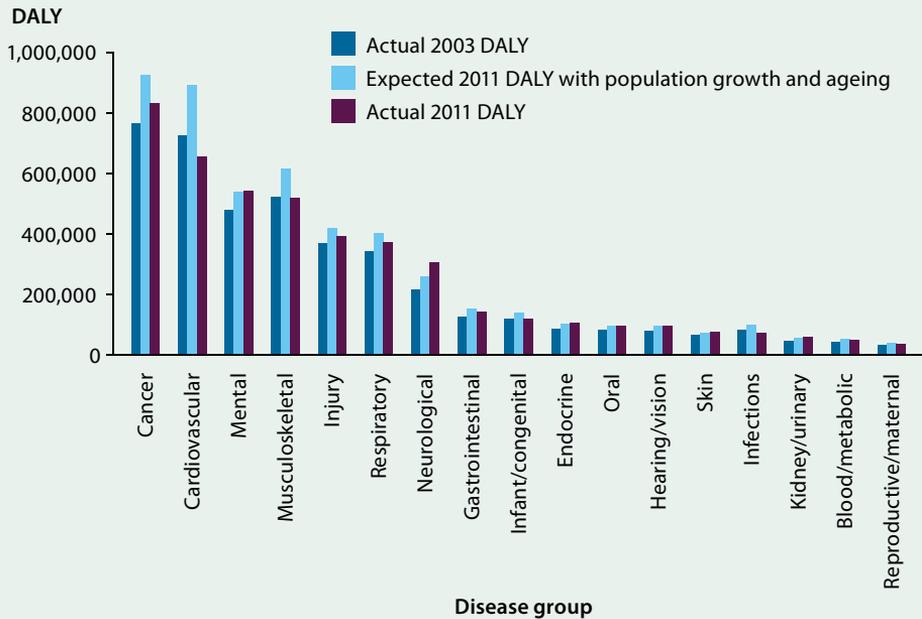
Figure 3.1.6 compares the actual estimates for 2003 and 2011 for each disease group with those that would have been expected based on population increase and ageing since 2003.

Generally, the actual 2011 DALY for most disease groups was lower than would have been expected. This indicates an improvement in the underlying disease burden of these groups.

Cardiovascular disease and infections were lower in 2011 than in 2003. While the overall burden of cancer and injuries was higher in 2011 than 2003, these increases were lower than expected based on population changes.

Conversely, actual 2011 DALY were substantially higher for neurological conditions than would be expected based on population changes. Kidney and urinary diseases, skin disorders, hearing and vision disorders, and endocrine disorders were also slightly higher than expected.

Figure 3.1.6: Expected and actual DALY, 2003 and 2011



Source: Australian Burden of Disease Study 2011; Table S3.1.6.

## A large proportion of the burden is preventable

A large proportion (31%) of the burden experienced by the population could be prevented by reducing the exposure to modifiable risk factors.

The five risk factors included in the ABDS that caused the most burden were tobacco use, high body mass, high alcohol use, physical inactivity and high blood pressure (see 'Chapter 4 Determinants of health'). Table 3.1.1 also shows the proportion of burden (DALY) in each disease group attributable to that risk factor. For example, 22% of all cancer DALY is due to tobacco use, 4.5% is due to high body mass, 3.3% is due to alcohol use, and 6.4% is due to physical inactivity. (Note that it is not possible to add these proportions together to find the total amount of cancer DALY due to these risk factors, because the same burden may be attributed to more than one risk factor.)

While there are known *associations* between these risk factors and many diseases and conditions, burden was only attributed to a risk factor where there is sufficient evidence that the risk factor *causes* the disease and its contribution can be measured.

**Table 3.1.1: Proportion of total burden, and burden of selected disease groups, attributable to the five risk factors causing the most burden, 2011**

| Disease group                      |  Tobacco use (%) |  High body mass (%) |  High alcohol use (%) |  Physical inactivity (%) |  High blood pressure (%) |
|------------------------------------|---|--|--|---|---|
|                                    | Proportion of total burden  |  |  |   |   |
| All disease groups                 | 9.0   | 5.5  | 5.1  | 5.0   | 4.9   |
| Proportion of disease group burden |   |  |  |   |   |
| Cancer                             | 22.0  | 4.5  | 3.3  | 6.4   | ..  |
| Cardiovascular                     | 12.0  | 21.1   | 4.8  | 21.2  | 31.7  |
| Mental                             | ..  | ..   | 12.2   | ..  | ..  |
| Injury                             | ..  | ..   | 20.6   | ..  | ..  |
| Respiratory                        | 36.2  | ..   | ..   | ..  | ..  |
| Endocrine                          | 3.5   | 49.4   | 2.0  | 29.7  | ..  |
| Kidney/urinary                     | ..  | 27.5   | ..   | ..  | 21.5  |

.. Indicates that there was no burden from this disease group that could be attributed to the risk factor in this study.

Source: Australian Burden of Disease Study 2011.

Overall, alcohol was the leading contributor to burden for those aged 0–44; tobacco for those aged 45–84; and high blood pressure for those over 85. From 0–84, males experienced a higher amount of burden due to the three top-ranking risk factors. After the age of 85, females experienced a higher amount of burden due to the top three risk factors.

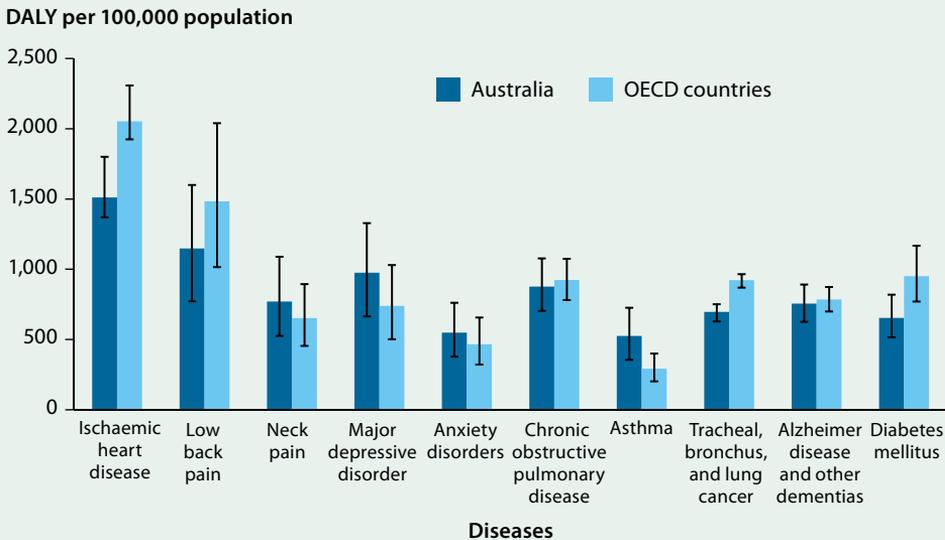
The risk factors able to be measured in 2003 contributed to 28% of the total burden (DALY) in 2003. These same risk factors contributed to 27% of the total burden in 2011. This small decrease in the proportion of burden attributable to these common risk factors between 2003 and 2011 may reflect success in reducing either the exposure to these risk factors or the burden from the diseases and injuries linked to them.

## How do we compare with other similar countries?

International comparisons are important and can provide a useful perspective on global disease burden. However, comparing the health of populations between countries is complex, with many factors being important. Comparisons of disease burden must be made using estimates that are internally consistent and produced using common methods. While the ABDS 2011 has sought to maintain the same broad methodological approach as used for recent global studies, there are sufficient differences that results from the ABDS 2011 cannot be compared with results from other burden of disease studies. Instead, the Global Burden of Disease (GBD) 2013 is used here to compare the burden of disease in Australia with other countries or regions.

When comparing the top 20 diseases contributing to DALY in Australia, using GBD 2013 results, most rates of burden for Australia were similar to the average rates for OECD countries (GBD 2013 Collaborators 2015). However, the rates of burden for ischaemic heart disease and lung cancer were significantly lower in Australia compared with the average rates of burden for OECD countries (Figure 3.1.7).

**Figure 3.1.7: Total burden of selected high burden diseases in Australia compared with OECD countries, 2013**



Source: AIHW analysis of GBD 2013; Table S3.1.7.

### What is missing from the picture?

ABDS 2011 is based on the best current knowledge, methods and available data, as suited to the Australian context. Nevertheless, there are some limitations which further development work may reduce.

The ABDS 2011 burden of disease estimates are currently limited to 2003 and 2011. Frequent and up-to-date burden of disease estimates would provide better insight into the areas in which improvements are taking place, and which diseases, injuries or risk factors require greater attention from policymakers and service planners.

For the non-fatal component, ABDS 2011 was able to use detailed Australian data for many diseases and injuries. However, where some data gaps remain, reliance on overseas data or old Australian data remains. For some diseases, such as coronary heart disease and epilepsy, results were partly based on state-level linked hospital and deaths data from Western Australia, so may be limited as to their applicability to Australia as a whole. Reliability of estimates would be significantly improved if national linked data could be used.

The ABDS 2011 did not estimate the burden where diseases are also risk factors for other diseases (for example, diabetes is a risk factor for coronary heart disease). Projects are currently under way to estimate the burden due to diseases such as diabetes.

The scope of the ABDS 2011 report was limited to the total population (including by state and territory, remoteness area and socioeconomic group) and to Indigenous Australians; however, there are a range of other deeper analyses that can be undertaken using the available data. This includes looking more closely at: particular diseases and disease groups (for example, kidney disease); particular risk factors (for example, nutrition, intimate partner violence, social determinants of health); and certain population groups (for example, working age adults, older Australians). With appropriate data, further work could also be undertaken to disaggregate subnational estimates (for example, by state and territory by remoteness) or to explore the burden at local levels (for example, by Primary Health Networks).

### Where do I go for more information?

More information from the ABDS 2011, including an overview of methods and limitations, can be found on the AIHW website [www.aihw.gov.au/burden-of-disease/](http://www.aihw.gov.au/burden-of-disease/).

Analysis from the Indigenous component of the ABDS 2011, and full documentation of methods, will be available later this year.

### Reference

GBD (Global Burden of Disease) 2013 Collaborators 2015. Supplement to global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet* 386(9995):743–800; doi:10.1016/S0140-6736(15)60692-4.

## 3.2 Premature mortality

In Australia, as in most developed countries, the vast majority of deaths occur at older ages: the median age at death in 2013 was 82 years. In general, cancers and chronic diseases, such as coronary heart disease, are the leading causes of death at older ages. Deaths due to external causes of injury and poisoning, such as suicide and accidents, are more common among people younger than 45. Summary mortality statistics are usually influenced by diseases among the elderly and are less reflective of the patterns of deaths in younger age groups.

This article measures and describes the impact of premature mortality in Australia—that is, deaths among people younger than 75 (see Box 3.2.1). It highlights and expands on the web report, [Premature mortality in Australia 1997–2012](#) and on the accompanying series, [Leading cause of premature mortality in Australia](#) fact sheets.

### Box 3.2.1: Measuring premature mortality

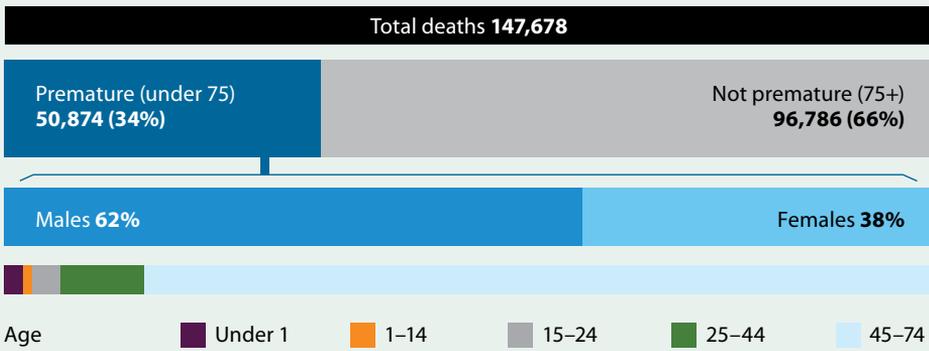
‘Premature mortality’ refers to deaths that occur at an age earlier than a selected cut-off. For this analysis, deaths among people aged under 75 are considered premature. This is a conservative cut-off—it is lower than the current median age at death (82 years in 2013) and the current life expectancy at birth (80 for males and 84 for females in 2013). It was chosen to allow for comparisons over time, across population groups and between countries. Premature deaths can be summarised in terms of ‘potential years of life lost’ (PYLL). For example, if dying before the age of 75 is considered premature, then a person dying at age 40 would have lost 35 potential years of life. Premature mortality measures are distinct from burden of disease estimates, which normally uses the measure ‘years of life lost’ (YLL). See ‘Chapter 3.1 Burden of disease and injury in Australia.’

Despite relatively high standards of health and health care in Australia, not all Australians fare equally well in terms of their health and longevity, including premature mortality (AIHW 2014). This article also examines differences in premature mortality among different population groups, specifically among people living outside *Major cities* or in lower socioeconomic areas.

### Overview of premature mortality in Australia

Of all deaths in Australia in 2013, about 1 in 3 (34%) occurred among people aged under 75 (Figure 3.2.1), representing 50,900 premature deaths. This equates to a premature mortality rate of 235 deaths per 100,000 population (or about 1 in 426) aged under 75 or, put another way, there were 861,000 potential years of life lost as a result of death before the age of 75. Males accounted for 62% of premature deaths, and 85% of premature deaths were of people aged 45–74. A greater proportion of premature deaths were among infants aged under 1 (2.2%) than among children aged 1–14 (1.0%).

**Figure 3.2.1: Premature mortality in Australia, by age and sex, 2013**



Source: AIHW National Mortality Database; Table S3.2.1.

The leading cause of premature death in 2011–2013 was coronary heart disease (10% of deaths among people aged under 75; see Table 3.2.1). Lung cancer (8.9%) was second but was the leading cause among females aged under 75. Suicide (4.6%) was the third leading cause of premature death and the greatest contributor to potential years of life lost. The top 10 causes of premature death together contributed 46% to the total causes of premature death.

Two of the leading causes of premature death among females are diseases that mainly affect females—more than 99% of breast cancer diagnoses (which ranked second among the 10 leading causes of premature death for women) are among females; and ovarian cancer (which ranked 9th) exclusively affects females.

Note that many of the following tables combine 3 years of data to reduce the effect of variations in death rates from year to year.

The leading causes of premature death differ by age (Figure 3.2.2). In general, deaths from chronic disease and cancer were more common among people aged 45 and over, while injury and accidental poisoning deaths were more common among people aged 1–44. (Accidental poisoning may result from agents such as alcohol, narcotics, sedatives and anti-inflammatory drugs.) Among infants, conditions originating in the perinatal period and congenital conditions were responsible for most deaths.

Table 3.2.1: Top 10 leading causes of premature death by sex, 2011–2013

|    | Males                        |        |      | Females                      |        |     | People                       |        |      |
|----|------------------------------|--------|------|------------------------------|--------|-----|------------------------------|--------|------|
|    | Cause of death               | Number | %    | Cause of death               | Number | %   | Cause of death               | Number | %    |
| 1  | Coronary heart disease       | 11,887 | 12.7 | Lung cancer                  | 5,336  | 9.3 | Coronary heart disease       | 15,223 | 10.1 |
| 2  | Lung cancer                  | 8,141  | 8.7  | Breast cancer                | 5,259  | 9.2 | Lung cancer                  | 13,477 | 8.9  |
| 3  | Suicide                      | 5,161  | 5.5  | Coronary heart disease       | 3,336  | 5.8 | Suicide                      | 6,881  | 4.6  |
| 4  | Colorectal cancer            | 3,572  | 3.8  | COPD                         | 2,303  | 4.0 | Colorectal cancer            | 5,867  | 3.9  |
| 5  | COPD                         | 3,003  | 3.2  | Colorectal cancer            | 2,295  | 4.0 | COPD                         | 5,306  | 3.5  |
| 6  | Cerebrovascular disease      | 2,995  | 3.2  | Cerebrovascular disease      | 2,268  | 4.0 | Breast cancer                | 5,296  | 3.5  |
| 7  | Land transport accidents     | 2,672  | 2.9  | Cancer, unknown, ill-defined | 1,770  | 3.1 | Cerebrovascular disease      | 5,263  | 3.5  |
| 8  | Liver disease                | 2,665  | 2.8  | Suicide                      | 1,720  | 3.0 | Cancer, unknown, ill-defined | 4,346  | 2.9  |
| 9  | Cancer, unknown, ill-defined | 2,576  | 2.8  | Ovarian cancer               | 1,600  | 2.8 | Liver disease                | 3,836  | 2.5  |
| 10 | Diabetes                     | 2,425  | 2.6  | Pancreatic cancer            | 1,589  | 2.8 | Pancreatic cancer            | 3,826  | 2.5  |

## Notes

1. COPD refers to chronic obstructive pulmonary disease.
2. % refers to the percentage of all deaths.

Source: AIHW National Mortality Database; Table S3.2.2.

**Figure 3.2.2: Top five leading causes of premature death, by age, 2011–2013**

|   | Age group                       |                          |                              |                          |                        |                         |
|---|---------------------------------|--------------------------|------------------------------|--------------------------|------------------------|-------------------------|
|   | Under 1                         | 1–14                     | 15–24                        | 25–44                    | 45–64                  | 65–74                   |
| 1 | Perinatal & congenital          | Land transport accidents | Suicide                      | Suicide                  | Coronary heart disease | Coronary heart disease  |
| 2 | SIDS                            | Perinatal & congenital   | Land transport accidents     | Accidental poisoning     | Lung cancer            | Lung cancer             |
| 3 | Ill-defined causes              | Brain cancer             | Accidental poisoning         | Land transport accidents | Breast cancer          | COPD                    |
| 4 | Accidental threats to breathing | Accidental poisoning     | Assault                      | Coronary heart disease   | Colorectal cancer      | Cerebrovascular disease |
| 5 | Selected metabolic disorders    | Cerebral palsy & related | Event of undetermined intent | Breast cancer            | Suicide                | Colorectal cancer       |

*Notes*

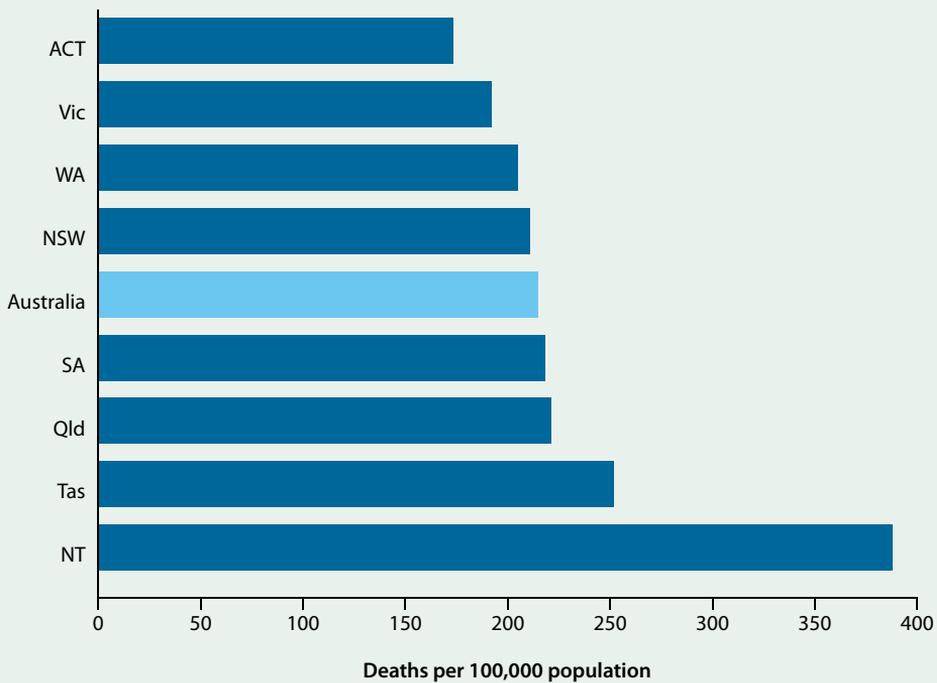
- Colours indicate the broad cause of death category (blue = chronic disease, orange and brown = cancer, purple and pink = injury and poisoning, green = other cause of death).
- While cancers have been distinguished from other chronic diseases in this figure, they are also classed as chronic diseases.
- 'COPD' refers to chronic obstructive pulmonary disease.

*Source:* AIHW National Mortality Database; Table S3.2.2.

## State and territory analysis

The rate of premature mortality varied considerably between states and territories in 2011–2013 (Figure 3.2.3). After adjusting for differences in age structure, the Australian Capital Territory had the lowest rate (173 deaths per 100,000 people aged under 75), followed by Victoria (192) and Western Australia (205). The age-standardised premature mortality rate in the Northern Territory (388) was more than twice as high as the rate in the Australian Capital Territory. The Northern Territory has the highest proportion of Indigenous residents (about 30%) of all Australian states and territories and the majority of the Northern Territory's land mass is classified as remote (Taylor & Bell 2013). The following section, 'Inequalities in premature mortality', describes the impact of remoteness of residence and Indigenous status on premature death.

**Figure 3.2.3: Age-standardised premature mortality rates, by state and territory, 2011–2013**



Source: AIHW National Mortality Database; Table S3.2.3.

The leading causes of premature death were similar across all states and territories (Table S3.2.3). Coronary heart disease and lung cancer were the two leading causes of death in all jurisdictions and suicide consistently featured in the top five. The most notable difference was that diabetes was the third leading cause of premature death in the Northern Territory (6.3%, compared with 2.5% and 11th ranking across Australia).

## Inequalities in premature mortality

Premature mortality affects certain population groups disproportionately. This section discusses premature mortality in relation to remoteness of residence, socioeconomic groups and Indigenous status. Box 3.2.2 outlines measures of inequality.

### Box 3.2.2: Measures of inequality

To calculate measures of inequality, each population group is compared with a relevant reference group. The reference group is the group with the most favourable outcome—that is, the lowest age-standardised premature mortality rate. (For example, *Major cities* is the reference group for remoteness areas, and the highest socioeconomic group is the reference group for socioeconomic comparisons.)

Relative inequality is represented by rate ratios—that is, the age-standardised premature mortality rate for the group of interest relative to (divided by) the rate for the reference group. A rate ratio of greater than 1 indicates that the rate for the group of interest is higher than the rate for the reference group. A rate ratio of less than 1 indicates that the rate for the group of interest is lower than the rate for the reference group. A rate ratio of 1 indicates that the rate for the group of interest is the same as the rate for the reference group.

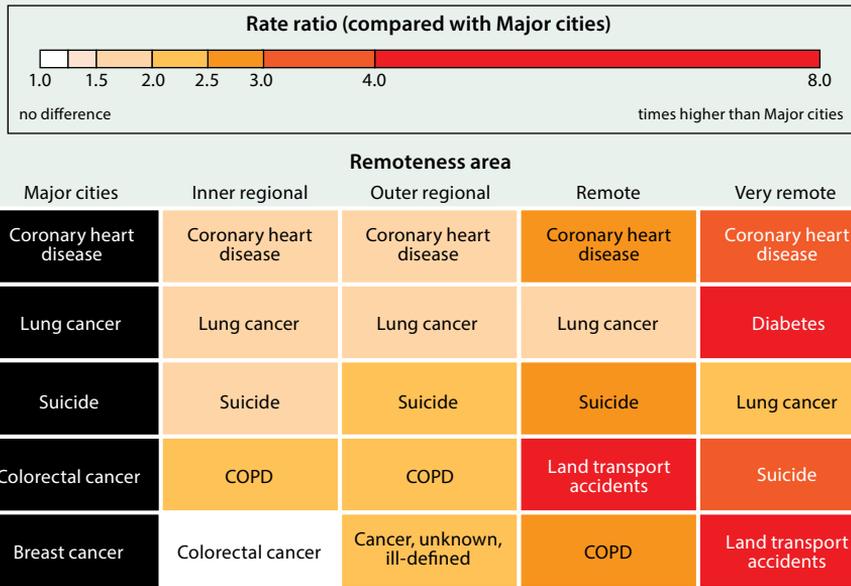
## Remoteness area

The majority of Australians live in *Major cities*, with fewer than 3 in 10 people (29% of the population) living in *Regional* and *Remote* areas (see 'Chapter 5.11 Rural and remote health'). Despite this, in 2011–2013, deaths in *Regional* and *Remote* areas accounted for 38% of premature deaths.

Premature mortality rates increased with remoteness. The premature mortality rate among people living in *Remote* areas was 1.6 times as high as the rate among people in *Major cities*, and in *Very remote* areas it was 2.2 times as high.

Figure 3.2.4 shows the top five causes of premature death for each remoteness area. Coronary heart disease was the leading cause for all areas, and mortality rates were between 1.2 and 3.3 times as high in *Regional* and *Remote* areas as in *Major cities*. Diabetes was the second leading cause of premature death in *Very remote* areas and the rate of dying from diabetes was 7.8 times as high as in *Major cities*. For premature deaths due to land transport accidents, rates were more than 5 times as high in *Remote* and *Very remote* areas as in *Major cities*.

**Figure 3.2.4: Top five leading causes of premature death, by remoteness area, 2011–2013**



**Notes**

1. 'COPD' refers to chronic obstructive pulmonary disease.
2. Colours represent the rate ratio of the age-standardised premature mortality rate for each remoteness area, compared with the age-standardised premature mortality rate for *Major cities*.

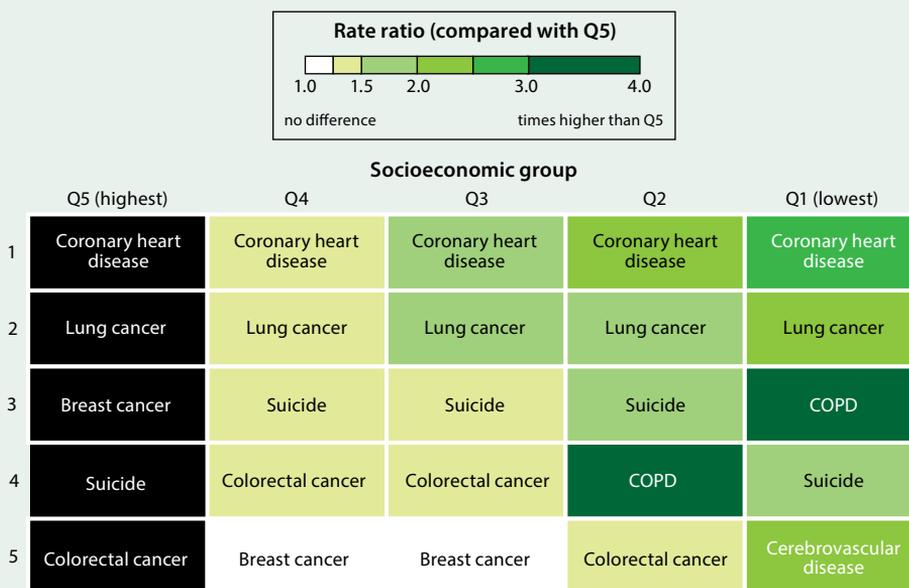
Source: AIHW National Mortality Database; Table S3.2.4.

## Socioeconomic groups

Socioeconomic factors, including associated disadvantage, are important determinants of health and wellbeing in Australia (see 'Chapter 5.1 Health across socioeconomic groups'). People living in the lowest socioeconomic areas had a premature mortality rate that was 2 times as high as the rate among people living in the highest socioeconomic areas. The effects of a 'social gradient' are also apparent, where each step up the socioeconomic ladder is generally associated with better health and lower levels of risk factors (for details see [Australia's health 2012](#)).

The leading causes of premature death among all five socioeconomic groups were coronary heart disease followed by lung cancer (Figure 3.2.5). For both causes of death, rates increased as disadvantage increased. Of the top five causes of premature death in each socioeconomic group, the largest relative inequality in premature mortality rates was for chronic obstructive pulmonary disease (COPD; 3.8 times as high in the lowest socioeconomic group and 3.0 times as high in the second lowest group as in the highest group).

**Figure 3.2.5: Top five leading causes of premature death, by socioeconomic group, 2011–2013**



**Notes**

1. Q1–Q5 refer to area-based quintiles classified according to Socio-Economic Indexes for Areas 2011 (ABS 2011), specifically the Index of Relative Socio-Economic Disadvantage (IRSD).
2. 'COPD' refers to chronic obstructive pulmonary disease.
3. Colours represent the rate ratio of the age-standardised premature mortality rate for each socioeconomic group compared with the age-standardised premature mortality rate for the highest socioeconomic group.

Source: AIHW National Mortality Database; Table S3.2.5.

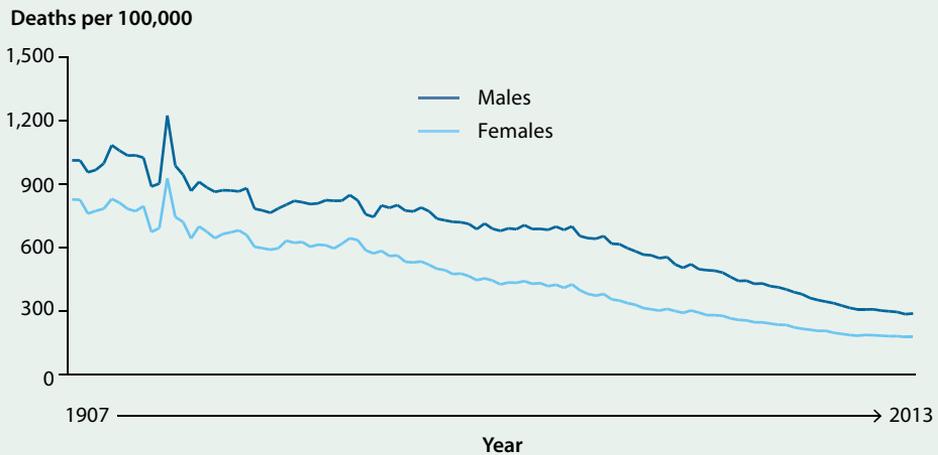
## Indigenous Australians

In 2013, there were about 2,600 deaths registered (1.8% of all deaths) for people of Aboriginal or Torres Strait Islander origin in the five jurisdictions for which the quality of Indigenous identification in the data is considered to be adequate—New South Wales, Queensland, Western Australia, South Australia and the Northern Territory. Because Indigenous Australians have a much younger population and have higher death rates at younger ages, a relatively large proportion of Indigenous deaths occur before the age of 75. Around 81% of deaths among Indigenous people occurred before the age of 75, compared with 34% of deaths for non-Indigenous people during the period 2009–2013 (ABS 2015). For more information, see 'Chapter 5.8 Main contributors to the Indigenous life expectancy gap', and the reports [Mortality and life expectancy of Indigenous Australians 2008 to 2012](#) and [The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples: 2015](#).

## How have premature death rates changed over time?

Between 1907 and 2013, the premature mortality rate fell by 71% for males and 78% for females (Figure 3.2.6). Deaths of people aged under 75 accounted for 84% of all deaths in 1907 compared with 34% of all deaths in 2013. In 1973, the premature death rate among males was 1.7 times as high as that for females. The gap between males and females fell over the following four decades, and in 2013 the premature death rate for males was 1.6 times as high as that for females.

**Figure 3.2.6: Premature mortality rates, by sex, 1907–2013**



Source: AIHW 2016; Table S3.2.6.

## What has influenced trends in premature deaths?

There has been a long and continuing fall in premature mortality in Australia. The decline in premature deaths in the first half of the last century was associated with factors such as control of infectious disease and better hygiene and nutrition. The decline in the later years was associated with improvements in road safety measures and in the prevention, detection and treatment of disease such as cardiovascular disease and other chronic diseases. Substantial improvements have also occurred through behavioural and policy changes to reduce the effect of 'modifiable' risk factors such as smoking, physical inactivity, poor nutrition and excessive consumption of alcohol.

The following are examples of factors that have influenced trends for some of the leading causes of premature deaths in Australia.



The fall in premature mortality from chronic diseases such as coronary heart disease and cerebrovascular disease has been heavily driven by improvements in reducing risk factors such as high blood pressure (hypertension) and high blood cholesterol (see 'Chapter 4.3 Biomedical risk factors'). There have been marked increases in the use of statins to treat high cholesterol and of anti-hypertensive medication to treat high blood pressure, as well as improvements in rates of smoking and other risk factors.



Chronic obstructive pulmonary disease (COPD) and lung cancer mortality trends in Australia are greatly affected by smoking trends. In 1973, health warnings on cigarette packets were introduced in Australia. In 1976, tobacco smoking advertising on radio and television was banned and, in 1985, anti-smoking commercials began to air on television. Smoking was banned in all pubs and clubs across Australia by 2010—the same year excise and customs duty on cigarettes rose by 25%. Mandatory graphic warnings on packaging of tobacco products about the health effects of smoking were introduced in 2004, followed by mandatory plain packaging of tobacco products in 2012. This range of interventions has influenced smoking rates in Australia and thereby premature death due to diseases related to smoking (see 'Chapter 4.7 Tobacco smoking').



Australia has achieved significant and lasting reductions in land transport deaths as a result of road improvements, safer vehicles, lower speed limits, graduated licensing and a range of programs that target the behaviour of individuals—such as seatbelt laws (applicable across Australia by 1972), random breath testing (first introduced in 1976 in Victoria), and slower default speed limits in urban areas and school zones (progressively implemented across Australia from 1997).



The 'mechanism' or 'means' for suicide deaths differ greatly between subgroups and have changed considerably over time. Some trends can be explained by the availability of certain mechanisms. For example, peaks in premature deaths from poisoning by drugs may be attributable to the availability of certain drugs. Likewise, restrictions to firearm access, introduced in 1996, have been linked to reduced suicides. Organisations that provide information and crisis support, safety measures such as the removal of access to weapons, and the construction of physical barriers (at known 'jump-points'), are likely to have also influenced premature mortality trends.

Services available for people at risk of suicide/intentional self-harm are:

**Lifeline** 13 11 14 [www.lifeline.org.au](http://www.lifeline.org.au)

**Kids Help Line** 1800 55 1800 [www.kidshelpline.com.au](http://www.kidshelpline.com.au)

**Suicide Call Back Service** 1300 659 467 [www.suicidecallbackservice.org.au](http://www.suicidecallbackservice.org.au)

## What is missing from the picture?

Premature mortality data presented here do not account for quality of life or increasing life expectancy. Burden of disease analyses, however, quantify the effects of disease and injury in terms of 'healthy life' lost due to premature death or disability (see 'Chapter 3.1 Burden of disease and injury in Australia').

Geographic information is reported at aggregated levels in this article (for example, by state and territory, remoteness area and socioeconomic group). Although this is indicative of inequalities, it does not present the full spectrum of mortality inequalities across Australia (for example, between neighbouring suburbs/towns).

Socioeconomic factors such as the highest level of education a person achieves and main occupation are known to be associated with mortality and particular causes of death (AIHW 2014). This information is not collected in Australian deaths data.

There is a lag between some population-level approaches that target key risk factors (for example, tobacco control measures) and the reductions in premature deaths due to related causes (for example, lung cancer and COPD). As such, it is not always possible to directly correlate changes in mortality rates with specific interventions.

Further analysis could be undertaken, such as using linked data, to determine if improvements in premature mortality rates are shared equally across different populations or if particular groups are faring better than others.

## Where do I go for more information?

More information on premature mortality, including 15 fact sheets on leading causes of premature mortality and the General Record of Incidence of Mortality (GRIM) books are available on the AIHW website [www.aihw.gov.au/deaths](http://www.aihw.gov.au/deaths).

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## 3.3 Chronic disease and comorbidities

Chronic diseases are the leading cause of ill health, disability and death, and have a significant impact on the health sector. The term ‘chronic disease’ refers to a wide group of conditions, illnesses and diseases. Chronic diseases are generally characterised by their long-lasting and persistent effects, which distinguish them from ‘acute’ conditions—that is, conditions that first manifest over a short period, and often with potentially intense and severe effects.

Chronic diseases can range from mild conditions such as short- and long-sightedness, mild dental decay and minor hearing loss, to debilitating arthritis and low back pain, to life-threatening heart disease and cancers. They can result from the complex interaction of external factors and biological causes, usually over a long period, and can lead to functional limitations and disability. If the biological and metabolic changes that occur during these long latency periods were identified, early intervention strategies, including prevention, treatment and management plans, may be implemented. Once present, chronic diseases often persist throughout a person’s life, so there is generally a need for long-term management by individuals and health professionals.

Data on some of the most common and important chronic diseases are featured in individual snapshots in this chapter. This article focuses on a specific group of chronic diseases, using a single data source to enable comorbidity analyses (see Box 3.3.1 for more detail). The prevalence estimates presented here may differ from elsewhere in this report because estimates for each chronic disease can vary between data sources. For example, self-reported data for chronic kidney disease substantially underestimate its prevalence compared with biomedical testing: 1% versus 10% respectively (AIHW 2014).

### Who suffers from chronic disease?

In 2014–15, more than 11 million Australians (50%) reported having at least one of the eight selected chronic diseases. This rate was higher for:



People aged **65 and over** (87%) compared with people aged 0–44 (35%).



**Females** (52%) compared with males (48%).



People in the **lowest socioeconomic areas** (55%) compared with those in the highest socioeconomic areas (47%).



People living in **Regional and Remote areas** (54%) compared with those in *Major cities* (48%).

**Box 3.3.1: Classifying chronic diseases**

Although chronic diseases cover a diverse group of conditions, the analyses presented in this feature article focuses on self-reported data from the Australian Bureau of Statistics (ABS) 2014–15 National Health Survey (NHS) (ABS 2015), unless otherwise specified, for the following eight chronic diseases:

- arthritis
- asthma
- back pain and problems
- cancer (such as lung and colorectal cancer)
- cardiovascular disease (such as coronary heart disease and stroke)
- chronic obstructive pulmonary disease (COPD)
- diabetes
- mental health conditions (such as depression).

These diseases were selected because they are common, pose significant health problems, have been the focus of ongoing national surveillance efforts, and action can be taken to prevent them. Chronic kidney disease is not included because of the low numbers identified using self-reported data.

Using the self-reported data from the 2014–15 NHS enables us to look at the co-occurrence of chronic diseases across the Australian population (comorbidity), which is not possible using separate data sources.

## What are the most common chronic diseases?

Based on self-reported data, cardiovascular disease (18%) and mental health conditions (18%) were the most commonly reported of the selected chronic diseases in Australia, followed by back pain and problems (16%) (Figure 3.3.1). Among males, cardiovascular disease (18%) was followed by back pain and problems (16%) and among females, mental health conditions (19%) and cardiovascular disease (19%) were most common.

The most common chronic diseases reported varied by age group. Of the eight selected chronic diseases, mental health conditions (16%) and asthma (11%) were the most common among people aged under 45. Cardiovascular disease (27%) and arthritis (26%) were the most common among people aged 45–64 and also for people aged 65 and over (59% and 51%, respectively).

Measuring disease prevalence alone does not provide a complete picture of the impact of chronic disease. For example, based on self-reported survey data, just 2.6% of the population said that they had COPD but it was the fifth leading cause of death in 2013 (4.4% of all deaths). (For more information, see chapters '1.3 How healthy are Australians?' and '3.10 Chronic respiratory conditions'.) This under-reporting may be because some chronic diseases have fewer treatment options, higher mortality rates, or remain undiagnosed until the disease has progressed to a life-threatening stage.

**Figure 3.3.1: Most common selected chronic diseases, by age and sex, 2014–15**

|   | Age group                |                          |                          | Sex                      |                          |                          |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|   | 0–44                     | 45–64                    | 64+                      | Males                    | Females                  | People                   |
| 1 | Mental health conditions | Cardiovascular disease   | Cardiovascular disease   | Cardiovascular disease   | Mental health conditions | Cardiovascular disease   |
| 2 | Asthma                   | Arthritis                | Arthritis                | Back pain and problems   | Cardiovascular disease   | Mental health conditions |
| 3 | Back pain and problems   | Back pain and problems   | Back pain and problems   | Mental health conditions | Arthritis                | Back pain and problems   |
| 4 | Cardiovascular disease   | Mental health conditions | Mental health conditions | Arthritis                | Back pain and problems   | Arthritis                |
| 5 | Arthritis                | Asthma                   | Diabetes                 | Asthma                   | Asthma                   | Asthma                   |

*Note:* The selected chronic diseases are: arthritis, asthma, back pain and problems, cancer, cardiovascular disease, chronic obstructive pulmonary disease, diabetes, and mental health conditions.

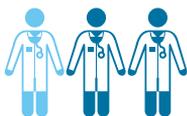
*Sources:* ABS 2015 (Table 19.1); Table S3.3.1.

Of the eight selected chronic diseases, cancer (1.6%) was the least prevalent, based on self-reported data. Some people diagnosed with cancer may consider it to be a one-off event rather than a 'long-term condition'. However, cancers can recur multiple times in a person and over an extended time. As treatments and survival rates improve, cancer is increasingly viewed as a chronic disease that may not be cured, but can often be managed for months or even years (American Cancer Society 2015).

## What are the impacts?

Changes to our lifestyles and reduction in other diseases in the last hundred years have meant that chronic diseases are increasingly common and now cause most of the burden of ill health. They can have large impacts on quality of life and have social and economic effects.

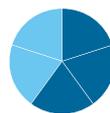
The eight selected chronic diseases were associated with:



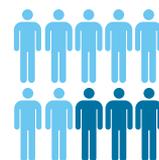
Around **1 in 3** (30%) problems managed in general practice in 2014–15 (Britt et al. 2015).



More than **1 in 3** (39%) potentially preventable hospitalisations in 2013–14 (AIHW 2015).



More than **three-fifths** (61%) of the total burden of disease in 2011 (AIHW 2016a).



Over **7 in 10** (73%) deaths in 2013 (AIHW 2016b).

Many chronic diseases are amenable to preventive measures such as changes in behaviour. These changes, together with timely and effective medical treatments, are important in improving chronic disease health outcomes.

## What are the risk factors?

Many factors influence how healthy we are. Some of these have an impact at an individual level (for example, health behaviours or genetic make-up), while others have an impact at a broader societal level, such as the availability of health services, vaccination programs or a clean and healthy environment. As already noted, the occurrence of chronic diseases increases with age. Many chronic diseases share common risk factors which are largely preventable. Modifying these risk factors can reduce the risk of developing a chronic disease and result in large population health gains by reducing illness and rates of death.

The onset of chronic disease is linked to a number of different behavioural and biomedical risk factors that can affect disease management and progression. Behavioural risk factors include physical inactivity and poor nutrition, smoking, risky alcohol consumption and illicit drug use. Biomedical characteristics that contribute to the development of chronic disease include overweight and obesity, high blood pressure, dyslipidaemia (for example, high blood cholesterol) and impaired fasting glucose. Biomedical risk factors are often influenced by behavioural risk factors. For more information, see 'Chapter 4 Determinants of health'.

## About comorbidity

Comorbidity refers to the occurrence of two or more diseases in a person at one time. While the existence of these multiple health conditions may be unrelated, in many instances—and particularly in relation to chronic diseases—there is some association between them. Further, a range of chronic diseases share common risk factors. Understanding more about comorbidities can provide vital information for prevention, management and treatment of chronic diseases.

## Who experiences comorbidity?

Overall, 1 in 4 (23%) Australians—5.3 million people—had two or more of the eight selected chronic diseases in 2014–15. The rate was higher for:



People aged **65 and over (60%)** compared with people aged 0–44 (9.7%).



**Females (25%)** compared with males (21%).

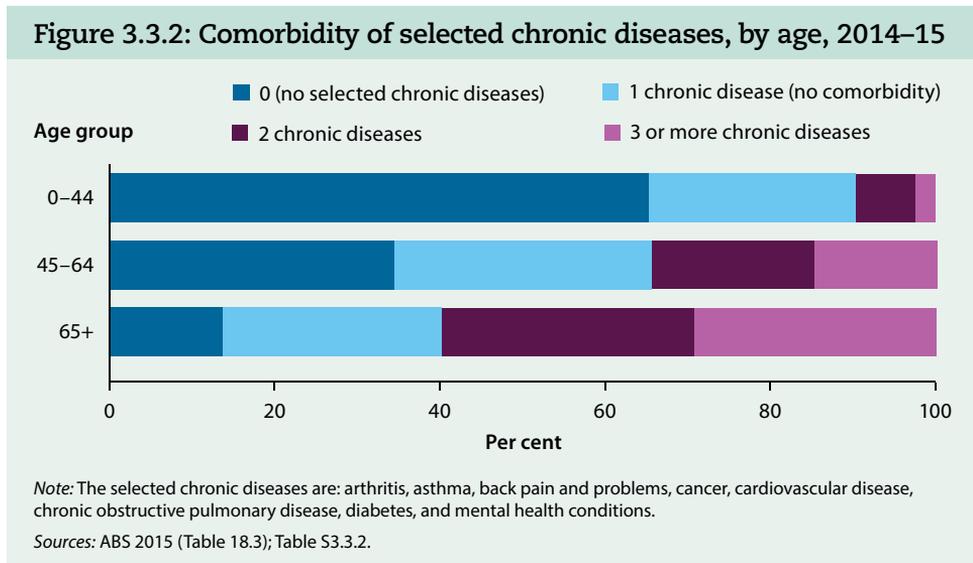


People living in the **lowest socioeconomic areas (30%)** compared with the highest socioeconomic areas (19%).



People living in **Regional and Remote areas (28%)** compared with **Major cities (21%)**.

The rate of comorbidity and the number of chronic diseases experienced (based on self-reported data) increases with age. Almost 1 in 3 (29%) people aged 65 and over reported having three or more chronic diseases, compared with just 2.4% of those under 45 (Figure 3.3.2).

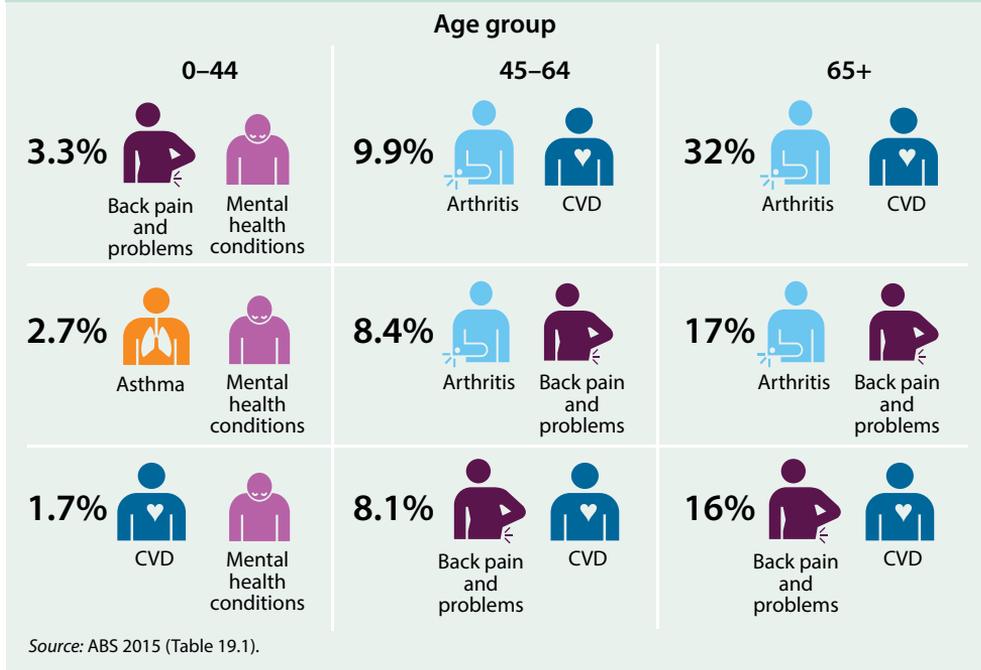


## What are the most common chronic disease comorbidities?

The most common comorbidity combination was arthritis with cardiovascular disease (7.4%), followed by arthritis with back pain and problems (5.1%), and back pain and problems with cardiovascular disease (5.0%). Arthritis with cardiovascular disease was the most frequently occurring comorbidity combination in both males (6.3%) and females (8.5%), and reflected the pattern in the overall population. Back pain featured in the second and third most common comorbidities among both males and females; among males it most frequently occurred with cardiovascular disease (5.1%) and mental health conditions (4.5%), and among females it featured with arthritis (5.8%) and mental health conditions (5.2%).

The top three chronic disease combinations for people aged 45–64, and for those aged 65 and over, reflected the pattern in the overall population but with higher rates, particularly for the 65-and-over age group: arthritis occurring with cardiovascular disease (32%), followed by arthritis with back pain and problems (17%), and back pain and problems with cardiovascular disease (16%). Among the 0–44 age group, combinations with mental health conditions were more common, co-occurring with back pain and problems for 3.3% and asthma for 2.7% (Figure 3.3.3).

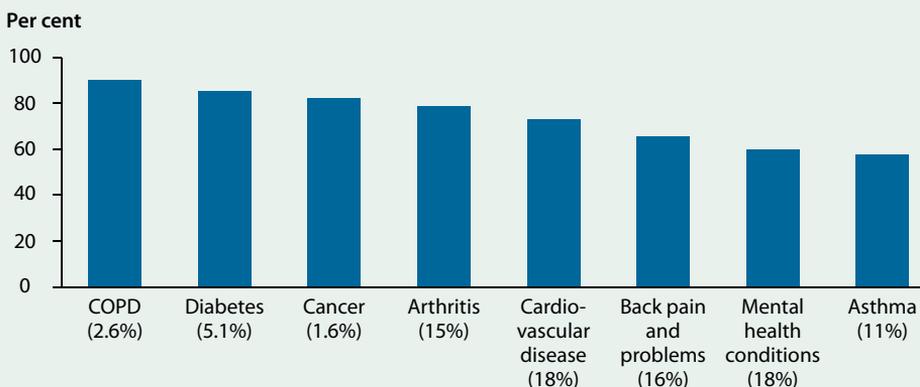
**Figure 3.3.3: Most common comorbidities of selected chronic diseases, by age, 2014–15**



## Comorbidity among selected chronic diseases

Although cancer (1.6%), COPD (2.6%) and diabetes (5.1%) were the least reported of the eight selected chronic diseases in the 2014–15 NHS, people with these conditions were more likely than people with other conditions to have a comorbidity (90% of people with COPD, 85% of people with diabetes, and 82% of people with cancer had two or more chronic diseases; Figure 3.3.4). This is because people with COPD, diabetes or cancer tend to be older, and the likelihood of having multiple chronic diseases increases with age.

**Figure 3.3.4: Comorbidity of selected chronic diseases, by chronic disease, 2014–15**



COPD= chronic obstructive pulmonary disease.

Notes

1. Y-axis % refers to the percentage of people with each chronic disease who had at least one other chronic disease (comorbidity).
2. X-axis label % refers to the percentage of the population with each chronic disease (prevalence).

Sources: ABS 2015 (tables 3.3 and 19.3); Table S3.3.4.

Some chronic diseases may act as a precursor or as a risk factor for other chronic diseases. For example, having diabetes is known to be a risk factor for developing cardiovascular disease (AIHW 2014), and people with asthma are at greater risk of developing COPD later in life (ACAM 2011).

Other chronic diseases affect similar parts of the body and may manifest as comorbidity. For example, both arthritis and back pain and problems cause pain in muscles, bones and joints.

Common comorbidities of the eight selected chronic diseases by broader body system groupings include:

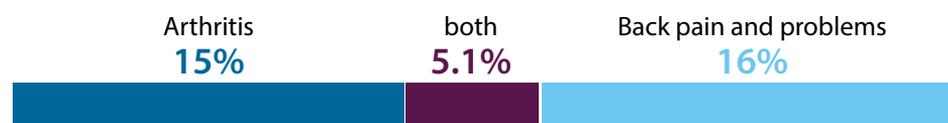
### Vascular diseases

742,000 people (3.2%) reported having both cardiovascular disease and diabetes.



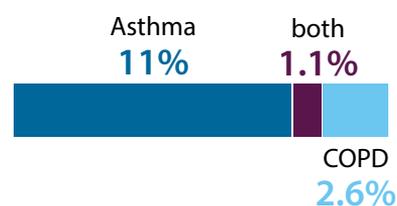
### Musculoskeletal conditions

1.2 million people (5.1%) reported having both arthritis and back pain and problems.



### Chronic respiratory conditions

250,000 people (1.1%) reported having both asthma and COPD.



Among people with any of the eight selected chronic diseases, the most commonly reported comorbid chronic diseases were cardiovascular disease, arthritis, back pain and problems, and mental health conditions. These four conditions featured prominently as comorbidities because they are strongly age related and the most commonly reported chronic diseases. For example:

**Cardiovascular disease**



was reported as a comorbidity among



63% of people with diabetes



51% of people with cancer



49% of people with COPD

**Arthritis**



was reported as a comorbidity among



52% of people with COPD



41% of people with diabetes



41% of people with cardiovascular disease

**Back pain and problems**



was reported as a comorbidity among



38% of people with COPD



33% of people with arthritis



29% of people with diabetes

**Mental health conditions**



were reported as a comorbidity among



38% of people with COPD



30% of people with back pain and problems



29% of people with asthma

## What is the future of chronic disease and its comorbidities?

If left unchecked, trends in chronic disease risk factors (especially physical inactivity and poor nutrition leading to overweight and obesity), combined with a growing and ageing population and better treatment and management, will lead to increasing numbers of people living with chronic diseases. Helping people to make good lifestyle choices and having an accessible and integrated health care system can help to keep people in good health and prevent illness.

The growing burden of chronic disease will place more importance on the effective treatment of multiple chronic conditions and complex health care needs. Developing and implementing new and innovative methods for early detection of disease and treatment—including coordinated care, self-management and chronic disease management plans—holds promise for future disease management.

## What is the AIHW doing?

The AIHW develops and maintains national data to support monitoring and reporting on specific chronic diseases, such as cardiovascular disease, diabetes, kidney disease, cancer, musculoskeletal conditions and respiratory conditions. This includes reports on individual chronic diseases, comorbidities and common risk factors.

The Australian Burden of Disease Study complements the work of the chronic disease monitoring centres and combines multiple data sources to count and compare the total fatal and non-fatal health loss due to a range of diseases and injuries. For more information, see 'Chapter 3.1 Burden of disease and injury in Australia'.

The AIHW also reports on the use of health services among people with chronic disease (for example, hospital admissions and mental health services); disparities in specific population groups (for example, prisoners and Indigenous Australians); and disease expenditure.

In addition, the Department of Health is developing the National Strategic Framework for Chronic Conditions. This will be the foundation chronic conditions policy document that sets the direction and outcomes required to achieve the vision that *all Australians live healthier lives: with reduced risk, or delayed onset, of developing a chronic condition; and/or with their chronic condition/s well managed.*

## What is missing from the picture?

Better statistical information on the incidence and prevalence of chronic diseases could benefit future health services planning. Some chronic diseases such as dementia are not readily identifiable in health surveys.

Additional data on comorbidity and treatment—including on primary care; health service use; medications and whether these are being taken correctly; quality of life; and people's ability to carry out their daily lives—will also help to develop a picture of how chronic diseases affect people in Australia and the effectiveness of current strategies.

Data and information on chronic disease would greatly benefit from data linkage to monitor disease progression; comorbidities; service use and costs; patient journeys and care pathways; outcomes; and interactions between disease and risk factors.

## Where do I go for more information?

More information on chronic disease and its comorbidities is available on the AIHW website at [www.aihw.gov.au/chronic-diseases](http://www.aihw.gov.au/chronic-diseases). For specific chronic diseases, refer elsewhere in this chapter.

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## 3.4 Cancer

Cancer is a diverse group of several hundred diseases in which some of the body's cells become abnormal and begin to multiply out of control. Cancer has a significant social and economic impact on individuals, families and the community in terms of premature mortality, absence from work, and the provision of health care infrastructure.

Cancer is a major cause of morbidity internationally, with an estimated 14.1 million new cancer cases diagnosed and 8.2 million cancer-related deaths in 2012 (GLOBOCAN 2012). Collectively, cancer and other neoplasms were responsible for almost one-fifth (19%) of the total burden of disease and injury in Australia in 2011, making it the most burdensome group of diseases. Despite the high survival and prevalence rates of cancer in Australia (AIHW 2014), this burden was almost entirely due to premature death, with only 6.1% of this burden due to living with cancer.

Common non-melanoma skin cancers, including basal cell carcinoma (BCC) and squamous cell carcinoma (SCC) are not reportable to cancer registries. As a result, incidence, survival and prevalence data for all cancers combined do not include BCC and SCC.

In this section, estimates for 2016 are presented for cancer incidence and mortality in Australia to provide the most up-to-date information possible. The estimates presented here are a mathematical extrapolation of past trends.

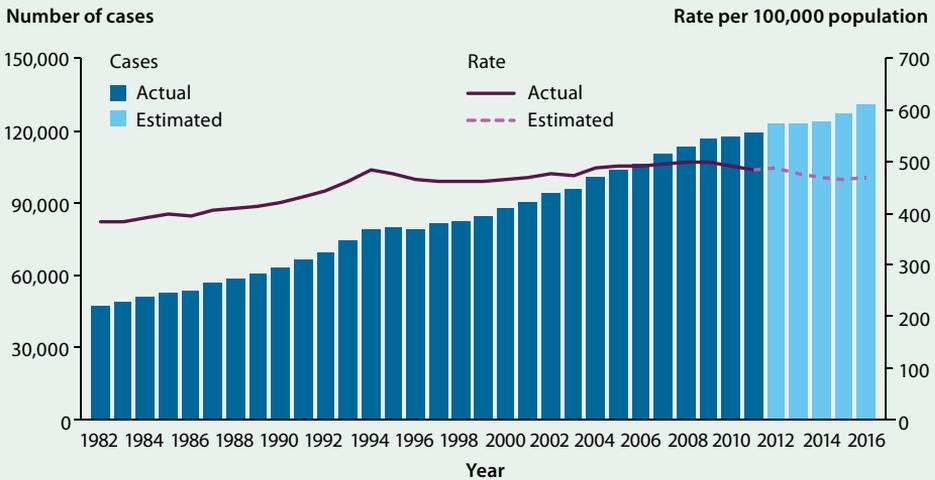
### Incidence

In 2016, it is estimated that:

- about 130,000 new cases of cancer will be diagnosed in Australia (excluding basal and squamous cell carcinoma of the skin—which are the most common types of non-melanoma skin cancer). More than half (55%) of these cases will be diagnosed in males
- the risk of being diagnosed with any cancer before the age of 85 will be 1 in 2 for males and 1 in 3 for females
- the most commonly diagnosed cancers in males will be prostate cancer (18,100 cases), colorectal cancer (9,810), melanoma of the skin (7,850), lung cancer (7,130) and head and neck cancers (3,430)
- the most commonly diagnosed cancers in females will be breast cancer (15,900 cases), colorectal cancer (7,700), melanoma of the skin (5,440), lung cancer (5,070) and uterine cancer (2,650).

From 1982 to 2016, it is estimated that the age-standardised incidence rate for all cancers combined will increase by 22%, from 383 new cases per 100,000 population to 467 per 100,000 (Figure 3.4.1). This increasing trend can be largely attributed to the rise in the number of prostate cancers, breast cancers in females and colorectal cancers that are diagnosed, as well as improved diagnoses through population health screening programs and improvements in the technologies and techniques used to identify and diagnose cancer.

**Figure 3.4.1: Estimated incidence of all cancers combined<sup>(a)</sup>, Australia, 2016<sup>(b)</sup>**



(a) Cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3, except those C44 codes that indicate a basal or squamous cell carcinoma of the skin.

(b) The 2016 estimates are based on 2002–2011 incidence data. The projected numbers of cancer cases diagnosed are rounded to the nearest 10. The estimates for males and females may not add up to the estimates for the population due to rounding.

*Note:* The rates were standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

*Source:* AIHW ACD 2011.

## Hospitalisations

In 2013–14 in Australia, there were around 936,000 cancer-related hospitalisations (see Glossary). This was an increase of 44% from 2001–02, when there were around 649,000 cancer-related hospitalisations. Over the same period, the age-standardised cancer-related hospitalisation rate increased by 8.9% from 337 per 10,000 population to 367 per 10,000.

In 2013–14, there were around 520,000 hospitalisations where the principal diagnosis was a cancer-related treatment or service. The top five most common reasons for cancer-related hospitalisations accounted for 96% of all hospitalisations where the principal diagnosis was a cancer-related treatment or service (Table 3.4.1).

**Table 3.4.1: Five most common reasons for hospitalisation<sup>(a)</sup>, when the principal diagnosis is a cancer-related treatment or service, Australia, 2013–14**

| Principal diagnosis  | Number         | %            |
|--|----------------|--------------|
| Pharmacotherapy session for neoplasm (chemotherapy)  | 392,385        | 75.4         |
| Special screening examination for neoplasm of intestinal tract   | 56,644         | 10.9         |
| Follow-up after surgery for cancer <sup>(b)</sup>  | 41,971         | 8.1          |
| Adjustment and management of vascular access device  | 5,636          | 1.1          |
| Follow-up examination after combined treatment for malignant neoplasm  | 5,132          | 1.0          |
| <i>Total five most common reasons for hospitalisation when the principal diagnosis was a cancer-related treatment or service</i> | <i>501,759</i> | <i>96.5</i>  |
| <b>Total hospitalisations with a principal diagnosis of a cancer-related treatment or service<sup>(c)</sup></b>                  | <b>520,224</b> | <b>100.0</b> |

(a) Hospitalisation for which the care type was reported as 'Newborn' with no qualified days, and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

(b) Follow-up after surgery for cancer may include further surgery.

(c) Hospitalisations in which the principal diagnosis is a health service or treatment that may be related to treatment of cancer.

Source: AIHW NHMD.

## Survival

Information on survival from cancer provides an indication of cancer prognosis and the effectiveness of treatment available. Survival of less than 100% suggests that those with cancer had a lower chance of surviving for at least 5 years after diagnosis than the general population.

In 2007–2011 in Australia:

- people diagnosed with cancer had a lower (67%) chance of surviving for at least 5 years after diagnosis compared with their counterparts in the general population (referred to as '5-year relative survival'; see Glossary). Among people who had already survived 5 years past their cancer diagnosis, the chance of surviving for at least another 5 years was 91%
- females diagnosed with cancer had slightly higher survival rates than males (5-year relative survival of 68% and 66% respectively). For males diagnosed with cancer, the 5-year relative survival was highest for testicular cancer (98%), lip cancer (93%) and prostate cancer (93%)
- for females diagnosed with cancer, the 5-year relative survival was highest for thyroid cancer (97%), lip cancer (94%) and melanoma of the skin (94%).

From 1982–1986 to 2007–2011:

- five-year relative survival for all cancers combined increased from 40% to 66% for males and from 52% to 68% for females
- the cancers that had the largest absolute increase in survival were prostate cancer, kidney cancer, non-Hodgkin lymphoma, colorectal cancer, myeloma, Hodgkin lymphoma and anal cancer, for which 5-year survival increased by 18 percentage points or more
- many cancers that had low survival in 1982–1986 showed improvements, such as pancreatic cancer (from 3.5% to 6.1%) and lung cancer (from 8.5% to 14.3%).

## Prevalence

At the end of 2010 in Australia:

- around 385,000 people were alive who had been diagnosed with cancer within the previous 5 years; this represented 1.7% of the Australian population
- 5-year prevalence was higher for males than females (representing 56% and 44% of all prevalence cases, respectively)
- among males, 5-year prevalence was highest for prostate cancer (42% of total male 5-year prevalence), followed by melanoma of the skin (13%) and colorectal cancer (12%)
- among females, 5-year prevalence was highest for breast cancer (36% of total female 5-year prevalence), followed by colorectal cancer (13%) and melanoma of the skin (12%).

## Deaths

In 2016 in Australia, it is estimated that:

- around 46,900 people will die from cancer, an average of 128 deaths every day. Males will account for more than half of all deaths from cancer (57%)
- lung cancer will be the leading cause of cancer death among males (5,120 deaths), followed by prostate cancer (3,400), colorectal cancer (2,140), pancreatic cancer (1,470), liver cancer (1,260) and melanoma of the skin (1,230)
- the most common cancers causing death in females will be lung cancer (3,720 deaths), breast cancer (3,050), colorectal cancer (1,950), cancer of unknown primary site (1,440) and pancreatic cancer (1,360).

From 1982 to 2016, it is estimated that the age-standardised mortality rate for all cancers combined will be 162 deaths per 100,000, a fall of 22% from 1982 (209 per 100,000).

### What is missing from the picture?

There are no national registry data on the stage (severity) of cancer at diagnosis, treatments applied to individual cases of cancer, the frequency of recurrence of cancer after treatment, or the incidence of common non-melanoma skin cancers (BCC and SCC). The AIHW, Cancer Australia, and state and territory cancer registries are working together to assess the feasibility of collecting, collating and reporting national data on the stage of the disease when cancer is diagnosed, the treatments applied at each stage, and how frequently cancer recurs after treatment.

### Where do I go for more information?

The reports, [Cancer in Australia: an overview, 2014](#), [Cancer incidence projections: Australia, 2011 to 2020](#), [Cancer survival and prevalence in Australia: period estimates from 1982 to 2010](#), and [Cancer mortality trends and projections: 2013 to 2025](#), are available for free download.

### Reference

GLOBOCAN 2012. Estimated cancer Incidence, Mortality and Prevalence Worldwide in 2012. International Agency for Research on Cancer. Viewed 16 March 2016, <[http://globocan.iarc.fr/Pages/summary\\_table\\_site\\_sel.aspx](http://globocan.iarc.fr/Pages/summary_table_site_sel.aspx)>.

## 3.5 Coronary heart disease

Coronary heart disease (CHD) occurs when there is a blockage in the blood vessels that supply blood to the heart muscle. There are two major clinical forms: heart attack—an acute life-threatening event when the blood vessel supplying the heart itself is suddenly completely blocked, threatening to damage the heart muscle and its function, requiring prompt treatment, and angina—a chronic condition in which short episodes of chest pain can occur periodically when the heart has a temporary deficiency in its blood supply.

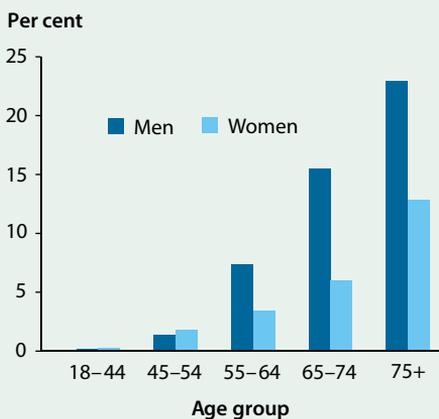
Older people with CHD are at increased risk of developing heart failure, which occurs when the heart functions less effectively in its role of pumping blood around the body.

CHD is very common, killing more people in Australia than any other disease. However, it is largely preventable, as many of its risk factors are modifiable, including tobacco smoking, high blood cholesterol, physical inactivity, poor nutrition and obesity (see 'Chapter 4 Determinants of health').

### How common is coronary heart disease?

- In 2014–15, an estimated 643,000 Australian adults (3.6%) had been told by a doctor or nurse that they had CHD. Of these, 281,000 had experienced angina, 428,000 had previously had a heart attack, and 55,000 had other forms of CHD (a person may report more than one disease) (ABS 2015a, 2015b).
- Further, an estimated 108,000 adults had heart failure, which is a common outcome of diseases such as CHD that damage the heart.
- Rates of CHD were 1.7 times as high in men as women.

**Figure 3.5.1: Self-reported coronary heart disease, people aged 18 and over, by age and by sex, 2014–15**



Note: Coronary heart disease is based on self-reported results only.

Source: ABS 2015a.

- CHD occurred more commonly in older age groups—it was 10 times as high in people aged 75 and over as in people aged 45–54 (17% and 1.7%, respectively) (ABS 2015a) (Figure 3.5.1).
- An estimated 65,300 people aged 25 and over experienced an acute coronary event in 2013 in the form of a heart attack or unstable angina—around 200 events every day, based on hospitalisations and mortality data. The age-standardised rate declined by 29% between 2007 and 2013, from 534 to 379 events per 100,000 population (see 'Chapter 7.1 Indicators of Australia's health').

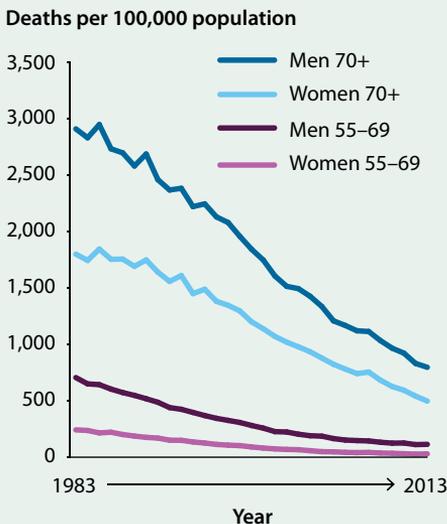
## Hospitalisations

- In 2013–14, there were around 149,000 hospitalisations where CHD was the principal diagnosis (see Glossary)—of these, 36% were for acute myocardial infarction (54,100) and 34% for angina (50,700). CHD accounted for around 1.5% of all hospitalisations.
- Most admissions for acute myocardial infarction (80%) and angina (64%) were on an emergency basis.
- Of all CHD hospitalisations, 44% had a coronary angiography (a diagnostic procedure) and 22% underwent revascularisation (surgical procedures to restore blood supply).
- CHD was the leading cause of hospitalisations for cardiovascular disease (31% of all cardiovascular hospitalisations) across most age groups, except for those aged 85 and over. In this age group, hospitalisation rates for heart failure and cardiomyopathy were 30% higher than for CHD (4,400 and 3,400 per 100,000), reflecting the increasing burden and need for acute care for these diseases.
- CHD hospitalisation rates have declined by 30% over the last decade (from an age-standardised rate of 804 to 564 per 100,000 population between 2003–04 and 2013–14). The downward trend was similar for men (28%) and women (33%), although men were hospitalised at much higher rates than women (807 compared with 340 per 100,000 population in 2013–14).

## Deaths

- In 2013, CHD was the leading single cause of death in Australia, accounting for 19,800 deaths as the underlying cause of death. This represents 13% of all deaths, and almost 1 in 2 cardiovascular deaths.

**Figure 3.5.2: Coronary heart disease death rates, people aged 55 and over, by selected age groups and by sex, 1983–2013**



Source: AIHW National Mortality Database.

- Overall, the CHD death rate has fallen by 75% over the last three decades for both males and females, largely due to reductions in key risk factors—such as smoking, high cholesterol and high blood pressure—and to improvements in medical and surgical treatment. However, for some age groups (such as the age group 55–69), there has been a levelling-off of this mortality decline in the most recent decade (Figure 3.5.2).
- Where CHD is the underlying cause of death, common associated causes of death in 2011 include heart failure and cardiomyopathy (27%), hypertensive disease (21%) and diabetes (12%), highlighting the interrelated nature of these conditions with CHD.

# Variations among population groups

Compared with non-Indigenous Australians, **Indigenous Australians** were:



- 2 times as likely to have CHD
- 2.4 times as likely to be hospitalised for CHD
- 1.6 times as likely to die from CHD
- experiencing CHD at younger ages: in the 35–44 age group, 4.7 times as likely to report having CHD, and 7 times as likely to be hospitalised for CHD.



Compared with those living in *Major cities*, people in **combined Remote and Very remote areas** were:



- 1.6 times as likely to be hospitalised for CHD
- 1.3 times as likely to die from CHD.

Compared with those living in the highest socioeconomic areas, people living in the **lowest socioeconomic areas** were:



- 2.2 times as likely to have CHD
- 1.5 times as likely to be hospitalised for CHD
- 1.4 times as likely to die from CHD.

## What is missing from the picture?

There are no reliable national and jurisdictional data on the number of new cases of CHD or heart failure each year. Proxy measures that combine hospital and mortality data are used to estimate new cases of acute coronary events in the form of a heart attack or unstable angina; however, these methods do not count the less-severe cases of CHD that do not result in hospitalisation.

Further information is required on primary health care and on the long-term outcomes of people treated for CHD. Currently there are limited national data on rates of readmissions, survival and case-fatality for people with CHD.

## Where do I go for more information?

More information on coronary heart disease is available at:

[www.aihw.gov.au/cardiovascular-disease](http://www.aihw.gov.au/cardiovascular-disease).

The following reports are available for free download on the AIHW website: The *Cardiovascular disease, diabetes and chronic kidney disease—Australian facts series* ([Mortality](#); [Prevalence and incidence](#); [Morbidity—hospital care](#); [Risk factors](#); [Aboriginal and Torres Strait Islander people](#)) and [Trends in coronary heart disease mortality: age groups and populations](#).

## References

ABS (Australian Bureau of Statistics) 2015a. National Health Survey: Australia, 2014–15, customised report. Canberra: ABS.

ABS 2015b. National Health Survey: first results, Australia, 2014–15. ABS cat. no. 4364.0.55.001. Canberra: ABS.

## 3.6 Stroke

Stroke occurs when an artery supplying blood to the brain either suddenly becomes blocked (known as ischaemic stroke) or ruptures and begins to bleed (known as haemorrhagic stroke). Either may result in part of the brain dying, leading to sudden impairment of a range of functions. Stroke often causes paralysis of parts of the body normally controlled by the area of the brain affected by the stroke, or speech problems and other symptoms, such as difficulties with swallowing, vision and thinking.

Stroke is largely preventable because many of its risk factors are modifiable, such as high blood pressure, physical inactivity, abdominal overweight and obesity and tobacco smoking (see 'Chapter 4 Determinants of health').

### How common is stroke?

- In 2012, an estimated 377,000 people (2% of Australians—206,000 males and 171,000 females)—had had a stroke at some time in their lives, based on self-reported data. Most (71%) were aged 65 and over. While the overall prevalence of stroke has remained similar over the last 15 years at 1.5–2%, the proportion of people who had a disability resulting from stroke fell from 45% to 39% between 1998 and 2012.
- The rate of stroke events, based on hospital and mortality data, fell by 27% between 2000 and 2013 (from an age-standardised rate of 176 to 128 per 100,000 population). In 2013, there were an estimated 34,300 stroke events—almost 100 every day.

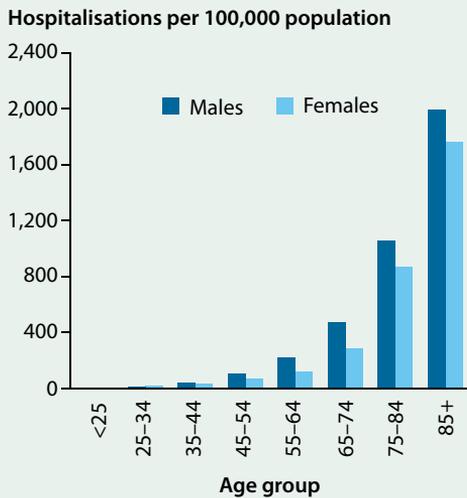
### Health care

- In 2013–14, there were 37,000 hospitalisations for acute care of stroke and 28,000 hospitalisations for rehabilitation care for stroke. The average length of stay in acute hospital care was 8 days, and in rehabilitation care, 14 days.
- Stroke hospitalisation rates were more common among males than females (1.3 times as high) and most occurred among those aged 75 and over (Figure 3.6.1).
- Between 2003–04 and 2013–14, stroke hospitalisation rates fell by 15% (from an age-standardised rate of 163 to 138 per 100,000 population).
- Dedicated stroke units in hospitals significantly improve the health outcomes of patients. Two-thirds (67%) of patients accessed stroke units in 2015. The number of beds for patients with acute stroke increased from 429 to 648 between 2007 and 2015 (National Stroke Foundation 2015).
- Informal carers, such as family members, play an important role in the care of stroke survivors. In 2012, there were around 70,400 stroke-affected recipients of care whose primary carer lived in the same household.

# Deaths

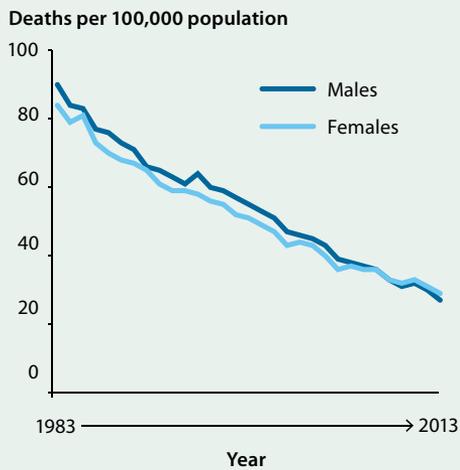
- In 2013, there were 8,100 deaths with stroke recorded as the underlying cause, accounting for 5% of all deaths in Australia.
- Stroke death rates were similar among males and females (with age-standardised rates of 27 and 29 deaths per 100,000 population, respectively); however, more females (4,900) than males (3,200) died, largely reflecting the higher proportion of older women.
- Over the last three decades, stroke death rates have fallen by 70% for males (from 90 to 27 per 100,000 population) and 65% for females (from 84 to 29 per 100,000 population) (Figure 3.6.2). These declines have been driven by improvements in key risk factors for stroke (in particular, high blood pressure and smoking); progress in medical treatment and other advances in medical care; and increasing access to dedicated stroke units in hospitals and the high level of care received there.
- Stroke is commonly associated with other diseases, in particular other cardiovascular diseases. In 2013, where cerebrovascular disease (predominantly stroke) was listed as the underlying cause of death, common associated causes of death included hypertensive diseases (29%), dementia and Alzheimer disease (19%) and coronary heart disease (11%).

**Figure 3.6.1: Hospitalisations with a principal diagnosis of stroke, by age and sex, 2013–14**



Source: AIHW National Hospital Morbidity Database.

**Figure 3.6.2: Stroke death rates, by sex, 1983 to 2013**



Note: Rates have been age-standardised to the 2001 Australian population.

Source: AIHW National Mortality Database.

## Variations among population groups

- The burden of stroke is greater among Aboriginal and Torres Strait Islander people—hospitalisation and mortality rates for stroke for Indigenous Australians were 2 and 1.4 times as high as for non-Indigenous Australians, respectively.
- People living in the lowest socioeconomic areas also had higher rates of stroke—the prevalence of self-reported stroke was over twice as high and death rates were 1.4 times as high as for people living in the highest socioeconomic areas.

### What is missing from the picture?

Currently, there is no comprehensive national monitoring of new cases of stroke. Increased collection and more frequent reporting of data would help inform planning and policy and provide an improved picture of the quality of stroke care in Australian hospitals.

### Where do I go for more information?

The following reports can be downloaded for free: the *Cardiovascular disease, diabetes and chronic kidney disease—Australian facts series* ([Mortality](#); [Prevalence and incidence](#); [Morbidity—hospital care](#); [Risk factors](#); [Aboriginal and Torres Strait Islander people](#)) and [Stroke and its management in Australia: an update](#).

### Reference

National Stroke Foundation 2015. National Stroke Audit—Acute Services Report 2015. Melbourne: National Stroke Foundation.

## 3.7 Diabetes

Diabetes is a chronic condition marked by high levels of glucose in the blood. It is caused either by the inability to produce insulin (a hormone made by the pancreas to control blood glucose levels), or by the body not being able to use insulin effectively, or both.

The main types of diabetes are type 1 diabetes, type 2 diabetes and gestational diabetes. Type 1 diabetes is a lifelong autoimmune disease that usually has onset in childhood and is believed to be caused by an interaction of genetic and environmental factors (see 'Chapter 5.3 How healthy are Australia's children?'). Type 2 diabetes, while involving a genetic component, is largely preventable by maintaining a healthy lifestyle. Modifiable risk factors that can lead to type 2 diabetes include insufficient physical activity, saturated fat intake, obesity, and tobacco smoking (see 'Chapter 4 Determinants of health'). Gestational diabetes occurs when higher than normal blood glucose is diagnosed in pregnancy.

Diabetes may result in a range of health complications, including heart disease, kidney disease, blindness and lower limb amputation. It is frequently associated with other chronic health conditions (comorbidities, see Glossary) such as cardiovascular disease and chronic kidney disease.

### How common is diabetes?

- According to the ABS 2014–15 National Health Survey, an estimated 1.2 million (5.1%) people had diabetes, based on self-reported data (ABS 2015). The majority of these (85%) had type 2 diabetes and 15% had type 1 diabetes. However, information based on self-reported data only is likely to underestimate the prevalence of diabetes as it cannot include people with undiagnosed diabetes. The 2011–12 Australian Health Survey, which included both measured and self-report data, showed that for every 4 adults with diagnosed diabetes, there was 1 who was undiagnosed (ABS 2013).
- In 2014–15, diabetes was more common in males (6%) than females (4%). It increased rapidly with age, to about 16% for those aged 65–74, based on self-reported data.
- In 2011–12, around 68% of people who had diabetes (based on measured and self-reported data) also had cardiovascular disease and/or chronic kidney disease.

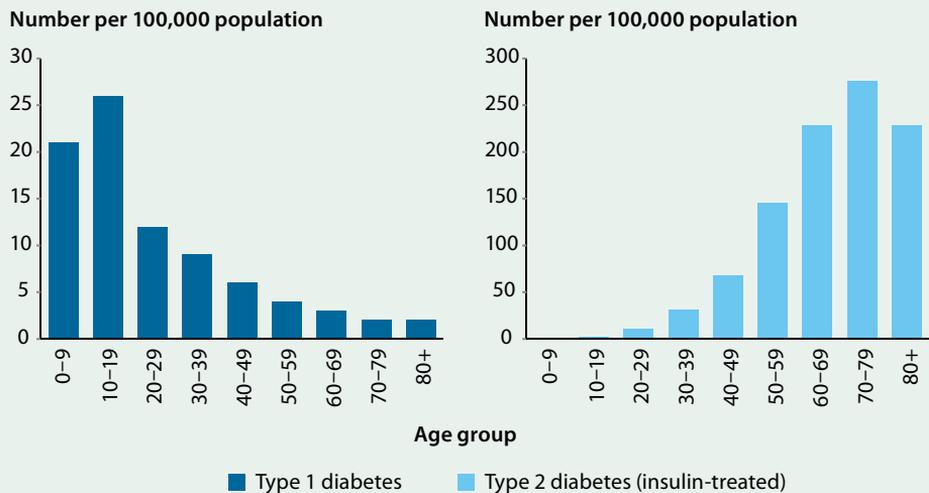
### Insulin-treated diabetes

Insulin replacement therapy is essential for all people with type 1 diabetes, as this condition is characterised by the destruction of insulin-producing cells. However, for people with type 2 diabetes and gestational diabetes, not enough insulin is produced or it is not used effectively. Around 20% of people with type 2 diabetes and 25–40% of people with gestational diabetes use insulin. In other cases, these conditions can be managed through lifestyle modifications and/or other medications.

According to the National (insulin-treated) Diabetes Register, in 2014:

- around 29,400, or 1 in 800 people, began using insulin. The majority of these (19,400 people) began to use insulin for the treatment of type 2 diabetes
- almost all (93%) new cases of insulin use for type 2 diabetes occurred in those aged 40 and over, reflecting the higher prevalence of type 2 diabetes with advancing age (Figure 3.7.1)
- there were more than 2,500 new cases of type 1 diabetes, with almost two-thirds (63%) of these diagnosed in people under the age of 25 (Figure 3.7.1)
- about 6,600 women started using insulin to treat gestational diabetes, which occurs in around 6% of pregnancies.

**Figure 3.7.1: New cases of type 1 diabetes and insulin-use among people with type 2 diabetes, by age, 2014**



Source: AIHW National (insulin-treated) Diabetes Register.

## Hospitalisations

- Diabetes contributed to around 929,000 hospitalisations in 2013–14 (9% of all hospitalisations), with the majority (95%) of the hospitalisations listing diabetes as an additional diagnosis.
- In 2013–14, 32% of hospitalisations for diabetes also had a diagnosis of cardiovascular disease, 19% had a diagnosis of chronic kidney disease, and 14% had both.

## Deaths

- In 2013, diabetes contributed to 10% of all deaths in Australia (15,100), with the majority of these (71%) recording diabetes as an associated cause of death.
- Diabetes death rates have remained relatively stable between 1997 and 2013, with age-standardised rates of 53 to 62 deaths per 100,000 population each year.
- In 2013, diabetes death rates were higher for males than females (1.6 times as high for males) and most (88%) deaths occurred among those aged 65 and over.
- In 2013, where diabetes was an associated cause of death, coronary heart disease was listed as the underlying cause of death in 23% of deaths, and stroke in 6%.

# Variations among population groups

Compared with non-Indigenous Australians, **Indigenous Australians** were:



- 3.5 times as likely as non-Indigenous Australians to have diabetes
- 4.0 times as likely as Other Australians to be hospitalised for diabetes
- 4.0 times as likely as non-Indigenous Australians to die from diabetes.

Compared with those living in *Major cities*, people in **combined Remote and Very remote areas** were:



- 1.8 times as likely to be hospitalised for diabetes
- 1.9 times as likely to die from diabetes.

Compared with those living in the highest socioeconomic areas, people living in the **lowest socioeconomic areas** were:



- 3.6 times as likely to have diabetes
- 1.8 times as likely to be hospitalised for diabetes
- 2.0 times as likely to die from diabetes.

## What is missing from the picture?

Further monitoring and surveillance of diabetes is crucial for guiding preventive measures, determining clinical care and informing health policy and service planning.

Currently, there are no national data on new cases of diagnosed type 2 diabetes, especially for young people. Symptoms of type 2 diabetes are often absent in the early stages and so people may go undiagnosed for a long time. Also, there can be problems with misdiagnosis, particularly among young people with type 2 diabetes, and misreporting of diabetes type.

## Where do I go for more information?

The following reports are available for free download: [Incidence of insulin-treated diabetes in Australia 2014](#) and the *Cardiovascular disease, diabetes and chronic kidney disease—Australian facts series* ([Mortality](#); [Prevalence and incidence](#); [Morbidity—hospital care](#); [Risk factors](#); [Aboriginal and Torres Strait Islander people](#)).

## References

ABS (Australian Bureau of Statistics) 2013. Australian Health Survey: biomedical results for chronic diseases, 2011–12. ABS cat. no. 4364.0.55.005. Canberra: ABS.

ABS 2015. National Health Survey: first results, Australia, 2014–15. ABS cat. no. 4364.0.55.001. Canberra: ABS.

## 3.8 Kidney disease

The kidneys filter and remove waste from the blood. Kidney disease occurs when the nephrons (functional units inside the kidney that filter the blood) are damaged. Kidney disease is often called a 'silent disease', as up to 90% of kidney function can be lost before symptoms appear. As a result, many people are unaware that they have the condition.

When a person has evidence of kidney damage and/or reduced kidney function lasting at least 3 months, this is referred to as chronic kidney disease, or CKD. The most severe form of CKD is end-stage kidney disease (ESKD), where people usually require kidney replacement therapy—a kidney transplant or dialysis—to survive. Kidney disease may also present as an acute condition, such as acute kidney injury (AKI), where an abrupt loss of kidney function causes the body to accumulate waste products and become unable to maintain electrolyte, acid–base and water balance.

CKD is largely preventable, as many of its risk factors—such as smoking, high blood pressure, overweight and obesity, and impaired glucose regulation—are modifiable. Further, simple tests of a person's blood and urine can identify most cases of CKD when the disease is in its early stages, enabling treatment to prevent, or slow down, its progression. In contrast, AKI is often the consequence of injury or trauma restricting blood supply to the tissues or as a result of severe inflammation.

CKD and AKI are risk factors for each other and they are both risk factors for cardiovascular disease.

### How common is chronic kidney disease?

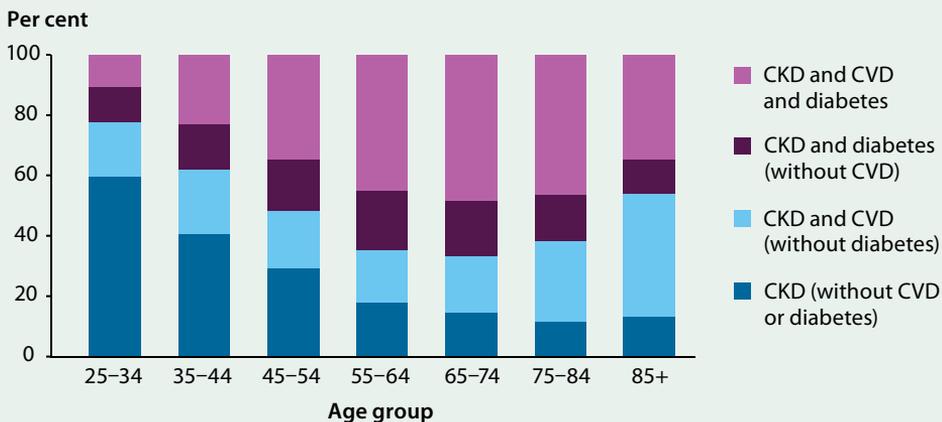
- In 2011–12, an estimated 1 in 10 people (1.7 million Australians) aged 18 and over had biomedical signs of CKD (ABS 2013). Of these, only 10% were aware they had the condition based on self-reported data, reflecting that this is a highly under-diagnosed condition.
- In 2014, there were around 22,100 people with treated ESKD—55% of patients were on dialysis while 45% were living with a functioning transplant.
- There were around 2,600 new cases of treated ESKD in 2014—7 new treated cases per day.
- Diabetic nephropathy—damage to the blood-filtering capillaries in the kidneys caused by high blood sugar levels—was the leading cause of treated ESKD, accounting for 37% of new cases in 2014 (ANZDATA 2015).

### Hospitalisations

- Of the 1.6 million hospitalisations for CKD in 2013–14, 81% were for regular dialysis treatment. Dialysis is the most common reason for hospitalisation in Australia, and age-standardised rates have increased by 37% over the last decade, from 3,800 to 5,200 per 100,000 population, between 2003–04 and 2013–14.

- In 2013–14, there were more than 300,000 hospitalisations for CKD (excluding dialysis). The vast majority of these (87%) were for CKD as an additional diagnosis. Age-standardised rates have increased substantially between 2003–04 and 2013–14, from 128 to 164 per 100,000 population.
- CKD often occurs with other conditions such as cardiovascular disease and diabetes, as they share common risk factors. Of hospitalisations with CKD in 2012–13, 66% also had a diagnosis of cardiovascular disease, 57% a diagnosis of diabetes, and 41% had both.
- The proportion of CKD hospitalisations with either cardiovascular disease or diabetes or both increased with age—from 40% of people aged 25–34 to 88% of people aged 75–84 (Figure 3.8.1).
- In 2013–14, there were around 146,600 hospitalisations where AKI was the principal and/or additional diagnosis. The number and rates of hospitalisations for AKI almost doubled between 2003–04 and 2013–14.

**Figure 3.8.1: CKD hospitalisations with one or more diagnoses of cardiovascular disease, diabetes and CKD, by age, 2012–13**



Note: Hospitalisations were for adults aged 25 and over only.

Source: AIHW National Hospital Morbidity Database.

## Deaths

- In 2013, CKD contributed to 15,900 (11%) of all deaths in Australia, with 76% of these recorded as an associated cause of death. CKD was commonly listed as an associated cause of death where the underlying cause was coronary heart disease (23%), heart failure and cardiomyopathy (7%), and dementia and Alzheimer disease (6%).
- There were around 5,300 deaths where AKI was recorded as the underlying or associated cause of death in 2013. As for CKD, there is also a strong association between AKI and cardiovascular disease—cardiovascular disease was the leading cause of death in 28% of deaths where AKI was an associated cause of death.

## Variations among population groups

Compared with non-Indigenous Australians, **Indigenous Australians** were:



- 2.1 times as likely to have biomedical signs of CKD
- 4.8 times as likely to hospitalised for CKD (excluding dialysis)



- 3.2 times as likely to die from CKD
- 5.0 times as likely to have ESKD, but less likely to be treated with a functioning kidney transplant for their ESKD (12% compared with 48% for non-Indigenous people).

Compared with those living in *Major cities*, people in **combined Remote and Very remote areas** were:



- 2.2 times as likely to be hospitalised for CKD
- 1.7 times as times as likely to die from CKD.

Compared with those living in the highest socioeconomic areas, people living in the **lowest socioeconomic areas** were:



- 1.6 times as likely to have biomedical signs of CKD
- 1.9 times as likely to be hospitalised for CKD
- 1.6 times as likely to die from CKD.

### What is missing from the picture?

Although nearly all people with ESKD in Australia who receive kidney replacement therapy are recorded in the Australian and New Zealand Dialysis and Transplant Registry (ANZDATA), there is a lack of information on people with ESKD who are not receiving kidney replacement therapy. Data linkage of ANZDATA and mortality data has provided some information on people not receiving kidney replacement therapy (AIHW 2011). Further linkage with hospitalisation data would allow a greater capture of untreated ESKD and provide improved estimates on the incidence of ESKD in Australia; however, national linkage is currently not possible.

There is also a lack of reliable national data on the prevalence and incidence of AKI in Australia. Hospital and deaths data may underestimate the burden of AKI given that standardised definitions of AKI have only appeared in the last decade, that it is clinically under-recognised and that its definition is still evolving.

### Where do I go for more information?

The following reports can be downloaded for free: the *Cardiovascular disease, diabetes and chronic kidney disease—Australian facts series* ([Mortality](#); [Prevalence and incidence](#); [Morbidity—hospital care](#); [Risk factors](#); [Indigenous Australians](#)), [Acute kidney injury in Australia: a first national snapshot](#) and [Chronic kidney disease: regional variation in Australia](#).

### References

ABS (Australian Bureau of Statistics) 2013. Australian Health Survey: biomedical results for chronic diseases, 2011–12. ABS cat. no. 4364.0.55.005. Canberra: ABS.

AIHW 2011. End-stage kidney disease in Australia: total incidence, 2003–2007. Cat. no. PHE 143. Canberra: AIHW.

ANZDATA (Australian and New Zealand Dialysis and Transplant) 2015. ANZDATA 38th Annual report 2015. Adelaide: Australia and New Zealand Dialysis and Transplant Registry.

## 3.9 Arthritis and other musculoskeletal conditions

Arthritis and other musculoskeletal conditions are a group of conditions affecting the bones, muscles and joints. These conditions include osteoarthritis, rheumatoid arthritis, juvenile arthritis, back pain and problems and osteoporosis or osteopenia (low bone density) (see Glossary).

### How common are arthritis and other musculoskeletal conditions?

Arthritis and other musculoskeletal conditions affect many Australians. Based on the self-reported data from the Australian Bureau of Statistics (ABS) 2014–15 National Health Survey (NHS) (ABS 2015):

- 30% of Australians had arthritis and other musculoskeletal conditions—around 6.9 million people
- 16% of Australians (3.7 million) had back pain and problems, 9.0% had osteoarthritis (2 million), 3.5% osteoporosis (801,000) and 1.8% rheumatoid arthritis (406,000)
- 6,500 (1 in 800) children aged 0–17 had juvenile arthritis—it was as common as type 1 diabetes for the same age group
- twice as many women as men had osteoarthritis or rheumatoid arthritis
- for people aged 55 and over, 5 times as many women as men had osteoporosis or osteopenia.

### Comorbidity

People with arthritis and other musculoskeletal conditions often have other chronic diseases and long-term conditions. This is referred to as ‘comorbidity’, where two or more health problems occur at the same time. Almost 1 in 4 Australians (23%) have comorbid chronic conditions. For more information, see ‘Chapter 3.3 Chronic disease and comorbidities’.

For people with arthritis, based on self-reported data in the ABS 2014–15 NHS (ABS 2015):

- more than 3 out of 4 (79%) had at least one other chronic condition
- cardiovascular disease was the most common comorbidity (48%), followed by back pain and problems (33%) and mental health problems (27%).

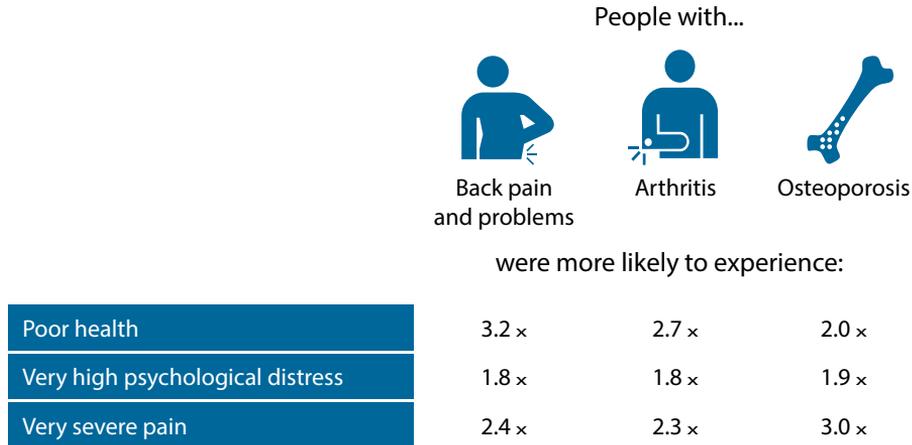
For people with back pain and problems (also based on self-report NHS data):

- almost 2 out of 3 (65%) had at least one other chronic condition
- arthritis and cardiovascular disease were the most common comorbidities (31%), followed by mental health problems (30%).

## Impact

Arthritis and other musculoskeletal conditions are large contributors to illness, pain and disability. For more information on the burden of disease associated with these conditions, see 'Chapter 3.1 Burden of disease and injury in Australia'.

In 2014–15, compared with the general population, people with musculoskeletal conditions had higher rates of poor health, very high psychological distress and very severe pain. For example, people with back pains and problems were 3.2 times as likely as the general population to experience poor health. Other examples of higher rates were:



## Health care

These conditions are predominantly managed in primary health care settings by a range of health professionals. Treatment involves a combination of medication (for pain and inflammation); physiotherapy; self-management (such as diet and exercise); education on self-management and living with the condition; and referral to specialist care.

- Based on survey data, at least one musculoskeletal condition was managed at an estimated 24 million general practice visits (representing 18% of visits and 12% of problems managed) in 2014–15 (Britt et al. 2015).
- Between 2004–05 and 2013–14, age-standardised rates of musculoskeletal hospitalisations increased, by 131% for juvenile arthritis, 54% for rheumatoid arthritis, 20% for osteoporosis-related minimal trauma fractures in people aged 50 and over, and 15% for osteoarthritis.
- Biologic disease-modifying anti-rheumatic drugs (bDMARDs) are specialised medications commonly used to treat rheumatoid arthritis and juvenile arthritis. These drugs are unique to the type of arthritis being treated and can only be obtained from a rheumatologist and administered in hospital. In 2013–14, the Pharmaceutical Benefits Scheme paid \$7.5 million in benefits for bDMARDs for juvenile arthritis and \$281 million for rheumatoid arthritis. bDMARDs have been shown to result in improved quality of life and reduced use of other health care services (Nam et al. 2014).

## What is missing from the picture?

The prevention, management and treatment of these conditions beyond hospital settings cannot be examined in detail because of a lack of information about primary health care.

There is limited information on the use of vitamins, nutritional supplements and over-the-counter pharmaceuticals such as paracetamol, which are commonly used to manage musculoskeletal conditions. Prescription pharmaceutical data are limited because these data lack information about the diagnoses for which the medications were prescribed.

Information is also lacking on the overall costs of these conditions to individuals (for example out-of-pocket expenditure and lost earning potential).

## Where do I go for more information?

More information on arthritis and other musculoskeletal conditions is available at [www.aihw.gov.au/arthritis-and-musculoskeletal-conditions](http://www.aihw.gov.au/arthritis-and-musculoskeletal-conditions).

## References

ABS (Australian Bureau of Statistics) 2015. National Health Survey: first results, 2014–15. ABS cat. no. 4364.0.55.001. Canberra: ABS.

Britt H, Miller GC, Henderson J, Bayram C, Harrison C, Valenti L et al. 2015. General practice activity in Australia 2014–15. General practice series no. 38. Sydney: Sydney University Press.

Nam JL, Ramiro S, Gaujoux-Viala C, Takase K, Leon-Garcia M, Emery P et al. 2014. Efficacy of biological disease-modifying antirheumatic drugs: a systematic literature review informing the 2013 update of the EULAR recommendations for the management of rheumatoid arthritis. *Annals of the Rheumatic Diseases* 73(3):516–28.

## 3.10 Chronic respiratory conditions

Chronic respiratory conditions affect people's airways and are characterised by symptoms such as wheezing, shortness of breath, chest tightness and cough. Conditions include asthma, chronic obstructive pulmonary disease (COPD)—which includes emphysema and chronic bronchitis—and a range of other conditions, such as allergic rhinitis ('hay fever'), chronic sinusitis, cystic fibrosis, bronchiectasis, occupational lung diseases and sleep apnoea (see Glossary).

There are a range of behavioural, environmental and genetic risk factors that are associated with chronic respiratory conditions, including smoking, exposure to viral infections and air pollutants, and inheritance of genes associated with respiratory illnesses, such as cystic fibrosis.

### How common are chronic respiratory conditions?

Based on the self-reported data from the Australian Bureau of Statistics (ABS) 2014–15 National Health Survey (NHS) (ABS 2015):

- more than 3 in 10 Australians (31% or 7 million people) had one or more chronic respiratory conditions
- hay fever and asthma were the two most common conditions, affecting 4.5 million Australians (19% of the population) and 2.5 million Australians (11% of the population), respectively. COPD was comparatively rarer, affecting an estimated 600,000 Australians (2.6%)
- asthma was one of the most common chronic health conditions among children, affecting 479,000 children aged 0–14 (11%)
- almost two-thirds (65% or 388,000) of the 600,000 Australians with COPD were aged 55 and over
- both asthma and COPD were more common in people living in low socioeconomic areas than in people living in high socioeconomic areas (13% compared with 10% for asthma, and 4.1% compared with 1.5% for COPD).

Between 2001 and 2014–15 there was a fall in the age-standardised prevalence of self-reported asthma (from 12% to 11%) and of COPD (from 3.6% to 2.4%).

### Deaths

COPD was the fifth leading underlying cause of death in Australia in 2013 (4.4% of all deaths).

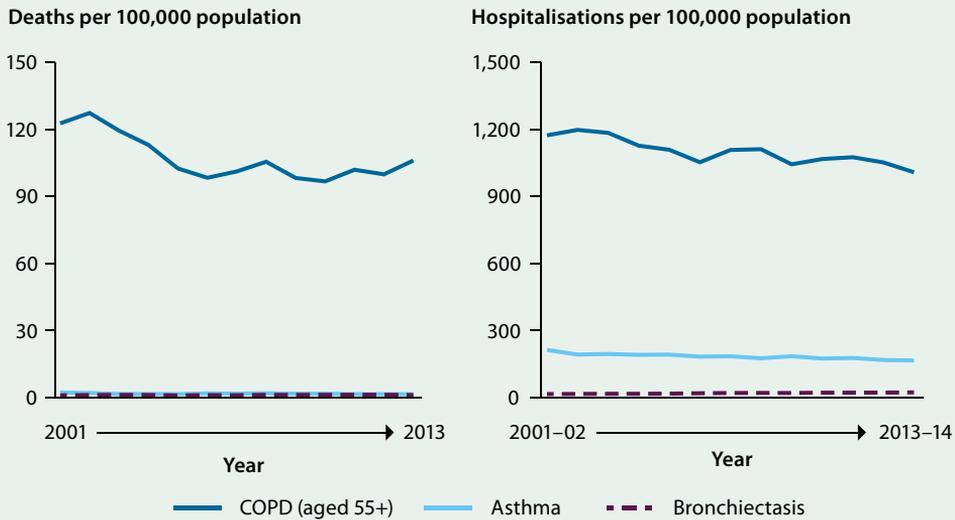
In 2013:

- there were around 6,500 deaths due to COPD, about 400 deaths due to asthma and nearly 300 deaths due to bronchiectasis
- 95% (6,200) of deaths due to COPD were among people aged 55 and over.

Between 2001 and 2013, among those aged 55 and over, the age-standardised death rate for COPD fluctuated, ranging from 97 to 127 deaths per 100,000 population (Figure 3.10.1). The rate for males fell from 183 to 137 deaths per 100,000 males, while the rate for females had no clear trend, ranging from 74 to 89 deaths per 100,000 females.

Between 2001 and 2013, among those of all ages, the age-standardised death rates for asthma and bronchiectasis remained relatively steady at fewer than 2.2 deaths per 100,000 population.

**Figure 3.10.1: Age-standardised death rates (2001 to 2013) and hospitalisations (2001–02 to 2013–14) for asthma (all ages), bronchiectasis (all ages) and COPD (ages 55 and over)**



*Notes*

1. Rates have been age-standardised to the 2001 Australian population.
2. Deaths registered in 2011 and earlier are based on the final version of cause of death data; deaths registered in 2012 and 2013 are based on revised and preliminary versions, respectively and are subject to further revision by the ABS.
3. Data for COPD are for those aged 55 and over.

Sources: AIHW National Mortality Database and AIHW National Hospitals Morbidity Database.

## Health care

- Chronic respiratory conditions are predominantly managed in primary health care. In 2011–12, more than half (57%) of people with asthma visited a general practitioner (GP) for asthma at least once in the previous year (ABS 2013). People aged 0–14 were most likely to have visited a GP at least once for their asthma (73%).
- Asthma guidelines recommend that all people with asthma should have a written asthma action plan. However, in 2011–12, based on self-reported survey data, only 24% of people with asthma as a long-term condition had a written asthma action plan (ABS 2013). See also 'Chapter 7.1 Indicators of Australia's health'.
- Between 2001–02 and 2013–14 there was a fall in the age-standardised hospitalisation rates for asthma (down 22% from 212 to 165 hospitalisations per 100,000 population of all ages) and for COPD (down 14% from 1,172 to 1,007 hospitalisations per 100,000 population aged 55 and over) (Figure 3.10.1).

## What is missing from the picture?

The prevention, management and treatment of chronic respiratory conditions beyond hospital settings, including the appropriateness of care relating to clinical guidelines, cannot be examined in detail because of a lack of data on primary health care. Future linkage work may provide insight into these issues.

## Where do I go for more information?

More information on chronic respiratory conditions in Australia is available at [www.aihw.gov.au/chronic-respiratory-conditions](http://www.aihw.gov.au/chronic-respiratory-conditions). The reports *Asthma in Australia 2011; Mortality from asthma and COPD in Australia; Respiratory medication use in Australia 2003–2013: treatment of asthma and COPD* and other recent publications can be downloaded for free.

## References

ABS (Australian Bureau of Statistics) 2013. Australian Health Survey: health service usage and health related actions, 2011–12. ABS cat. no. 4364.0.55.002. Canberra: ABS.

ABS 2015. National Health Survey: first results 2014–15, ABS cat. no. 4364.0.55.001.

## 3.11 Mental health

Mental health is a state of wellbeing in which an individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community (WHO 2014). While most Australians enjoy good mental health, a significant proportion of the population will experience mental illness at some time throughout their lives. This will affect how they think, behave and interact with those around them.

Australia's National Survey of Mental Health and Wellbeing is a program of three targeted mental health epidemiological surveys. Together, these surveys provide a detailed view of the prevalence of mental health issues in Australia:

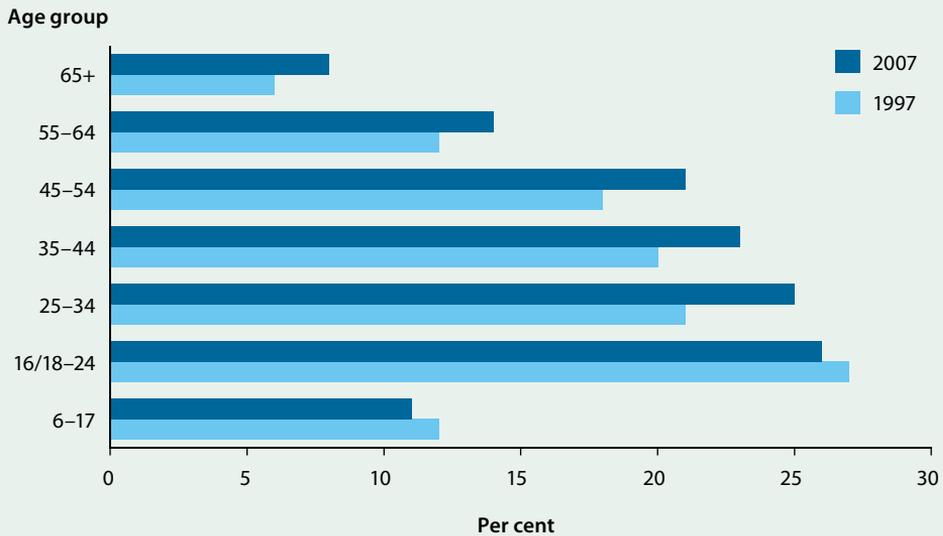
- i. **National Survey of Mental Health and Wellbeing** (conducted most recently in 2007). Around 7.3 million (45%) of Australians aged 16–85 will experience a high prevalence mental disorder, such as depression, anxiety or a substance use disorder in their lifetime (ABS 2008). The age distribution of high prevalence mental disorders in 2007 was similar to that found 10 years earlier from the same survey conducted over 1997 or 1998 (depending on age group) (see Figure 3.11.1.)
- ii. **National Survey of People with Psychotic Illness** (conducted most recently in 2010). Almost 64,000 people with a psychotic illness are in contact with public specialised mental health services each year (Morgan et al. 2011). The survey did not cover private service providers such as private psychiatrists, psychologists and private hospitals.
- iii. **Australian Child and Adolescent Survey of Mental Health and Wellbeing**, also known as Young Minds Matter (conducted most recently in 2012–13). Analysis from the survey estimates that 560,000 children and adolescents aged 4–17 (almost 14%) experienced mental health disorders in 2012–13 (Lawrence et al. 2015) (see 'Chapter 5.5 Mental health of Australia's young people and adolescents').

While the National Survey of Mental Health and Wellbeing provides valuable insights, the severity of a mental illness is a critical factor in understanding the impact of mental illness, both on an individual and on society as a whole. While severe and persistent mental illness, such as psychosis, has a relatively low prevalence, it contributes substantially to the impact of mental illness on society, due to the ongoing and sometimes extensive care needs required to support the individual.

A person experiencing poor mental health may not meet the diagnostic criteria for a mental disorder (Slade et al. 2009), but may still experience a negative impact on their life. Poor mental health may also be associated with suicidality—the collective term for suicidal ideation, suicide plans and suicide attempts. While suicidality is more common in people with mental disorders, it is not confined solely to this group (Slade et al. 2009).

People who experience suicidal ideation and make suicide plans are at increased risk of attempting suicide (see Glossary). At some point in their lives, 13% of Australians aged 16–85 have experienced suicidal ideation, 4.0% have made suicide plans and 3.3% have attempted suicide (Slade et al. 2009). From 2004 to 2013, an average of 2,300 Australians died by suicide each year (ABS 2015).

**Figure 3.11.1: Proportion of Australians with high prevalence mental disorders, by age, 1997 and 2007**



*Notes*

1. For the 6–17 age group, the data are for 1998 and 2013–14.
2. For the 16/18–24 age group, the 1997 data relate to people aged 18–24 and the 2007 data to people aged 16–24.
3. Prevalence data from the National Survey of People with Psychotic Illness are not included in this figure.
4. Some caution should be exercised in comparing findings from the two adult surveys because they sampled from slightly different age ranges and used somewhat different approaches to gauge the presence of mental illness in the past 12 months. It may be the case that these methodological differences account for the small increase in overall prevalence over time.

Sources: DoHA 2013; Lawrence et al. 2015.

### What is missing from the picture?

The Australian Child and Adolescent Survey of Mental Health and Wellbeing, conducted in 2013–14, filled the gap in contemporary information about the extent and impact of mental illness on children and adolescents.

Given the passage of time since the last adult survey of mental health was conducted, consideration of cost-effective methods to update prevalence information about Australian adults is indicated.

### Where do I go for more information?

More information on mental health in Australia is available on the Mental Health Services in Australia website at [mhsa.aihw.gov.au](http://mhsa.aihw.gov.au) and in the [Suicide and hospitalised self-harm in Australia: trend and analysis report](#).

Services available for people at risk of suicide are:

**Lifeline** 13 11 14 [www.lifeline.org.au](http://www.lifeline.org.au)

**Kids Help Line** 1800 55 1800 [www.kidshelpline.com.au](http://www.kidshelpline.com.au)

**Suicide Call Back Service** 1300 659 467 [www.suicidecallbackservice.org.au](http://www.suicidecallbackservice.org.au)

## References

ABS (Australian Bureau of Statistics) 2008. National Survey of Mental Health and Wellbeing 2007: summary of results. ABS cat. no. 4326.0. Canberra: ABS.

ABS 2015. Causes of death, Australia, 2013. ABS cat. no. 3303.0. Canberra: ABS.

AIHW (Australian Institute of Health and Welfare) 2014. Suicide and hospitalised self-harm in Australia: trends and analysis. Injury research and statistics series no. 93. Cat. no. INJCAT 169. Canberra: AIHW.

DoHA (Department of Health and Ageing) 2013. National Mental Health Report 2013: tracking progress of mental health reform in Australia 1993–2011. Canberra: DoHA.

Lawrence D, Johnson S, Hafekost J, Boterhoven de Haan K, Sawyer M, Ainley J et al. 2015. The mental health of children and adolescents: report on the second Australian Child and Adolescent Survey of Mental Health and Wellbeing. Canberra: Department of Health.

Morgan VA, Waterreus A, Jablensky A, Mackinnon A, McGrath JJ, Carr, V et al. 2011. People living with psychotic illness 2010: report of the second Australian national survey. Canberra: Department of Health and Ageing.

Slade T, Johnston A, Teesson M, Whiteford H, Burgess P, Pirkis J et al. 2009. The mental health of Australians 2: report on the 2007 National Survey of Mental Health and Wellbeing. Canberra: Department of Health and Ageing.

WHO (World Health Organization) 2014. Mental health: a state of well-being. Geneva: WHO. Viewed August 2014, <[http://www.who.int/features/factfiles/mental\\_health/en/](http://www.who.int/features/factfiles/mental_health/en/)>.

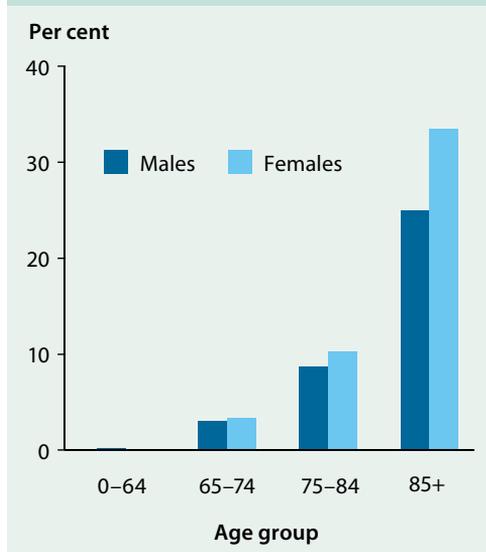
## 3.12 Dementia

Dementia is not the name of a specific disease; rather, it describes a syndrome characterised by the gradual impairment of brain function. Skills commonly affected include memory, cognition and personality. While dementia is irreversible and progressive, it is not an inevitable part of ageing. There is no simple test to diagnose it, and more than 100 diseases are associated with the condition—the most common types are Alzheimer disease and vascular dementia. Alzheimer disease accounts for up to 80% of cases, although only half of these are estimated to be 'pure' Alzheimer disease (AA 2015).

### How many people have dementia?

Dementia presents a significant challenge to health and aged care in Australia, and affects almost 1 in 10 (8.8%) people aged 65 and over. Based on rates derived from published international and local studies and on Australian population projections, there are an estimated 354,000 people with dementia in Australia in 2016. The prevalence of dementia has increased—it affected approximately 252,000 people in 2006, which represents an increase of 40% to 2016. Just over 1% of people with dementia are estimated to be under 60, while people aged 85 and over account for 43% of cases. While dementia is not caused by age, it does primarily affect older people (Figure 3.12.1).

**Figure 3.12.1: Estimated proportion of people with dementia, by age group and sex, 2016**



11,000 deaths (7.4% of all deaths). For deaths associated with dementia, the median age at death was 88.

Some studies have indicated that age-specific risk rates for dementia may be decreasing, and the age of onset increasing, in line with changes to particular risk factors such as improved cardiovascular health (AA 2015, ADI 2014). A number of factors are associated with the development of dementia—for instance, a robust evidence base suggests that higher levels of education in early life reduce the risk of dementia, while higher levels of high blood pressure in mid-life and diabetes in late life increase it (ADI 2014).

However, dementia's impact on society continues to increase as the absolute number of cases increases because the number of older people as a proportion of the population is increasing. Dementia was the second leading cause of death in Australia in 2013, accounting for almost

# People with dementia rely heavily on health and aged care services

Dementia is one of the leading contributors to burden of disease and disability, and people with dementia are frequent users of health and aged care services. Because of the degenerative nature of the condition, an individual's need for assistance generally increases as the disease progresses. (For more information on the burden of disease, see 'Chapter 3.1 Burden of disease and injury in Australia')

People with dementia experience more hospitalisations than people without dementia, although dementia is generally not the primary reason for admission. For instance, people with dementia account for 29% of people admitted to hospital with hip fractures (Scandol et al. 2013); are hospitalised for unintentional poisoning at twice the rate of people without dementia (Mitchell et al. 2015); and, once hospitalised, are more than twice as likely to develop complications such as pneumonia than people without dementia (Bail et al. 2015).

In June 2015, more than half of all people in permanent residential aged care (52%, or almost 90,000 people) had a diagnosis of dementia and were more likely to require a high level of care than people without dementia (95% compared with 83%).

People with dementia living in the community also depend on informal care provided by family and friends.

Informal carers of people with dementia:

- are often female—74%
- are more likely to be 65 or older—65%
- are commonly the person's spouse or partner—65%
- usually provide 40 or more hours of care per week—65%
- have often been a carer for less than 5 years—60%
- often have a disability themselves—46%.

Some treatments are available for people with dementia, particularly Alzheimer disease. In 2012–13, more than 48,000 people were prescribed an anti-dementia medication subsidised under the Pharmaceutical Benefits Scheme. These drug treatments provide symptomatic relief and can help to delay the progress of the disease for a time. In addition, some behavioural and psychological symptoms associated with dementia, such as agitation and depression, can be treated with drugs or by using non-pharmacological therapies.

## What is missing from the picture?

Australia lacks national data that can provide reliable prevalence estimates of dementia. As a result, very little comprehensive information is also available on the prevalence of dementia among specific populations, such as Aboriginal and Torres Strait Islander Australians. A number of studies have indicated that Indigenous people across urban, regional, and remote Australia have higher rates of dementia, and earlier age of onset, than comparable populations of non-Indigenous people (Li et al. 2014; Radford et al. 2015).

The underlying mechanisms relating to the progress of dementia—and the various factors that influence it—are not yet fully understood. Further research is needed, using a range of appropriate methodologies.

### Where do I go for more information?

For more information and a list of AIHW publications on dementia in Australia, see [www.aihw.gov.au/dementia](http://www.aihw.gov.au/dementia). The [Alzheimer's Australia](http://www.alzheimersaustralia.org.au) website offer information, services and support for people with dementia and their carers.

### References

AA (Alzheimer's Association) 2015. Alzheimer's disease facts and figures. *Alzheimer's & Dementia* 11(3):332–84.

ADI (Alzheimer's Disease International) 2014. World Alzheimer report 2014. Dementia and risk reduction: an analysis of protective and modifiable factors. London: ADI.

Bail K, Goss J, Draper B, Berry H, Karmel R & Gibson D 2015. The cost of hospital-acquired complications for older people with and without dementia; a retrospective cohort study. *BMC Health Services Research* 15:91.

Li SQ, Guthridge SL, Eswara Aratchige P, Lowe MP, Wang Z, Zhao Y et al. V 2014. Dementia prevalence and incidence amongst the Indigenous and non-Indigenous populations of the Northern Territory. *Medical Journal of Australia* 200(8):465–9.

Mitchell RJ, Harvey LA, Brodaty H, Draper B & Close JC 2015. Dementia and intentional and unintentional poisoning in older people: A 10 year review of hospitalization records in New South Wales, Australia. *International Psychogeriatrics* 27(11):1757–68.

Radford K, Mack HA, Draper B, Chalkley S, Daylight G, Cumming RG et al. 2015. Prevalence of dementia in urban and regional Aboriginal Australians. *Alzheimer's & Dementia* 11:271–9.

Scandol JP, Toson B & Close JC 2013. Fall-related hip fracture hospitalisations and the prevalence of dementia within older people in New South Wales, Australia: An analysis of linked data. *Injury* 44(6):776–83.

## 3.13 Injury

Injury is a major contributor to mortality, morbidity and permanent disability in Australia. Based on the self-reported data in the Australian Bureau of Statistics 2012 Survey of Disability, Ageing and Carers (ABS 2013), 7% of the main long-term health conditions experienced by the estimated 4.2 million Australians living with a disability occurred as a result of injury or poisoning.

This snapshot illustrates the impact of injury by providing an overview of injury deaths and injury cases that were severe enough to require admission to hospital. Given that some injuries result in more than one stay in hospital, only the first hospitalisation was counted for each case where possible. Hospitalised injuries can range from single fractures to catastrophic injuries such as spinal cord injury or traumatic brain injury, which may result in life-long disability at a substantial cost to the health system.

### Injury deaths

- Injury was recorded as a cause of more than 11,000 deaths in 2011–12 in Australia, or 7.6% of all deaths.
- Almost 40% of male injury deaths and almost 66% of female deaths occurred at ages 65 and older; 1.9% of deaths were at ages younger than 15.
- The most common causes of injury deaths in 2011–12 were falls (35%), intentional self-harm (22%) and transport accidents (14%).
- Adjusting for age, injury deaths decreased from 55 per 100,000 population in 1999–00 to 47 in 2004–05, with little change in more recent years. The injury death rate was 46 per 100,000 population in 2011–12.
- Rates of injury deaths for Indigenous Australians were consistently twice the rate for non-Indigenous Australians over the period from 2001–02 to 2011–12 (89 compared with 45 deaths per 100,000 population in 2011–12, respectively).

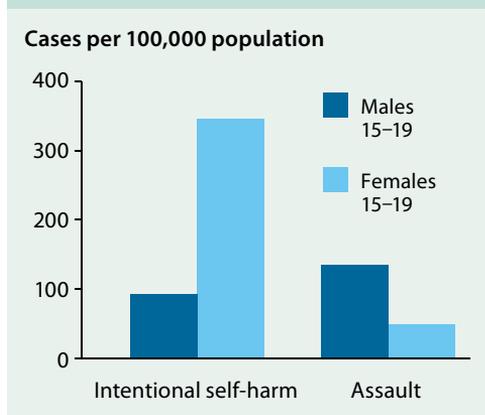
### Injury hospitalisations

- In 2013–14, there were nearly 500,000 hospitalisations due to injury (5.3% of all hospitalisations). These represented an estimated 461,000 cases of hospitalised injury.
- The number of hospitalised injury cases per 100,000 population was higher for Indigenous people (3,521) than for other Australians (1,863). Indigenous females aged 30–34 had a rate of injury 5 times that of other Australian females in the same age group (4,812 compared with 918, respectively).
- The age group with the highest rate of hospitalised injury cases was people aged 85 and older, at 11,375 cases per 100,000 population.
- Two of the main causes of hospitalised injury cases in 2013–14 were falls (41%) and transport crashes (13%).
- In the past 10 years, statistically significant increases in age-standardised rates of hospitalised injury have occurred for injuries due to falls (a 2.4% increase per year) and intentional self-harm (a 0.4% increase per year). Significant decreases have occurred in the rate of hospitalised cases due to poisoning by pharmaceuticals (which fell by 4.1% per year), poisoning by other substances (3.6% per year), and drowning and near-drowning (1.2% per year).

## Intentional self-harm and assault in young people

Rates of hospitalised cases of self-harm and assault injury were highest for males and females aged 15–19 (Figure 3.13.1).

**Figure 3.13.1: Rates of hospitalised cases of intentional self-harm and assault in people aged 15–19, by sex, 2013–14**



- Rates of hospitalised cases of intentional self-harm among young women (15–19) were 4 times higher than for young males in 2013–14.
- Among young women hospitalised due to self-harm, the most common cause was poisoning due to non-opioid analgesics, antipyretics and antirheumatics (for example, paracetamol and ibuprofen) (43%). For young men hospitalised due to self-harm, the most common cause was poisoning due to antiepileptic, sedative-hypnotic and antiparkinson drugs (for example, benzodiazepines, and barbiturates) (35%).
- Rates of hospitalisation for assault among young males were 3 times that of young females in 2013–14. The most common cause for both (69% and 62% respectively) was assault by bodily force (such as assault with a fist, foot or hand).
- Where a perpetrator of the assault was identified in the hospital record, the perpetrator was reported as being a spouse or domestic partner for 34% of cases in young women aged 15–19, compared with 0.5% of cases in young men.

### What is missing from the picture?

Most injury cases do not require hospital admission or result in death, and they are not included here. Many of the most serious of these other injury cases attend hospital emergency departments (ED). National data on ED cases exist, but lack information on causes of injury and have other limitations for use in injury surveillance. Other injury cases are treated by general practitioners, at sports medicine clinics, by physiotherapists and elsewhere. Limited data are available on these cases.

Many injury cases, especially (but not only) those that require hospital admission, leave the person with long-lasting disability. The hospital data reported here describe the initial injury and do not provide information on the extent or timing of recovery.

### Where do I go for more information?

More information on hospitalisations and deaths due to injury in Australia is available at [www.aihw.gov.au/injury](http://www.aihw.gov.au/injury). The reports [Trends in hospitalised injury, Australia: 1999–00 to 2009–10](#) and [Trends in injury deaths, Australia: 1999–00 to 2011–12](#) and other recent publications are available for free download.

### Reference

ABS (Australian Bureau of Statistics) 2013. Disability, ageing and carers, Australia: summary of findings 2012. ABS cat. no. 4430.0. Canberra: ABS.

## 3.14 Oral health

Good oral health is an integral part of good general health and enables people to 'eat, speak and socialise without pain, discomfort or embarrassment' (Oral Health Monitoring Group 2015). Oral health can also affect general health through impacts on diet and nutrition, and there is evidence that chronic oral infections are associated with a range of other diseases and conditions, such as heart and lung diseases, stroke, low birthweight and premature births (NACDH 2012).

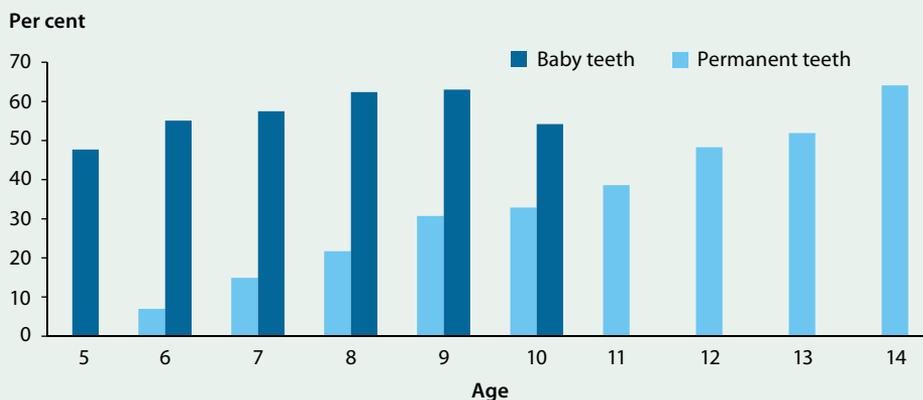
Since the late 1970s, oral health of children has improved in Australia (AIHW: Chrisopoulos et al. 2015), likely reflecting increased access to fluoridated drinking water and toothpaste, and improvements to preventive oral health services and dental hygiene practices. However, more recent trends suggest that children's oral health may be deteriorating. Poor adult oral health is strongly predicted by poor childhood oral health.

### Children

Dental examinations of children in public dental clinics across six states and territories in 2010 (excluding New South Wales and Victoria) revealed that:

- more than half (55%) of 6-year-old children had experienced decay (decayed, missing or filled teeth) in their baby teeth (see Figure 3.14.1)
- almost half (48%) of 12-year-old children had experienced decay in their permanent teeth
- children aged 5 and 6 had the highest rates of untreated tooth decay, compared with older children
- children aged 8 and 9 had higher numbers of filled teeth than other children
- after decreasing steadily from the late 1970s, the average number of teeth affected by decay for children aged 6 and 12 plateaued in the late 1990s and early 2000s, and then increased. The average number of affected baby teeth of children aged 6 increased from 1.5 in 1996 to 2.6 in 2010. The average number of affected permanent teeth of children aged 12 increased from 0.8 in 2000 to 1.3 in 2010.

**Figure 3.14.1: Proportion of children attending a school dental service with decayed, missing or filled teeth, by age, 2010**



*Note:* Does not include New South Wales and Victoria.

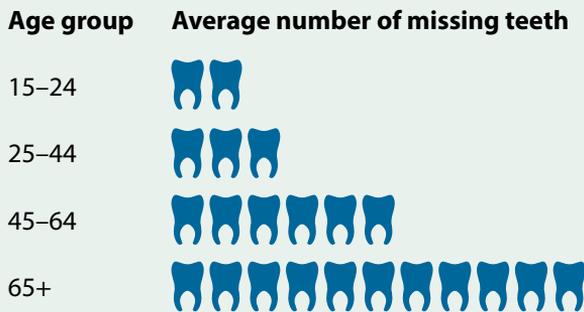
*Source:* Child Dental Health Survey 2010.

## Young people and adults

The National Dental Telephone Interview Survey of people aged 15 and over found that, in 2013:

- just over 1 in 25 people had no natural teeth. Among people aged 65 and over, 19% had lost all natural teeth
- on average, people were missing 5 teeth. The number of teeth missing increased with age, with an average of 2 teeth missing for those aged 15–24, and an average of 11 teeth missing for those aged 65 and over (Figure 3.14.2). People with dental insurance were missing an average of one tooth fewer than uninsured people
- about 12% of people with natural teeth wore dentures. Among this group, the prevalence of dentures increased with age and was highest (42%) for those aged 65 and over.

**Figure 3.14.2: Average number of missing teeth, by age group (15 and over), 2013**



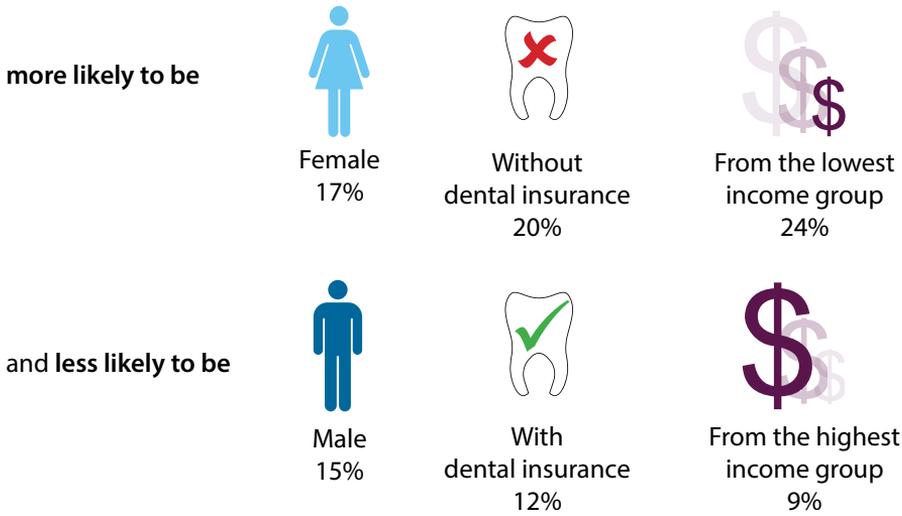
*Note:* Derived from self-reported data on the number of natural teeth at the time of interview and includes all missing teeth, regardless of the reason they were missing.

*Source:* National Dental Telephone Interview Survey 2013.

Among those aged 15 and over who had at least one natural tooth:

- about 16% of people experienced toothache in the previous 12 months (an increase from 11% in 1994). Toothache was most prevalent in adults aged 25–44
- about 1 in 5 (21%) people avoided eating certain foods due to problems with their oral health
- the proportion of people who were uncomfortable with their dental appearance has increased over time, from 20% in 1994 to 27% in 2013
- females were more likely to be uncomfortable with their appearance than males, with 31% of females reporting some level of discomfort compared with 23% of males.

In the previous 12 months people experiencing a toothache were:



## Dental visits

- In 2013, about two-thirds (64%) of people aged 5 and over had made a dental visit in the previous year. Children aged 5–14 were the most likely to have made a visit, with 79% visiting in the previous year, and 91% in the previous 2 years. The age group with the lowest proportion of dental visits was adults aged 25–44, with 55% visiting in the previous year, and 75% visiting in the previous 2 years.
- Almost half (44%) of adults aged 18 and over had a favourable (proactive) visiting pattern, where they visited a usual dentist for a check-up (rather than a problem) at least once a year.
- Most dental visits were made to a private dental practice (84%).
- Almost one-third (32%) of people delayed or avoided a visit to the dentist due to cost. People without private health insurance were twice as likely (44%) as those with insurance (20%) to avoid visiting a dentist due to cost.
- Of people who did visit a dentist in the previous 12 months, 20% did not receive the recommended dental treatment due to cost.
- In 2013–14, there were about 63,000 dental-related hospitalisations (2.7 per 1,000 population) that were considered potentially preventable if timely and adequate non-hospital care had been provided.
- Children aged 5–9 had the highest rate of potentially preventable hospitalisations due to dental conditions, with a rate of 9.3 hospitalisations per 1,000 children in that age group.

## How much is spent?

- Spending on dental services (except those in hospitals) in Australia has increased by 46% over the last decade, from \$5.9 billion in 2002–03 to \$8.7 billion in 2012–13, adjusted for inflation. Per capita expenditure also increased over the same period, from \$303 to \$380, adjusted for inflation.
- Individuals were the largest source of funds for dental spending in 2012–13, paying directly out-of-pocket for 58% of dental costs. Total government contributions, including premium rebates from the Australian Government, and state and territory governments, amounted to 25%. Private health insurance funds paid 16%, while other non-government funding sources accounted for 0.4%.

## What is missing from the picture?

There is a lack of recent clinical data about the oral health status of Australians. The National Dental Telephone Interview Survey is conducted every 2 to 3 years, and collects self-reported data only. The National Survey of Adult Oral Health, which supplements telephone interview survey data with clinical data from standardised dental examinations, was last conducted in 2004–06; the next survey is planned for 2016–18. The data on children's oral health status collected from state and territory public child dental health providers is incomplete and not very timely.

There is also a lack of routinely collected data about dental services provided in Australia. Some data are collected from public dental services, in relation to child dental services and to waiting times information for adult services, but the data are not necessarily comparable, due to variation between jurisdictions in the scope and coverage of public dental programs and data collection practices. Data on privately provided dental services are not collected nationally.

## Where do I go for more information?

More information on oral health in Australia is available on the AIHW website at [Dental and oral health](#). The AIHW report [Oral health and dental care in Australia: key facts and figures 2015](#) is available for free download.

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## 3.15 Vision and hearing disorders

Vision and hearing are important senses for communication, mobility and learning. Impaired vision or hearing can have implications for education, employment, social participation and independent living.

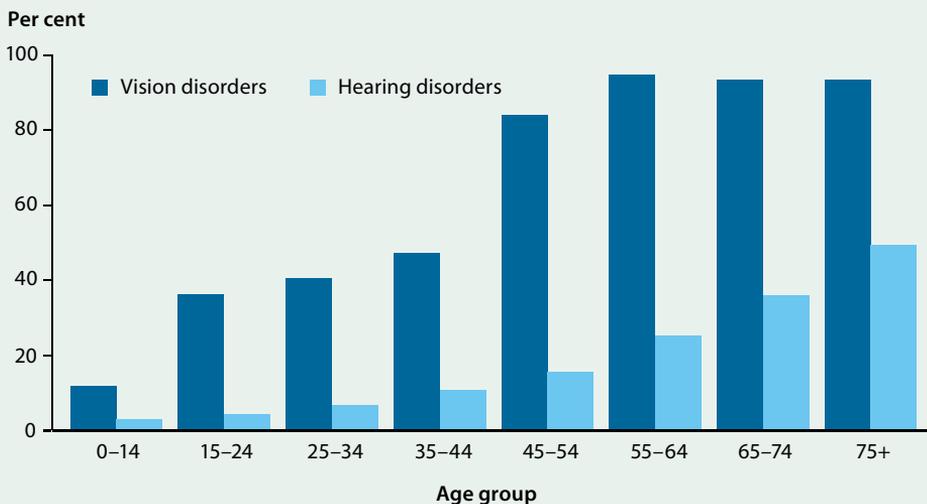
Vision disorders can be present from birth, result from an acute illness or injury, or develop over time because of chronic eye diseases and ageing (WHO 2015a). Hearing disorders can also be present from birth or develop because of an inherited condition, problems during pregnancy and delivery, infectious diseases, neurological disorders, injury or excessive noise, or develop over time with age (WHO 2015b). There is considerable variety in the types, causes and level of impairment of vision and hearing disorders.

### How common are vision disorders?

Vision disorders are very common. Based on self-reported data from the Australian Bureau of Statistics (ABS) 2014–15 National Health Survey (NHS) (ABS 2015):

- over 12 million Australians (55%) had at least one long-term vision disorder
- the proportion of people with long-term vision disorders increased with age, from 10% of children aged 0–14, to 93% of people aged 55 and over (Figure 3.15.1)
- after adjusting for differences in the age structure of the population, vision disorders were more common among females (59%) than males (51%)
- the most common long-term vision disorders were long-sightedness and short-sightedness, with 1 in 4 Australians reporting each condition
- about 421,000 Australians (1.8% of the population) had a cataract, 236,000 (1.0%) had macular degeneration, and 129,000 (0.6%) had complete or partial blindness.

**Figure 3.15.1: Vision and hearing disorders, by age, 2014–15**



Source: ABS 2015 (Table 3.3).

## How common are hearing disorders?

Hearing disorders are less common than vision disorders but still affect many Australians. Based on self-reported data from the ABS 2014–15 NHS (ABS 2015):

- over 3 million Australians (14%) had at least one long-term hearing disorder
- the proportion of people with long-term hearing disorders increased with age, from 3% of children aged 0–14, to 49% of people aged 75 and over (Figure 3.15.1)
- after adjusting for differences in the age structure of the population, hearing disorders were more common among males (18%) than females (11%)
- the most common long-term hearing disorder in Australia was complete or partial deafness, which affected 1 in 10 Australians
- more than 1.1 million people (4.9%) had other diseases of the ear and mastoid, and 79,000 (0.3%) had otitis media (middle ear infection).

Each year in Australia, more than 500 children are born with moderate to profound permanent childhood hearing impairment (MSAC 2007).

## Health service use for vision and hearing disorders

- In 2012, 1 in 2 Australians (50%) wore glasses or contact lenses and 1 in 7 (15%) wore a hearing aid (ABS 2013b).
- In 2014–15, more than 364,000 hearing devices were issued under the Hearing Services Program (Office of Hearing Services 2015).
- In 2013–14, there were 8.9 hospitalisations for cataract extraction per 1,000 Australians, and 97% were performed on a same-day basis.
- In 2014–15, there were almost 564,000 Medicare claims for diagnostic audiology services (DHS 2015).
- In 2011, there were nearly 11,000 people employed in the eye health workforce, including over 6,000 allied ophthalmic personnel (such as optical dispensers, orthoptists and occupational therapists specialising in eye health), around 4,000 optometrists and over 800 ophthalmologists (specialist eye doctors).

## Vision and hearing disorders among Aboriginal and Torres Strait Islander Australians

Aboriginal and Torres Strait Islander Australians experience higher rates of certain vision and hearing disorders than non-Indigenous Australians. In 2012–13, Indigenous Australians were more than twice as likely as non-Indigenous Australians to have partial or complete blindness, and more than twice as likely to have otitis media (ABS 2013a). Cataract and deafness were also more common among Indigenous Australians.

While Australia remains the only developed country with endemic trachoma (a bacterial eye infection that can lead to blindness), the rate of trachoma among 5–9 year olds in remote Indigenous communities dropped from an estimated 14% in 2009 to 4.7% in 2014 (Kirby Institute 2015).

## What is missing from the picture?

Australia is a signatory to the global initiative Vision 2020—the right to sight, which aims to eliminate preventable and avoidable blindness by 2020. Due to limitations in the availability and completeness of eye health data, it is not currently possible to measure Australia’s progress towards eliminating preventable and avoidable blindness. The National Eye Health Survey, led by Vision 2020 Australia and the Centre for Eye Research Australia, is under way to provide Australia’s first national population-based data on the prevalence and causes of vision impairment.

Australian data on hearing disorders are similarly limited. In recognition of the importance of early diagnosis and appropriate intervention for childhood hearing loss, all states and territories have, or are implementing, infant hearing screening, with varying levels of coverage.

## Where do I go for more information?

More information on eye health in Australia is available at [www.aihw.gov.au/eye-health/](http://www.aihw.gov.au/eye-health/).

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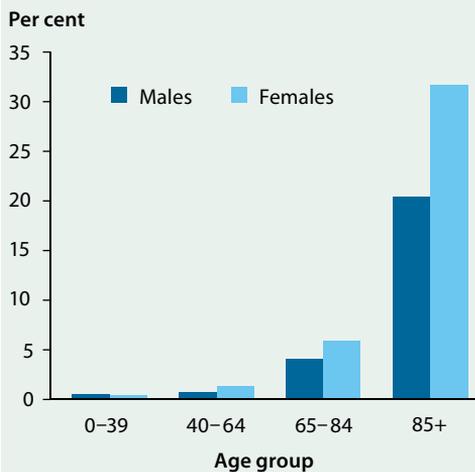
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## 3.16 Incontinence

Incontinence, or any involuntary leakage of urine or faecal matter, is a widespread condition that can affect people at any age. However, it is particularly common among older people, and both its prevalence and severity increase with age. The condition varies by type, cause, and associated risk factors (ICI 2013)—ranging, for example, from idiopathic childhood bedwetting, to having trouble with toileting due to dementia. In many cases it can be treated effectively through non-drug measures such as exercise, weight loss or lifestyle changes, or through medical treatments such as medications and surgery. However, for some people, incontinence is a severe chronic condition that requires personal assistance and/or continence aids to manage. As a result, incontinence can have a major effect on a person's physical and emotional health, and it places demands on both the health care system and on informal carers.

### Prevalence and management

**Figure 3.16.1: Prevalence of severe incontinence, by age and sex, 2012**



Source: AIHW analysis of the 2012 Survey of Disability, Ageing and Carers (ABS 2013).

Based on the 2012 Australian Bureau of Statistics Survey of Disability, Ageing and Carers, 1.8% of Australians (or 391,000 people with disability) experienced severe incontinence—determined by the need for assistance with bladder or bowel control, and/or the use of continence aids (ABS 2013). This increased by 24% (or 75,000 people) between 2009 and 2012. Severe incontinence was more common in women (2.2%) than in men (1.3%) in 2012 and, overall, prevalence increased with age (Figure 3.16.1). People aged 85 and over were more than 5 times as likely to experience severe incontinence as people aged 65–84 (28% compared with 5.0%).

Around 81% of people with severe incontinence 'always' or 'sometimes' needed assistance with their bladder

or bowel control. People also commonly use aids and equipment to manage their condition: 45% of people with severe incontinence used aids to go to the toilet (such as toilet frames or chairs), and 64% used continence aids (such as absorbent pads, briefs and pants). The Australian Government subsidises this through the Continence Aids Payment Scheme, which cost \$83.5 million in 2014–15.

## Risk factors

Urinary incontinence is commonly linked to pregnancy, childbirth and menopause. Other risk factors include constipation, prostate problems, impaired mobility and underlying neurological or musculoskeletal conditions (such as stroke, dementia, or arthritis), and other health and lifestyle issues (such as diabetes or cardiovascular disease; obesity or physical inactivity; developmental disorders; and food/water intake). Risk factors for fecal incontinence are similar, and the presence of urinary incontinence is associated with an increased risk of fecal incontinence (ICI 2013).

Some commonly used medications—such as anticholinergic agents, many psychopharmaceuticals and sedatives, and diuretics—also contribute to triggering or worsening incontinence.

Frail older people experience incontinence more than other population groups (ICI 2013), and incontinence is a risk factor for admission into residential aged care (ICI 2013; Pearson 2003). At 30 June 2014, 81% of women and 75% of men in permanent residential aged care had some degree of incontinence that was not self-managed. The majority of people (71% of women and 65% of men) were in the most dependent category, experiencing three or more episodes of incontinence a week that required assistance.

## What else do we know?

People commonly perceive incontinence as a normal or untreatable consequence of life events and age, and can experience shame, depression and reduced quality of life because of it (Coyne et al. 2013; Siddiqui et al. 2014). Fewer than one-third of people with incontinence seek medical attention for the condition (Avery et al. 2014). However, active diagnosis and management of incontinence may lead to the identification of a reversible or treatable cause (ICI 2013).

### What is missing from the picture?

The estimated severity and prevalence of incontinence vary across studies. This is partly due to differences in how incontinence—and its severity—are defined, identified and measured, and partly due to differences between the studied populations. To improve the accuracy and comparability of data, the AIHW has suggested a set of standard questions for collecting information on incontinence, which may be accessed at [Incontinence in Australia](#).

No comprehensive estimates of incontinence expenditure are available, and because incontinence is typically not the main condition for which people seek treatment, estimates of expenditure require more complex attribution of costs from different parts of the health system, including out-of-pocket costs.

### Where do I go for more information?

More information is available in the AIHW report [Incontinence in Australia](#). Information about support for people with incontinence and their carers can be found on the [bladderbowel.gov.au](http://bladderbowel.gov.au) and the [Continence Foundation of Australia](#) websites.

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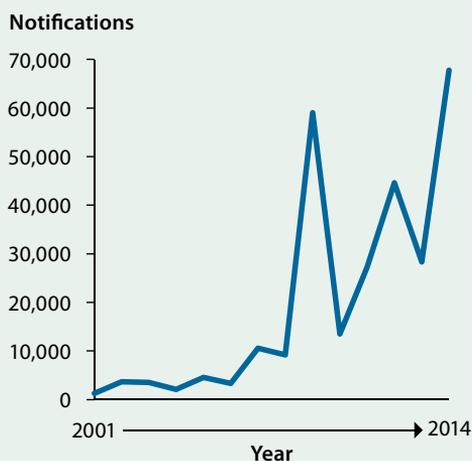
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## 3.17 Vaccine preventable disease

Vaccination is one of the most successful and cost-effective population health interventions. It can protect individuals from life-threatening diseases, and also reduces transmission in the community.

This snapshot looks at the most common notifiable vaccine preventable diseases (VPDs) in Australia. Notifiable diseases are medical conditions that are required to be reported by health practitioners or pathology laboratories to state or territory health authorities. Notifications data are presented for 2013 and 2014, and underlying causes of death data for 2013. Information on childhood vaccination is in 'Chapter 6.1 Prevention and health promotion'.

**Figure 3.17.1: Influenza notifications, Australia, 2001–2014**



Source: National Notifiable Diseases Surveillance System.

Note: Influenza was first added to the list of notifiable diseases in 2001 and data for that year is incomplete.

In 2014, about 275,600 notifications of more than 60 communicable conditions and diseases were made to the National Notifiable Diseases Surveillance System (NNDSS)—23% more than in 2013 (about 224,400) (NNDSS Annual Report Writing Group 2015b, forthcoming 2016) (Table 3.17.1).

More than one-third (about 101,400, or 37%) of the notifications in 2014 were for VPDs—a 70% increase on the 59,600 VPD cases notified in 2013 (27% of total notifications) (NNDSS Annual Report Writing Group 2015b, forthcoming 2016). Much of this was due to a rise in influenza notifications (see Figure 3.17.1).

It should be noted that influenza notifications can vary substantially from

year to year due to the variation in true disease incidence as well as the propensity to notify. Factors that influence variation in true disease incidence include the similarity of circulating strains to vaccine strains, and a person's age, level of immunity and any other chronic medical conditions they may have.

Notifications represent cases where a person has sought medical care, had a test performed, been given a diagnosis, and a notification has been made to health authorities. For all notifiable diseases, the number of notifications is influenced by a range of factors, including public awareness, individual behaviours of patients, and the testing and notification practices of medical practitioners. Changes to testing policies; preferential testing of high-risk populations; the use of less invasive and more sensitive diagnostic tests; periodic awareness campaigns and media coverage may all influence the number of notifications received. These factors are likely to vary by region and over time, and are difficult to quantify.

For most diseases, the cases notified to the NNDSS represent only a proportion of total cases that occur in the community.

## Impact of vaccine preventable diseases

- Several previously common VPDs have been eliminated or are now rare, including diphtheria (2 cases in 2014) and poliomyelitis (0 cases) (Table 3.17.1).
- Influenza was the most commonly notified VPD in 2014 (about 67,700 cases).
- In 2014, the varicella zoster virus, which causes chickenpox and shingles, was the next most commonly notified VPD (about 19,600 cases) after influenza.
- In 2013, there were 80 deaths recorded due to influenza, 32 due to the varicella zoster virus (29 of which were associated with cases of shingles), and 12 due to pneumococcal disease. This compares with 152 influenza deaths in 2012 (about 44,600 notifications), 26 shingles deaths (about 4,500 notifications) and 24 pneumococcal deaths (about 1,800 notifications) (ABS 2015; NNDSS Annual Report Writing Group 2015a). However, deaths and hospitalisations recorded as due to influenza are widely acknowledged to substantially underestimate the true number attributable to influenza, because the illness can exacerbate a range of other medical conditions, leading to hospitalisation or death (NCIRS 2010).

**Table 3.17.1: Most commonly notified vaccine preventable diseases, notifications 2013 and 2014, deaths 2013**

| Disease                                  | Notifications<br>2014 | Notifications<br>2013 | Deaths<br>2013    |
|--|-----------------------|-----------------------|-------------------|
| Influenza                                | 67,742                | 28,329                | 80                |
| Varicella zoster (total)                 | 19,658                | 16,986                | 32                |
| Pertussis                                | 11,863                | 12,341                | 2                 |
| Pneumococcal (invasive)                  | 1,564                 | 1,546                 | 12 <sup>(a)</sup> |
| Measles                                  | 340                   | 158                   | 1                 |
| Mumps                                    | 190                   | 217                   | 0                 |
| Haemophilus influenzae type b (invasive) | 21                    | 20                    | n.p.              |
| Rubella                                  | 17                    | 25                    | 0                 |
| Tetanus                                  | 3                     | 4                     | 1                 |
| Diphtheria                               | 2                     | 2                     | 0                 |
| Congenital rubella                       | 0                     | 2                     | 0                 |
| Poliomyelitis infection                  | 0                     | 0                     | 0                 |
| <b>Total</b>                             | <b>101,400</b>        | <b>59,630</b>         | <b>128</b>        |

n.p. not published.

(a) Deaths data is only for pneumonia due to *Streptococcus pneumoniae*.

Sources: ABS 2015; NNDSS Annual Report Writing Group 2015b, forthcoming 2016.

# Hospitalisations for vaccine preventable diseases

In 2013–14, there were nearly 12,000 hospitalisations due to vaccine preventable pneumonia (pneumonia due to *Streptococcus pneumoniae* and *Haemophilus influenzae*) and to influenza, and another 19,400 due to other VPDs. Hospitalisations are included in this analysis regardless of whether these diseases are the principal diagnosis or an additional diagnosis.

Some population groups had higher rates of hospitalisation per 1,000 population for vaccine preventable diseases than other Australians (AIHW 2015). For example rates were:



**6.3 per 1,000**  
for Indigenous  
Australians  
compared with  
0.9 per 1,000 for  
non-Indigenous  
Australians.



**7.2 per 1,000**  
in *Very remote*  
areas compared  
with 1.3 per 1,000  
in *Major cities*.



**2.0 per 1,000**  
in lowest  
socioeconomic areas  
compared with  
0.8 per 1,000  
in highest  
socioeconomic areas.

## What is missing from the picture?

Notifications of VPDs to the NNDSS represent only a portion of all the cases occurring in the community, as not all individuals with VPDs present for medical care, and of those who do, not all are tested and/or notified. The proportion of under-reporting may vary between diseases, over time, and across jurisdictions. The number of notifications may be influenced over time by changes in testing practices, for example, by an increased propensity to test and/or to use more sensitive diagnostic tests, and these changes may be influenced by both clinician practice and patient expectations.

## Where do I go for more information?

More information on VPDs is available at the [Department of Health](#) website. Information on immunisation is available from the [National Centre for Immunisation Research and Surveillance](#) website and the [Immunise Australia Program](#). Information on national notification data is available from the NNDSS pages of the [Department of Health](#) website. Information on deaths in Australia is available at the [AIHW](#) and [Australian Bureau of Statistics](#) websites.

To overcome the limitations of the notification data in describing the epidemiology of influenza, notification data are complemented by a number of systems within the National Influenza Surveillance Scheme. More information is available at: [www.health.gov.au/flureport](http://www.health.gov.au/flureport).

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# Chapter 4

## Determinants of health



## 4.0 Introduction

Determinants of health are factors that influence how likely we are to stay healthy or to become ill or injured. This chapter examines three key determinants of health: social determinants, biomedical risk factors and behavioural risk factors.

Many of the key drivers of health reside in our everyday living and working conditions—the circumstances in which we grow, live, work and age. These social determinants include factors such as income, education, employment and social support.

Social determinants can strengthen or undermine the health of individuals and communities. For example, in general, people from poorer social or economic circumstances are at greater risk of poor health than people who are more advantaged.

A person's health is also influenced by biomedical factors and health behaviours that are part of their individual lifestyle and genetic make-up. These factors can be positive in their effects (for example, being vaccinated against disease), or negative (for example, consuming alcohol at risky levels).

Biomedical risk factors such as high blood pressure can have a direct impact on illness and chronic disease. For example, in 2014–15, 23% of Australian adults had high blood pressure, which is a risk factor for stroke, coronary heart disease, heart failure and chronic kidney disease.

Behavioural risk factors such as tobacco smoking, risky alcohol consumption, using illicit drugs, not getting enough exercise and poor eating patterns can also have a detrimental effect on health.

Although there is a lot to celebrate about Australia's changing smoking and drinking behaviours, there are still areas of concern.

Some population groups are far more likely to smoke daily than the general population—for example, smoking rates are much higher among single parents with dependent children, and Aboriginal and Torres Strait Islander people are more likely to smoke than non-Indigenous Australians.

Although the overall volume of alcohol being consumed by Australians aged 15 and over has fallen to its lowest level in 50 years, some people still drink to excess, putting them at risk of short- and long-term adverse health effects.

This chapter also looks at illicit drug use, which contributes to substantial illness, disease and many deaths in Australia. It is estimated that about 2.9 million people aged 14 and over—15% of the population—are illicit drug users. The four most commonly used illicit drugs are cannabis, ecstasy, methamphetamine and cocaine.

# 4.1 Social determinants of health

Our health is influenced by the choices that we make—whether we smoke, drink alcohol, are immunised, have a healthy diet or undertake regular physical activity. Health prevention and promotion, and timely and effective treatment and care, are also important contributors to good health. Less well recognised is the influence of broader social factors on health (see ‘Chapter 1.1 What is health?’).

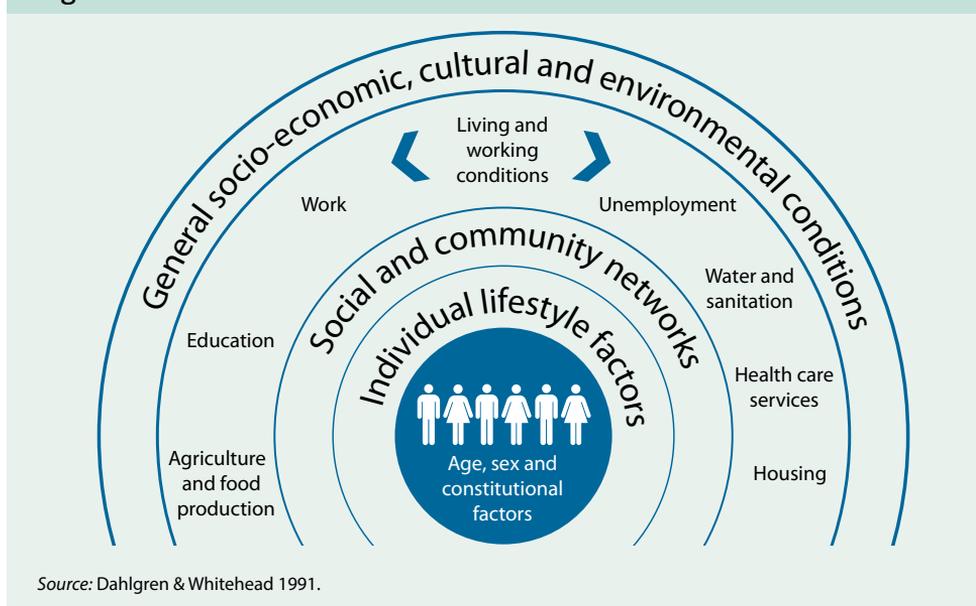
Evidence on the close relationship between living and working conditions and health outcomes has led to a renewed appreciation of how human health is sensitive to the social environment. Factors such as income, education, conditions of employment, power and social support act to strengthen or undermine the health of individuals and communities. Because of their potent and underlying effects, these health-determining factors are known as the ‘social determinants of health’ (Wilkinson & Marmot 2003).

The World Health Organization (WHO) has described social determinants as:

...the circumstances in which people grow, live, work, and age, and the systems put in place to deal with illness. The conditions in which people live and die are, in turn, shaped by political, social, and economic forces (CSDH 2008).

According to WHO, the social conditions in which people are born, live and work is the single most important determinant of good health or ill health. As factors that affect health, social determinants can be seen as ‘causes of the causes’—that is, as the foundational determinants which influence other health determinants. In keeping with this model, Figure 4.1.1 illustrates how social determinants extend inward to affect other factors, including health behaviours and biomedical factors that are part of a person’s individual lifestyle and genetic make-up.

Figure 4.1.1: A framework for determinants of health



Source: Dahlgren & Whitehead 1991.

The National Health Performance Framework also recognises the importance of social determinants to our health. The framework includes community and socioeconomic factors that relate to income, health literacy and educational attainment (see 'Chapter 7.1 Indicators of Australia's health').

The health advantages and disadvantages experienced by Australians are shaped by their broader social and economic conditions (see Box 4.1.1). Inequalities in health appear in the form of a 'social gradient of health', so that in general, the higher a person's socioeconomic position, the healthier they are.

Some health inequalities are attributable to external factors and to conditions that are outside the control of the individuals concerned. Inequalities that are avoidable and unjust—health inequities—are often linked to forms of disadvantage such as poverty, discrimination and access to goods and services (Whitehead 1992).

#### **Box 4.1.1: Ten facts about social determinants and health inequalities**

- The 20% of Australians living in the lowest socioeconomic areas in 2014–15 were 1.6 times as likely as the highest 20% to have at least two chronic health conditions, such as heart disease and diabetes (ABS 2015a).
- Australians living in the lowest socioeconomic areas lived about 3 years less than those living in the highest areas in 2009–2011 (NHPA 2013).
- If all Australians had the same death rates as people living in the highest socioeconomic areas in 2009–2011, overall mortality rates would have reduced by 13%—and there would have been 54,000 fewer deaths (AIHW 2014d).
- People reporting the worst mental and physical health (those in the bottom 20%) in 2006 were twice as likely to live in a poor-quality or overcrowded dwelling (Mallett et al. 2011).
- Mothers in the lowest socioeconomic areas were 30% more likely to have a low birthweight baby than mothers in the highest socioeconomic areas in 2013 (AIHW 2015a).
- A higher proportion of people with an employment restriction due to a disability lived in the lowest socioeconomic areas (26%) than in the highest socioeconomic areas (12%) in 2012 (AIHW analysis of ABS 2012 Survey of Disability, Ageing and Carers).
- Unemployed people were 1.6 times as likely to use cannabis, 2.4 times as likely to use meth/amphetamines and 1.8 times as likely to use ecstasy as employed people in 2013 (AIHW 2014e).
- Dependent children living in the lowest socioeconomic areas in 2013 were 3.6 times as likely to be exposed to tobacco smoke inside the home as those living in the highest socioeconomic areas (7.2% compared with 2.0%) (AIHW analysis of the 2013 National Drug Strategy Household Survey).
- People in low economic resource households spend proportionally less on medical and health care than other households (3.0% and 5.1% of weekly equivalised expenditure, respectively, in 2009–10) (ABS 2012).
- People living in the lowest socioeconomic areas in 2014–15 were more than twice as likely to delay seeing—or not see—a dental professional due to cost compared with those living in the highest socioeconomic areas (28% compared with 12%) (ABS 2015b).

# Key social determinants of health

The evidence gathered from the ways in which social, economic, political and cultural conditions create health inequalities has led to the identification of key social determinants of health and wellbeing (CSDH 2008; Wilkinson & Marmot 2003), including socioeconomic position, early life circumstances, social exclusion, social capital, employment and work, housing and the residential environment.

## Socioeconomic position



In general, people from poorer social or economic circumstances are at greater risk of poor health, have higher rates of illness, disability and death, and live shorter lives than those who are more advantaged (Mackenbach 2015). Generally, every step up the socioeconomic ladder is accompanied by an increase in health.

Historically, individual indicators such as education, occupation and income have been used to define socioeconomic position (Galobardes et al. 2006).

- **Educational attainment** is associated with better health throughout life. Education equips people to achieve stable employment, have a secure income, live in adequate housing, provide for families and cope with ill health by assisting them to make informed health care choices. An individual's education level affects not only their own health, but that of their family, particularly dependent children.
- **Occupation** has a strong link to position in society, and is often associated with higher education and income levels—a higher educational attainment increases the likelihood of higher-status occupations and these occupations often come with higher incomes.
- **Income** and wealth play important roles in socioeconomic position, and therefore in health. Besides improving socioeconomic position, a higher income allows for greater access to goods and services that provide health benefits, such as better food and housing, additional health care options, and greater choice in healthy pursuits. Loss of income through illness, disability or injury can adversely affect individual socioeconomic position and health (Galobardes et al. 2006).

## Early life



The foundations of adult health are laid in-utero and during the perinatal and early childhood periods (Lynch & Smith 2005). The different domains of early childhood development—physical, social/emotional and language/cognitive—strongly influence learning, school success, economic participation, social citizenry and health (CSDH 2008). Healthy physical development and emotional support during the first years of life provide building blocks for future social, emotional, cognitive and physical wellbeing. Children from disadvantaged backgrounds are more likely to do poorly at school, affecting adult opportunities for employment, income, health literacy and care, and contributing to intergenerational transmission of disadvantage. Investment in early childhood development has great potential to reduce health inequalities, with the benefits especially pronounced among the most vulnerable children (Heckman & Mosso 2014).

## Social exclusion



Social exclusion is a broad concept used to describe social disadvantage and lack of resources, opportunity, participation and skills (Hayes et al. 2008). Social exclusion may result from unemployment, discrimination, stigmatisation and other factors. Poverty; culture and language; and prejudices based on race, religion, gender, sexual orientation, disability, refugee status or other forms of discrimination limit opportunity and participation, cause psychological damage and harm health through long-term stress and anxiety. Social exclusion can damage relationships, and increase the risk of disability, illness and social isolation. Additionally, disease and ill health can be both products of, and contribute to, social exclusion.

## Social capital



Social capital describes the benefits obtained from the links that bind and connect people within and between groups (OECD 2001). The extent of social connectedness and the degree to which individuals form close bonds with relations, friends and acquaintances has been in some cases associated with lower morbidity and increased life expectancy (Kawachi et al. 1997), although not consistently (Pearce & Smith 2003). It can provide sources of resilience against poor health through social support which is critical to physical and mental wellbeing, and through networks that help people find work, or cope with economic and material hardship.

Social infrastructure—in the form of networks, mediating groups and organisations—is also a prerequisite for ‘healthy’ communities (Baum & Ziersch 2003).

The degree of income inequality within societies (the disparity between high and low incomes) has also been linked to poorer social capital and to health outcomes for some, although there is little evidence of consistent associations (Lynch et al. 2004).

## Employment and work



Unemployed people have a higher risk of death and have more illness and disability than those of similar age who are employed (Mathers & Schofield 1998). The psychosocial stress caused by unemployment has a strong impact on physical and mental health and wellbeing (Dooley et al. 1996). For some, unemployment is caused by illness, but for many it is unemployment itself that causes health problems through its psychological consequences and the financial problems it brings.

Rates of unemployment are generally higher among people with no or few qualifications or skills, those with disabilities or poor mental health, people who have caring responsibilities, those in ethnic minority groups or those who are socially excluded for other reasons (AIHW 2015b).

Once employed, work is a key arena where many of the influences on health are played out. Dimensions of work—working hours, job control, demands and conditions—have an impact on physical and mental health (Barnay 2015). Participation in quality work is health-protective, instilling self-esteem and a positive sense of identity, while also providing the opportunity for social interaction and personal development (CSDH 2008).

## Housing



Safe, affordable and secure housing is associated with better health, which in turn impacts on people's participation in work, education and the community. It also affects parenting and social and familial relationships (Mallet et al. 2011). There is a gradient in the relationship between health and quality of housing: as the likelihood of living in 'precarious' (unaffordable, unsuitable or insecure) housing increases health worsens. The relationship is also two-way, in that poor health can lead to precarious housing. Single parents and single people generally, young women and their children and older private renters are particularly vulnerable to precarious housing (AIHW 2015b; Mallet et al. 2011).

## Residential environment



The residential environment has an impact on health equity through its influence on local resources, behaviour and safety. Communities and neighbourhoods that ensure access to basic goods and services; are socially cohesive; which promote physical and psychological wellbeing; and protect the natural environment, are essential for health equity (CSDH 2008).

To that end, health-promoting modern urban environments are those with appropriate housing and transport infrastructure and a mix of land use encouraging recreation and social interaction.

## Measuring socioeconomic inequalities in health

Since social determinants are often pinpointed as a key cause of health inequalities, measuring the size of the health gap between different social groups is important. This provides essential information for policies, programs and practices which seek to address social determinants in order to reduce health gaps (Harper & Lynch 2006).

A common approach to measurement is to: (i) rank the population by socioeconomic position; (ii) divide the population into groups based on this ranking; and (iii) compare each group on health indicators of interest. To rank the population by socioeconomic position, factors such as education, occupation or income level are commonly used, although many other factors, such as housing, family structure or access to resources, can also be used. These factors closely reflect social conditions, such as wealth, education, and place of residence (WHO 2013a). Similar associations between socioeconomic position and health are generally found regardless of which factor is used.

Although individual measures of socioeconomic position are included in some health data sets, area-based measures can be calculated from most collections. An example is the Australian Bureau of Statistics (ABS) composite Index of Relative Socio-economic Disadvantage (IRSD), which is frequently used to stratify the population—see Box 4.1.2 for further details.

### Box 4.1.2: The Index of Relative Socio-economic Disadvantage

The IRSD is one of four indices compiled by the ABS using information collected in the Census of Population and Housing (ABS 2013). This index represents the socioeconomic conditions of Australian geographic areas by measuring aspects of disadvantage. The IRSD scores each area by summarising attributes of their populations, such as low income, low educational attainment, high unemployment, and jobs in relatively unskilled occupations. Areas can then be ranked by their IRSD score and are classified into groups based on their rank. Any number of groups may be used—five is common.

If five categories are used, then the IRSD commonly describes the population living in the 20% of areas with the greatest overall level of disadvantage as 'living in the lowest socioeconomic areas' or the 'lowest socioeconomic group'. The 20% at the other end of the scale—the top fifth—is described as the 'living in the highest socioeconomic areas' or the 'highest socioeconomic group'.

It is important to understand that the IRSD reflects the overall or average socioeconomic position of the population of an area; it does not show how individuals living in the same area might differ from each other in their socioeconomic position.

Often, the gap between the lowest and highest socioeconomic groups is of greatest interest. Simple differences in epidemiologic measures, such as rates and prevalences, can be used to examine this gap—and this gap can be *absolute* (for example, a difference in rates) or *relative* (for example, the ratio between two rates) (Harper et al. 2010).

Both absolute and relative measures help in understanding the differences in health status between the two groups. Absolute measures are important for decision makers, especially where goals in absolute terms have been set, since they allow a better appraisal of the size of a public health problem.

Simple measures generally use information from only two socioeconomic groups—the lowest and highest—and ignore the middle groups. More complex measures use information from all groups to measure the magnitude of socioeconomic inequalities in health (WHO 2013a).

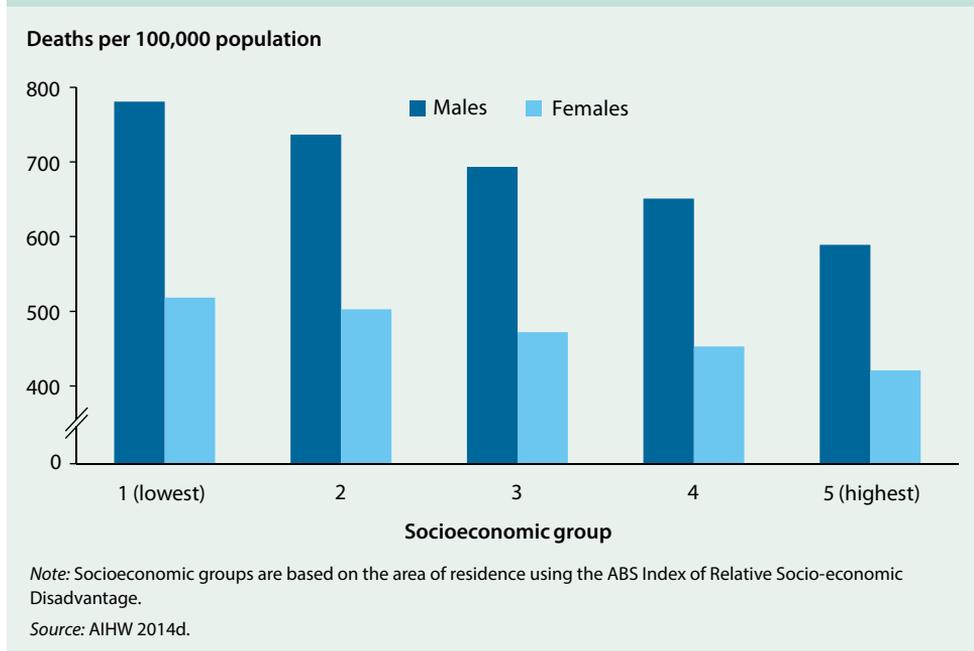
Although complex measures include information on both the magnitude of inequality and the total population distribution of inequality, they are restricted by the types of data that can be used, and by their ease of interpretation.

## The social gradient in health

There is clear evidence that health and illness are not distributed equally within the Australian population. Variations in health status generally follow a gradient, with overall health tending to improve with improvements in socioeconomic position (Kawachi et al. 2002).

One example is mortality (Figure 4.1.2). In 2009–2011, the female mortality rate was 518 deaths per 100,000 population in the lowest socioeconomic areas, compared with 503 in the second group, 472 in the third, 453 in the fourth, and 421 in the highest socioeconomic areas—with a 23% difference in mortality rates between the highest and lowest areas. For males, the effect was similar, with an even greater inequality (33%) between the highest and lowest areas (AIHW 2014d).

**Figure 4.1.2: The social gradient in Australian mortality, 2009–2011**

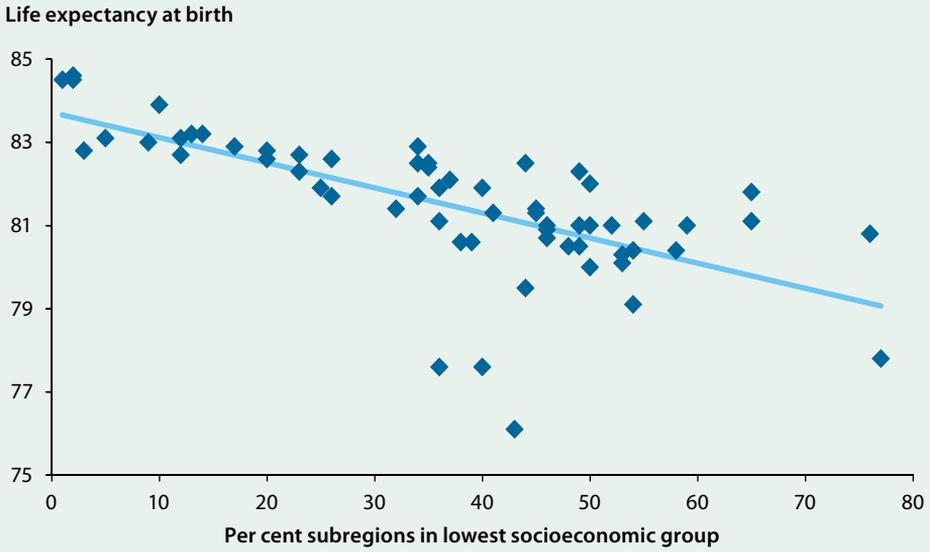


The gradient in mortality affects life expectancy. People living in the lowest socioeconomic areas generally have lower life expectancies (Figure 4.1.3). In 2009–2011, a baby born in a region where only 10% of the subregions were in the lowest socioeconomic group could, on average, expect to live to 83 years, whereas a baby born in a region where 70% of the subregions were in the lowest socioeconomic group could expect to live to 79 years.

The gradient is apparent even at young ages. Figure 4.1.4 illustrates the relationship between social exclusion and health outcomes among Australian children. Children at higher risk of social exclusion—measured using an index of socioeconomic circumstances, education, connectedness, housing and health service access—had higher rates of avoidable deaths (that is, deaths which were potentially preventable or treatable within the present health system) (AIHW 2014c).

The social gradient also extends to types of health care coverage (Figure 4.1.5). People living in the lowest socioeconomic areas report much lower rates of private health insurance than those living in the highest socioeconomic areas (33% compared with 80% in 2011–12). Related to this, people living in lower socioeconomic areas were more likely to be covered by other schemes such as government health concession cards, reflecting the greater proportion receiving pensions and other income support in these areas. This pattern is not surprising, given government policy and incentives to encourage people with higher incomes to contribute more to the costs of their care, including through the purchase of private health insurance (ABS 2010).

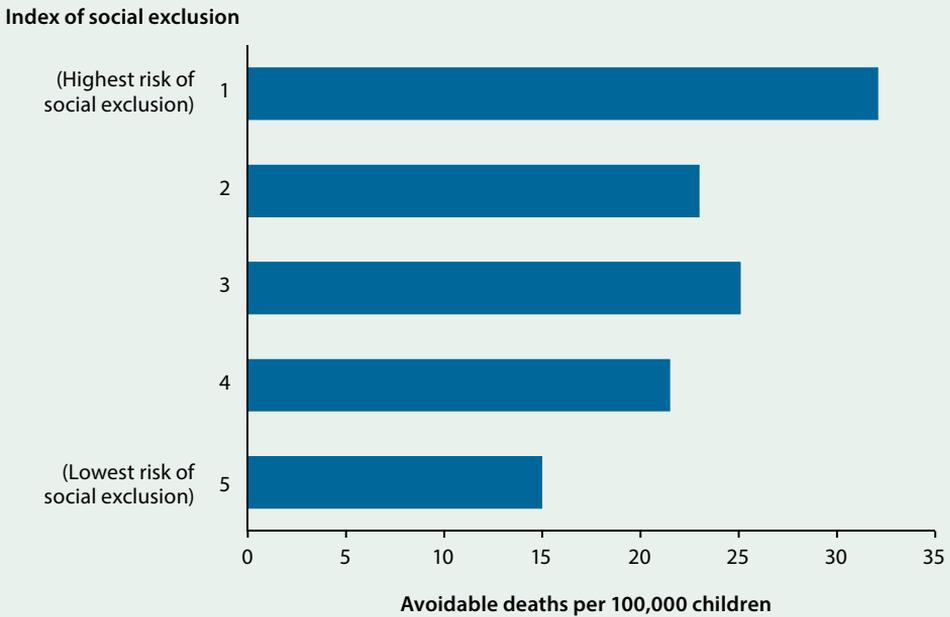
**Figure 4.1.3: Proportion of health subregions in the lowest socioeconomic group and life expectancy at birth, 2009–2011**



*Note:* Each point represents a Medicare Local administrative health region. These consist of smaller subregions based on ABS Statistical Areas Level 1 (SA1), which were classified using the ABS Index of Relative Socio-economic Disadvantage. The line through the scatterplot is based on regression analysis which has been used to determine the best fit through the observed data.

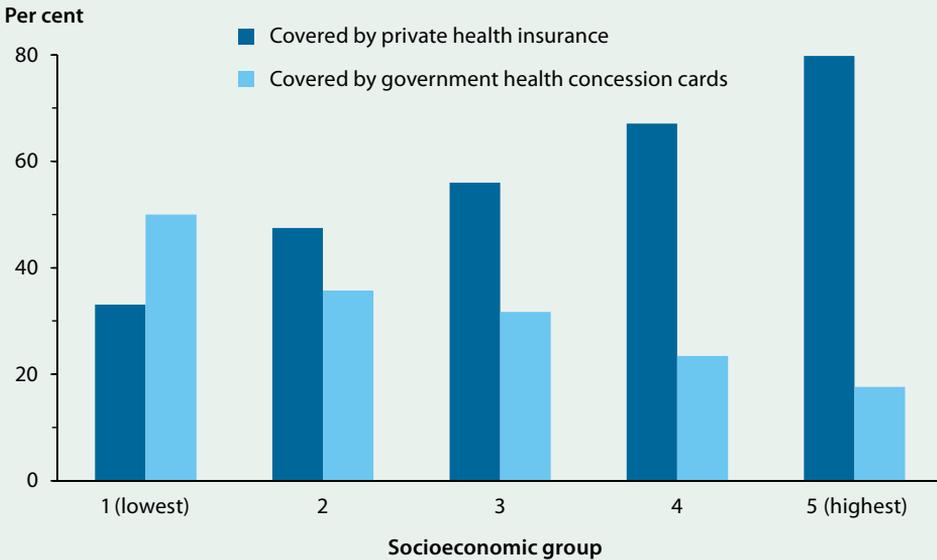
*Source:* NHPA 2013, based on ABS Causes of Death and Life Tables 2009–2011.

**Figure 4.1.4: Estimated rate of avoidable deaths of children aged 0–15, by index of social exclusion, 2007**



*Source:* AIHW 2014c.

**Figure 4.1.5: Coverage with private health insurance and government health concession cards, by socioeconomic group, 2011–12**



Source: AIHW analysis of ABS 2011–12 Australian Health Survey.

The social gradient in health can also be seen in differing rates for many health risk factors; in the prevalence of many chronic diseases and conditions; in the need for doctor visits; in hospitalisation; and in the use of other health care services (AIHW 2014a, 2014b, 2015c; De Vogli et al. 2007).

The gradient also exists within population groups, including among Aboriginal and Torres Strait Islander Australians (see 'Chapter 4.2 Social determinants of Indigenous health'), and minority groups such as people from non-English speaking backgrounds and refugees (Shepherd et al. 2012; Wilkinson & Marmot 2003). The social gradient effects can start from birth and persist throughout life, through adulthood and into old age, often extending to the next generation. This tends to entrench differences in health and wellbeing across the population. The gradient is a global phenomenon affecting all countries, regardless of whether they are low-, middle- or high-income countries (CSDH 2008).

## Better health through action on social determinants

Action on the social determinants of health is often seen as the most appropriate way to address health inequalities, with the prospect of better health for all across the entire social gradient (CSDH 2008). One study has estimated that half a million Australians could be spared chronic illness, \$2.3 billion in annual hospital costs saved, and Pharmaceutical Benefits Scheme prescriptions cut by 5.3 million, if the health gaps between the most and least disadvantaged were closed (Brown et al. 2012).

In 2008, the WHO Commission on Social Determinants of Health made recommendations on what is required to close the health gap through action on social determinants (CSDH 2008). WHO suggested that countries adopt a 'whole-of-government' approach to address the social determinants of health, with policies and interventions from all sectors and levels of society—for example, transport and housing policies at the local level; environmental, educational, and social policies at the national level; and financial, trade, and agricultural policies at the global level (WHO 2011).

The United Kingdom and the WHO Regional Office for Europe have both conducted reviews of political action required to narrow health inequalities (Marmot 2010; WHO 2013b). In Australia, a major focus has been on closing the gap in Indigenous health (see 'Chapter 5 Health of population groups').

Barriers remain, however, in adopting a social determinants approach. Despite strong evidence and an imperative to tackle health inequities, the complex nature of social determinants continues to challenge conventional policy-making and action (Baum et al. 2013; Carey et al. 2014).

## What is the AIHW doing?

Socioeconomically disadvantaged people are a priority population for health monitoring. The AIHW routinely uses available measures, such as the IRSD, to assess and report the health outcomes of socioeconomic groups, and it investigates, where possible, which factors contribute to observed inequalities.

The Closing the Gap Clearinghouse at the AIHW has produced a number of reports that discuss how social determinants influence Aboriginal and Torres Strait Islander health outcomes, and how these determinants are associated with the health gap (AIHW 2015d).

The AIHW is seeking to expand its use of health and welfare data to further understand how social factors influence health.

## What is missing from the picture?

Social determinants of health act through complex and multidirectional pathways. Research is focusing on better understanding the causal links between social determinants and health outcomes, and on which policies might lead to better health outcomes. Across all key determinants, evaluation of programs and interventions to identify successes in reducing inequalities is important.

Data availability and analytical constraints limit the monitoring of social determinants and the evidence needed for policy development. The extension of reporting to include variables such as ethnicity, culture and language, social support and the residential environment would provide a more robust picture of socioeconomic position. There is also scope for linking health and welfare data to provide a broader and more comprehensive understanding of the effects of social determinants. Additional longitudinal data would also enable improved monitoring of gaps and gradients in health inequalities.

## Where do I go for more information?

Many AIHW reports include analysis of health indicators based on socioeconomic position, for example, [Mortality inequalities in Australia 2009–2011](#).

For more information about disadvantage and social inequalities, see the AIHW report [Australia's welfare 2015](#).

The World Health Organization has a leading role in supporting countries to take action on the social determinants of health to address health inequities:

[http://www.who.int/social\\_determinants/en/](http://www.who.int/social_determinants/en/).

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## 4.2 Social determinants of Indigenous health

The social determinants of health refer to the close relationship between health outcomes and the living and working conditions that define the social environment. The previous article ('4.1 Social determinants of health') reviewed a wide range of social factors that influence health. One particular well-documented aspect of this relationship is the special role played by income and other related indicators of material affluence and socioeconomic position, such as education and occupation. That is the focus of this snapshot in the context of Indigenous health outcomes.

The social determinants of health related to socioeconomic position help to explain both the gaps in the average health status of Indigenous and non-Indigenous Australians, and also the wide variation observed in the health outcomes within the Indigenous population.

People with higher incomes live longer and have better health, on average, than do people with lower incomes. This relationship is a key component of the overall socioeconomic 'gradient' in health status (the strong association between health outcomes and socioeconomic position), and is regularly observed across countries and within the population subgroups of a country (CSDH 2008). This strong link occurs not just with higher levels of income but with a wide range of characteristics that denote a person's socioeconomic position, including educational attainment, employment and occupation. The higher the socioeconomic position, the better the health status on average. The gradient is not limited just to comparisons between the lowest and highest parts of the socioeconomic distribution, but is evident across the whole distribution (Case et al. 2002).

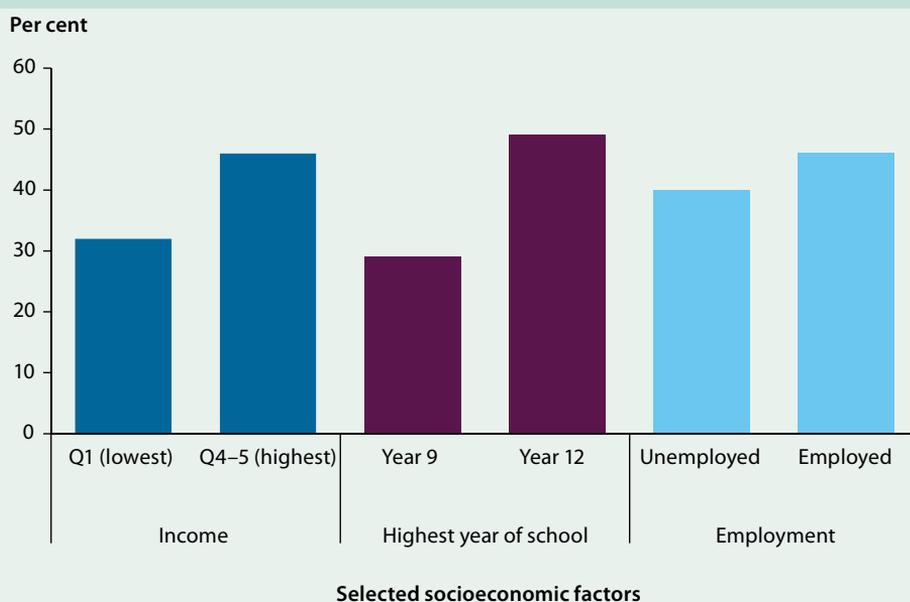
### Contribution of social determinants to the Indigenous health gap

Previous studies have shown the importance of social determinants in understanding and addressing the health gap between Aboriginal and Torres Strait Islander Australians and non-Indigenous Australians (Booth & Carroll 2008; DSI Consulting 2009; Marmot 2011; Zhao et al. 2013). This was also confirmed by AIHW analyses on 'The size and causes of the Indigenous health gap' published in *Australia's health 2014* (AIHW 2014). These studies found that between one-third and one-half of the health gaps between Indigenous and non-Indigenous Australians are associated with differences in socioeconomic position (AHMAC 2015).

### Socioeconomic position and self-assessed health within the Indigenous population

Differences in social determinants can also explain a large part of the differences in health status within the Indigenous population. Indigenous Australians who are in the lowest income group, have a lower level of educational attainment or who are unemployed, are less likely to be in 'excellent' or 'very good' health (based on self-reported survey data) than those in the higher income groups, those with high educational attainment, or those who are employed (Figure 4.2.1).

**Figure 4.2.1: Indigenous Australians reporting ‘excellent’ or ‘very good’ self-assessed health status, by selected socioeconomic factors, 2012–13**



Note: Q1–Q5 refer to income quintiles.

Source: AHMAC 2015.

## Socioeconomic position and behavioural risk factors

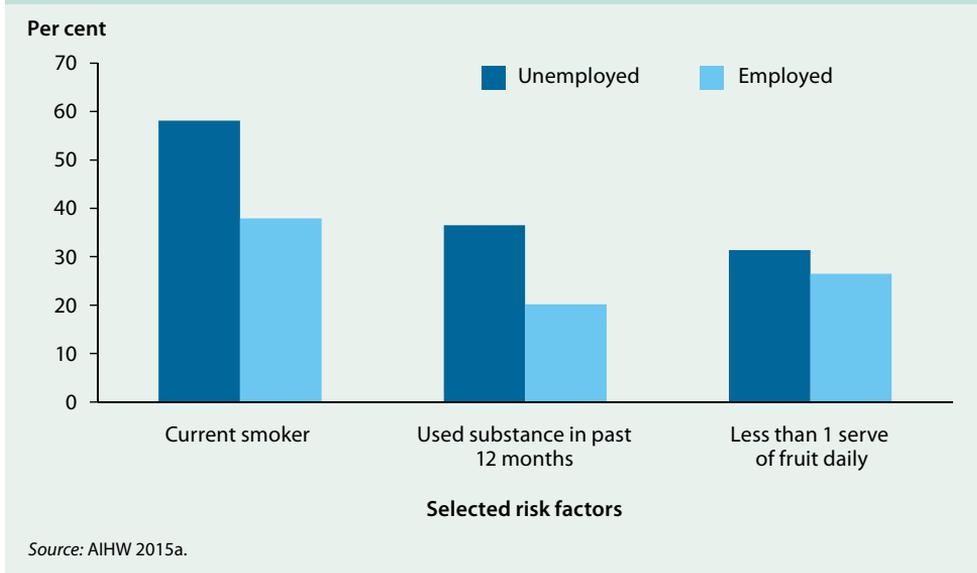
The socioeconomic gradient in health status also occurs because rates of risky health behaviours are usually higher among individuals in low socioeconomic positions. One example of this relationship is the difference in behavioural risk factors associated with employment status. Indigenous Australians who are unemployed face a higher risk of poor health through higher rates of smoking, substance use and dietary behaviour (such as lower level of daily fruit consumption) compared with Indigenous Australians who are employed (Figure 4.2.2). A counter-example of a risk factor that has a higher prevalence among employed Indigenous adults is being overweight or obese.

## Socioeconomic gradient has an early start

The socioeconomic gradient in health starts early. Children in households with higher income have better health from an early age, and in many countries this relationship becomes more pronounced as children get older (Case et al. 2002).

There is limited direct evidence specifically for Indigenous children in Australia on the origins and trajectories of the gradient in health; but one proxy indicator—low birthweight—highlights the early start to socioeconomic disadvantage in health for many Indigenous children.

**Figure 4.2.2: Selected risk factors, by employment status, Indigenous Australian adults, 2012–13**



AIHW analyses of the National Perinatal Data Collection show that:

- in 2013, babies born to Indigenous mothers were twice as likely to be of low birthweight as babies born to non-Indigenous mothers (12.2% compared with 6.1%) (see 'Chapter 5.2 Trends and patterns in maternal and perinatal health')
- the proportion of low birthweight babies born to Indigenous mothers in 2013 was higher in *Very remote* areas (14% in 2013) than in non-remote areas (12%)
- the proportion of low birthweight babies born to non-Indigenous mothers does not increase with remoteness as it does for Indigenous mothers, suggesting that greater social disadvantage of Indigenous families in remote areas could be an important factor behind the higher proportion of Indigenous low birthweight babies in remote areas
- the overall proportion of low birthweight babies born to Indigenous mothers fell slightly, from 12.7% in 2000 to 12.2%, in 2013 (AIHW 2015a, 2015b).

### What is missing from the picture?

The relationship between health status and its social determinants can be complex. Social determinants can also influence other determinants of health, such as health behaviours and access to health services. More detailed longitudinal analysis is required. Previous analyses mainly sought to explain the health gaps between Indigenous and non-Indigenous Australians. Less is known about the role of socioeconomic factors in explaining differences in the health status among Indigenous Australians, including the health status of specific subgroups, such as Indigenous Australians with a disability.

## Where do I go for more information?

More information on the social determinants of Indigenous health in Australia and other related health issues is available at <http://www.aihw.gov.au/closingthegap/>.

The report [Australia's mothers and babies 2013](#) has more detailed data on low birthweight babies and other outcomes for Indigenous and non-Indigenous babies.

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## 4.3 Biomedical risk factors

Biomedical risk factors are bodily states that can contribute to the development of chronic disease. Abnormal levels of the three biomedical factors in this snapshot—blood pressure, blood lipids and blood glucose—pose direct and specific risks to health.

Biomedical risk factors may also be influenced by behavioural risk factors. For example, a high blood cholesterol level (biomedical) may be the result of a diet high in saturated fats (behavioural). The effects of individual biomedical risk factors on a person's health can also be amplified when other behavioural or biomedical risk factors are present. The longer a person lives with one or more risk factors, the greater the risk to their overall health and wellbeing.

The latest risk factor results have been sourced from the Australian Bureau of Statistics (ABS) 2014–15 National Health Survey and the biomedical component of the ABS 2011–12 Australian Health Survey (ABS 2013, 2015).

### High blood pressure

Blood pressure is the force exerted by blood on the wall of the arteries. High blood pressure—also known as hypertension—is a risk factor for chronic diseases including stroke, coronary heart disease, heart failure and chronic kidney disease (see 'Chapter 3 Leading causes of ill health').

Poor diet (especially high salt intake), overweight and obesity, excessive alcohol consumption and physical inactivity can all contribute to high blood pressure. People with high blood pressure may be able to control their condition with lifestyle changes that reduce these risk factors, or they may require medication.

In 2014–15, 23% of adults, or 4.1 million people, had measured high blood pressure, excluding those taking medication.

- High blood pressure was more common in men (24%) than in women (22%)—except among people aged 75 and over (51% in women and 42% in men).
- The proportion with high blood pressure increased with age, from 6% for people aged 18–24 years to 47% for people aged 75 and over.
- In 2011–12, 11% of adults, or 1.5 million people, managed their high blood pressure through medications.



*Note:* High blood pressure is defined as systolic/diastolic blood pressure equal to or greater than 140/90 mmHg. The usual definition for the proportion of the population with high blood pressure generally includes people on blood pressure medication. These data were not available from the ABS 2014–15 National Health Survey for inclusion in this report.

The prevalence of high blood pressure is even greater among people with specific conditions. For example, in 2011–12, 77% of people with diabetes and 59% of people with chronic kidney disease had high blood pressure.

# Dyslipidaemia

Dyslipidaemia—abnormal levels of blood lipids such as cholesterol and triglycerides—can contribute to the development of atherosclerosis, a build-up of fatty deposits in the blood vessels that may lead to the development of cardiovascular disease. Dyslipidaemia is a risk factor for chronic diseases such as coronary heart disease and stroke. People with dyslipidaemia are encouraged to adopt a healthy lifestyle through a balanced diet and sufficient physical activity, and may also be treated using lipid-modifying medications such as statins.



In 2011–12, 63% of adults or 8.5 million Australians had dyslipidaemia. Of these:

- 33% had high total cholesterol
- 33% had high LDL ‘bad’ cholesterol
- 23% had low HDL ‘good’ cholesterol.

Dyslipidaemia increased with age, to a peak of 81% in people aged 65–74 and then declined. Eighty-nine per cent of people with measured dyslipidaemia (7.6 million people) were not using lipid-modifying medication.

*Note:* Dyslipidaemia is defined as having either total cholesterol  $\geq 5.5$  mmol/L, LDL cholesterol  $\geq 3.5$  mmol/L, HDL cholesterol  $< 1.0$  mmol/L for men and  $< 1.3$  mmol/L for women, triglycerides  $\geq 2.0$  mmol/L, or taking lipid-modifying medication.

The prevalence of dyslipidaemia is even greater among those with specific conditions. In 2011–12, 86% of people with diabetes and 78% of people with cardiovascular disease had dyslipidaemia.

## Impaired glucose regulation

Impaired glucose regulation is a characteristic of pre-diabetes, a condition in which blood glucose levels are higher than normal, although not high enough to be diagnosed with type 2 diabetes. Impaired fasting glucose (IFG)—the presence of higher than usual levels of glucose in the blood after fasting—is one of two measures that are used to define impaired glucose regulation, the other being impaired glucose tolerance (IGT).

People who have IFG and IGT are at risk for the future development of diabetes and cardiovascular disease (see ‘Chapter 3.7 Diabetes’ and ‘Chapter 3.5 Coronary heart disease’). Lifestyle changes incorporating increased physical activity and healthy eating can slow the progression of IFG to diabetes.



In 2011–12, 3.1% of adults or 416,000 Australians had IFG.

- IFG was more common in men (4.1%) than women (2.1%).
- IFG increased with age, to 7.5% in people aged 75 and over.

*Note:* Impaired fasting glucose is defined as a fasting plasma glucose level ranging from 6.1 mmol/L to less than 7.0 mmol/L.

The prevalence of IFG is even greater among those with specific conditions. In 2011–12, 5.9% of people with cardiovascular disease and 4.6% of people with chronic kidney disease had IFG.

## What is missing from the picture?

There is limited national data to measure progress and monitor trends in some biomedical risk factors. Future collections measuring dyslipidaemia and impaired glucose regulation will be needed to provide updated data on these risk factors and to determine trends in the Australian population.

## Where do I go for more information?

More information on these biomedical risk factors is available on the AIHW website [www.aihw.gov.au/risk-factors](http://www.aihw.gov.au/risk-factors).

The report [\*Cardiovascular disease, diabetes and chronic kidney disease—Australian facts: risk factors\*](#) and other recent publications can be downloaded for free.

## References

ABS (Australian Bureau of Statistics) 2013. Australian Health Survey: biomedical results for chronic diseases, 2011–12. ABS cat. no. 4364.0.55.005. Canberra: ABS.

ABS 2015. National Health Survey: first results, Australia, 2014–15. ABS cat. no. 4364.0.55.001. Canberra: ABS.

## 4.4 Overweight and obesity

Overweight and obesity refers to abnormal or excessive fat accumulation which presents health risks. It generally arises from a sustained energy imbalance when energy intake through eating and drinking exceeds energy expended through physical activity.

Being overweight or obese increases the risk of chronic diseases such as cardiovascular disease (including heart disease and stroke), type 2 diabetes, musculoskeletal conditions, some cancers and mental health conditions. Mortality risk also increases progressively as weight increases, with being obese presenting greater health risks than being overweight. Weight loss can help reduce the incidence and severity of many chronic conditions.

### Who is overweight or obese?

- In 2014–15, an estimated 11.2 million adults (63%) were overweight or obese—6.3 million (35%) were overweight and 4.9 million (28%) were obese. One in 4 children aged 5–17 (27%, or 1 million) were overweight or obese (ABS 2015).
- Overweight and obesity was greater among men (71%) than women (56%), and increased with age from 39% of people aged 18–24 to 74% for those aged 65–74.
- Adults living in the lowest socioeconomic areas were more likely to be overweight or obese than those in the highest socioeconomic areas (66% compared with 58%).
- Overweight and obesity was more common among Indigenous adults, especially rates of obesity (43% compared with 27% for non-Indigenous adults in 2011–13).

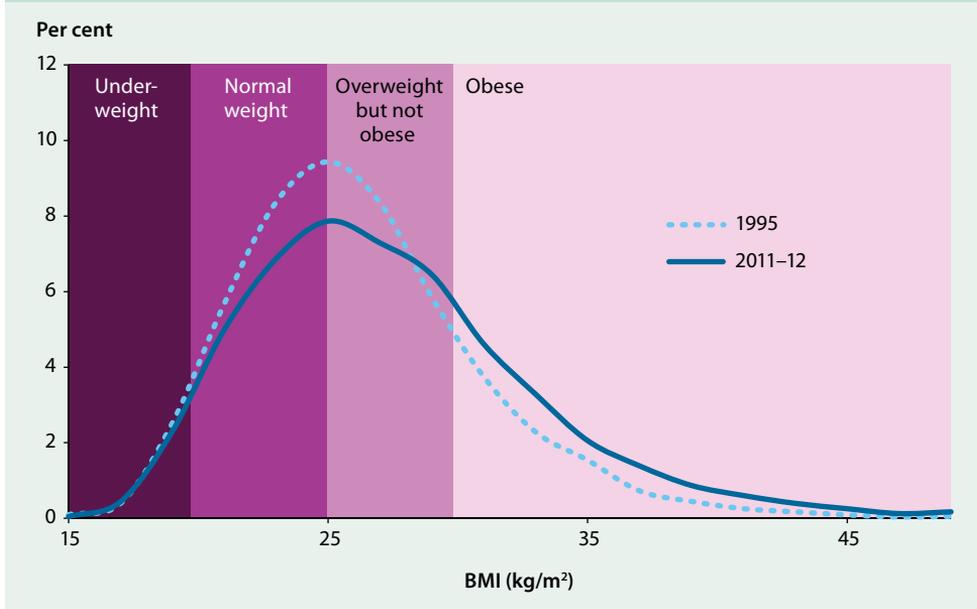
### Trends in overweight and obesity

- The proportion of overweight or obese adults increased from 56% to 63% between 1995 and 2014–15. Average weights increased by 4.4kg for both men and women.
- There has been a shift in the distribution of body mass index (BMI), with fewer people in the 'normal' or 'overweight' category and more people in the 'obese' category (Figure 4.4.1).

### Factors influencing overweight and obesity

The main factors influencing overweight and obesity are poor diet and inadequate physical activity. As well as being important components in weight management, a healthy diet and regular physical activity also assist in preventing chronic diseases such as heart disease, stroke, type 2 diabetes and colorectal cancer.

**Figure 4.4.1: Distribution of body mass index, people aged 18 and over, 1995 and 2011–12**



Minimal consumption of discretionary foods—foods and drinks not necessary to provide the nutrients the body needs, and often high in saturated fats, sugars, salt and/or alcohol—and sufficient consumption of fruit and vegetables (recommended intake of 2 and 5–6 serves per day, respectively) are good indicators of a healthy diet (NHRMC 2013).

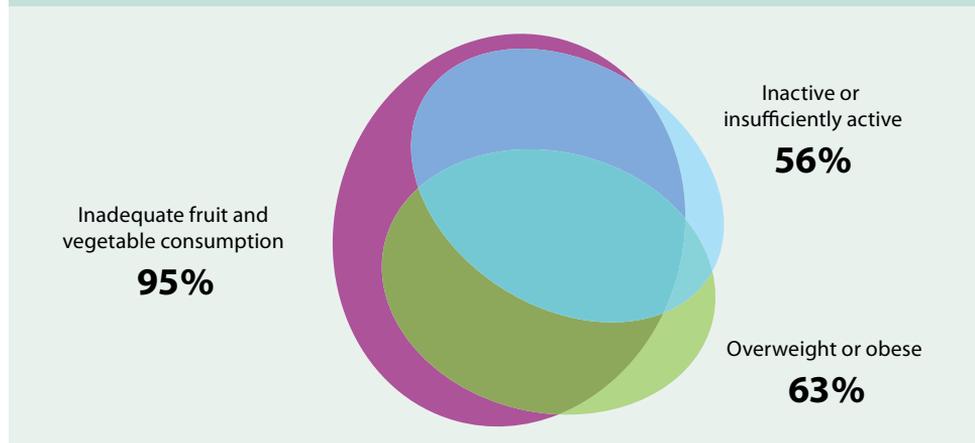
- In 2014–15, 93% of adults did not eat five serves of vegetables, and 50% did not eat two serves of fruit per day (ABS 2015).
- Discretionary foods contributed 35% of energy intake for adults, and 39% for children and young people aged 2–18 in 2011–12 (ABS 2014).

For adults aged 18–64, the recommended minimum level of activity for health benefits is 150 minutes of moderate intensity physical activity or 75 minutes of vigorous intensity physical activity, or an equivalent combination of both, each week (Department of Health 2014).

- Almost half of adults aged 18–64 (45%) were inactive or insufficiently active for health benefits in 2014–15, with rates higher among women (47%) than men (42%) (ABS 2015).
- The proportion of the population inactive or insufficiently active increased with age in 2014–15, from 40% for those aged 18–24 to 59% for those aged 65 and over.
- Among children and young people aged 5–17 years in 2011–12, 80% did not meet physical activity recommendations on all 7 days of the week. Rates increased from 64% for those aged 5–8 to 94% for those aged 15–17 (ABS 2013).

The combination of overweight or obesity, poor dietary intake and/or insufficient physical activity further increases the risk of chronic disease. In 2011–12, most adults who were overweight or obese were also inactive or insufficiently active, and/or had inadequate fruit and vegetable consumption (Figure 4.4.2). Almost one-third (31%) of adults had all three risk factors. This increased to over half (54%) for those with diabetes and 42% for those with cardiovascular disease.

**Figure 4.4.2: Graphical representation of the overlap between selected risk factors for chronic disease, people aged 18 and over, 2011–12**



### What is missing from the picture?

Better data are needed to monitor trends in overweight and obesity among particular groups over time, especially children. Longitudinal research into factors associated with overweight and obesity, such as changing patterns of health, nutritional status, vulnerable populations and education could provide further public health benefits for Australians.

Regular data on food, nutrition and physical activity will inform policy development and resource investment, and assist in evaluation and monitoring. Some data used to report on these aspects are self-reported and may be prone to under-reporting; exploring ways to obtain additional measured data could eliminate some of this bias.

### Where do I go for more information?

For more information on overweight and obesity, nutrition and physical activity, refer to [www.aihw.gov.au/overweight-and-obesity](http://www.aihw.gov.au/overweight-and-obesity) and [www.aihw.gov.au/food-and-nutrition](http://www.aihw.gov.au/food-and-nutrition).

The following reports are available for free download: [Cardiovascular disease, diabetes and chronic kidney disease—Australian facts: risk factors](#); [Risk factors contributing to chronic disease](#) and [Australia's food and nutrition 2012](#).

### References

- ABS (Australian Bureau of Statistics) 2013. Australian Health Survey: physical activity, 2011–12. Cat. no. 4364.0.55.004. Canberra: ABS.
- ABS 2014. Australian Health Survey: nutrition first results—foods and nutrients, 2011–12. Cat. no. 4364.0.55.007. Canberra: ABS.
- ABS 2015. National Health Survey: first results, 2014–15. Cat. no. 4364.0.55.001. Canberra: ABS.
- Department of Health 2014. Australia's physical activity and sedentary behaviour guidelines. Canberra: Department of Health. Viewed September 2015, <<http://www.health.gov.au/internet/main/publishing.nsf/Content/pasb>>.
- NHMRC (National Health and Medical Research Council) 2013. Australian dietary guidelines. Canberra: NHMRC.

## 4.5 Illicit drug use

### Introduction

Drug use is a serious and complex issue, which contributes to substantial illness, disease and injury, many deaths, social and family disruptions, workplace concerns, violence and to crime and community safety issues (MCDS 2011). The misuse of licit and use of illicit drugs is widely recognised in Australia as a major health problem, and one with wider social and economic costs (Collins & Lapsley 2008). While illicit drug use is a significant issue in the context of Australia's health, tobacco continues to cause more ill health and premature death than any other drug, and alcohol-related hospital separations are higher than those related to illicit drugs (including heroin, cannabis, methamphetamine and cocaine) (Roxburgh and Burns 2013).

Illicit drug use contributed to 1.8% of the total burden of disease and injury in Australia in 2011. This included the impact of injecting drug use and cocaine, opioid, amphetamine and cannabis dependence. Globally, illicit drug use contributed 0.8% of the total burden of disease in 2010 and has increased since 1990—moving from the 18th to 15th ranking risk factor (IHME 2014). It is estimated that illicit drug use costs the Australian economy \$8.2 billion annually through crime, productivity losses and health care costs (Collins & Lapsley 2008).

Illicit drug use is associated with many risks of harm to the user and to their family and friends. It has both short-term and long-term health effects, which can be severe, including poisoning, heart damage, mental illness, self-harm, suicide and death (NRHA 2015).

The first part of this article profiles illicit drug use and looks at the four most commonly used illegal drugs. As there is currently a substantial community and policy interest in the use and effects of 'ice,' (see Box 4.5.1) the second part of this article focuses in more detail on methamphetamine and explores recent trends in availability, use and treatment, and highlights the current evidence about this drug.

### What do we know about the prevalence of illicit drug use?

According to the 2013 National Drug Strategy Household Survey (NDSHS), around 2.9 million people in Australia aged 14 and over were estimated to have used illicit drugs in the previous 12 months, and 8 million were estimated to have done so in their lifetime (AIHW 2014b). Both nationally and internationally, the proportion of people using illicit drugs has remained relatively stable over the last 10 years—around 15% of adults in Australia, and around 5% of the global adult population (AIHW 2014a; UNODC 2015).

However, over time, changes occur in the use of specific drugs, in the forms of drugs used and in the way drugs are taken. In Australia, changes in the use of methamphetamine have been one area of increasing concern among the community (see Box 4.5.1).

### Box 4.5.1: Strategies, legislation and other activities

Since 1985, the National Drug Strategy (NDS) has provided an overarching framework for a consistent and coordinated approach to addressing licit and illicit drug use in Australia. The NDS is guided by the principle of harm minimisation. Harm minimisation encompasses three components (pillars): demand reduction, supply reduction and harm reduction. The aim of the NDS is to prevent the uptake and misuse of drugs and to reduce the production and supply of illicit drugs and the negative social, economic and health consequences of drug use. The NDS also continues to support and develop essential partnerships between the law enforcement, health and non-government sectors, communities, and all levels of government (MCDS 2011).

Research undertaken by the Drug Policy Modelling Program revealed that Australian governments spent approximately \$1.7 billion in 2009–10 on illicit drug programs and estimated that 64% was spent on law enforcement, 22% on treatment, 9.7% on prevention and 2.2% on harm reduction (Ritter et al. 2013).

The NDS recognises illicit drug use as a health and social issue, while acknowledging the role of law enforcement in detecting and deterring drug-related crime. Legislative and regulatory provisions relating to illicit drugs, precursor chemicals and proceeds of crime exist at the national level (for example, border protection and compliance), but most action (including expenditure) in relation to illicit drugs rests with the states and territories (Ritter et al. 2013).

Many national initiatives are implemented under the NDS, including the National Drugs Campaign. This is a media campaign aimed at reducing illicit drug use among young Australians, by increasing their knowledge of the negative consequences of drug use. The campaign has been running since 2001 and the focus varies, depending on trends in drug use and emerging drugs. The most recent campaign focused on crystal methamphetamine (Department of Health 2015).

#### **The National Ice Taskforce**

The Australian Government established a National Ice Taskforce in April 2015 and released its final report in December 2015. The Government will provide almost \$300 million over 4 years from 1 July 2016 to improve treatment, education, prevention, support and community engagement, and to capture better data to identify emerging trends on illicit drug use (PM&C 2015). The *Final Report of the National Ice Taskforce* made 38 recommendations across five key areas:

- support families, communities and frontline workers
- target prevention
- tailor services and support
- strengthen law enforcement
- improve governance and build better data (PM&C 2015).

## Illicit drug use and trends

Among the 15% of people aged 14 and over in Australia who are illicit drug users (see Box 4.5.2 for a definition of illicit drug use), 4 in 5 reported using illegal drugs such as cannabis and cocaine, or other substances such as inhalants (Figure 4.5.1). The remaining 1 in 5 reported misuse of a pharmaceutical drug (without use of any other illicit drug) (AIHW 2014b).

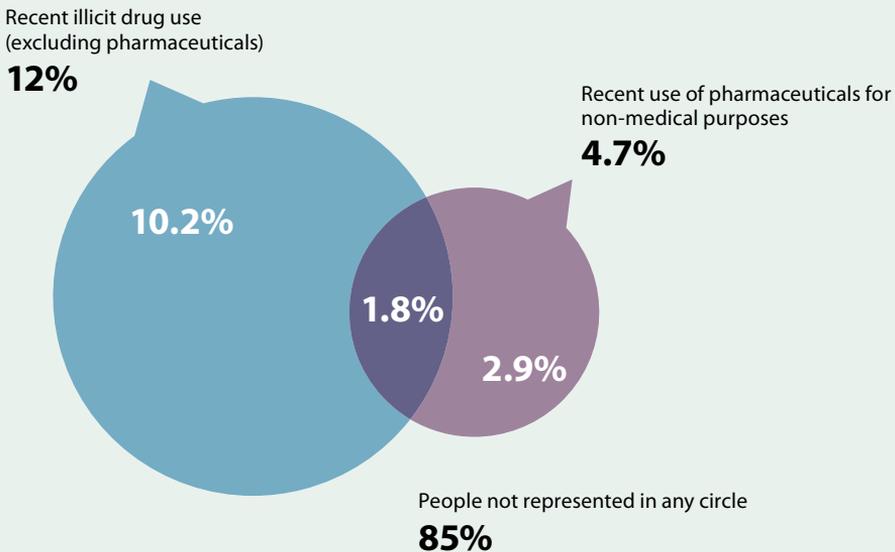
### Box 4.5.2: Definition of illicit drug use

'Illicit drug use' can encompass a broad range of substances including:

- illegal drugs—drugs that are prohibited from manufacture, sale or possession in Australia (for example, cannabis, cocaine, heroin and amphetamine-type stimulants)
- pharmaceuticals—drugs that are available from a pharmacy, over the counter or by prescription, which may be subject to misuse (when used for purposes, or in quantities, other than medical purposes for which they were prescribed)—for example, opioid-based pain relief medications, opioid substitution therapies, benzodiazepines, over-the-counter codeine and steroids
- other psychoactive substances—legal or illegal, potentially used in a harmful way—for example, kava, synthetic cannabis and other synthetic drugs, or inhalants such as petrol, paint or glue (MCDS 2011).

Each data collection cited in this article uses a slightly different definition of illicit drug use; please refer to the relevant report for additional information.

**Figure 4.5.1: Relationship between recent illicit drug use and pharmaceutical use, people aged 14 and over, 2013**



#### Notes

1. Components may not sum to totals due to rounding.
2. Illicit use of at least 1 of 17 drugs.

Source: AIHW 2014b.

According to the 2013 NDSHS, there was no change in the overall use of any illicit drug between 2010 and 2013 (15% of people reporting they had used at least 1 of 17 illicit drugs). However, there were significant changes for a few specific drugs. There were falls in the reported use of ecstasy (from 3.0% to 2.5%), heroin (from 0.2% to 0.1%) and gamma hydroxybutyrate (GHB). Longer-term trends, since 2001, show that use of cannabis, ecstasy and methamphetamine have all declined, but use of cocaine and misuse of pharmaceuticals have increased (AIHW 2014b). Although methamphetamine use has declined over the last 12 years, and remained stable between 2010 and 2013, there was change in the main form used, with ice replacing powder (discussed in further detail in the 'Methamphetamine use, availability and treatment' section).

This section focuses on key findings from the 2013 NDSHS for the four most commonly used illegal drugs—cannabis (10%), ecstasy (2.5%), methamphetamine (2.1%) and cocaine (2.1%). Box 4.5.3 then highlights the increasing misuse of pharmaceuticals, which is an important and emerging issue in relation to illicit drug use in Australia.

## Cannabis

According to the 2013 NDSHS, an estimated 6.6 million (or 35%) people aged 14 and over older had used cannabis in their lifetime and about 1.9 million (or 10%) had used cannabis in the previous 12 months. About 1 in 20 Australians (5.3%) had used it in the month prior to the survey and 3.5% had used it in the previous week.

About one-third (32%) of recent cannabis users used the drug as often as weekly, and older people (50 and over) were more likely than younger people to use cannabis regularly, with at least 4 in 10 recent users in these age groups using it as often as once a week or more. Among people aged 14–24, the average age for first cannabis use increased between 2001 and 2013 (from 15.5 to 16.7 years).

## Ecstasy

In 2013, ecstasy was the second most commonly used illicit drug in a person's lifetime, with 2.1 million (10.9%) people aged 14 and over reporting having ever used the drug and 500,000 having done so in the past 12 months, representing 2.5% of the population. Ecstasy use had been gradually increasing since 2001, before peaking in 2007 at 3.5%. It then declined in 2010 (3.0%) and again in 2013 (2.5%).

The majority of recent ecstasy users only took ecstasy once or twice a year (54%). The average age for first trying ecstasy has remained relatively stable, since 2001, at 18 years.

## Methamphetamines

In 2013, about 1.3 million (7.0%) people had used methamphetamines in their lifetime and 400,000 (2.1%) had done so in the last 12 months. Methamphetamine use had been declining since it peaked at 3.7% in 1998 but remained stable at 2.1% between 2010 and 2013. While there was no increase in methamphetamine use in 2013, there was a change in the main form of methamphetamines used, with crystal replacing powder as the preferred form of the drug. Among recent users, powder decreased from 51% to 29%, while the use of crystal more than doubled, from 22% in 2010 to 50% in 2013. This is discussed in further detail in the 'Methamphetamine use, availability and treatment' section.

## Cocaine

Of people aged 14 and over, 8.1% (or 1.5 million) had used cocaine in their lifetime, and 2.1% (or about 400,000 people) had used it in the previous 12 months. While use of drugs such as cannabis, ecstasy and methamphetamines has generally declined since 2004, the proportion of people using cocaine has been increasing since 2004. This is particularly so among those aged 20–29 and 30–39. Cocaine use in Australia is currently at the highest levels seen since the survey collection commenced.

However, recent users used cocaine less often in 2013 than in previous years, with a lower proportion using it every few months (from 26% to 18%) and a higher proportion using it once or twice a year from 61% to 71%.

### Box 4.5.3: Opioids and misuse of pharmaceuticals

According to the 2013 NDSHS, an estimated 900,000 Australians aged 14 and over (4.7%) used a pharmaceutical drug for non-medical purposes in the previous 12 months. This represents a significant rise from 4.2% in 2010, and is the highest proportion reported since 2001 (AIHW 2014b).

Australia has seen an increase in mortality and morbidity associated with prescription drugs, from opioids in particular. From 2002 to 2011, the rate of accidental overdose deaths due to opioids increased from 32.3 to 49.5 per million people aged 15–54. In the 10 years since 2004–05, hospital separations for opioids also increased from 292 to 362 separations per million people (Roxburgh & Burns 2015; AIHW National Hospital Morbidity Database).

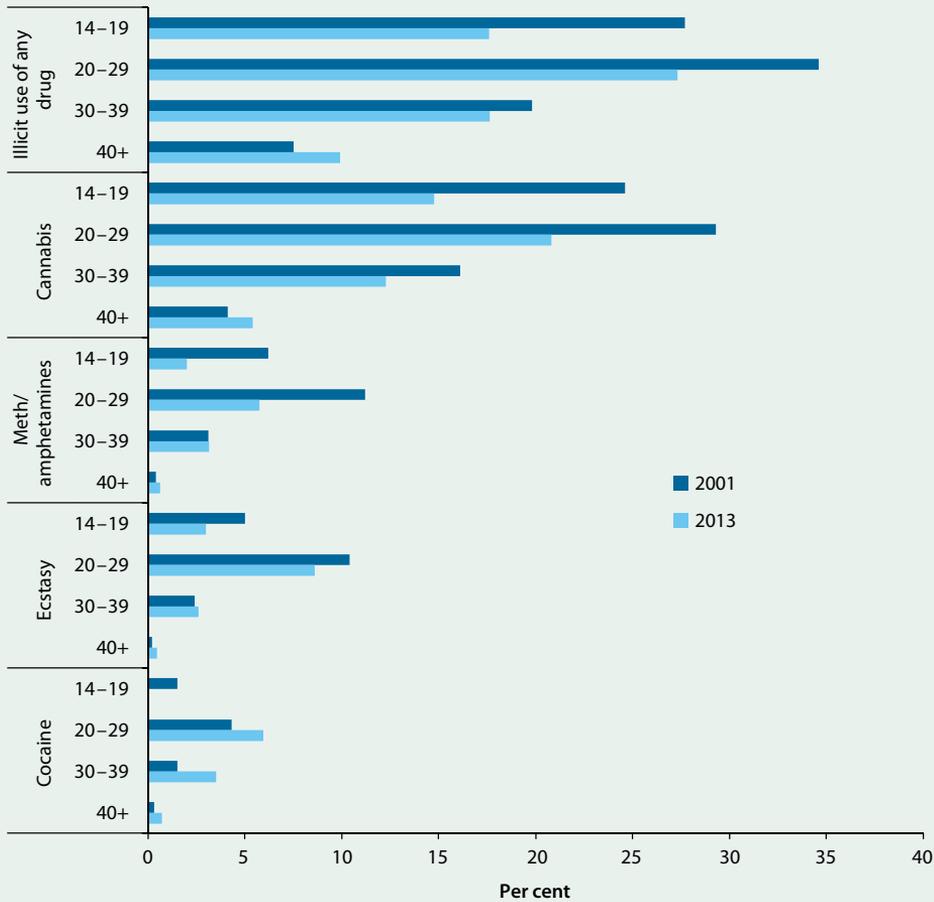
The AIHW will undertake further exploration and analysis on this emerging trend in 2016–17 and will publish results in a future report.

## Age comparisons

According to the 2013 NDSHS, people in their 20s were the most likely of all age groups to report using an illicit drug in the previous 12 months (27%) (Figure 4.5.2). Recent cannabis use was by far the most common illicit drug use reported by this group in 2013; however, since 2001, recent use of cannabis decreased (from 29% to 21%).

While people aged 40 and over generally have the lowest rate of illicit drug use, this was the only age group in which a statistically significant increase was found in recent illicit drug use, increasing from 7.5% to 9.9% between 2001 and 2013. This was mainly driven by an increase among people in their 50s and people aged 60, and the largest relative rise in illicit drugs use was reported among people in their 50s (from 6.7% in 2001, to 8.8% in 2010 and 11% in 2013).

**Figure 4.5.2: Recent use of selected illicit drugs, by age, 2001 and 2013**



Note: 'Any illicit drug use' means they reported using at least 1 of 17 illicit drugs in the previous 12 months.

Source: AIHW 2014b.

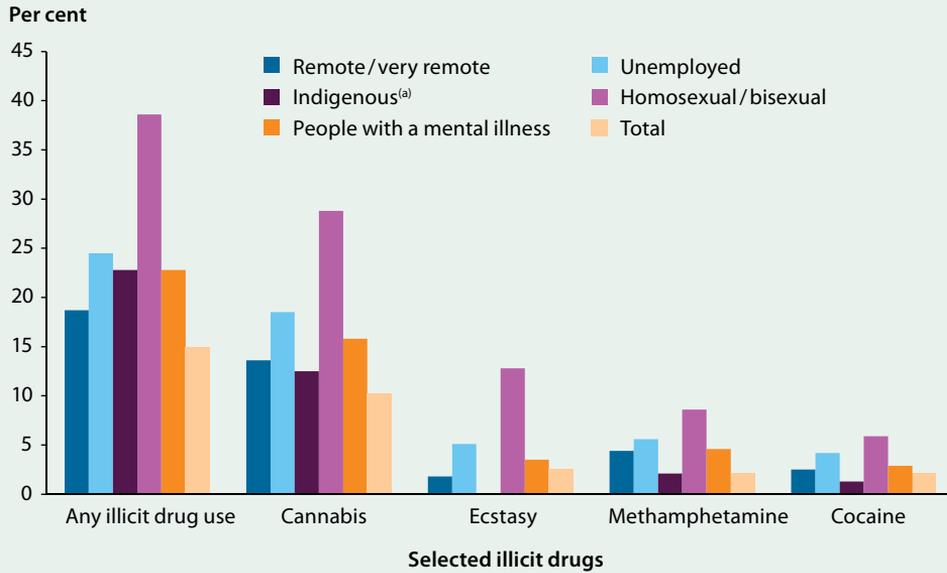
### Secondary students

Analysis of the 2011 Australian Secondary Students' Alcohol and Drug Survey suggests that an estimated 16% of 12–17 year olds had used an illicit drug, down from 20% in 2005. Illicit drug use was more common for older teenagers, with 27% of 16–17 year olds using an illicit drug in their lifetime, but again this declined from 33% in 2005. Among secondary students, misuse of tranquillisers (misuse of a specific pharmaceutical) (17%) was the most common behaviour of concern reported to have occurred in their lifetime, followed by marijuana/cannabis use (15%) (White & Bariola 2012).

### Use among specific population groups

Illicit drug use varies across different population groups in Australia and Figure 4.5.3 focuses on those groups that show some of the largest disparities in illicit drug use compared with the general population—Indigenous people; people who were unemployed; people identifying as homosexual or bisexual; people with a mental illness; and people living in remote areas.

Figure 4.5.3: Proportion of illicit drug users, people aged 14 and over by specific population groups, 2013



(a) Age-standardised percentage.

## Methamphetamine use, availability and treatment

Methamphetamine (generally referred to by the street names of its two main illicit forms, 'ice' or 'speed'—see Box 4.5.4 for methamphetamine terminology) is a drug of national concern, with the Australian Crime Commission assessing it to be the illicit drug posing the greatest risk to the Australian community (ACC 2015). A number of indicators suggest that the Australian methamphetamine market has grown since 2010, as there have been increases in the detected importation, manufacture and supply of the drug. Use of crystal methamphetamine has also increased among some population groups; the number of people seeking treatment for amphetamines is increasing; and there are more hospitalisations for amphetamine-related problems. Methamphetamine comes in a number of forms and can be administered in different ways (see Box 4.5.5).

### Box 4.5.4: Terminology for methamphetamine

Methamphetamine is commonly referred to as methamphetamine or ‘meth’ or by one of the forms in which it is purchased, such as its crystalline form ‘ice’, and the terminology varies across data sources. Where possible, the crystalline form of methamphetamines has been referred to as ‘crystal’ throughout this feature article, rather than its street name, ‘ice’. Not all data sources collect data on methamphetamine specifically; some use the broader classes of drugs—amphetamines, amphetamine-type stimulants, or ‘meth/amphetamines’—to which methamphetamine belongs. This diagram provides a description of the various terms used.

|   |   |                      |                          |
|---|---|----------------------|--------------------------|
| <b>Amphetamine-type stimulants (IDDR)</b>                   |   |                      | Class of drugs           |
| <b>Amphetamines (AODTS NMDS); meth/amphetamines (NDSHS)</b> |   | Phenethylamines      | Class of drugs           |
| Amphetamine   | Methylamphetamine (methamphetamine)         | Dexamphetamine       | MDMA (ecstasy), MDA etc. |
| Powder (speed), tablet                                      | Powder (speed), base, crystal (ice), liquid | Tablet, e.g. Ritalin | Types of drugs           |
|   |   |                      | Forms of drugs           |

*Notes*

1. IDDR: Illicit Drug Data Report.
2. AODTS NMDS: Alcohol and Other Drug Treatment Services, National Minimum Data Set.
3. NDSHS: National Drug Strategy Household Survey.

### Box 4.5.5: Forms of methamphetamine and route of administration

Methamphetamine comes in many forms, and changes in the use of methamphetamine have been one area of increasing concern among health professionals and the Australian community.

- Methamphetamine forms include powder/pills (‘speed’), crystal (‘crystal meth’ or ‘ice’) and a sticky paste (‘base’).
- Powder/pills are generally snorted or ingested and crystal is usually smoked or injected.
- Dependence on methamphetamine is more commonly associated with people who inject the drug or who smoke crystalline methamphetamine, rather than among those who prefer oral or intranasal routes of administration.
- Injecting and smoking methamphetamine are both associated with more frequent use patterns, treatment demand, higher levels of risky behaviour and other health and psychiatric consequences (McKetin et al. 2008).

## Production and supply

Since 2009, the global market for amphetamine-type stimulants (ATS—see Box 4.5.4) has increased substantially. An upsurge in seizures since 2009 point to a rapid expansion of the global ATS market, with ATS seizures almost doubling to reach over 130 tonnes in 2011 and 2012—the highest amount since the United Nations Office on Drug Crime systematic monitoring began—before decreasing slightly in 2013 (UNODC 2015). The increase from 2009 is primarily attributable to the growing amount of methamphetamine seized, which increased from 31 tonnes in 2009 to 80 tonnes in 2013.

### Arrests, seizures and detections

Over the last 5 years, the total number of arrests for ATS increased—accounting for 16% of illicit drug arrests in 2009–10 (12% were for consumers; 4.6% for providers) and 23% (18% for consumers; 5.6% for providers) in 2013–14 (Figure 4.5.4). Consumers apprehended for possessing or using illicit drugs accounted for more than three-quarters (76%) of all ATS arrests in 2013–14 (ACC 2015).

In Australia, the number of ATS (excluding MDMA) detections at the Australian border has increased dramatically since 2009–10 (ACC 2015) and was the highest number on record in 2013–14 (from 672 in 2009–10 to 2,367 in 2013–14). The total mass of these detections also increased from 67 kg in 2009–10 to 1,812 kg in 2013–14, although the national mass of seizures decreased by 326 kg between 2012–13 and 2013–14 (ACC 2015). The number of national seizures followed similar trends, increasing from 10,543 in 2009–10 to 26,805 in 2013–14. The national mass of seizures also increased over this period (from 671 kg to 4,076 kg).

**Figure 4.5.4: Selected key trends in methamphetamine use, availability and treatment, 2009–10 to 2013–14**

| Key trends   |         |         |          |
|--|---------|---------|----------|
| From 2009–10 to 2013–14, criminal activity, use and treatment relating to methamphetamine rose to their highest levels since 2003–04 |         |         |          |
|  | 2009–10 | 2013–14 | % change |
| Arrests  | 14,000  | 26,300  | 95%      |
| Seizures   | 10,500  | 26,800  | 155%     |
| Detections   | 700     | 2,400   | 243%     |
| Recent users reporting lifetime crystal use  | 190,000 | 280,000 | 47%      |
| Treatment episodes   | 10,000  | 28,900  | 189%     |

 Percentage change of number, 2009–10 to 2013–14.

#### Notes

1. Each data source has different reference periods, counting units and sample sizes, see 'Data sources'.
2. The specific timing of when these increases occurred may vary due to the overlap between reference periods used across data sources (that is, calendar versus financial year).
3. Numbers are rounded to the nearest 100, except for use numbers, which are rounded to the nearest 10,000.

In addition to increased seizures and detections at the Australian border, the number of clandestine laboratories detected (also known as 'clan' labs—sites where illegal drugs are manufactured in secret, usually with improvised materials and methods) also increased, which is another indicator of the size of the ATS market. The number of clandestine laboratories detected in Australia more than doubled from 2003–04 to 2013–14—from 358 to 744. Of these, the majority were identified as producing ATS (excluding MDMA) (ACC 2015), and given the ease of access of precursor chemicals, such as pseudoephedrine, methamphetamine is reported as the most common ATS produced in Australia (AIC 2015).

## Price and purity

In 2014, around three-quarters of people using powder, base and crystal forms of methamphetamine reported stable prices (Stafford & Burns 2014) and have reported a relatively stable price of all three forms (powder, crystal and base) since 2009.

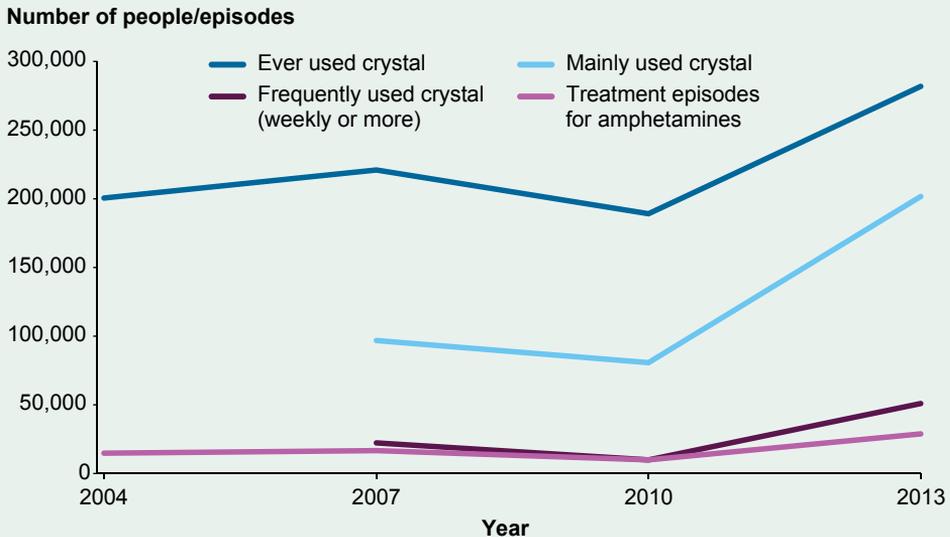
However, using a purity-adjusted price of both powder and crystal, based on Victorian data, Scott et al. (2015) argue that the increasing purity of crystal means the price of both powder and crystal are effectively on par and the price of both has decreased over time.

## Current use and trends

Despite the apparent increases in supply (see the 'Production and supply' section), lifetime and recent use of methamphetamine has declined over the last decade and remained stable in recent years. There was, however, a change in the main form of methamphetamine used between 2010 and 2013, with crystal methamphetamine being the preferred form and used more often than powder. In addition, there were consistent increases across a number of data sources between 2010 and 2013. For example:

- the proportion of recent methamphetamine users who reported smoking the drug increased significantly (from 19% to 41%), and the proportion swallowing the drug decreased significantly (from 36% to 26%), probably reflecting the shift in main form used from powder to crystal
- among recent meth/amphetamine users, the number who 'mainly' and 'ever' used crystal, and the number who 'frequently' used crystal (at least once per week) all increased (Figure 4.5.5)
- it was estimated that there were around 120,000 more recent methamphetamine users who used crystal as their main form in 2013, compared with 2010 (AIHW 2015d) (Note, this only represents those people who reported that they used crystal as their main form in the previous 12 months; the number is likely to be higher as it does not represent all crystal users.)
- the number of treatment episodes for amphetamines increased from around 10,000 in 2009–10 to 28,900 in 2013–14 (AIHW 2014b)
- the reported availability of crystal also increased, with people who inject drugs, psychostimulant users and police detainees all claiming that crystal was easier to obtain in 2013 (Coghlan & Goldsmid 2015; Sindicich & Burns 2014; Stafford & Burns 2014).

**Figure 4.5.5: Recent methamphetamine users who ‘ever used’, ‘mainly used’, and ‘used crystal at least weekly’, and closed episodes for clients receiving treatment for amphetamines, 2004 to 2013**



*Notes*

1. Treatment data relates to episodes; a person may have multiple treatment episodes in a reporting year.
2. Information on crystal specifically is not available prior to 2007 for main form used and frequency of use.

*Sources:* 2004 to 2013 National Drug Strategy Household Surveys; 2003–04 to 2013–14 Alcohol and Other Drug Treatment Services National Minimum Data Set.

## Frequency of use

High doses and frequent use of methamphetamine can cause amphetamine-induced psychosis (characterised by symptoms similar to paranoid schizophrenia and other psychoses); increased risk of suicide; violent behaviour; diminished effects over time (leading to users increasing their dose to achieve intoxication); and methamphetamine dependence (Campbell 2001). Dependent users have been found to be three times as likely to experience psychotic symptoms as non-dependent users (McKetin et al. 2006). Results indicate that those using methamphetamine, particularly ice, are doing so with increased frequency. Between 2010 and 2013:

- there was an increase in the reported frequency of methamphetamine use—daily or weekly use rose from 9.3% to 16%
- daily and weekly use among people who reported mainly using crystal more than doubled—from 12% in 2010 to 25% in 2013 (AIHW 2014b).

Data from the Illicit Drug Reporting System (IDRS) indicates that this trend in increased frequency of crystal use has also been observed among the population of people who inject drugs, and it has continued past 2013. Between 2010 and 2015, the reported median number of days crystal was used in the last 6 months surpassed the median number of days for powder use—7 days for crystal and 10 days for powder in 2010, compared with 20 days for crystal and 11 days for powder and in 2015 (Stafford & Burns 2014).

## Who uses methamphetamines?

In 2013, males were more likely than females to have reported the use of methamphetamine in their lifetimes (8.6% and 5.3% respectively) and recently (2.7% and 1.5% respectively), and this pattern is consistent with previous years. Recent users of methamphetamine were most commonly aged 20–29, and this age group has consistently accounted for the largest prevalence of recent methamphetamines users. However, the proportion of recent users in this age group has been steadily decreasing since 2001 (from 11% in 2001 to 5.7% in 2013) (AIHW 2014b).

### Which population groups are most likely to use methamphetamines?

Certain groups within the population are more likely to use drugs and to experience drug-related harms, with some population groups in the 2013 NDSHS far more likely to report having used methamphetamines recently than the general population. For example, methamphetamine use was 6.1 times as high among people experiencing high or very high levels of psychological distress as among the general population (AIHW 2014b).

#### More likely to have used meth/amphetamines recently than the general population

|   |  |           |
|---|--|-----------|
|    | Those living in <i>Remote/Very remote</i> areas                | 2.1 times |
|    | Aboriginal and Torres Strait Islander people                   | 1.5 times |
|   | Unemployed people  | 2.7 times |
|  | Homosexual/bisexual people                                     | 4.1 times |
|  | Males aged 20–29   | 3.2 times |
|  | Single people with dependent children                          | 2.4 times |
|  | People with high or very high levels of psychological distress | 6.1 times |

### Prison entrants

For the first time since the National Prisoner Health Data Collection began in 2009, in 2015 methamphetamine was the most commonly reported illicit drug used among prison entrants in the previous 12 months (AIHW 2015c). More specifically:

- use increased by 35% (from 37% in 2012 to 50% in 2015) and surpassed cannabis (41%), which has traditionally been the most common drug used among this population group as well as among the general population (10%)

- a prison history was both more common and more extensive among prison entrants who reported having used illicit drugs, particularly methamphetamine
- use of methamphetamine was more common among non-Indigenous entrants than Indigenous entrants (54% and 38%, respectively)
- the youngest entrants (aged 18–24) were the age group most likely to report methamphetamine use (59%) (AIHW 2015c).

## Treatment patterns

Alcohol and other drug treatment services (AODTS) play an important role in efforts to respond to the recent trends in methamphetamine use. Information on publicly funded alcohol and other drug (AOD) treatment services in Australia, and the people and drugs treated, are collected through the AODTS National Minimum Data Set (NMDS). In 2013–14, amphetamines were the third most common principal drug of concern (17% of all treatment episodes), behind alcohol (40%) and cannabis (24%). Since 2003–04, the proportion of episodes where amphetamines were the principal drug of concern has increased (from 11% in 2003–04 to 17% in 2013–14) (AIHW 2015a).

Treatment episodes for clients using amphetamines in 2013–14 typically involved males aged 20–29—the same profile seen for methamphetamine users in the general population (AIHW 2015a).

Information on the different forms of methamphetamine is not captured in the AODTS NMDS, but the client's usual method of administration is captured. This can provide an indication of the form a client used. For example, clients smoking (report either smoking or inhaling amphetamines in vapour form) will largely be using the crystal form and clients ingesting or snorting are most likely to be using the powder form. For clients injecting amphetamines it is less clear, as each of the base, crystal, powder, or liquid forms can be injected. But, according to the most recent data from the IDRS, for injecting users who were injecting methamphetamine, crystal was the form most often used in the month preceding interview (Stafford & Burns 2014).

Since 2009–10, the number of episodes for clients injecting and smoking amphetamines has increased, while use via other methods remained relatively stable. In 2003–04, injectors accounted for 4 in 5 (79%) episodes for amphetamines and just 3.0% involved smoking the drug. However, the proportion of clients reporting they smoked amphetamines had increased, over the 11-year period to 2013–14, to 41%, while clients injecting fell to 44% (AIHW 2015a).

These trends in method of use for treatment episodes parallel those seen in the population of recent methamphetamine users from the NDSHS, where there was a substantial change in the main form of methamphetamine used—from powder to crystal—between 2010 and 2013 (AIHW 2014b).

Between 2003–04 and 2012–13, there was an increase in the geographic spread of amphetamine-related treatment episodes across Statistical Local Areas in Australia (AIHW 2015a). Overall, this represented a change of around two percentage points, with an increase in the number of episodes across all regional and remote areas (from 24% to 26%) and a decrease across *Major cities* (from 76% to 74%) (see also 'Chapter 6.16 Specialised alcohol and other drug treatment services').

Amphetamine-related hospital separations have also risen. Between 2003–04 and 2013–14, separations rose from 43 to 348 separations per million people. In addition, the number of methamphetamine-related hospital separations has risen since these data were first collected in 2008–09, from 22 to 131 separations per million people in 2013–14 (note that counts of methamphetamines separations are likely to be underestimated) (AIHW National Hospital Morbidity Database). These increases could partly be attributed to the increase in use of methamphetamines in their purer crystal form—crystal generally being recognised as the highest in levels of purity of methamphetamine (DoHA 2008)—which is generally considered to cause more potential harm.

## What is the AIHW doing?

As with previous iterations of the NDSHS, the AIHW has established a Technical Advisory Group to provide advice on the survey design and content for the 2016 survey. Refinements to the 2016 questionnaire being considered include an additional question to measure the use of crystal methamphetamine in the previous 12 months, and changes to the pharmaceutical opioid/analgesic questions to better capture the misuse of prescription and over-the-counter opioids/analgesics.

A number of data-development activities have been identified to enhance the AODTS NMDS, including a review of treatment types and settings to better reflect current practice in the AOD sector; analysis of existing data items on pharmaceutical misuse and their involvement in polydrug use; and exploration of options for capturing treatment outcomes.

A data portal with dynamic and interactive data is also being developed.

The AIHW is undertaking a data linkage project to explore the relationship between AOD use and homelessness. This research will inform the development of integrated service approaches to help people with multiple and complex needs to stabilise their lives and reintegrate with the community.

## What is missing from the picture?

People who use illicit drugs can be a difficult population to survey, as they may not wish to disclose that they are involved in an illegal activity. Currently, it is not possible to calculate the number of people who used crystal methamphetamine in the previous 12 months, from the NDSHS. From 2007, an additional question about the main form of meth/amphetamine used was added to the survey, which has enabled estimates to be produced for the minimum number of people using, but not for the total number who have used in the previous 12 months.

It is difficult to fully quantify the scope of AOD services in Australia. There are a variety of settings in which people receive treatment for alcohol and other drug-related issues that are not in scope for the AODTS NMDS. In addition, the AODTS NMDS does not cover all agencies providing substance-use services to Indigenous Australians. These agencies provide data to the Online Services Report collection.

Data on the different forms of amphetamines, and methamphetamine specifically, are not separately available in the AODTS NMDS due to the nature of the classification structure used in this collection.

## Where do I go for more information?

For more information on illicit drug use and harms in Australia, see AIHW drug-related reports available online at [www.aihw.gov.au/alcohol-and-other-drugs-publications/](http://www.aihw.gov.au/alcohol-and-other-drugs-publications/). The [National Drug Strategy Household Survey detailed report: 2013; Trends in methylamphetamine availability, use and treatment, 2003–04 to 2013–14](#); and other recent publications are available for free download.

Additional research and statistics are available from the [National Drug and Alcohol Research Centre](#); the [Australian Crime Commission](#); [National Drug Research Institute](#); and the [National Centre for Education and Training on Addiction](#) websites.

Two key reports quantify the efforts of such agencies: the *Illicit drug data report*, produced by the ACC, and the *World drug report*, produced by the United Nations Office on Drug Crime.

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## 4.6 Alcohol risk and harm

The consumption of alcohol is widespread within Australia and associated with many social and cultural activities. However, excessive alcohol consumption is a major cause of ill health and social harms, not limited to individual drinkers but also affecting families, bystanders and the broader community (NHMRC 2009). Alcohol-related absenteeism in Australia in 2013 was estimated at 7.5 million days, resulting in a cost of over \$2 billion in lost workplace productivity (Roche et al. 2015).

Alcohol use was responsible for 5.1% of the total burden of disease and injury in Australia in 2011. It was responsible for 28% of the burden due to road traffic injuries (motor vehicle occupants), 24% of the burden due to chronic liver disease, 23% of the burden due to suicide and self-inflicted injuries, and 19% of the burden due to stroke.

### What do we know about alcohol consumption in Australia?

**Figure 4.6.1: Drinking status, 2010 and 2013**



Note: the above drinking categories are not mutually exclusive.

The 2013 National Drug Strategy Household Survey has highlighted improvements in drinking patterns in Australia (Figure 4.6.1). The overall volume of alcohol consumed by people in Australia fell from 10.8 litres of pure alcohol per person in 2007–08 to 9.7 litres in 2013–14. This is the lowest level since 1962–63 (ABS 2015).

#### Daily drinking down from previous years

Between 2010 and 2013, daily drinking fell from 7.2% to 6.5% in people aged 14 and over. Before this, the daily drinking rate had remained fairly stable at around 8% between 1993 and 2007.

#### Fewer Australians drinking at risky levels

Between 2010 and 2013, the proportion of people who drank at levels placing them at lifetime risk of harm (more than two standard drinks per day on average) fell from 20% to 18%. Fewer people also consumed five or more standard drinks on a single drinking occasion at least once a month—29% in 2010 compared with 26% in 2013. The alcohol risk data presented here are reported against guideline 1 and guideline 2 of [The Australian guidelines to reduce health risks from drinking alcohol](#) released in March 2009 by the National Health and Medical Research Council (NHMRC 2009).

Before this, the consumption of alcohol in quantities that placed Australians at risk of an alcohol-related disease, illness or injury had remained at similar levels between 2001 and 2010.

## More people are abstaining from drinking alcohol

The proportion of people choosing to abstain from drinking alcohol rose from 20% in 2010 to 22% in 2013. This was largely influenced by an increase in young people aged 12–17 abstaining, from 64% in 2010 to 71% in 2013.

### A considerable proportion drink to excess

In 2013, around 1 in 6 (16%) people aged 12 or older had consumed 11 or more standard drinks on a single drinking occasion in the past 12 months (compared with 17% in 2010).

### Half of pregnant women still drinking

In 2013, 47% of pregnant women reported consuming alcohol during their pregnancy (little changed from 2010), but most (96%) consumed only 1–2 standard drinks on that drinking occasion.

## Harm, hospitalisation and treatment

While many drinkers consume alcohol responsibly, a substantial proportion of drinkers consume alcohol at a level that is considered to increase their risk of alcohol-related disease, illness or injury. Excessive intake of alcohol not only affects a drinker's health, but also affects the people around them. In 2013:

- more than 1 in 5 (21%) of recent drinkers put themselves or others at risk of harm while under the influence of alcohol in the previous 12 months (for example, by driving a vehicle, or verbally or physically abusing someone or undertaking some other risky activity)
- more than 1 in 4 (26%) Australians had been a victim of an alcohol-related incident; verbal abuse was the most common incident reported (22%), although this proportion was lower than the 24% in 2010.

In 2014–15, there were around 115,000 clients who received treatment from publicly funded alcohol and other drug treatment agencies across Australia. Alcohol was the most common principal drug of concern, accounting for over one-third (37%) of clients and 40% of treatment episodes (a total of 60,000 episodes) (AODTS NMDS). See 'Chapter 6.16 Specialised alcohol and other drug treatment services' for more information.

In 2013–14, about 1% of hospitalisations had a drug-related principal diagnosis; of those, 55% were for alcohol. Over the 5 years to 2013–14, alcohol has consistently been the drug-related principal diagnosis with the highest number of hospital separations, increasing from 61,000 to nearly 66,000 hospitalisations in that time (from about 280 to 282 hospitalisations per 100,000) (AIHW analysis of the National Hospital Morbidity Database).

In 2014–15, around 70,000 emergency department presentations for alcohol/drug abuse and alcohol/drug induced mental disorders were reported, based on diagnosis information. This equates to approximately 1% of all emergency department presentations. (Note, the quality of diagnosis information in the National Non-Admitted Patient Emergency Department Care Database has not been assessed.)

## What is missing from the picture?

Estimation of ill health and death associated with alcohol use is complex. While both can occur as a direct result of alcohol use (for example, alcohol poisoning), in most cases alcohol is one of a number of contributing factors. The data presented on alcohol-related hospitalisations is therefore likely to represent only a fraction of the total harm caused by alcohol.

Surveys of self-reported alcohol consumption are likely to produce an underestimate of the total amount of alcohol consumed in Australia (Stockwell et al. 2004). Wholesale sales data are an alternative measure of consumption. While national data are available, they have not been available at a regional level since 1997. Recent progress has been made to collect data from most (but not all) states and territories (Loxley et al. 2014). While wholesale data provides a more accurate estimate of average consumption, it cannot identify individual drinking levels and the number of drinkers exceeding the recommended alcohol guidelines.

## Where do I go for more information?

More information on alcohol consumption and harms in Australia is available at [aihw.gov.au/alcohol-and-other-drugs/](http://aihw.gov.au/alcohol-and-other-drugs/). The [National Drug Strategy Household Survey detailed report: 2013](#); [Alcohol and other drug treatment services in Australia 2013–14](#); and [Emergency department care 2014–15: Australian hospital statistics](#) can be downloaded for free.

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## 4.7 Tobacco smoking

In 2011, tobacco smoking was the leading risk factor contributing to death and disease in Australia and was responsible for 9.0% of the total burden of disease and injury. This includes the risks associated with past tobacco use, current use, and exposure to second-hand smoke. Tobacco smoking increases the risk of cardiovascular disease, respiratory diseases and other health problems (USHHS 2014). In Australia in 2011, it was estimated that 80% of lung cancer burden and 75% of chronic obstructive pulmonary disease burden were attributable to tobacco smoking.

It has been estimated that, during a given year, smoking kills around 15,000 Australians and has significant social (including health) and economic costs—estimated at \$31.5 billion in 2004–05 (Collins & Lapsley 2008).

Australia has been successful in reducing smoking prevalence over many years through the use of many strategies (IGCD 2013). These have included advertising bans; bans on smoking indoors and increasingly in outdoor public spaces; plain packaging; price increases; restrictions on sales to minors; public education; and media campaigns (IGCD 2013; MCDS 2011).

### Fewer Australians are smoking

Fewer people, both proportionally and absolutely, are smoking daily and more people have never smoked, compared with 20 years ago.

- In 2013, the proportion of people aged 14 and over smoking daily (13%) was lower than in 2010 (15%), and almost half that of 1991 (24%). The proportion of people who reported never smoking rose from 58% in 2010 to 60% in 2013.
- In 2014, the proportions of secondary school students aged 12–17 smoking in their lifetime, in the past 4 weeks, past week or on 3 days of the last 7, were significantly lower than in 2008 and 2011 (White & Williams 2015).

### Positive changes to smoking patterns over time

Fewer people are being exposed to tobacco smoking, more people are delaying the uptake of smoking and smokers are smoking fewer cigarettes.

- Dependent children were far less likely to be exposed to tobacco smoke inside the home in 2013 (3.7%) than in 1995 (31%).
- The average age at which young people aged 14–24 smoked their first cigarette has steadily risen since 2001 (15.9 years in 2013 compared with 14.3 in 2001), indicating a delay in uptake of smoking.
- Smokers smoked fewer cigarettes per week in 2013 (96) than in 2001 (113).
- The proportion of women smoking at any time during pregnancy has steadily declined over time—from 15% in 2009 to 12% in 2013.

## The likelihood of being a daily smoker is:



**2 times** as high in *Remote/Very remote areas* compared with *Major cities*



**1.9 times** as high for homosexual/bisexual people compared with heterosexual people



**3 times** as high in the lowest socioeconomic areas compared with the highest socioeconomic areas



**2.7 times** as high for single people with dependent children compared with couples with dependent children



**1.7 times** as high for unemployed people compared with employed people



**5.7 times** as high for prison entrants compared with the general population



**2.6 times** as high for Aboriginal and Torres Strait Islander Australians compared with non-Indigenous Australians

(a) Rate ratio based on the estimates reported in the 2015 NPHDC and the 2013 NDSHS.

(b) Rate ratio based on the Indigenous estimates reported in the 2011–13 AATSIHS and the non-Indigenous estimates reported in the 2011–12 NHS (ABS 2014).

### Notes

1. All other rate ratios are based on estimates reported in the 2013 NDSHS.

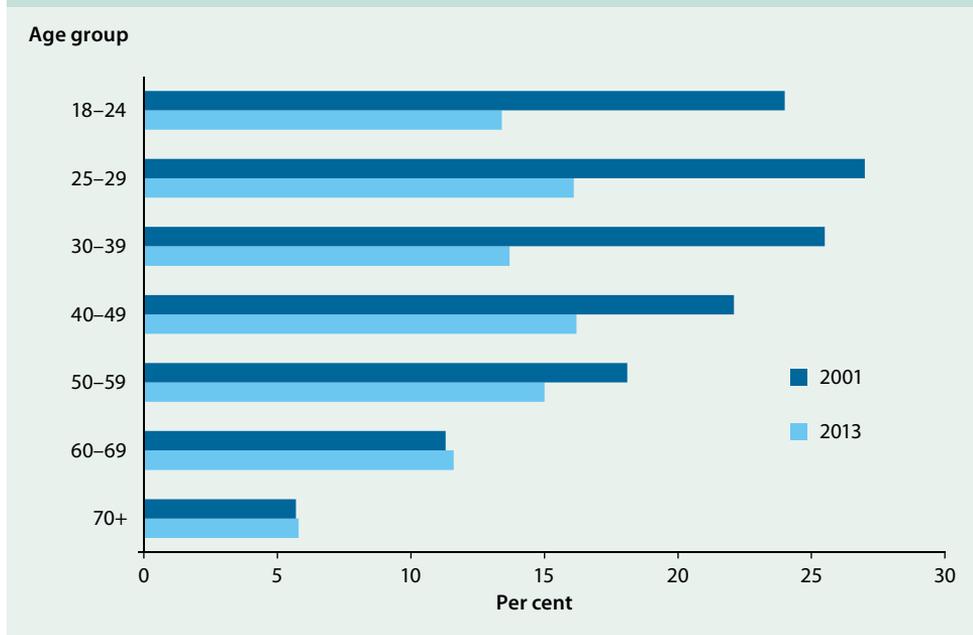
2. The rate ratio for socioeconomic areas is based on the Index of Relative Socio-economic Advantage and Disadvantage.

## Rates differ across population groups

Although substantial progress has been made in reducing the rates of smoking in Australia, smoking remains one of the leading causes of preventable disease and death. In 2013, certain groups within the population were far more likely to smoke daily than their counterparts, and are at greater risk of tobacco smoking and tobacco-related harm.

The proportion of people smoking daily in 2013 was highest among people aged 25–29 and 40–49. The fall in daily smoking rates over the past 12 years has predominantly been for people aged 18–49—there has been little change among people aged 60 and over during this period (Figure 4.7.1). Use of battery-operated electronic cigarettes (e-cigarettes) is more common among younger smokers and was highest for smokers aged 18–24 (27%) in the last 12 months and declined with age (to 5.3% of smokers aged 70 and over).

Figure 4.7.1: Daily smokers, by age, 2001 and 2013



### What is missing from the picture?

The most recent estimate of the social and economic costs of tobacco smoking is for 2004–05. Substantial changes to smoking patterns have occurred since 2004 and more recent data on these costs would enhance evaluations of policy effectiveness.

There are limited data on smoking behaviours for some population groups at risk of tobacco smoking and related harm. For example, there is no regular data collection on smoking prevalence among many groups that face multiple levels of disadvantage, such as people experiencing homelessness; people living with a mental illness; culturally and linguistically diverse populations; and the drug treatment population.

There are also limited data on behaviours or circumstances that lead ex-smokers to successfully quit and maintain cessation.

### Where do I go for more information?

More information on tobacco use in Australia is available at <http://www.aihw.gov.au/alcohol-and-other-drugs/ndshs/>. The [National Drug Strategy Household Survey detailed report: 2013](#) can be downloaded for free. More information about tobacco control measures in Australia is available at <http://www.health.gov.au/internet/main/publishing.nsf/content/tobacco-kff>.

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## 4.8 Health behaviours and biomedical risks of Indigenous Australians

The prevalence of major behavioural and biomedical health risk factors is generally higher for Aboriginal and Torres Strait Islander Australians than for other Australians. Behavioural risks include smoking, poor nutrition, physical inactivity and excessive alcohol consumption. Biomedical risks are bodily states that can contribute to the development of chronic disease, such as being obese or having abnormal levels of blood lipids (see 'Chapter 4.3 Biomedical risk factors').

This snapshot describes some of the behavioural and biomedical risk factors that contribute to poor health status for Indigenous Australians.

### Smoking and alcohol consumption

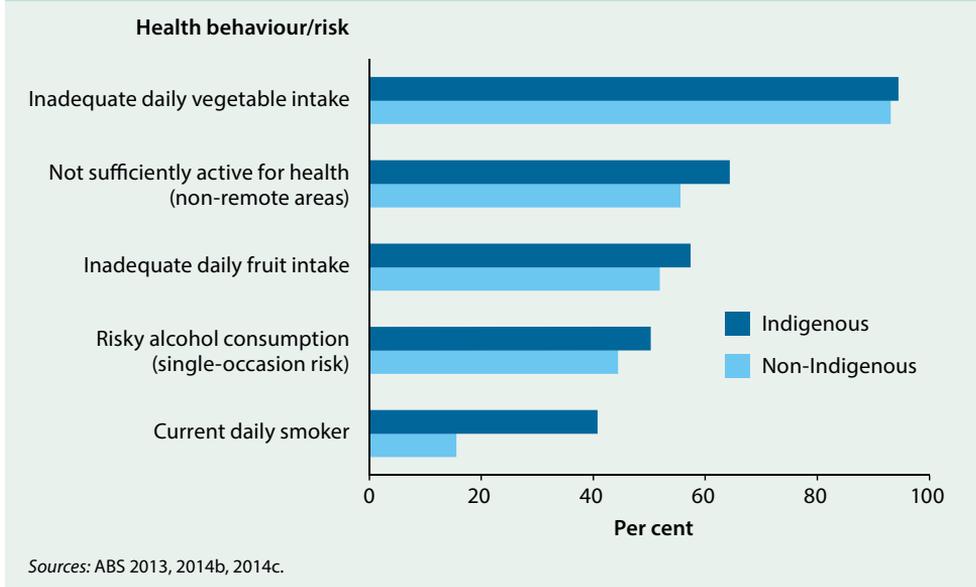
The prevalence of smoking remains significantly higher in the Indigenous population than in the non-Indigenous population, while the picture for alcohol consumption is more complex.

- In 2012–13, 44% of Indigenous Australians aged 15 and over reported being a current smoker—42% smoked daily and 2% smoked weekly or less frequently. After adjusting for differences in age structure, Indigenous Australians were 2.6 times as likely as non-Indigenous Australians to smoke daily (Figure 4.8.1).
- The smoking rate for Indigenous Australians aged 15 and over has declined significantly, from 51% to 44% between 2002 and 2012–13.
- In 2012–13, a high proportion (26%) of Indigenous Australians aged 15 and over reported that they had not drunk any alcohol in the previous 12 months. After adjusting for age differences, this rate of abstinence was 1.6 times the non-Indigenous rate (AIHW 2015).
- Indigenous Australians who consume alcohol do so at levels that are risky for their health. In 2012–13, 54% of Indigenous Australians aged 15 and over drank at levels placing them at risk of harm—more than four standard drinks on a single occasion at least once in the past 12 months. After adjusting for differences in age structure, Indigenous people aged 15 and over were 1.1 times as likely as non-Indigenous people to have exceeded the guidelines for single-occasion risk (50% and 44% respectively) (Figure 4.8.1). This is a much smaller difference than in smoking rates.

### Physical inactivity

Physical inactivity is a risk factor associated with several potentially preventable chronic diseases that are prevalent in the Indigenous population, including cardiovascular disease, hypertension and diabetes.

**Figure 4.8.1: Age-standardised prevalence of selected health behaviours and risks, by Indigenous status, 2011–13**



Based on 2012–13 Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS) data:

- More than 6 in 10 (61%) of Indigenous adults in non-remote areas had been sedentary or undertook low levels of physical activity in the week prior to the survey (less than 150 minutes over five or more sessions).
- Insufficient activity levels were higher for Indigenous females (68%) than for males (53%).
- After adjusting for differences in age structure, Indigenous adults were more likely than non-Indigenous adults to not have undertaken the recommended activity levels in the last week (64% compared with 56%) (Figure 4.8.1).

The physical activity of Indigenous adults was assessed differently in remote areas (and this measure is not comparable with the physical activity data for persons living in non-remote areas).

- More than half (55%) of Indigenous adults in remote areas spent more than 30 minutes in the previous day undertaking physical activity or walking 20% spent less than 30 minutes, 21% did no physical activity, while data were missing for 4% (ABS 2014b).

## Dietary behaviours

Several principal causes of ill health are nutrition-related, including type 2 diabetes and coronary heart disease. The AATSIHS self-reported results (ABS 2014c) show that:

- 85% of Indigenous children aged 2–14, and 97% of Indigenous adults aged 15 and over, had inadequate daily fruit and/or vegetable intake
- 22% of Indigenous children aged 2–14, and 58% of Indigenous adults aged 15 and over, did not eat the daily intake of fruit (2 serves), recommended in the 2013 National Health and Medical Research Council guidelines
- 84% of Indigenous children aged 2–14, and 95% of Indigenous adults aged 15 and over, did not eat the daily recommended intake of vegetables (5–6 serves).

## Biomedical risks

This section summarises data on four biomedical factors that can pose direct and specific risks to health: high blood pressure, obesity, vitamin D deficiency and abnormal blood lipid levels (such as high cholesterol and triglycerides). Data about high blood pressure and being overweight or obese (based on body mass index, or BMI) among Indigenous Australians are sourced from the 2012–13 AATSIHS. Information on vitamin D deficiency and high levels of cholesterol and triglycerides are from the National Aboriginal and Torres Strait Islander Health Measures Survey (NATSIHMS), a voluntary component of the AATSIHS, in which around 3,300 Indigenous adults aged 18 and over from across Australia provided blood and urine samples for analyses (ABS 2014a).

- One in 5 (20%) Indigenous adults had measured high blood pressure, with more men (23%) affected than women (18%).
- Nearly 4 in 5 (79%) people who had measured high blood pressure did not report it as a long-term condition (ABS 2014c).
- Almost 7 in 10 (69%) Indigenous adults aged 18 and over were either overweight (29%) or obese (40%), according to their BMI score (ABS 2014c).
- After adjusting for differences in age structure, Indigenous adults aged 18 and over were 1.6 times as likely to be obese as non-Indigenous adults—43% compared with 27% (Figure 4.8.2); but less likely (0.8 times) to be overweight than non-Indigenous adults (30% compared with 35%).
- Overall, Indigenous adults were 1.2 times as likely to be either overweight or obese as non-Indigenous adults (72% compared with 63%).

Levels of physical activity are related to being overweight or obese:

- Indigenous adults in non-remote areas who were sufficiently active were less likely to be obese than those who were fully inactive (31% compared with 56%) (ABS 2014b).

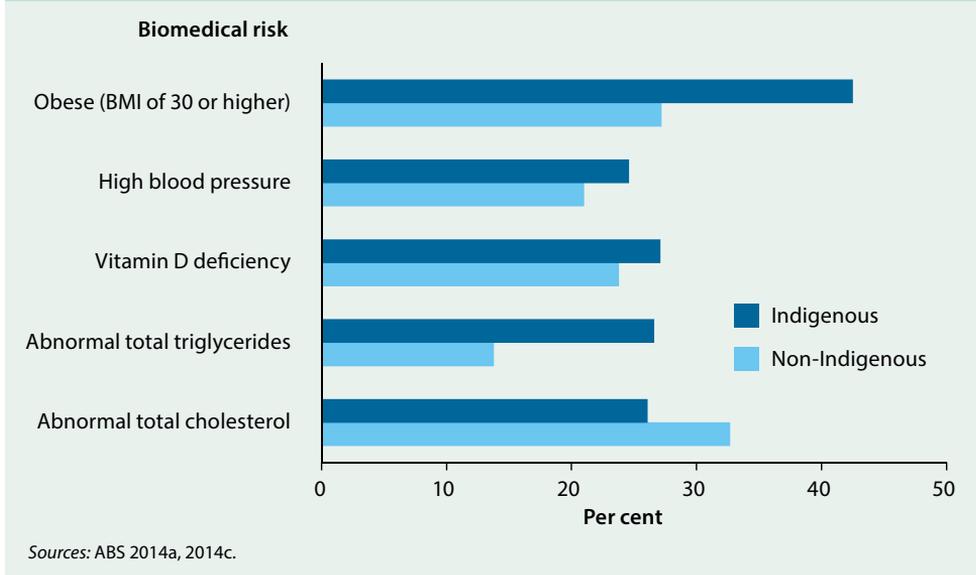
The NATSIHMS results show that, among Indigenous adults in 2012–13:

- around 1 in 4 (27%) had vitamin D deficiency, and this condition was more common among Indigenous adults living in remote areas (39%) than among those living in non-remote areas (23%)
- 1 in 4 (25%) had abnormal or high total cholesterol levels, and a similar proportion also had high triglyceride levels.

After adjusting for differences in the age structure (Figure 4.8.2):

- Indigenous adults were nearly twice as likely to have abnormally high triglycerides compared with non-Indigenous adults (27% compared with 14% respectively, a rate ratio of 1.9).
- Indigenous adults were less likely than non-Indigenous adults to have high total cholesterol levels (26% compared with 33%, a rate ratio of 0.8).

**Figure 4.8.2: Age-standardised prevalence of selected biomedical risks, by Indigenous status, 2011–13**



### What is missing from the picture?

Data on the behavioural and biomedical health risk factors among Indigenous Australians were enhanced through the additional components of the 2012–13 AATSIHS, such as the Health Measures Survey and the Nutrition and Physical Activity Survey. The frequency of these additional components, however, is insufficient to produce a consistent time series. The available data are too sparse to regularly assess changes in these risk factors, or explain their contribution to the health gaps between the Indigenous and non-Indigenous populations, and the health inequities within the Indigenous population. Some of these data items are collected only from Indigenous people living in non-remote locations. There also are data gaps on the relationship between the observed behavioural risk factors and an individual's participation in and outcomes from treatment programs and other preventative health interventions.

### Where do I go for more information?

For more details on the health behaviours and biomedical markers of Indigenous Australians, see the [Australian Aboriginal and Torres Strait Islander Health Survey \(AATSIHS\) 2012–13](#).

## References

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ABS 2014b. Australian Aboriginal and Torres Strait Islander Health Survey: physical activity, 2012–13. ABS cat. no. 4727.0.55.004. Canberra: ABS.

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AIHW (Australian Institute of Health and Welfare) 2015. Aboriginal and Torres Strait Islander Health Performance Framework 2014 report: detailed analyses. Cat. no. IHW 167. Canberra: AIHW.



# Chapter 5

## Health of population groups



## 5.0 Introduction

While some health concerns span all age groups, others tend to emerge at specific life stages. This chapter focuses on some of the issues and challenges that can arise at different times during our lives, starting at the very beginning—mothers and babies.

Almost all pregnant women access antenatal care at some time during their pregnancies, and the vast majority of mothers give birth in hospital. Most of their babies are born at full term and are in the normal weight range.

The majority of primary school children are in the normal weight range and are fully immunised. However, many do not get enough exercise or eat the recommended serves of fruit and vegetables each day.

Many important health risk factors for later life either emerge or increase during adolescence and young adulthood, including smoking, risky drinking, illicit drug use, physical inactivity and poor nutrition. This is also a time when mental disorders may arise, particularly anxiety and depression.

Today there are nearly 487,000 people aged 85 and over in Australia, and this number is projected to more than double by 2036, to 1.0 million. The majority of older Australians consider themselves to be in good, very good, or excellent health. The most common health conditions reported by this age group—long-sightedness, deafness and arthritis—have moderate yet long-term effects on quality of life.

This chapter also examines the health of specific groups with higher rates of illness, health risk factors and death: people in lower socioeconomic groups, Aboriginal and Torres Strait Islanders, Australians living with disability, prisoners, and people living in rural and remote areas.

Despite improvements in Indigenous health in recent years (such as the decline in infant and child mortality and in mortality related to circulatory and kidney diseases), Indigenous Australians have a lower life expectancy, higher rates of chronic and preventable illnesses, and poorer self-reported health than non-Indigenous Australians.

Similarly, Australians living in rural and remote areas tend to have shorter lives and higher rates of disease and injury than their *Major cities* counterparts. They are also more likely to engage in health behaviours that can lead to adverse health outcomes, such as smoking, risky drinking and being insufficiently active.

# 5.1 Health across socioeconomic groups

Socioeconomic factors are important determinants of health and wellbeing in Australia. The higher a person's income, education or occupation level, the healthier they tend to be—a phenomenon often termed the 'social gradient of health'. In general, people from lower socioeconomic groups are at greater risk of poor health, have higher rates of illness, disability and death, and live shorter lives than those from higher groups (Mackenbach 2015). In 2001–2007, for example, men and women aged 20 in the lowest socioeconomic group could expect to live 2.6 years less than those in the highest group (Clarke & Leigh 2011).

Socioeconomic position can be measured using a single characteristic, such as income, education, or occupation, or a composite measure such as the Index of Relative Socio-Economic Disadvantage (IRSD). This snapshot uses the IRSD, which is compiled by the Australian Bureau of Statistics after each Census of Population and Housing using area-based population attributes such as low income, low educational attainment, high unemployment and jobs in relatively unskilled occupations (see 'Chapter 4.1 Social determinants of health'). The IRSD reflects the overall or average level of socioeconomic disadvantage of the population of an area; it does not show how individuals living in the same area differ from each other in these socioeconomic factors. In this snapshot, people living in the lowest socioeconomic areas are also referred to as the 'lowest socioeconomic group', and those living in the highest socioeconomic areas as the 'highest socioeconomic group'.

People in the lowest socioeconomic group are compared with the highest group on selected health measures, including health risk factors, chronic diseases and causes of death. On almost all of these measures, people in the lowest socioeconomic group fared worse.

- On average, those in the lowest socioeconomic group were far more likely to smoke daily. In 2013, 20% of those aged 14 and over in this group smoked daily, a rate 3 times that of people in the highest socioeconomic group (6.7%) (Table 5.1.1).
- For lifetime risky drinking of alcohol, people in the lowest socioeconomic group had a lower rate. In 2013, these adults were less likely to exceed alcohol consumption guidelines than adults in the highest socioeconomic group (16.4% compared with 18.5% respectively).
- On other health risk factors—inadequate fruit and vegetable consumption, dyslipidaemia (abnormal amounts of lipids such as cholesterol in the blood), and impaired fasting glucose levels—there were no significant differences between people in the lowest and highest socioeconomic groups.

Table 5.1.1: Inequalities in selected health risk factors

|   | Year    | Lowest socioeconomic group (%) | Highest socioeconomic group (%) | Rate ratio: lowest/highest socioeconomic group |
|---|---------|--------------------------------|---------------------------------|--|
| Low birthweight   | 2013    | 7.5                            | 5.6                             | 1.3  |
| Daily smoking   | 2013    | 20                             | 6.7                             | 3.0  |
| Inactive or insufficiently active                       | 2014–15 | 76                             | 56                              | 1.4  |
| Lifetime risky drinking                                 | 2013    | 16.4                           | 18.5                            | 0.9  |
| Overweight or obese                                     | 2014–15 | 66                             | 58                              | 1.1  |
| High blood pressure                                     | 2014–15 | 26                             | 21                              | 1.2  |
| Participation of women aged 20–69 in cervical screening | 2012–13 | 52                             | 64                              | 0.8  |

Sources: ABS 2015; AIHW 2014a, 2015a, 2015b.

- The prevalence of some chronic diseases was substantially higher among adults in the lowest socioeconomic group. Diabetes, for example, was 2.6 times as high, and coronary heart disease and stroke 2.2 times as high, as for those in the highest socioeconomic group (Table 5.1.2).
- Lung cancer incidence was 1.6 times as high in the lowest socioeconomic group as for the highest group in 2006–2009 (rates of 52 and 33 per 100,000 population respectively), reflecting the higher rates of smoking in the lowest socioeconomic group.
- Adults from lowest income households were far more likely to rate their oral health status as 'fair' or 'poor', compared with adults from the highest income households (31% compared with 12%, respectively).

Table 5.1.2: Inequalities in selected chronic diseases

|  | Year      | Lowest socioeconomic group (%) | Highest socioeconomic group (%) | Rate ratio: lowest/highest socioeconomic group |
|--|-----------|--------------------------------|---------------------------------|--|
| Arthritis  | 2014–15   | 19.7                           | 12.1                            | 1.6  |
| Asthma   | 2014–15   | 12.8                           | 9.8                             | 1.3  |
| Back problems                                    | 2014–15   | 18.9                           | 15.9                            | 1.2  |
| Chronic kidney disease                           | 2011–12   | 13.5                           | 8.3                             | 1.6  |
| Coronary heart disease                           | 2011–12   | 5.0                            | 2.3                             | 2.2  |
| Diabetes   | 2014–15   | 8.2                            | 3.1                             | 2.6  |
| Lung cancer incidence                            | 2006–2009 | 52 per 100,000                 | 33 per 100,000                  | 1.6  |
| Mental and behavioural problems                  | 2014–15   | 21.5                           | 15.0                            | 1.4  |
| Oral health rated as fair or poor <sup>(a)</sup> | 2010      | 31.2                           | 12.2                            | 2.6  |
| Stroke   | 2014–15   | 1.1                            | 0.5                             | 2.2  |

(a) Classified by household income groups.

Sources: ABS 2015; AIHW 2013, 2014b, 2014c.

- Mortality from all causes in the lowest socioeconomic group was 29% higher than in the highest socioeconomic group in 2009–2011 (639 and 495 per 100,000 population, respectively) (Table 5.1.3).
- Lung cancer death rates were 1.6 times as high in the lowest socioeconomic group.
- Rates of potentially avoidable deaths—premature deaths that could have been avoided in the presence of timely and effective health care—were 1.8 times as high in the lowest socioeconomic group, compared with the highest (194 compared with 105 per 100,000 population).
- In terms of excess deaths and population impact, if all Australians had the same death rates as the 20% of Australians in the highest socioeconomic group, there would have been 54,214 fewer deaths in 2009–2011.

**Table 5.1.3: Inequalities in leading causes of death**

|                                       | Year      | Lowest socioeconomic group (per 100,000) | Highest socioeconomic group (per 100,000) | Rate ratio: lowest/highest socioeconomic group |
|---------------------------------------|-----------|--|---|--|
| Coronary heart disease                | 2009–2011 | 98                                       | 71  | 1.4  |
| Cerebrovascular diseases              | 2009–2011 | 46                                       | 42  | 1.1  |
| Dementia and Alzheimer disease        | 2009–2011 | 32                                       | 34  | 0.9  |
| Lung cancer                           | 2009–2011 | 40                                       | 25  | 1.6  |
| Chronic obstructive pulmonary disease | 2009–2011 | 27                                       | 16  | 1.7  |
| All causes                            | 2009–2011 | 639                                      | 495                                       | 1.3  |
| Potentially avoidable deaths          | 2009–2011 | 194                                      | 105                                       | 1.8  |

Source: AIHW 2014d.

### What is missing from the picture?

Ongoing work is needed to monitor progress in closing health gaps between socioeconomic groups. Most health data collections in Australia do not include information to measure an individual's socioeconomic position. The use of an area-based measure such as the IRSD limits the extent of analysis regarding the relationship between socioeconomic position and health.

Statistical linkage of health and welfare data sets to provide added information on wealth, education, employment and other social determinants will assist in better understanding pathways through the health system and the relationships between risk factors, disease, service use and outcomes for all socioeconomic groups.

## Where do I go for more information?

Many reports from the AIHW include analysis of health indicators based on socioeconomic position (for example, [Mortality inequalities in Australia 2009–2011](#)).

For more information about disadvantage and social inequalities, see the AIHW report [Australia's welfare 2015](#).

## References

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Mackenbach JP 2015. Socioeconomic inequalities in health in high-income countries: the facts and the options. In: Detels R, Gulliford M, Karim QA & Tan CC (eds). *Oxford textbook of global public health*. Vol. 1. 6th edn. Oxford: Oxford University Press.

## 5.2 Trends and patterns in maternal and perinatal health

A newborn baby's health can be a key determinant of their health and wellbeing throughout life. Factors such as a baby's gestational age and birthweight can influence their chance of survival and health outcomes. Mothers' attributes, such as age, whether they smoke or drink during pregnancy, and where they live, can also affect obstetric and perinatal outcomes (Bywood et al. 2015; WHO 2015a).

Australia's maternity services are among the best in the world—with one of the lowest maternal mortality ratios (MMR) reported globally in 2015 (6 maternal deaths per 100,000 women who gave birth, compared with 9 in the United Kingdom, and 11 in New Zealand and the United States of America) (WHO et al. 2015). However, in 2008–2012, the ratio in Australia for Aboriginal and Torres Strait Islander mothers was double that of other Australian women who gave birth (14 per 100,000 compared with 6.6 per 100,000) (AIHW: Humphrey et al. 2015). Monitoring MMR alongside other indicators designed to assess the safety and quality of maternity care (such as the type of delivery a mother has) is important to ensure that there is continual improvement in the quality of maternity services (see the [National Core Maternity Indicators](#), or NCMI) (AIHW National Perinatal Epidemiology and Statistics Unit & AIHW 2013).

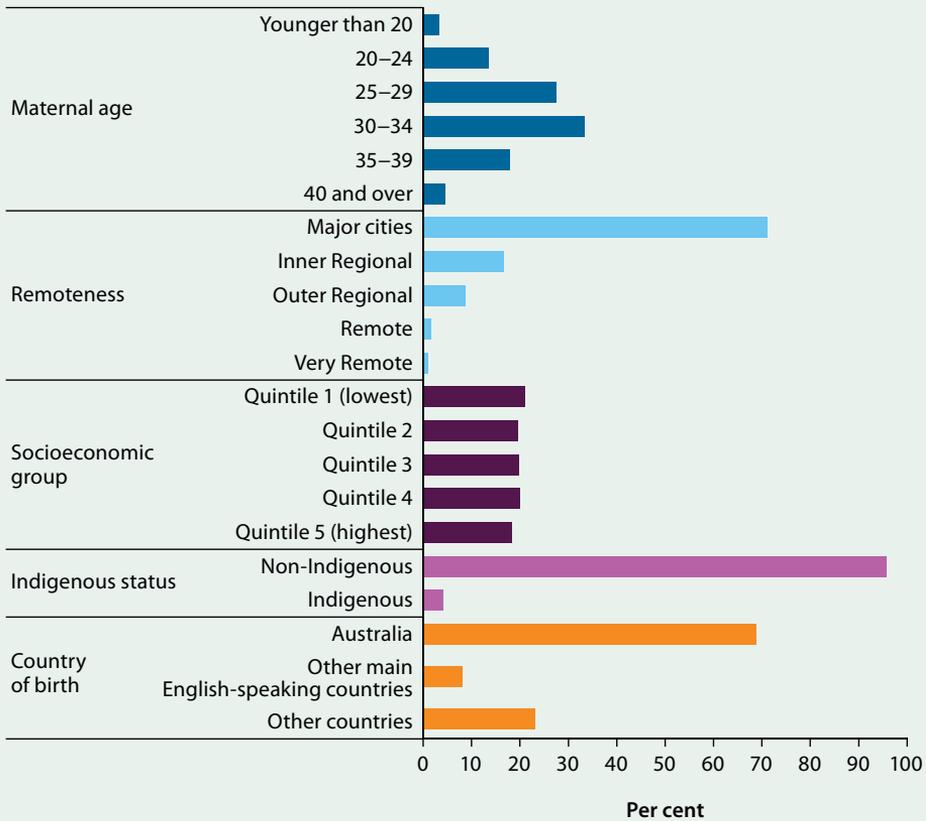
Data on almost every birth in Australia are collected by health professionals and included in the National Perinatal Data Collection at the AIHW. This article uses these data to explore aspects of pregnancy and childbirth, including differences that occur due to characteristics such as a mother's age, where she lives, the socioeconomic conditions in which she lives, her Indigenous status and her country of birth; as well as characteristics such as a baby's gestational age at birth and their birthweight.

### Mothers and babies at a glance

In 2013, about 305,000 women gave birth to around 309,000 babies. Slightly fewer women gave birth in 2013 than in 2012 (approximately 307,500). In 2013:

- most mothers lived in *Major cities* (71%) and most (69%) were born in Australia—similar to the proportions of all women of reproductive age in the population (Figure 5.2.1)
- of all mothers, just over one-fifth (21%) were from the lowest socioeconomic areas and 18% were from the highest socioeconomic areas
- 4.1% of all Australian women who gave birth were of Aboriginal and Torres Strait Islander origin, slightly higher than the proportion of Aboriginal and Torres Strait Islander women of reproductive age in the population (which was 3.3%, or about 160,700 women)
- 5.2% of babies (or approximately 16,100 babies) born in Australia were reported to be of Aboriginal and Torres Strait Islander origin in 2013, based on the Indigenous status of the baby.

Figure 5.2.1: Selected characteristics of women giving birth in 2013



Note: The 'Other main English-speaking countries' category comprises New Zealand, the United Kingdom, Ireland, South Africa, the United States of America and Canada.

Source: National Perinatal Data Collection (AIHW).

## Summary of selected maternal characteristics by population group

Many factors contribute to inequalities in maternal and perinatal health outcomes. For example, in 2013:

- older mothers (40 and over) were more likely to attend antenatal care in the first trimester and were significantly more likely to give birth via caesarean section, than teenage mothers (Tables 5.2.1, 5.2.2)
- pregnant women living in *Major cities* were less likely to smoke or to be overweight or obese—with a body mass index (BMI) of 25.0 and over—than those living in *Very remote* areas. They were also less likely to have a pre-term or low birthweight baby
- women from the lowest socioeconomic areas were more likely to begin antenatal care later in pregnancy, to smoke in pregnancy and to be overweight or obese in pregnancy than women from the highest socioeconomic areas. They were also more likely to give birth early (or pre-term), to babies of low birthweight, than women from the highest socioeconomic areas

- Aboriginal and Torres Strait Islander pregnant women were more likely to smoke than non-Indigenous pregnant women and to be overweight or obese. They were also more likely to give birth early (pre-term) and twice as likely to have a baby of low birthweight
- women born overseas were less likely to attend antenatal care early in pregnancy, to smoke during pregnancy or be overweight in pregnancy, than women born in Australia. They were equally likely, compared with women born in Australia, to have a baby pre-term.

**Table 5.2.1: Selected maternal characteristics by population group, 2013**

| Characteristic   | Attended antenatal care in first trimester |            | Did not smoke during first 20 weeks of pregnancy |            | BMI under 25 at first antenatal visit |            |
|--|--|------------|--|------------|---------------------------------------|------------|
|  | (%)  | Rate ratio | (%)  | Rate ratio | (%)                                   | Rate ratio |
| Maternal age: less than 20                                 | 46.0                                       | —          | 66.4   | —          | 34.9                                  | —          |
| Maternal age: 40 and over                                  | 65.6                                       | 0.7        | 92.2   | 0.7        | 19.2                                  | 1.8        |
| <i>Major city</i>  | 60.7                                       | —          | 91.2   | —          | 59.5                                  | —          |
| <i>Very remote</i>   | 64.3                                       | 0.9        | 62.3   | 1.5        | 50.3                                  | 1.2        |
| Lowest socioeconomic area                                  | 54.8                                       | —          | 80.4   | —          | 50.6                                  | —          |
| Highest socioeconomic area                                 | 68.4                                       | 0.8        | 96.3   | 0.8        | 65.2                                  | 0.8        |
| Indigenous   | 51.9                                       | —          | 53.1   | —          | 52.3                                  | —          |
| Non-Indigenous   | 62.2                                       | 0.8        | 90.2   | 0.6        | 57.3                                  | 0.9        |
| Born in Australia  | 64.3                                       | —          | 85.5   | —          | 54.2                                  | —          |
| Born in 'other main English-speaking countries'            | 59.7                                       | 1.1        | 89.8   | 1.0        | 55.3                                  | 1.0        |
| Born in country other than main English-speaking countries | 55.5                                       | 1.2        | 97.7   | 0.9        | 67.0                                  | 0.8        |
| <b>All mothers</b>   | <b>61.9</b>                                |            | <b>88.3</b>                                      |            | <b>49.3</b>                           |            |

— Denotes the reference point used to calculate the rate ratio for each characteristic listed (age, remoteness, socioeconomic area, Indigenous status, maternal country of birth).

Note: The 'Other main English-speaking countries' category comprises New Zealand, the United Kingdom, Ireland, South Africa, the United States of America and Canada.

Source: National Perinatal Data Collection (AIHW).

Table 5.2.2: Selected labour and birth outcomes by population group, 2013

| Characteristic   | Caesarean section <sup>(a)</sup> (%) | Rate ratio | Pre-term baby (%) | Rate ratio | Low birthweight (%) | Rate ratio |
|--|--------------------------------------|------------|-------------------|------------|---------------------|------------|
| Maternal age: less than 20                                 | 18.3                                 | —          | 9.8               | —          | 8.1                 | —          |
| Maternal age: 40 and over                                  | 50.6                                 | 0.4        | 12.0              | 0.8        | 8.5                 | 1.0        |
| <i>Major city</i>  | 33.6                                 | —          | 8.3               | —          | 6.3                 | —          |
| <i>Very remote</i>   | 32.6                                 | 1.0        | 13.3              | 0.6        | 10.6                | 0.6        |
| Lowest socioeconomic area                                  | 31.9                                 | —          | 9.5               | —          | 7.5                 | —          |
| Highest socioeconomic area                                 | 34.3                                 | 0.9        | 7.8               | 1.2        | 5.6                 | 1.3        |
| Indigenous   | 29.2                                 | —          | 14.4              | —          | 12.2                | —          |
| Non-Indigenous   | 33.3                                 | 0.9        | 8.3               | 1.7        | 6.1                 | 2.0        |
| Born in Australia  | 33.6                                 | —          | 8.5               | —          | 6.4                 | —          |
| Born in 'other main English-speaking countries'            | 31.6                                 | 1.1        | 7.3               | 1.2        | 5.3                 | 1.2        |
| Born in country other than main English-speaking countries | 32.7                                 | 1.0        | 7.0               | 1.2        | 6.6                 | 1.0        |
| <b>All mothers</b>   | <b>33.3</b>                          |            | <b>8.6</b>        |            | <b>6.4</b>          |            |

(a) Age-standardised rate.

— Denotes the reference point used to calculate the rate ratio for each characteristic listed (age, remoteness, socioeconomic area, Indigenous status, maternal country of birth).

Source: National Perinatal Data Collection (AIHW).

## Antenatal risk factors

### Maternal age

The age at which a woman gives birth can be a risk factor for obstetric and perinatal outcomes, with adverse outcomes more likely to occur in women aged under 20 and over 40. Consistent with recent trends in Australia, women are continuing to give birth later in life. Although just over 3 in 5 (61%) women who gave birth were aged between 25 and 34 in 2013 (Figure 5.2.1), the proportion of mothers aged 35 and over increased from 19% in 2003 to 22% in 2013, and the proportion of teenage mothers (aged under 20) decreased from 4.6% to 3.3% over the same period. In 2013, the average age of all women who gave birth was 30.1, compared with 29.5 in 2003.

The average age of Aboriginal and Torres Strait Islander mothers also increased, from 24.7 in 2003 to 25.3 in 2013. Even though the proportion of Aboriginal and Torres Strait Islander mothers who were teenagers decreased over the same time period (from 23% to 18%), Aboriginal and Torres Strait Islander mothers were 6 times as likely to be teenage mothers as were non-Indigenous mothers (18% compared with 2.7%, respectively). Conversely, 9.6% of Aboriginal and Torres Strait Islander mothers were aged 35 and over, compared with 23% of non-Indigenous mothers.

## Antenatal care

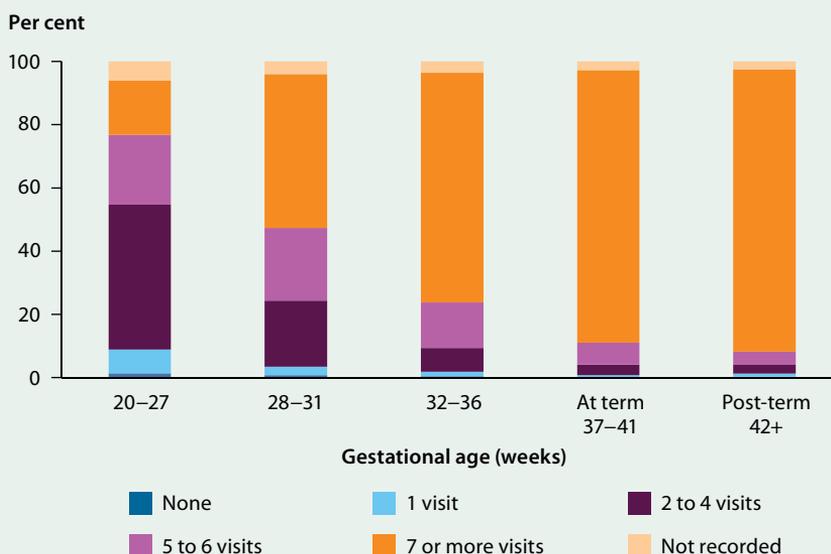
Accessing routine antenatal care, beginning in the first trimester (before 14 weeks gestational age), is known to contribute to better maternal health in pregnancy, fewer interventions in late pregnancy, and positive child health outcomes (AHMAC 2012; WHO 2015a). The Australian Antenatal Guidelines recommend that the first antenatal visit occur within the first 10 weeks of pregnancy and that first-time mothers with an uncomplicated pregnancy have 10 antenatal visits (seven visits for subsequent uncomplicated pregnancies) (AHMAC 2012).

In recent times, the options available for Australian women for antenatal care and birthing have expanded significantly, including the provision of more midwifery-led care. Women can now choose to receive antenatal care from a range of practitioners (including general practitioners, midwives and obstetricians) and to give birth in a range of different settings (such as in hospital, in a birthing centre or at home). Aspects that differ across types of care include:

- the practitioners supporting the women (community or independent midwives, general practitioners, obstetricians)
- aspects of how the care is provided (shared care, continuity of care, place of care, place of birth, private versus public settings)
- the target of specific types of care for the woman (low or high risk, specific cultural background).

In 2013, nearly 100% of women accessed antenatal care at some point in their pregnancies, with just over three-fifths (62%) attending in the first trimester. Fewer women (87%) met the recommended standard in the Australian Antenatal Guidelines by making seven or more antenatal visits, and the number of antenatal visits increased with gestational age (Figure 5.2.2).

**Figure 5.2.2: Number of antenatal visits, by baby's gestational age, 2013**



Note: 'Pre-term' is classed as 20-36 weeks gestation, 'term' is 37-41 weeks gestation and 'post-term' is gestation of 42 weeks and over.

Source: National Perinatal Data Collection (AIHW).

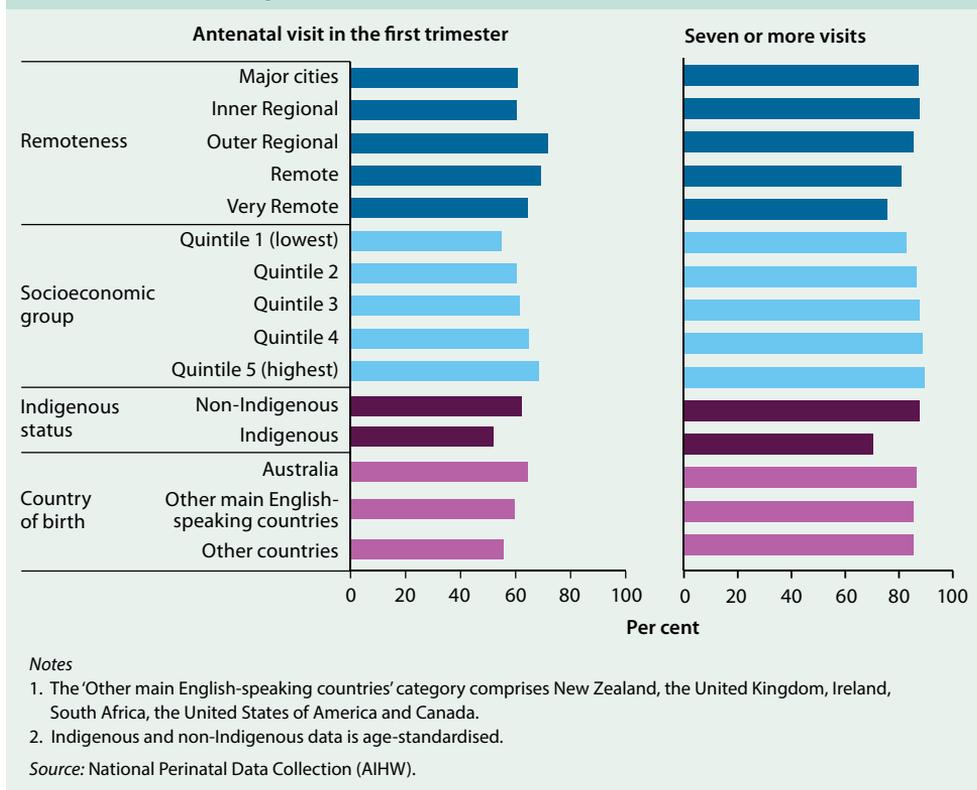
The number of antenatal visits accessed in the first trimester varied by remoteness, socioeconomic position, Indigenous status and country of birth of the mother (Figure 5.2.3). Knowledge of access to services, availability of culturally appropriate services, and language barriers are likely to influence access to antenatal visits.

Women born overseas in non-English speaking countries were less likely to access an antenatal visit in the first trimester (56%) than Australia-born women (64%), but they were almost as likely as other mothers to access seven or more antenatal visits (86% of mothers born in other countries compared with 87% of Australian-born mothers).

Aboriginal and Torres Strait Islander women were less likely to access either an antenatal visit in the first trimester (52%, compared with 62% of non-Indigenous women) or to access seven or more visits (71%, compared with 88% of non-Indigenous women).

Women living in the lowest socioeconomic areas tend to begin antenatal care later in pregnancy—just over half (55%) of these women accessed antenatal care in the first trimester, compared with 68% of women living in the highest socioeconomic areas.

**Figure 5.2.3: Antenatal visits in the first trimester and seven or more antenatal visits, by selected maternal characteristics, 2013**



## Smoking during pregnancy

Tobacco smoking at any time during pregnancy is the most common modifiable risk factor for pregnancy complications, and is associated with poorer perinatal outcomes, including a baby being of low birthweight or small for gestational age, a pre-term birth or perinatal death. Women who smoke while pregnant are also at increased risk of a wide range of problems, including ectopic pregnancy, miscarriage and premature labour (DHHS 2014).

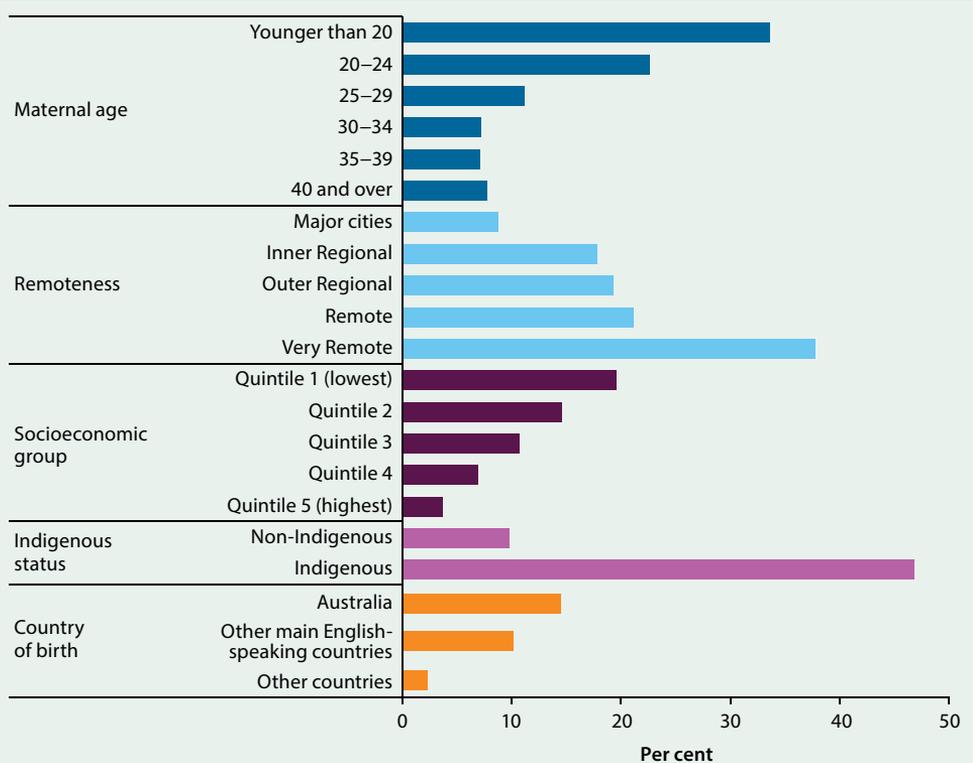
Around 1 in 8 women (about 35,000 or 12%) smoked at some time during their pregnancy in 2013, a decrease from 15% in 2009. About one-fifth (22%) of women who reported smoking during the first 20 weeks of pregnancy reported not smoking during the second 20 weeks.

On average, women who smoked during pregnancy accessed their first antenatal visit later in pregnancy and also had fewer overall antenatal visits (15 weeks and 9 visits) than women who did not smoke (13 weeks and 10 visits).

Aboriginal and Torres Strait Islander mothers accounted for 17% of mothers who smoked at any time during pregnancy in 2013, despite accounting for only 4.1% of mothers. However, the rate of smoking during pregnancy decreased between 2009 and 2013 for Aboriginal and Torres Strait Islander women (50% to 47%, respectively).

Smoking during pregnancy is strongly associated with socioeconomic factors. Teenage mothers (34%); mothers living in *Remote* (21%) and *Very remote* (38%) areas; those living in the lowest socioeconomic areas (20%); Aboriginal and Torres Strait Islander women (47%); and mothers born in Australia (15%) were most likely to smoke in the first 20 weeks of pregnancy. It should be noted that these categories are not mutually exclusive and it is likely that many of these influencing factors overlap (Figure 5.2.4).

**Figure 5.2.4: Smoking during the first 20 weeks of pregnancy, by selected maternal characteristics, 2013**



Note: The 'Other main English-speaking countries' category comprises New Zealand, the United Kingdom, Ireland, South Africa, the United States of America and Canada.

Source: National Perinatal Data Collection (AIHW).

## Alcohol consumption during pregnancy

Alcohol use during pregnancy can disturb the development of the fetus and lead to problems later in life. Fetal Alcohol Spectrum Disorder (FASD) is a term that describes the range of effects that can occur in a baby who has been exposed to alcohol in its mother's womb (Burns et al. 2013; NHMRC 2009). It is not yet known how much alcohol is safe to drink during pregnancy; however, it is known that the risk of damage to the baby increases the more women drink and that binge drinking is especially harmful. Therefore, the National Health and Medical Research Council advises that the safest option for women is to abstain from drinking if they are pregnant, planning a pregnancy or breastfeeding.

In recent years the Australian Government has funded research to improve the understanding of FASD. A FASD Action Plan has also been developed to inform the future directions in the area. The plan outlines five priority areas for action, including the provision of better diagnosis and management; development of best practice interventions; and services to support high-risk women (Department of Health 2016a, 2016b).

The main source of data on alcohol use in pregnancy in 2013 is the National Drug Strategy Household Survey. This survey contains a number of questions on alcohol consumption in pregnancy, with additional questions added in 2013. It should be noted that the number of pregnant women answering the survey was low and thus further disaggregations (based on age, remoteness, socioeconomic position or any other demographics) are not available.

The proportion of pregnant women abstaining from alcohol rose slightly between 2010 and 2013 (from 49% to 53%), but this increase was not statistically significant. More than half (56%) of pregnant women consumed alcohol before they knew they were pregnant and about 1 in 4 (26%) of these women continued to drink, even after they knew they were pregnant. About 3 in 4 (78%) pregnant women who consumed alcohol while pregnant drank monthly or less, and 17% drank 2–4 times a month. Most (96%) usually consumed 1–2 standard drinks.

## Obesity in pregnancy

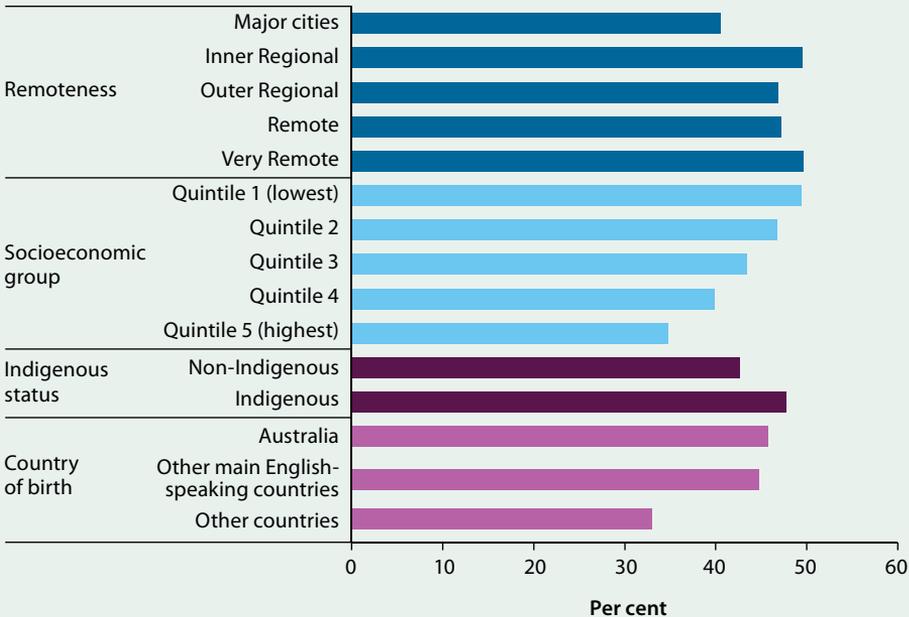
In line with trends relating to overweight and obesity generally in adults in Australia (see 'Chapter 4.4 Overweight and obesity'), obesity in pregnancy is becoming more of an issue in maternity services. Data on obesity in pregnant women was collected in the National Perinatal Data Collection for the first time in 2013, though it should be noted that data are not available for all women who gave birth. Data are available for BMI for around two-thirds of women who gave birth in 2013 (Victoria, Queensland, South Australia, Tasmania, Western Australia and the Australian Capital Territory).

Being overweight or obese during pregnancy contributes to an increased risk of complications during pregnancy and delivery, including increased morbidity and mortality for both mother and baby. A normal BMI for a non-pregnant woman is 18.5–24.9. While increases in BMI in pregnancy are expected, a BMI of 25–29 at the first antenatal visit has been defined as 'overweight' and a BMI of 30 and over as 'obese' in pregnancy.

In 2013, 46% of women who gave birth in these jurisdictions were classified as of normal weight and 3.5% as underweight. At the same time, 24% were classified as overweight and 19% as obese, with the remainder either morbidly obese (2.7%) or not reported (7.8%). Overweight or obesity tended to increase with lower socioeconomic position, with around half (49%) of pregnant women living in the lowest socioeconomic areas being overweight or obese.

Aboriginal and Torres Strait Islander mothers were slightly more likely to be overweight or obese than non-Indigenous mothers (48% compared with 43%). Women born in Australia were more likely to be overweight or obese than those born in countries other than Australia or the other 'main English-speaking' countries (46% compared with 33% and 45% respectively) (Figure 5.2.5).

**Figure 5.2.5: Women who gave birth, and were classified as overweight or obese (BMI 25+), by selected maternal characteristics, 2013**



**Notes**

- BMI data available for Victoria, Queensland, South Australia and Tasmania and partially collected from Western Australia and the Australian Capital Territory. BMI source data and methods used for collection in states and territories is not uniform.
- The 'Other main English-speaking countries' category comprises New Zealand, the United Kingdom, Ireland, South Africa, the United States of America and Canada.

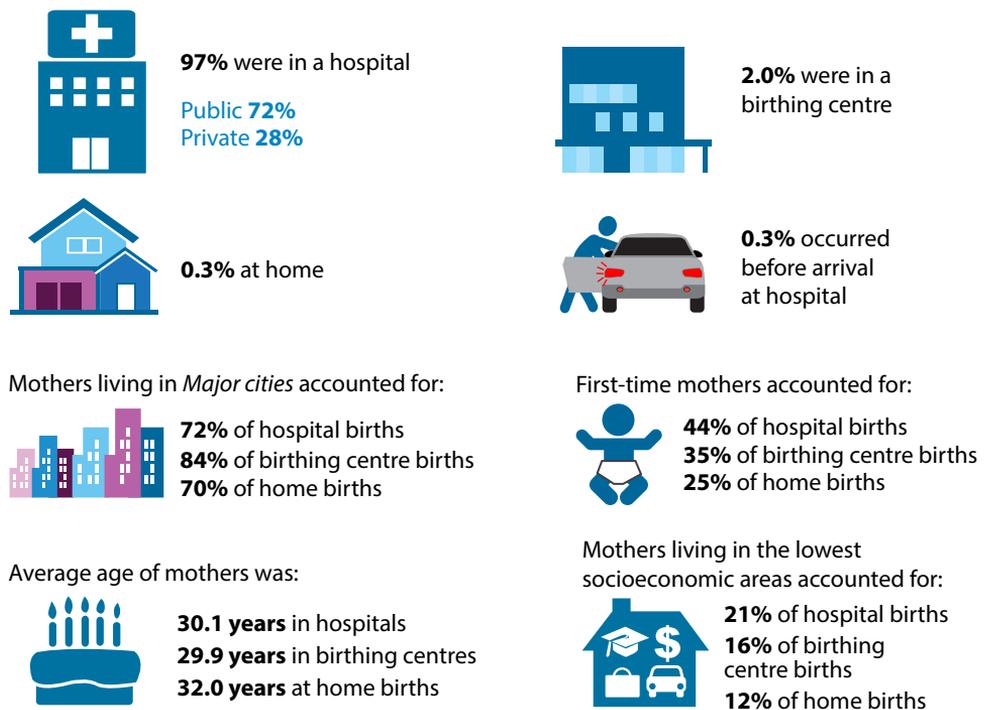
Source: National Perinatal Data Collection (AIHW).

# Labour and birth

## Place of birth

Hospitals were still the most common place to give birth in Australia (97% of all births). Place of birth is influenced by a range of factors: for example, birthing centres are generally located in *Major cities* and thus are not always an option for women living in regional or remote areas. Publicly funded home birth programs do exist in Australia but they are limited in number with no programs in the Australian Capital Territory or in Queensland. Birth centres and home birthing programs also tend to limit their care/services to low-risk mothers. Mothers who have given birth previously are more likely to give birth in other settings—including births occurring before arrival at hospital (in the 'other' category)—as their labour time tends to decrease with the number of births experienced.

### 309,000 births in 2013

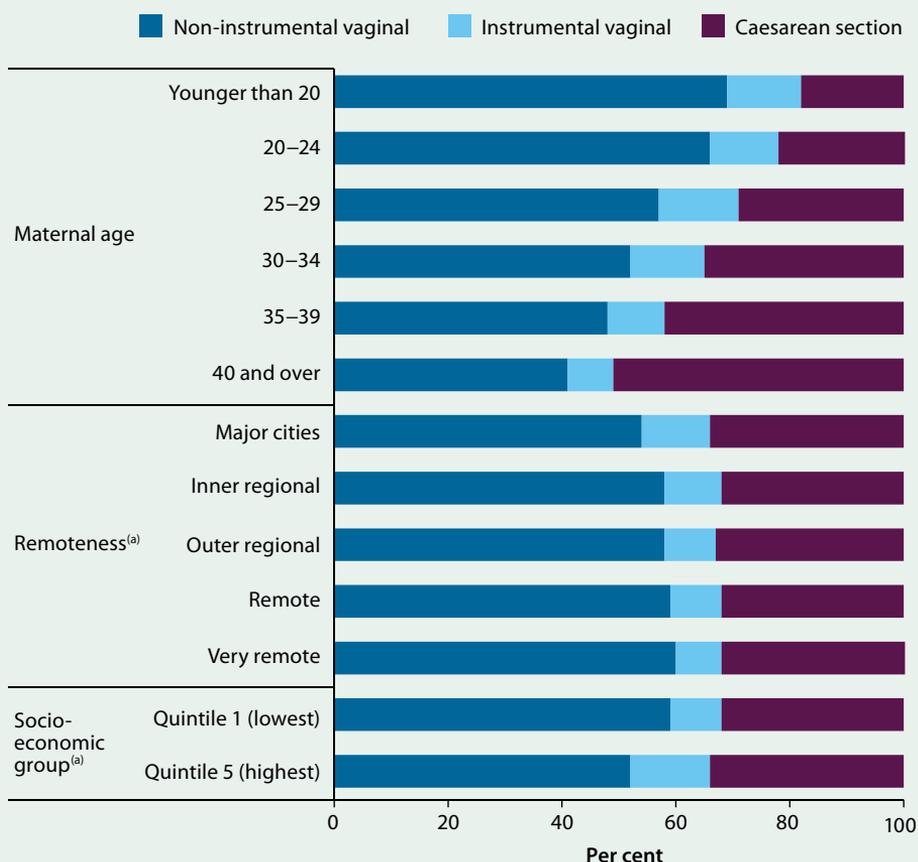


## Method of birth

In 2013, about two-thirds (67%) of women had a vaginal birth, while the remaining third (33%) had a caesarean section. Most vaginal births (82%) were unassisted, or 'non-instrumental' (see Glossary). The prevalence of unassisted vaginal deliveries decreased with age and increased marginally with each category of remoteness and socioeconomic position (Figure 5.2.6).

The vaginal unassisted delivery rate has fallen from 61% in 2003 to 55% in 2013, while the caesarean section rate has increased from 29% to 33% over the same time period. Assisted or 'instrumental' vaginal delivery (see Glossary) has remained relatively stable at around 12% throughout the same period.

Figure 5.2.6: Method of birth by selected maternal characteristics, 2013



(a) Age-standardised rates.

Source: National Perinatal Data Collection (AIHW).

Aboriginal and Torres Strait Islander mothers were more likely to have a vaginal birth (71%) than non-Indigenous mothers (67%), and less likely to have an assisted vaginal delivery (6.0%) or a caesarean section delivery (29%) than non-Indigenous women (12% and 33%, respectively).

In 2013, 33 in 100 births in Australia were by caesarean section delivery. Internationally, the caesarean section delivery rate has been increasing in most Organisation for Economic Co-operation and Development (OECD) countries in recent years. The OECD average increased from a rate of 20 per 100 live births in 2000 to 28 per 100 in 2013. Australia's rate has remained higher than the OECD average over this time and ranked 22nd out of 32 OECD countries in 2013 (when caesarean section rates are ranked from lowest to highest) (OECD 2015).

Since 1985, the international health care community has considered the ideal rate for caesarean section to be between 10% and 15% (WHO 2015c). However, caesarean sections have become increasingly common both in developed and developing nations (WHO 2015b). In recent years, governments and clinicians have expressed concern about the rise in the numbers of caesarean section births and the potential negative consequences for maternal and infant health. There is growing evidence of increasing maternal mortality and morbidity associated with multiple caesarean

operations, such as more difficult surgery, increased blood loss, abdominal organ injury, hysterectomy and longer hospital stay, as well as the risk of multiple exposures to anaesthesia (Häger et al. 2004; Macdorman et al. 2008).

The World Health Organization (WHO) has recently released a *WHO statement on caesarean section rates* which states that every effort should be made to provide caesarean sections to women in need, rather than striving for a specific rate (WHO 2015b).

Caesarean sections were more common among older mothers, first-time mothers and women who had given birth by caesarean section before. In 2013, 85% of mothers with a history of caesarean section had a further caesarean section delivery, while the remainder had a vaginal birth (12% had an unassisted vaginal birth and 3.6% had an assisted vaginal birth).

Caesarean section rates differed by hospital sector and age, but not by remoteness and socioeconomic position (Figure 5.2.6). Rates of caesarean section were 1.5 times as high in private hospitals (44%) as in public hospitals (30%) and women older than 40 were almost 3 times as likely to deliver by caesarean section as teenagers were (51% compared with 18%). Rates of caesarean section delivery were similar for mothers in *Major cities* (34%) and *Very remote* areas (33%) and for those living in the highest socioeconomic areas (34%) compared with women living in the lowest socioeconomic areas (32%).

## Babies

Key indicators of babies' health include gestational age and birthweight. This section of the article focuses on how maternal characteristics such as place of residence, socioeconomic position and Indigenous status affect babies' outcomes.

### Gestational age

In 2013, the average gestational age for all babies was 38.7 weeks, with the vast majority (91%) born at term (37–41 weeks). Pre-term births were more common for mothers who smoked or who did not receive antenatal care during pregnancy.

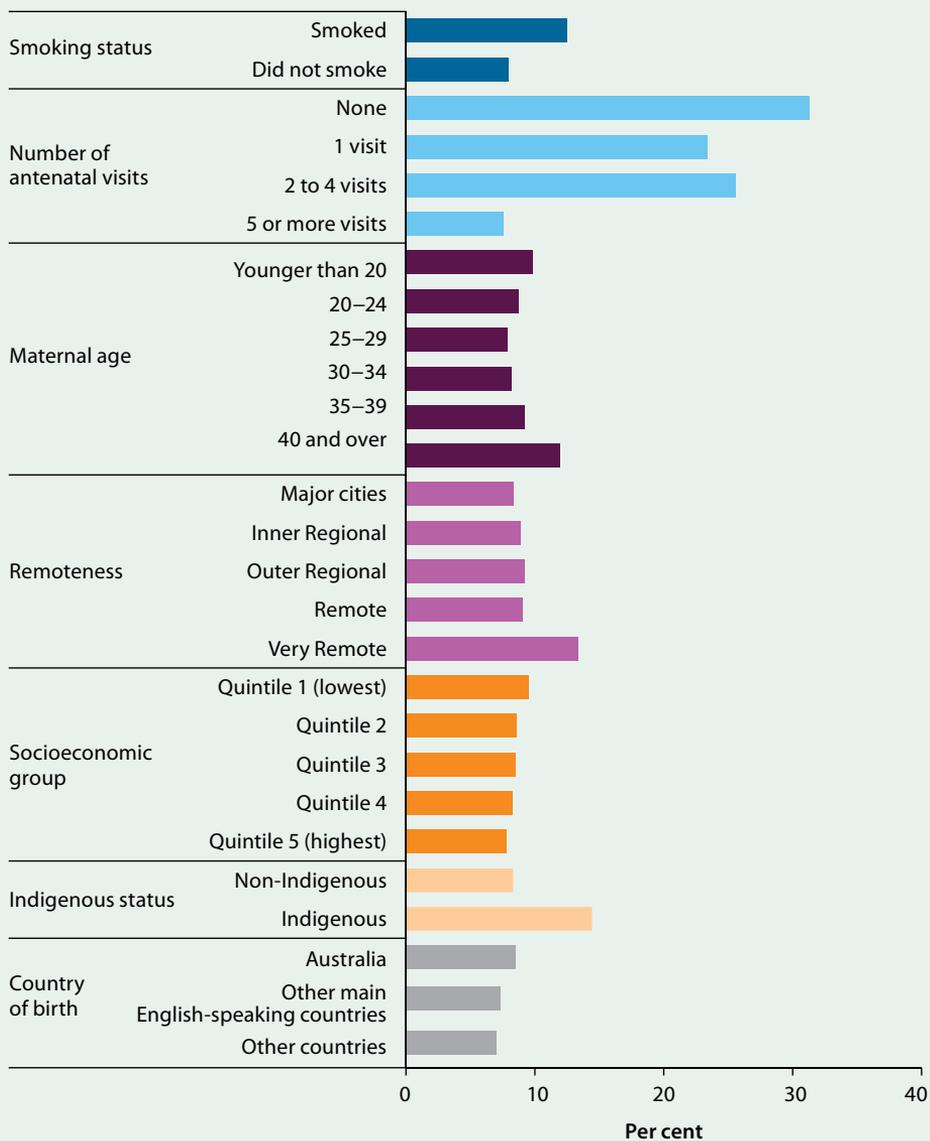
Overall, 8.6% of babies were born pre-term in 2013, with most of these births occurring at gestational ages of between 32 and 36 completed weeks. The average gestational age for all pre-term babies was 33.3 weeks.

Mother's smoking status was associated with the baby's gestational age. Babies whose mothers smoked during pregnancy were 1.5 times as likely to be born pre-term (12%) as those whose mothers did not smoke during pregnancy (7.9%) (Figure 5.2.7).

Babies were also more likely to be pre-term according to other selected maternal characteristics, including:

- the age of their mother—10% of babies born to teenage mothers and 12% of babies born to older mothers (those aged 40 and over) were pre-term compared with 8.4% of babies with mothers aged 20–39
- where their mother lives—13% of babies with mothers who lived in *Very remote* areas were born pre-term compared with 8.3% of babies whose mothers lived in *Major cities*, and 9.5% of babies with mothers who lived in the lowest socioeconomic areas were born pre-term compared with 7.8% of babies born to mothers in the highest socioeconomic areas
- their mother's Indigenous status—14% of babies born to Aboriginal and Torres Strait Islander mothers were born pre-term compared with 8.3% of babies born to non-Indigenous mothers.

**Figure 5.2.7: Pre-term births, by selected maternal characteristics, 2013**



Note: The 'Other main English-speaking countries' category comprises New Zealand, the United Kingdom, Ireland, South Africa, the United States of America and Canada.

Source: National Perinatal Data Collection (AIHW).

## Birthweight

A baby's birthweight is a key indicator of infant health and a determinant of a baby's chance of survival and health later in life. A baby may be small due to being born early (pre-term) or be small for gestational age, which indicates a possible growth restriction within the uterus.

### Birthweight ranges

Normal: 2,500 to 4,499 grams

Low: less than 2,500 grams

Extremely low: less than 1,000 grams

(WHO 1992)

In 2013, the vast majority of liveborn babies (92%) were in the normal weight range, with the mean birthweight of liveborn babies at 3,355 grams. One in 16 (6.4%) babies were of low birthweight, and a small proportion (1.6%) were of high birthweight (4,500 grams and over). Despite a fall in rates of smoking in pregnancy between 2009 and 2013 (from 15% to 12%), there has been little change in the proportion of low birthweight babies, with the proportion remaining between 6.1% and 6.4% over this period. This may be due to other factors, such as advances in medical care, that mean that small babies are more likely to be liveborn than in the past.

### The proportion of low birthweight babies was higher among:



**female babies** (6.9%) compared with male babies (5.9%)



**twins (56%) and other multiples** (98%) compared with singletons (4.8%)



babies **born in public hospitals** (7.0%) compared with babies born in private hospitals (4.8%)



babies whose mothers **smoked during pregnancy** (12%) compared with babies whose mothers did not smoke (5.7%)



babies of **Aboriginal and Torres Strait Islander mothers** (12.2%) compared with babies of non-Indigenous mothers (6.1%)

The proportion of low birthweight babies increased with remoteness and socioeconomic position.

In 2012, the proportion of low birthweight babies in Australia (6.2%) was lower than the OECD average (6.6%), with Australia ranked 15th out of 34 OECD countries (OECD 2015). (See Chapter 4.1 'Social determinants of health'.)

## What is the AIHW doing?

The AIHW is continually striving to improve the quality, timeliness and reporting of maternal and perinatal information in Australia—identifying information needs for maternity and perinatal data, enhancing reporting by making data more accessible online, and developing a range of nationally agreed indicators. Expanding the range of indicators will enable better monitoring and evaluation of safety and quality of maternity care in Australia.

### What is missing from the picture?

Though Australia's maternal and perinatal mortality is among the lowest in the world, there are a range of areas where collecting new data or improving current data would allow specific areas of concern to be better monitored and targeted by health services.

There are no routine data available on the prevalence of pre- or postnatal depression, on domestic violence during pregnancy, or on FASD in Australia. Current data on alcohol use in pregnancy are from the National Drug Strategy Household Survey and thus are based only on a small number of pregnant women. Due to the sample size, further disaggregation (for example, by Indigenous status, remoteness or socioeconomic position) is not possible. BMI is currently only available from the National Perinatal Data Collection for a limited number of states and territories. Having the full picture across Australia for these issues would allow health services to target subpopulations more effectively.

There are also limited data on caesarean sections—especially when caesarean sections are deemed to be urgent and the reason(s) for, and health condition(s) associated with, the procedure. This is essential information for evaluating the outcomes of caesarean sections. National data development is being pursued with the states and territories to improve data used to generate information on caesarean sections. Data being developed on maternal risk factors and the clinical indications for caesarean section will provide a more complete picture of an individual woman's risk profile, and further highlight potentially preventable variations in health care practice across Australia. Understanding variations across hospitals in performing caesarean sections and implementing evidence-based practices may result in improved maternity care (Lee et al. 2013). This should better inform policy and care aimed at ensuring that caesarean sections are targeted appropriately to those women who need them.

## Where do I go for more information?

More information on Australia's mothers and babies, the perinatal data portal, the Maternity Information Matrix (MIM), the National Maternity Data Development Project (NMDDP) and the NCMI is available at <http://www.aihw.gov.au/mothers-and-babies/>. The latest edition (and previous editions) of the annual publication [Australia's mothers and babies](#) and reports associated with the MIM, the NMDDP and the NCMI's are available for free download.

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## 5.3 How healthy are Australia's children?

Good health is a critical element in a child's quality of life and can influence participation in many aspects of life, including learning, recreation and relationships, not only in childhood but throughout life.

Children's health and developmental outcomes are closely related to the social environment in which they live—differences in socioeconomic position translate into inequalities in child development. These social determinants of health include socioeconomic, political, cultural context and daily living conditions. Discrepancies between children based on differences in social and economic circumstances can be evident from birth, and grow larger as children get older (CSDH 2008; Moore et al. 2015; Woolfenden et al. 2013). See also 'Chapter 4.1 Social determinants of health' and 'Chapter 4.2 Social determinants of Indigenous health'.

In recognition of the importance of ensuring that children have the best possible start in life, the Council of Australian Governments Health Council recently endorsed *Healthy, Safe and Thriving: National Strategic Framework for Child and Youth Health*. The framework identifies the five strategic priorities in Australia for the next 10 years (COAG 2015):

- equip children and young people with the foundations for a healthy life
- support children and young people to become strong and resilient
- support children and young people to live in healthy and safe homes, communities and environments
- ensure that children and young people have equitable access to health care services and equitable health outcomes
- improve systems to optimise the health outcomes of children and young people.

These strategic priorities comprise 27 objectives and 64 actions. Four of the 27 objectives have actions relating to child health which are measurable using existing data:

1. Children and young people are active, healthy and thriving.
2. Children and young people are immunised against preventable illnesses.
3. Children and young people have lower rates of preventable injury and mortality.
4. Children and young people experience lower rates and impact of chronic disease.

This snapshot examines how Australia's 4.4 million children aged 0–14 (19% of the Australian population) are faring against these four objectives.

## How children are faring

### Objective 1: Children are active, healthy and thriving



In 2014–15, only 2.5% of children aged 5–14 ate enough fruit and vegetables as recommended in the Australian Dietary Guidelines (NHRMC 2013): 70% ate the recommended 2 daily serves of fruit (or 1.5 serves for 4–8 year olds), but only 2.9% ate the recommended serves of vegetables daily (4.5 serves for 4–8 year olds; 5 serves for 9–11 year olds and for girls aged 12–14; and 5.5 for boys aged 12–14) (ABS 2015a).



At the same time, just over one-quarter (26%) of children aged 5–14 were classified as overweight or obese (19% as overweight and 7.1% as obese). Two-thirds (68%) were in the normal weight range with a body mass index of 18.50–24.99 (ABS 2015b).



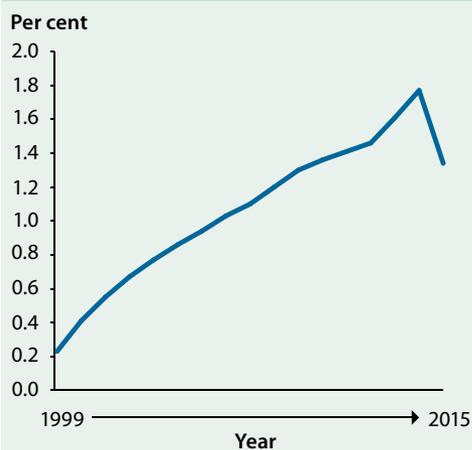
In 2011–12, less than one-quarter (23%) of Australian children aged 5–14 met the national physical activity recommendations every day. About half collectively met the recommendations on 5–6 days (32%) or on 3–4 days (22%) a week, while the remainder met the guidelines even less frequently (ABS 2013; Department of Health 2014).

### Objective 2: Children are immunised against preventable illnesses

As at December 2015, 92.6% of Australian children were fully immunised by the time they started school. Rates among Indigenous children were slightly higher at 93.9% (Department of Health 2016a, 2016b).

While vaccination rates have increased since the Australian Childhood Immunisation Register was established in 1996, vaccine objection rates for children under the age of 7 have also increased steadily, especially under the ‘conscientious objector’ category.

**Figure 5.3.1: Proportion of Australian children with conscientious objection recorded, 1999–2015**



Source: Department of Health 2016c.

However, between 2014 and 2015, for the first time since 1999, national vaccine objection rates have decreased (from 1.8% to 1.3%) (Department of Health 2016c).

In 2015, more than 1.3% (equivalent to 30,000) children aged under 7 were not vaccinated because their parents were vaccine objectors (Figure 5.3.1). This equates to an increase of more than 13,000 children over 10 years. In order to protect children and the community from preventable diseases, the Australian Government will remove ‘conscientious objection’ as an exemption category for child care payments from 1 January 2016. See ‘Chapter 6.1 Prevention and health promotion’ and ‘Chapter 7.1 Indicators of Australia’s health’.

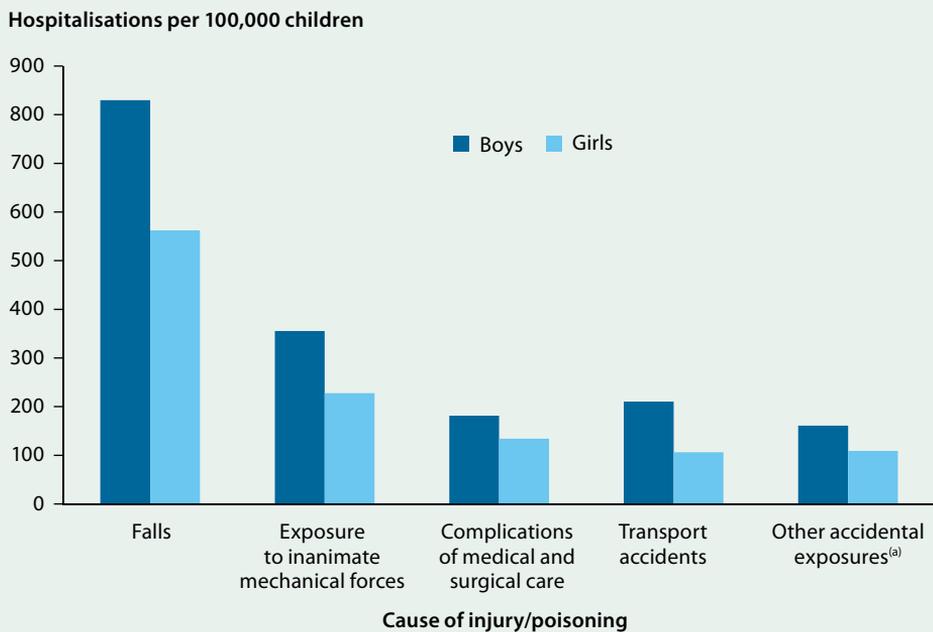
### Objective 3: Children have lower rates of preventable injury and mortality

In 2013–14, there were over 74,000 hospitalisations (1,686 per 100,000) due to injury and poisoning for children aged 0–14. Rates have changed little since 1993–94.

Hospitalisations tend to increase with age—in 2013–14, 80,000 (2,572 per 100,000) young people aged 15–24 were hospitalised with a principal diagnosis of injury and poisoning. Boys aged 0–14 were almost 1.5 times as likely to be hospitalised for injury and poisoning as girls (2,006 compared with 1,347 per 100,000).

Falls (700 per 100,000) were the most common cause of injury/poisoning hospitalisations for children in 2013–14, with rates 4.4 times as high as for transport accidents (160 per 100,000). Boys were more likely to be hospitalised than girls across all causes of injury and poisoning (Figure 5.3.2).

**Figure 5.3.2: Hospitalisations for the top five principal diagnoses of injury and poisoning, by cause and sex, children aged 0–14, 2013–14**



(a) This category comprises accidental drowning and submersion; accidental threats to breathing; overexertion; travel and privation; and accidental exposure to other and unspecified factors.

Source: AIHW Morbidity Database.

During 2011–2013, there were 3,265 infant deaths, a rate of 361 deaths per 100,000 infants aged under 1. During the same period, there were 1,441 child deaths, a rate of 12 deaths per 100,000 children (aged 1–14).

The leading causes of death for infants were conditions originating in the perinatal period and congenital conditions (76% of all infant deaths, or 272 per 100,000); sudden infant death syndrome (6.0% of all infant deaths, or 22 per 100,000); other ill-defined causes (5.0% of all infant deaths, or 18 per 100,000); and accidental threats to breathing (1.2% of all infant deaths, or 4 per 100,000).

The leading causes of death for children aged 1–14 were land transport accidents (14%, or 1.7 per 100,000), conditions originating in the perinatal period (8.9%, or 1.1 per 100,000), brain cancer (6.5%, or 0.8 per 100,000) and accidental drowning (6.0%, or 0.7 per 100,000).

On average, 7 pedestrians aged 0–14 were killed each year (in the 10-year period 2001–02 to 2009–2010) and 60 were seriously injured (in the 8-year period 2002–2003 to 2009–2010) due to being hit by a four-wheeled motor vehicle moving around a home (commonly known as ‘driveway run-overs’) (BITRE 2012).

#### Objective 4: Children experience lower rates and impact of chronic disease

The most common reported long-term conditions in children were asthma, and hayfever and allergic rhinitis.



In 2014–15, just over 1 in 10 (11%) children were diagnosed with asthma. See ‘Chapter 3.10 Chronic respiratory conditions’.



In 2014–15, the prevalence of allergic rhinitis (hay fever) was also 11%. Food allergies were reported for the first time in the 2014–15 National Health Survey, with 6.3% of children having a food allergy (ABS 2015b).



In 2014, 1,088 new cases of type 1 diabetes were diagnosed in children (equivalent to rate of 25 cases per 100,000). Rates for this age group have remained relatively stable since 2000, and were similar for males and females.

### What is missing from the picture?

Data are not collected for the majority of the priorities in the Strategic Framework. Data development work to scope and benchmark these priorities, objectives and actions needs to be progressed so that the success of targeted policies, resources and initiatives can be measured.

Key topics of public interest relating to child health and wellbeing include obesity, sleep disorders and the effects of screen-time use. Recent and regularly updated data on physical activity and screen-time use for children would be useful to help understand the factors affecting levels of childhood obesity.

### Where do I go for more information?

Further information on children’s health is available on the AIHW website: <http://www.aihw.gov.au/child-health-development-and-wellbeing/> or the AIHW’s Children’s Headline Indicators online data portal at <http://www.aihw.gov.au/chi/>. More detailed information on diabetes in children is available in the AIHW report [Prevalence of type 1 diabetes among children aged 0–14 in Australia 2013](#) which can be downloaded for free.

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## 5.4 Health of young Australians

Adolescence and young adulthood is a significant period of transition in a person's life. Many modifiable behavioural risk factors that can affect current and future health and wellbeing either emerge or accelerate during this time. Addressing health concerns and choices early can improve the immediate quality of life for young people and is socially and economically more effective than dealing with enduring problems in adulthood.

Recognising the importance of youth health, the Council of Australian Governments Health Council recently endorsed *Healthy, Safe and Thriving: National Strategic Framework for Child and Youth Health*. The framework identifies five strategic priorities in Australia for the next 10 years (COAG Health Council 2015). (See 'Chapter 5.3 How healthy are Australia's children?') These strategic priorities comprise 27 objectives and 64 actions. Six of these objectives have actions relating to youth health which are measurable using existing data:

1. Children and young people are active, healthy and thriving.
2. Children and young people have lower rates of preventable injury and mortality.
3. Children and young people experience lower rates and impact of chronic disease.
4. Children and young people are supported in their mental health needs.
5. Young people reduce risk behaviours such as smoking, drug and alcohol use.
6. Young people make sound choices about their sexual and reproductive health.

This snapshot examines how Australia's 3.1 million young people aged 15–24 (13% of the Australian population) are faring against these six objectives.

### How young people are faring

#### Objective 1: Young people are active, healthy and thriving

According to the 2014–15 National Health Survey (ABS 2015c):



57% of young people were in the normal weight range (with a body mass index of 18.50–24.99), but 22% were classified as overweight and 15% as obese.



Just over half (52%) of young people aged 18–24 were sufficiently active (more than 150 minutes of physical activity over 5 or more sessions in the previous week).



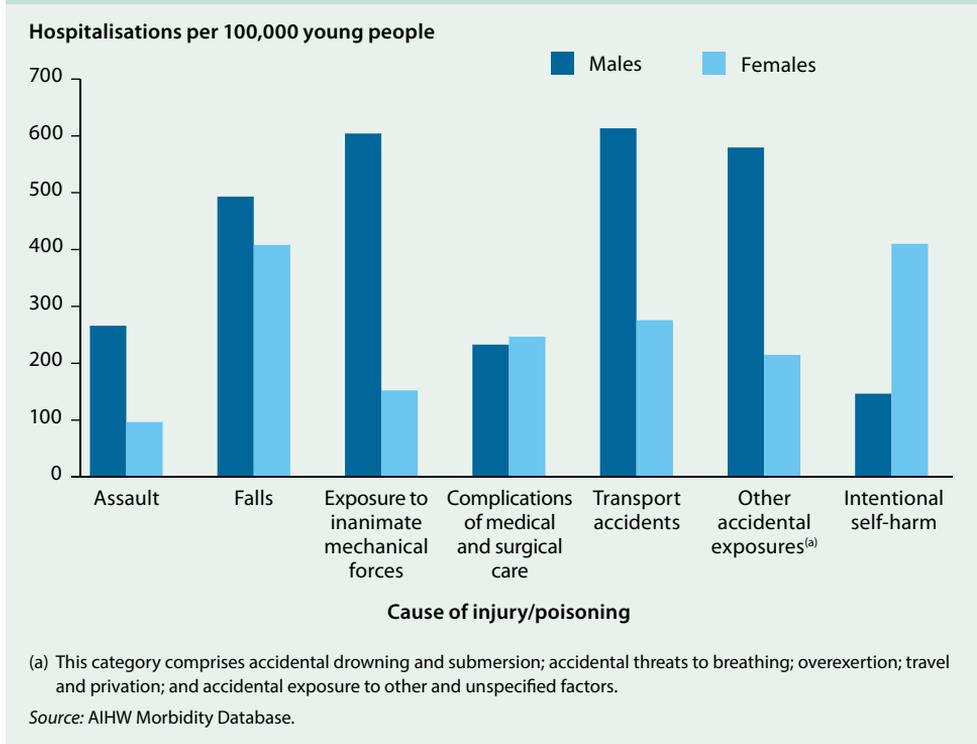
Only 3.3% of young people ate enough fruit and vegetables according to the Australian Dietary Guidelines (NHRMC 2013)—46% ate the recommended 2 daily serves of fruit (3 serves for 15–17 year olds) but only 4.0% had 5 serves of vegetables a day (or 4 serves for 15–17 year olds).

## Objective 2: Young people have lower rates of preventable injury and mortality

In 2013–14, there were over 80,000 hospitalisations (2,572 per 100,000) of young people due to injury and poisoning. Rates have changed little since 1993–94 (which were then 2,514 per 100,000). Males aged 15–24 were 1.9 times as likely as females to be hospitalised for injury/poisoning, but causes of hospitalised injuries by sex were very different for this age group (Figure 5.4.1).

The most common cause of injury/poisoning hospitalisation for females was intentional self-harm (410 per 100,000), which ranked 8th for males (147 per 100,000)—females were 2.8 times as likely to be hospitalised for self-harm as males aged 15–24. Males were most likely to be hospitalised for transport accidents (613 per 100,000), and 2.2 times as likely to be hospitalised for this reason as females. Transport accidents ranked as the 3rd most common reason for hospitalisations for females (276 per 100,000). See 'Chapter 3.13 Injury'.

**Figure 5.4.1: Hospitalisations for the most common principal diagnoses of injury and poisoning, by cause and sex, young people aged 15–24, 2013–14**



In 2014, there were 989 deaths (32 per 100,000 young people) among young people aged 15–24. Males were 2.2 times as likely as females to die between the ages of 15 and 24 (22 per 100,000 young people compared with 10 per 100,000 young people, respectively) (ABS 2015b).



The leading causes of death for young people in 2011–2013 were suicide (11 per 100,000), land transport accidents (9 per 100,000), accidental poisoning (2 per 100,000) and assault (1 per 100,000).



In 2015, there were 225 deaths due to road traffic accidents (7 per 100,000 young people), significantly less than in 2010 (when there were 332 deaths or 11 per 100,000 young people) (BITRE 2015).

### Objective 3: Young people experience lower rates and impact of chronic disease



In 2014–15, just over 1 in 10 (11%) young people were diagnosed with asthma. Rates have remained stable since 2011–12 (ABS 2015b). See 'Chapter 3.10 Chronic respiratory conditions'.



The most common reported long-term conditions in young people were allergic rhinitis (hay fever) (24%, up from 19% in 2011–12) and short-sightedness/myopia (20%). Food allergies were reported for the first time, with 8.2% of young people having a food allergy (ABS 2015d).



In 2014, 484 new cases of type 1 diabetes were diagnosed in young people (equivalent to a rate of 16 cases per 100,000). Rates for this age group have remained relatively stable since 2000. Males were 1.8 times as likely to be newly diagnosed as females.

### Objective 4: Young people are supported in their mental health needs

According to the Young Minds Matter Survey, in 2013–14 (Lawrence et al. 2015):



14% (245,000) of young people aged 12–17 had a mental health disorder in the last 12 months—anxiety was most common (7.0%), followed by Attention Deficit Hyperactivity Disorder (6.3%) and major depressive disorders (5.0%).



Just over one-fifth (21%) of all 12–17 year olds accessed services for emotional or behavioural problems and almost two-thirds (65%) of 12–17 year olds with mental disorders had used these services in the previous 12 months. See 'Chapter 5.5 Mental health of Australia's young people and adolescents'.

### Objective 5: Young people reduce risk behaviours such as smoking, drug and alcohol use

According to the 2013 National Drug Strategy Household Survey:



39% of young people aged 15–24 drank alcohol at levels that put them at risk of harm (more than four standard drinks on one occasion, at least once a month)—down from 49% in 2001. Over one-quarter (27%) had never drunk alcohol—an increase from 16% in 2001.

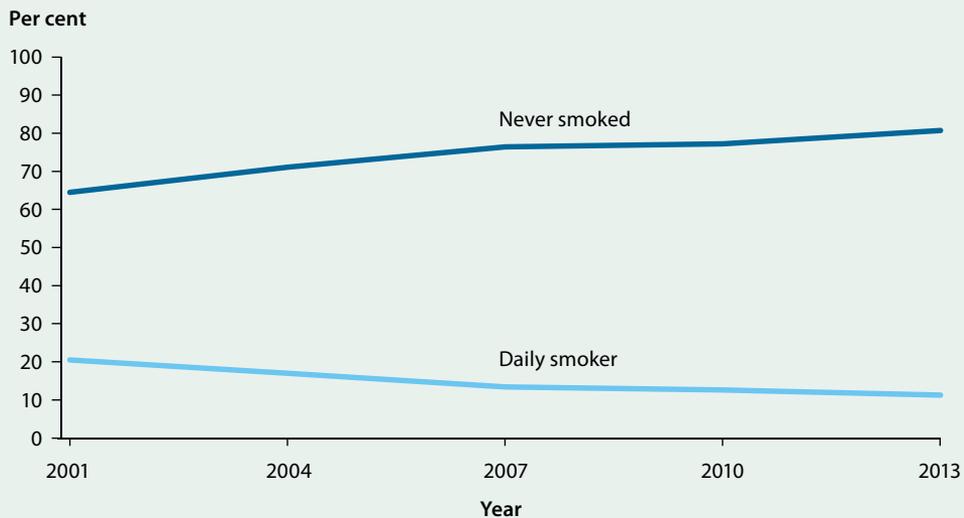


Just over 1 in 10 (11%) young people were current, daily smokers in 2013. This has almost halved since 2001 when 21% were daily smokers. The majority of young people have never smoked (81%) (see Figure 5.4.2). See also 'Chapter 4.7 Tobacco smoking'.



In 2013, one-quarter of young people (25%) had used illicit drugs in the previous 12 months—significantly less than in 2001 (33%). See also 'Chapter 4.5 Illicit drug use'.

**Figure 5.4.2: Tobacco smoking status, young people aged 15–24, 2001–2013**



Source: 2013 National Drug Strategy Household Survey, unpublished data.

### Objective 6: Young people make sound choices about their sexual and reproductive health



In 2013, 43% of sexually active young people (in Years 10–12) reported ‘always’ using condoms when they had sex in the previous year. A further 39% used condoms only ‘sometimes’ and 13% ‘never’ used condoms (Mitchell et al. 2014).

## STI

In 2014, there were more than 50,000 notifications of chlamydia, gonorrhoea and syphilis, a rate of 1,812 per 100,000, with chlamydia accounting for 89% of notifications among young people. Rates have increased since 2005 when 1,040 per 100,000 notifications were reported (Department of Health 2015).



There were around 9,200 births to teenage mothers in 2014. The corresponding age-specific fertility rate for 15–19 year olds was 13 births per 100,000, which has decreased from 16 births per 100,000 in 2004 (ABS 2015a).

### What is missing from the picture?

A significant number of the new priorities outlined in the Healthy, Safe and Thriving: National Strategic Framework for Child and Youth Health do not have any associated data sources or measures for success. Work to develop measures of how children and young people are faring against all objectives in the framework should be progressed so that the success of the framework can be measured.

## Where do I go for more information?

More information on youth health is available at <http://www.aihw.gov.au/youth-health-and-wellbeing/> or the AIHWs National Youth Information Framework data portal <http://www.aihw.gov.au/nyif/>.

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## 5.5 Mental health of Australia's young people and adolescents

Mental health disorders that emerge during the formative years of childhood can have a lasting impact on the health and wellbeing of the individual and on the lives of those around them (Erskine et al. 2015). The development of programs and initiatives for young people who need mental health care and support requires a sound understanding of the scope of the problem, which is best achieved through population-based prevalence studies.

Australia has an epidemiological mental health program, known as the National Survey of Mental Health and Wellbeing, which comprises three surveys: a survey of the adult population, a survey of people living with psychotic mental illness, and a survey of children and adolescents. Together, these surveys provide a detailed national view of the prevalence of mental health issues in Australia and of their impact.

The Australian Child and Adolescent Survey of Mental Health and Wellbeing (known as the Young Minds Matter Survey), conducted in 2013–14, is the second survey to be conducted on the prevalence of mental health disorders in children and adolescents (Telethon Kids Institute 2015), which surveyed households with 4–17 year olds (the methodology is briefly summarised in Box 5.5.1). The survey also examined the health behaviours of young people and their use of the available support services and provided the opportunity to make comparisons against the first survey, conducted in 1998.

### **Box 5.5.1: The Young Minds Matter Survey methodology**

Responses were obtained from over 6,000 households in Australia using two components.

#### **1. A component for parents and carers**

Parents and carers were questioned by a trained interviewer on a range of topics, including:

- family structure and sociodemographics
- health of the child and any disabilities
- the child's mental health service usage in the 12 months prior to the survey
- school attendance
- family characteristics.

Survey instrument examples included:

- strengths and difficulties questionnaire in relation to one selected child
- the Diagnostic Interview Schedule for Children Version IV.

*(continued)*

**Box 5.5.1 (continued): The Young Minds Matter Survey methodology****2. A component for young people**

A total of 3,000 people aged 11–17 from the participating households completed a self-report questionnaire that included:

- a strengths and difficulties questionnaire
- the Diagnostic Interview Schedule for Children Version IV major depressive disorder module
- the Kessler Psychological Distress Scale.

Questions included information about:

- self-harm and suicidal behaviours
- mental health service usage in the 12 months prior to the survey
- experience of bullying and health risk behaviours
- use of the internet and informal support mechanisms.

Source: Lawrence et al. 2015.

## Prevalence of mental health disorders in young people

Results from the 2013–14 Young Minds Matter Survey indicate that the majority of children and adolescents in Australia have good mental health. However, the results also indicate that 1 in 7 (14%, or 560,000) children and adolescents aged 4–17 had a mental disorder in the previous 12 months. Common mental disorders covered in the Young Minds Matter Survey are briefly described in Box 5.5.2. Prevalence rates were higher overall among males (16%) than females (12%) across all disorders except *Major depressive disorder* (Figure 5.5.1). *Attention deficit hyperactivity disorder (ADHD)* was the most prevalent disorder for males, and more common in the 4–11 years age group than in the 12–17 years age group. *Anxiety disorders* was the most prevalent disorder group among females, and more common in the 12–17 years age group. The prevalence of *Major depressive disorder* was higher when young people aged 11–17 provided the information themselves (7.7%) than when the information was provided by their parent/carer (4.7%).

**Box 5.5.2: Common mental disorders covered in the Young Minds Matter Survey**

**Major depressive disorder**—the key feature is the presence of either depressed mood, loss of interest or pleasure or being grouchy, irritable and in a bad mood. Symptoms of major depressive disorder may include significant weight change, loss of appetite, difficulty sleeping, restlessness, fatigue and loss of energy, feeling of worthlessness and inability to concentrate. The diagnostic criteria for this disorder specify that at least five symptoms of depression must be present for a minimum of a 2-week period; that these symptoms cause clinically significant distress; and that they interfere with normal functions at school, at home or in social settings.

(continued)

**Box 5.5.2 (continued): Common mental disorders covered in the Young Minds Matter Survey**

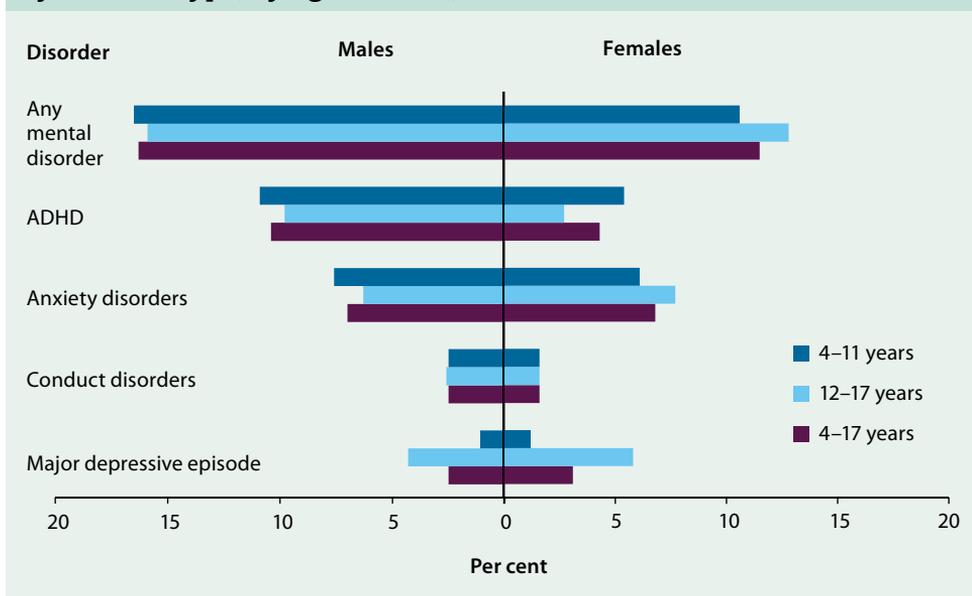
**Anxiety disorders**—a class of mental disorders defined by the experience of intense and debilitating anxiety. The type of anxiety disorders covered in the survey were social phobia, separation anxiety disorder, generalised anxiety disorder, and obsessive-compulsive disorder.

**Attention deficit hyperactivity disorder (ADHD)**—a persistent pattern of inattention and/or hyperactivity-impulsivity. Children and adolescents with this condition may find it difficult to pay attention and to see tasks or activities through to the end, or may make careless mistakes with school work or other tasks. Children and adolescents with problems in the area of hyperactivity may talk excessively; have trouble staying still when it is appropriate or expected; and act like they are ‘always on the go’.

**Conduct disorder**—repetitive and persistent behaviour to a degree that violates the basic rights of others, major societal norms or rules—in terms of aggression towards people or animals, destruction of property, deceitfulness or theft, and serious violation of rules.

Source: Lawrence et al. 2015.

**Figure 5.5.1: 12-month prevalence of mental health disorders, by disorder type, by age and sex, 2013–14**



Comparison of the 2013–14 data with the results of the first survey of young people, conducted in 1998, was limited due to changes in the survey design—most notably differences in the types of disorders that were assessed—and was limited to the 6–17 year old age group. Overall prevalence of any mental health disorder was similar to that indicated in the earlier 1998 survey; however, there were changes in the prevalence of specific disorders between the two surveys. Prevalence rates for *ADHD*

declined over the 15 years between the surveys. By contrast, the rate of *Major depressive disorder* increased. A comparison for *Anxiety disorders* could not be made due to survey design changes.

## Social and demographics characteristics

The Young Minds Matter Survey identified associations between household demographics and the prevalence of mental health disorders (Table 5.5.1).

**Table 5.5.1: Associations between household demographics and 12-month prevalence of mental disorders, 2013–14**

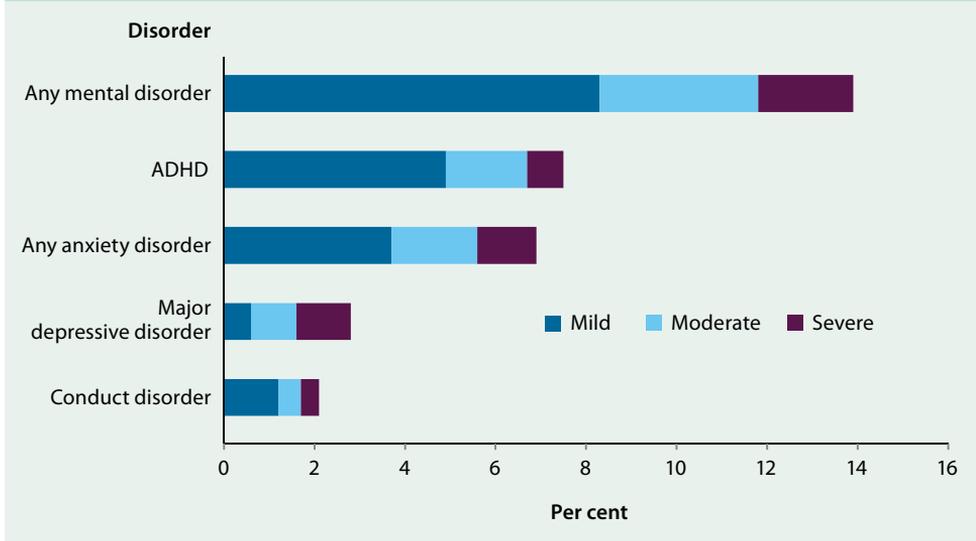
|                                     | Lower prevalence             | Higher prevalence                                       |
|-------------------------------------|------------------------------|---|
| <b>Family composition</b>           | 10.4%                        | 18.3–23.7%  |
|                                     | Original family              | Step families, blended families and one parent families |
| <b>Income bracket (\$ per year)</b> | 10.5%                        | 20.5%   |
|                                     | Highest (\$130,000+)         | Lowest (\$52,000 or less)                               |
| <b>Parent/carer employment</b>      | 10.8%                        | 21.3–29.6%  |
|                                     | Both parents/carers employed | Sole parent/carer; neither parent/carer in employment   |
| <b>Family functioning</b>           | 10.9%                        | 35.3%   |
|                                     | Very good                    | Poor  |
| <b>Location</b>                     | 12.6%                        | 16.2%   |
|                                     | Greater capital city         | Rest of state   |

## Severity of conditions

Unlike many other health conditions, the experience of a mental health disorder is unique to the individual, meaning that the impact of the disorder on daily life and activities is very different among individuals with the same diagnosis. Four domains relating to impact were assessed by the Young Minds Matter Survey: at school or work; with friends and social activities; on the family; and on the children themselves. These factors were combined to determine the severity profile for each disorder. However, the most severe forms of mental illness (for example, psychotic disorders) were out of scope for the survey.

The prevalence of mental health disorders for 4–17 year olds decreased with increasing severity, with 8.3% having 'mild' disorders, 3.5% 'moderate' and 2.1% 'severe' disorders (Figure 5.5.2). Importantly, the higher prevalence conditions, such as *ADHD* and *Anxiety disorders*, were more likely to be rated as having 'mild' and 'moderate' than 'severe' impact. *Major depressive disorder* was the only condition in which 'mild' impact was less common than 'moderate' and 'severe' impact.

**Figure 5.5.2: 12-month prevalence of mental disorders among 4–17 year olds, by disorder type and severity, 2013–14**



## Self-harm, suicidal ideation and attempted suicide

Suicide, self-harm behaviours, suicidal ideation and attempted suicide have long-lasting impacts on individuals, families and communities. The relationship between suicide and previous self-harm behaviours is strong, with around half of young people who die by suicide having previously engaged in self-harm behaviours (Hawton & James 2005). While suicide is uncommon among young people aged 0–14, it is the leading cause of death for young Australians aged 15–24. In 2013, there was fewer than one suicide death per 100,000 population in young people aged 0–14, increasing to 10 deaths per 100,000 population for the 15–19 age group and 12 deaths per 100,000 population for the 20–24 age group (ABS 2015). Rates have been relatively stable over the last 15 years. (Note: suicide data for children aged under 15 years should be treated with caution because there are difficulties determining a suitable age at which self-inflicted acts can be interpreted as an intentional act of self-harm.)

The Young Minds Matter Survey asked participants questions about self-harm, suicidal ideation and attempted suicide.

### Self-harm

The survey showed that 11% of young people aged 12–17 had ever self-harmed, which equates to around 186,000 adolescents. However, these figures are likely to be an underestimate, with around 7.5% of survey respondents preferring not to answer questions about self-harm. Females aged 16–17 had the highest prevalence of ever having harmed themselves (23%), over 3 times the rate of males the same age. Self-harm was shown to be most commonly associated with *Major depressive disorder*, with nearly half of all females with the disorder having ever self-harmed. Around half of 12–17 year olds who self-harmed in the 12 months prior to the survey had used support services such as health or school services; however, it is not known if service use was before or after the self-harm event.

### Suicidal ideation

One in 20 young people (5.6%) aged 12–15 had thoughts of suicide in the 12 months prior to the survey. The suicidal ideation rate for 16–17 year olds was greater than the 12–15 age group: 1 in 10 (11%) had suicidal thoughts, and 7.8% had made a suicide plan in the 12 months prior to the survey. Rates were higher in females (15%) than males (6.8%) and, similar to self-harm, the strongest association between thoughts of suicide and mental disorders occurred for those with a *Major depressive disorder*.

### Suicide attempt

Suicide attempt in the 12 months prior to the survey was highest in females aged 16–17 (4.7%), followed by males aged 16–17 (2.9%); however, 5.3% of 16–17 year olds reported having ever attempted suicide. Suicide attempts in the 12 months prior to the survey in children aged 12–15 (1.7%) were half that of young people aged 16–17 (3.8%). One in 5 females with *Major depressive disorder*, as determined by their own survey response, had attempted suicide. Males (14%) with *Major depressive disorder* were less likely to have attempted suicide than females (23%). The majority of 13–17 year olds who reported a suicide attempt had used support services in the previous 12 months, although it is not possible to establish whether the service use was before or after the suicide attempt.

Services available for people at risk of suicide are:

**Lifeline** 13 11 14 [www.lifeline.org.au](http://www.lifeline.org.au)

**Kids Help Line** 1800 55 1800 [www.kidshelpline.com.au](http://www.kidshelpline.com.au)

**Suicide Call Back Service** 1300 659 467 [www.suicidecallbackservice.org.au](http://www.suicidecallbackservice.org.au)

## Health risk behaviours

Behaviours that impact on the overall health and wellbeing of an individual are termed ‘health risk behaviours’—that is, they increase a person’s risk of developing ill health. For example, smoking, alcohol consumption and drugs use are all considered to be health risk behaviours. Some health risk behaviours are also known risk factors for the development of mental disorders. For example, in young people, risk factors associated with depression include alcohol consumption, drug use, unhealthy diet and negative coping strategies; conversely, maintaining a healthy weight, adequate diet and appropriate levels of sleep have been shown to reduce the risk of depression, and are also known as ‘protective health factors’ (Cairns et al. 2014). The Young Minds Matter Survey results provide an insight into the prevalence of young people engaging in health risk behaviours.

Alcohol consumption was the most prevalent health-risk behaviour identified in young people by the survey. Nearly 4 in 10 (38%) of all 13–17 year olds reported having ever consumed alcohol, with consumption rates higher for those with a mental disorder, particularly those with *Major depressive disorder* (65%). The self-reported rate for consuming four drinks of alcohol in a row in the last 30 days, by young people with a *Major depressive disorder* (28%), was more than double the rate for young people without a disorder (10%). Three in 10 females (31%) with *Major depressive disorder* (based on self-report) engaged in risky alcohol consumption, compared with 2 in 10 males (19%).

Around 1 in 10 (9.9%) 13–17 year old survey respondents reported having ‘ever smoked at least once a week’, with 7.2% having smoked in the 30 days prior to the survey. Smoking rates were 4–5 times higher in young people with a mental health disorder than in people without a disorder. Females (8.2%) were more likely than males (6.2%) to report having smoked in the 30 days prior to the survey. The highest smoking rate was in females with a *Major depressive disorder* (27%): 1 in 4 smoked in the 30 days prior to the survey.

Similar usage patterns to alcohol consumption and smoking were observed for cannabis and other drug use. That is, higher usage rates were observed in young people with mental disorders—in particular for young people with *Major depressive disorder*—compared with those who did not have a disorder. Overall, 12% of 13–17 year olds reported having ever used cannabis and 4.5% reported using other drugs. Rates of ever using cannabis by those with *Major depressive disorder* were over 3 times the rate for those without a disorder, and 6–8 times greater for other drugs (based on parent/carer and self-report respectively).

These results suggest that while *Major depressive disorder* was less prevalent across the total youth population than other disorders, it was more prevalent in 16–17 year olds and more often associated with risky health-related behaviours that may impact on the overall health and wellbeing of the individual. However, it is important to note that these data only illustrate the association between risk behaviours and mental health conditions. They cannot identify cause and effect—that is, whether the health behaviours occur before or after the development of a mental health condition.

## Emotional and behavioural support for young people

Young people often need support for emotional and behavioural issues in their formative years that may not be due to a diagnosable mental disorder. That is, support is often required to help young people negotiate ‘normal’ childhood/adolescent issues that are part of the transition to adulthood (Zimmerman et al. 2013). The lives of young people are dominated by family relationships, peer relationships and the school environment. Each of these elements provides a critical gateway through which support for young people can be delivered. Support at critical times may ease the transition to adulthood and prevent the onset and/or severity of mental health issues.

### Family, friends and school staff—informal support

Young people most often rely on those close to them for informal support. Informal support for emotional or behavioural issues is often provided by relatives, friends and school staff. The Young Minds Matter Survey found that, in 2013–14, nearly two-thirds (63%) of young people aged 13–17 received informal help from their family members, friends or school staff in the 12 months prior to the survey. While males (52%) were less likely to receive informal support, they were equally likely to receive support from a parent (38%) or a friend (35%). By contrast, females (74%) reported receiving more informal support than males but were more likely to receive support from a friend (62%) than from a parent (55%). Four in 5 (80%) young people aged 13–17 with a mental health disorder received informal support (based on the parent report), compared with 3 in 5 of those without a disorder (58%). These data suggest that the majority of young people receive support from a range of sources, regardless of their mental health status.

## Support services

Support services and clinical care options specifically designed for young people are provided by governments through various portfolios, including education and health. Support services are also provided by the non-government sector. The first Australian Child and Adolescent Survey of Mental Health and Wellbeing, conducted in 1998, estimated that only around one-third of 6–17 year olds with mental health issues sought and received care in the 6 months prior to the survey, suggesting that more needed to be done for young people requiring care (Sawyer et al. 2000). The 2013–14 Young Minds Matter Survey results provide a timely update on the use of services by all children and adolescents, as well as those with mental health disorders.

### Service use by all 4–17 year olds

Health and school services were the most common services used by 4–17 year olds in 2013–14.

- One in 10 young people who received support for their emotional and behavioural issues did not have a diagnosable mental disorder, as measured by the survey.
- A further 40% of service users had symptoms of a mental disorder but did not meet the threshold for a 'mental disorder'.
- The remaining 50% of service users were assessed as having a mental disorder.

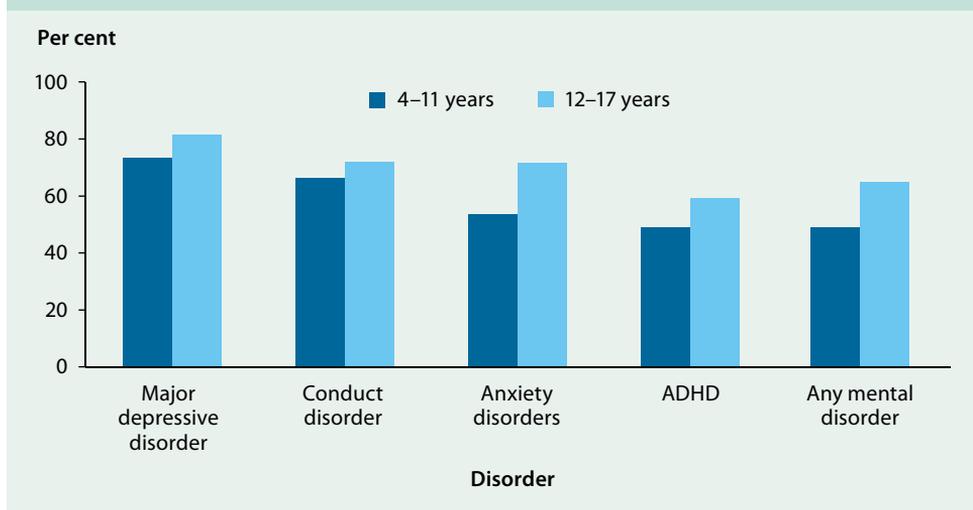
Data imply that many young people with emotional and behavioural issues are seeking and receiving support regardless of whether they have a diagnosable mental health illness.

### Service use by 4–17 year olds with a mental health disorder

Over half (56%) of 4–17 year olds with a mental health disorder had used services for emotional or behavioural issues in 2013–14 (Figure 5.5.3). Service use comparisons with the 1998 estimates can only be made for those aged 6–17 years with either *Major depressive disorder*, *ADHD* or *Conduct disorder*. Service use in this group was 68% in the 12 months prior to the 2013–14 survey compared with 31% in the six months prior to the 1998 survey.

Service use for all disorders in 2013–14 was greater for the 12–17 years age group than for the corresponding 4–11 years age group. The service-use profiles for each of the mental health disorders (Figure 5.5.3) largely reflect the severity profile of each disorder: that is, disorders with a greater proportion of severe impact (see Figure 5.5.2) were associated with greater service usage rates. When severity is considered, regardless of disorder, 88% of young people with a mental disorder that severely affected their daily lives accessed services, compared with 73% of those with moderate disorders and 41% with mild disorders.

**Figure 5.5.3: Service use in the 12-months prior to the survey among 4–17 year olds with mental disorders, by disorder type and age, 2013–14**



## Types of support services

### *School-based services*

School-based services—such as counsellors, welfare officers and support resources—provide support for young people as they negotiate challenges in their school-based social environment, since social connectedness has been shown to be a predictive factor for substance abuse, mental health disorders and school outcomes (Bond 2007).

Almost all (96%) of survey respondents aged 4–17 reported attending school or another educational institution. Of these, 1 in 9 students had used a school service for emotional or behavioural problems in the 12 months prior to the survey. Students with a mental health disorder used school services at a higher rate, with 40% receiving school-based services for their emotional and behavioural issues. The most common school service received was individual counselling followed by special class or school; group counselling or support program; and school nurse services. Similar to the overall usage profile, severity of the impact of the disorder was associated with much higher service-usage rates.

### *Headspace*

Headspace is an early intervention service model aimed at providing mental health services to 12–25-year-olds (National Youth Mental Health Foundation 2015). More than one-third (37%) of all Young Minds Matter Survey participants had heard of headspace, and 7.4% had accessed one or more of headspace’s services—for example, accessed online information, spoken to a headspace professional, or visited a headspace site.

### *The online environment*

Online services were accessed by nearly 3 in 10 (30%) of young people aged 13–17 with any mental disorder. The most common service accessed by this group was information about mental health issues, followed by assessment tools. One in 5 young people without any disorder also accessed online services, mostly seeking information about mental health issues.

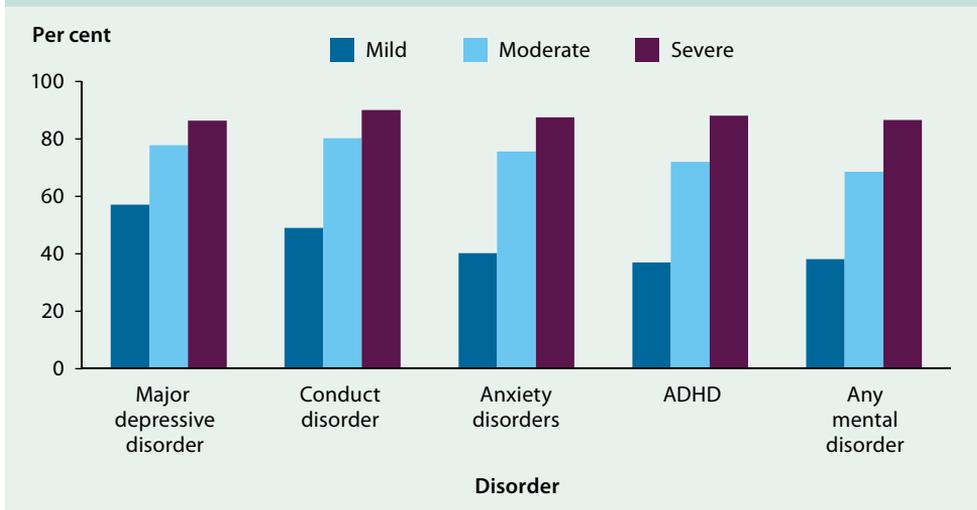
### Health services

Health services are most commonly clinical in nature: that is, they treat patients. Available mental health services are diverse and include:

- primary care services—that is, the first point of contact with the health system (for example, general practitioners)
- community-based care, including psychologists and psychiatrists and community-based specialised mental health teams operated and managed by state and territory health departments
- specialised mental health care facilities in hospitals.

The Young Minds Matter Survey results showed that mental health-related services were used by around half of all 4–17 year olds with a mental health disorder. As would be expected, given the predominantly clinical nature of health services, usage was greater for young people with disorders that had a severe impact on the individual, regardless of the disorder type (Figure 5.5.4).

**Figure 5.5.4: Mental health-related health service use in past 12 months among 4–17 year olds with mental disorders, by disorder type and severity of impact, 2013–14**



### Barriers to seeking and receiving care

The survey results indicate that around one-third (31%) of parents of 4–17 year olds with mental health disorders reported accessibility issues as the main reason for not seeking help or not having their needs met. Accessibility issues, such as inability to afford a service, are a continuing challenge for the mental health care system.

There are many reasons why children and adolescents with mental health disorders might not seek or receive the care they need. The Young Minds Matter Survey provides some insight into this issue.

Parents and carers of 4–11 year olds with mental health disorders who reported they did not seek help for their child, or that their child's needs were not met by services, most commonly reported that they could not afford it (41%), were not sure where to get help (40%), and that they would prefer to handle the issues by themselves or with

family/friends (37%) (note that more than one response was allowed). Parents of 12–17 year olds were most likely to report that their child/adolescent refused help (48%), that they were not sure where to get help (39%), or that they could not afford it (33%). Three out of 10 (29%) parents of 4–17 year olds with mental disorders reported that they could not get an appointment.

## What is the AIHW doing?

The program of population surveys and the National Survey of Mental Health and Wellbeing, is supplemented by AIHW's administrative mental health data sets. These latter data provide detailed information on the response of governments to the mental health needs of Australians, including children and adolescents. These data—published on the AIHW's [Mental health services in Australia](#) website—monitor the support services provided by Australia's specialised mental health care services.

## What is missing from the picture?

National mental health prevalence studies require rigorous survey design and data analysis and hence are costly exercises. However, the surveys afford the opportunity to obtain additional valuable information about other aspects of children's and adolescents' mental health and wellbeing, including service usage (of both health and non-health services); self-reported problems, behaviours and risk factors in young people; and self-harm and suicidal behaviours. Although a range of health administrative data sets are available to provide information about mental health service usage by children and adolescents, there is a paucity of national data on the support provided by other sectors, for example by education and welfare. Development of alternative data sources/methodologies to supplement the cycle of prevalence surveys, providing more regular information about these other aspects of children and adolescents' mental health and wellbeing, would be valuable.

The Young Minds Matter Survey's design did not enable representative data to be collected on Indigenous status; therefore, no comparisons can be made between the prevalence of mental health disorders for Aboriginal and Torres Strait Islander people and non-Indigenous Australians (see Chapter 5.7 'How healthy are Indigenous Australians?').

## Where do I go for more information?

The [Young Minds Matter](#) website (Telethon Kids Institute 2015) provides a range of information about the study, including an online data portal for interrogation of some aspects of the data.

There are a number of *Australian & New Zealand Journal of Psychiatry* articles either in press or published which supplement the survey report and supplementary tables.

More information about mental health is available at the [Mental health services in Australia](#) website, which provides a comprehensive picture of the national response of the health and welfare service system to the mental health care needs of Australians.

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## 5.6 Health of the very old

The proportion of the very old in the Australian population is increasing: in 2016, there are 486,700 people aged 85 and over, representing 2.0% of the population. This number is projected to more than double by 2036, to 1.0 million (3.2% of the population) (ABS 2013).

### The health of people aged 85 and over

Life expectancy is increasing both at birth, and over the course of a person's life, as most Australians enjoy better health, greater standards of living, and improved access to high-quality health care. Other topics within this publication present more information on this (see 'Chapter 1.3 How healthy are we' and 'Chapter 6.17 Health care use by older Australians'). Selected health characteristics of Australia's older people are shown here.



A man turning 85 in 2013 could expect to live another 6.1 years, and a woman the same age could expect another 7.1 years.



Two-thirds (65%) of people aged 85 and over rated their health as 'good', 'very good' or 'excellent' in 2014–15. Only 9.0% of people aged 85 and over reported a 'high' or 'very high' level of psychological distress, the lowest rate in any age group (ABS 2015b).



Most common health conditions reported by people aged 85 and over in 2014–15 included long-sightedness (61%), deafness (57%), and arthritis (49%) (ABS 2015b).



The three most common reasons for hospitalisation for people aged 85 and over in 2013–14 were for care involving dialysis (11%), rehabilitation (8.6%), and heart failure (3.0%).



Nearly 2 in 5 people (39%) who died in 2013 were aged 85 and over.



Between 2009 and 2013, 34 deaths per 100,000 men aged 85 and over were caused by suicide—the highest rate of suicide of any age group, although people aged 85 and over account for only a small number of deaths by suicide (ABS 2015a).



The most common cause of death in 2013 for people aged 85 and over was coronary heart disease (17%), followed by dementia (12%).

## The risks to health for people aged 85 and over

Ageing may be accompanied by physiological changes, such as increased frailty, reduced mobility, and progressive loss of vision and hearing. Common risk factors can exacerbate the impact of these changes, some of which are described here.



Nearly 4 in 10 (39%) people aged 85 and over were overweight but not obese in 2014–15. A further 18% were obese (ABS 2015b).



In 2014–15, 74% of men and 85% of women aged 85 and over had a waist circumference that placed them at an increased risk of chronic disease (ABS 2015b).



Only 6.2% of people aged 85 and over had an 'adequate' daily fruit and vegetable consumption in 2014–15. While 65% ate the recommended 2 or more serves of fruit, only 6.9% had the recommended 5 or more serves of vegetables a day. Just 5.1% of all adults consumed an adequate amount of fruit and vegetables (ABS 2015b).



Fewer than 4.0% of people aged 85 and over were daily smokers in 2013, compared with 13% of all adults. Over one-quarter (28%) of people aged 85 and over were ex-smokers.



Almost two-thirds (63%) of people 85 and over drank alcohol, with 19% of them having at least one alcoholic drink every day in 2013. While the proportion of people who drank daily increased with age, over 20% of people aged 85 and over had never drunk alcohol.



Only 29% of people aged 85 and over were 'sufficiently active for health' in 2014–15, undertaking 150 minutes of physical activity over five or more sessions in a week—and 45% undertook no physical activity. Overall, 45% of adults met the threshold for 'sufficient' activity (ABS 2015b).



More than half (52%) of people aged 85 and over had high blood pressure in 2014–15 (the highest of any age group).

### What is missing from the picture?

The very old are under-represented in many health surveys, particularly frail or ill people who are cared for in settings such as hospitals and permanent residential aged care. As a result, the proportion of frail or ill people in the population may be under-estimated, and there is limited information on their experience of, and outcomes from, interactions with the health system. In addition, data regarding the very old is not consistently collected or reported—instead, broader 'old' age groups, such as people aged 65 and over, are often used instead.

## Where do I go for more information?

More information is available through the AIHW website on topics such as ageing <[www.aihw.gov.au/ageing/](http://www.aihw.gov.au/ageing/)>, deaths <[www.aihw.gov.au/deaths/](http://www.aihw.gov.au/deaths/)>, hospitals <[www.aihw.gov.au/hospitals/](http://www.aihw.gov.au/hospitals/)>, and risk factors to health <<http://www.aihw.gov.au/risk-factors/>>.

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## 5.7 How healthy are Indigenous Australians?

The health of Aboriginal and Torres Strait Islander Australians is improving on a number of measures, including significant declines in infant and child mortality and decreases in avoidable mortality related to cardiovascular and kidney diseases. Despite these improvements, significant disparities persist between Indigenous and non-Indigenous Australians. Indigenous Australians continue to have lower life expectancy, higher rates of chronic and preventable illnesses, poorer self-reported health, and a higher likelihood of being hospitalised than non-Indigenous Australians (AIHW 2015a, 2015b).

There are many dimensions to the poorer health status of Indigenous Australians compared with other Australians and a complex range of factors are behind these differences. These include:

- differences in the social determinants of health, including lower levels of education, employment, income and poorer quality housing, on average, compared with non-Indigenous Australians
- differences in behavioural and biomedical risk factors such as higher rates of smoking and risky alcohol consumption, lack of exercise, and higher rates of high blood pressure for Indigenous Australians
- the greater difficulty that Indigenous people have in accessing affordable and culturally appropriate health services that are in close proximity.

Each of these three aspects contributing to the Indigenous health gap are reviewed in separate snapshots ('Chapter 4.2 Social determinants of Indigenous health', 'Chapter 4.8 Health behaviours and biomedical risks of Indigenous Australians' and 'Chapter 6.6 Indigenous Australians' access to health services').

This snapshot focuses on two selected topics:

- progress on the two measures of Indigenous health in the Council of Australian Governments (COAG) Closing the Gap targets: life expectancy and child mortality
- summaries of three commonly used measures of how healthy Indigenous Australians are: self-assessed health rating; disability and prevalence of major long-term conditions; and potentially avoidable deaths.

### Life expectancy

Life expectancy at birth is a measure of how long a newborn person is expected to live, on average, given the currently observed pattern of mortality in the population. The COAG target is to fully close the gap in life expectancy between Indigenous and non-Indigenous Australians by 2031.

The latest available estimates of Indigenous life expectancy were released in 2013 and they show that Indigenous Australians have a life expectancy of around 10 years less than non-Indigenous Australians.

- For the 3-year period 2010–2012, estimated Indigenous life expectancy at birth was 69.1 years for males and 73.7 years for females.
- Life expectancy at birth has increased by 1.6 years for Indigenous males and 0.6 years for Indigenous females since 2005–2007 (corresponding to annual increases of 0.3 and 0.1 years of life, respectively).
- Between 2005–2007 and 2010–2012, the life expectancy gap between Indigenous and non-Indigenous Australians decreased by 0.8 years for males and by 0.1 years for females (taking into consideration that life expectancy also increased for non-Indigenous Australians over this period).
- To meet the Closing the Gap target by 2031, an annual increase of 0.6 to 0.8 years in Indigenous life expectancy at birth will be required (AHMAC 2015).

See also 'Chapter 5.8 Main contributors to the Indigenous life expectancy gap'.

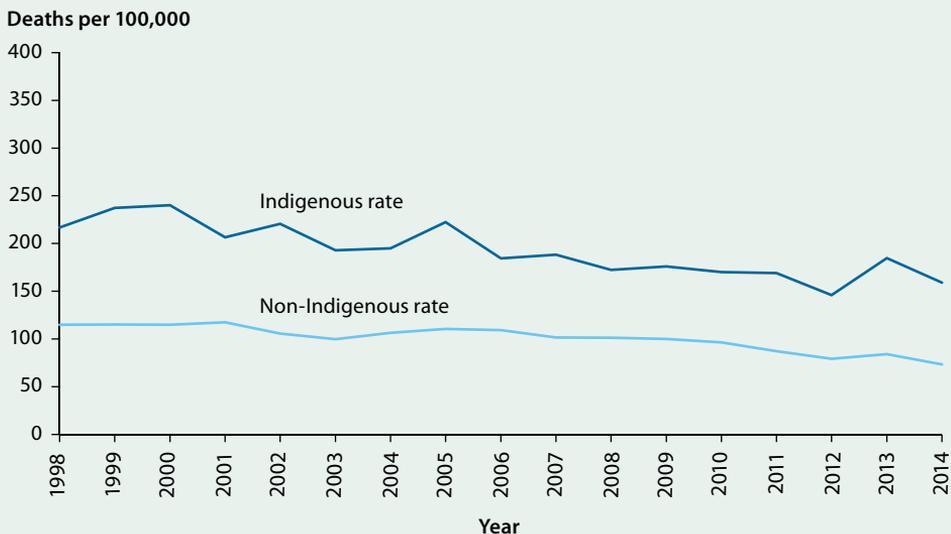
## Child mortality

The mortality rate for young children is also a key indicator of the general health of a population. Indigenous child mortality has been declining steadily over time (Figure 5.7.1).

Between 1998 and 2014, there was a significant:

- decline in Indigenous child mortality rates (by 33%)
- narrowing of the gap (by 34%) with non-Indigenous child mortality.

**Figure 5.7.1: Child mortality rates for children aged under 5, by Indigenous status, 1998 to 2014**



Note: Based on combined data for NSW, QLD, WA, SA and the NT.

Source: ABS and AIHW analysis of National Mortality Database.

The Closing the Gap target is to halve the gap in mortality rates between Indigenous and non-Indigenous children aged under 5 within the decade between 2008 and 2018.

Progress on this target is assessed to be 'on track' (PM&C 2016). Progress is assessed by comparing the annual outcome of the Indigenous child mortality rate to a range of values that indicate whether the required trajectory for that year has been met. The latest (2014) Indigenous child mortality rate was within the specified range for 2014 and so was on track towards the 2018 target (PM&C 2016).

## Self-assessed health

Self-assessed rating of health is a widely used measure of overall health status. The most recent data are from the 2012–13 Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS).

- Nearly 4 in 10 (39%) Indigenous Australians aged 15 and over reported their health status as 'excellent' or 'very good' in 2012–13—a decrease from 44% in 2008 and 43% in 2004–05 (SCRGSP 2014).
- A further 37% reported their health as 'good', and 24% as 'fair' or 'poor' in 2012–13.
- Adjusting for differences in age structure, 29% of Indigenous Australians rated their health as 'fair' or 'poor', which was more than double the non-Indigenous rate of 14%.
- The proportion of Indigenous Australians reporting their health status as 'fair' or 'poor' was lowest in *Very remote* areas (16%).

## Disability status and long-term health conditions

- According to the 2012–13 AATSIHS, 36% of Indigenous Australians (an estimated 228,000 people) had some form of disability (AIHW 2015b). Based on age-standardised rates of 44% and 29%, this is 1.5 times the rate experienced by non-Indigenous Australians. Indigenous Australians were twice as likely to have a severe or profound form of disability (with age-standardised rates of 7.9% and 3.9%, respectively).
- In 2012–13, two-thirds (67%) of Indigenous people reported at least one chronic health condition, with 33% reporting three or more. The proportion of Indigenous people reporting at least one health condition was similar to that of non-Indigenous people.
- The prevalence of the leading long-term health conditions (excluding mental health) for Indigenous Australians, by specific age groups and in total for all ages, is shown in Figure 5.7.2. The relative importance of specific conditions varies considerably by age.
- Overall, the most common conditions reported by Indigenous Australians (excluding mental health) were eye diseases and vision problems (33%), respiratory diseases (31%) and musculoskeletal diseases (20%).
- Data on the overall prevalence of mental health conditions are not available from the most recent AATSIHS. Some related mental health indicators showed that in 2012–13:
  - 12% of Indigenous Australians reported feeling depressed or having depression as a long-term condition
  - 30% of Indigenous adults had high or very high levels of psychological distress in the 4 weeks prior to the survey (AIHW 2015b).

(See also 'Chapter 5.9 Health of Australians with disability')

**Figure 5.7.2: Age-specific prevalence of leading long-term conditions for Indigenous Australians, 2012–13**

| Rank | Age group                                     |   |   |  |  |  | Total                                      |
|------|---|---|---|--|--|--|--|
|      | 0–14  | 15–24                                     | 25–34                                     | 35–44  | 45–54  | 55+  |  |
| 1    | Respiratory diseases<br>20.9%                 | Respiratory diseases<br>29.9%             | Respiratory diseases<br>36.9%             | Eye diseases and vision problems<br>46.7%              | Eye diseases and vision problems<br>87.2%              | Eye diseases and vision problems<br>92.4%              | Eye diseases and vision problems<br>33.4%  |
| 2    | Eye diseases and vision problems<br>8.8%      | Eye diseases and vision problems<br>22.0% | Eye diseases and vision problems<br>27.4% | Respiratory diseases<br>39.8%                          | Musculoskeletal diseases<br>47.0%                      | Musculoskeletal diseases<br>59.8%                      | Respiratory diseases<br>31.0%              |
| 3    | Ear diseases and hearing problems<br>7.1%     | Musculoskeletal diseases<br>12.7%         | Musculoskeletal diseases<br>21.8%         | Musculoskeletal diseases<br>35.3%                      | Respiratory diseases<br>42.6%                          | Endocrine, nutritional and metabolic diseases<br>47.4% | Musculoskeletal diseases<br>19.9%          |
| 4    | Skin and subcutaneous tissue diseases<br>3.3% | Ear diseases and hearing problems<br>8.3% | Nervous system diseases<br>13.7%          | Cardiovascular disease<br>18.9%                        | Endocrine, nutritional and metabolic diseases<br>31.2% | Cardiovascular disease<br>41.9%                        | Ear diseases and hearing problems<br>12.3% |
| 5    | Nervous system diseases<br>2.6%               | Nervous system diseases<br>8.3%           | Cardiovascular disease<br>12.2%           | Endocrine, nutritional and metabolic diseases<br>16.5% | Cardiovascular disease<br>28.2%                        | Respiratory diseases<br>40.7%                          | Cardiovascular disease<br>12.0%            |

**Notes**

1. The top 5 disease categories for each age group excluding 'Symptoms, signs and conditions not elsewhere classified'.
2. Data on the overall prevalence of mental health conditions are not available from the 2012–13 AATSIHS.

Source: AIHW 2015b based on analyses of 2012–13 AATSIHS data.

## Potentially avoidable deaths

'Potentially avoidable deaths' refer to deaths from conditions that could have been avoided, given timely and effective health care. Rates of potentially avoidable deaths in a population represent the underlying population health, as well as health-service utilisation and the accessibility and effectiveness of the health system. Total counts and rates of potentially avoidable deaths of Indigenous Australians are based on data from the five jurisdictions (New South Wales, Queensland, Western Australia, South Australia and the Northern Territory) where the quality of Indigenous identification is considered to be of acceptable quality in the recording of deaths.

- In the 5-year period 2009 to 2013, approximately 6,000 deaths (or 61% of all deaths) of Indigenous Australians aged 0–74 were classified as potentially avoidable deaths (compared with 51% of all deaths of non-Indigenous Australians in that age group).
- After adjusting for differences in age structure, in the 2009–2013 period the mortality rate for Indigenous Australians who died from all potentially avoidable causes was more than 3 times the rate for non-Indigenous Australians (351 and 110 deaths per 100,000 population, respectively).
- There was a 10% decline in the potentially avoidable death rate for Indigenous Australians in the 2009–2013 period compared with the previous 5-year period of 2003–2007. However, in the same period the potentially avoidable death rate also declined for the non-Indigenous population (SCRGSP 2016). Accordingly, the gap between the rates for the Indigenous and non-Indigenous population did not narrow.

Note that these rates are based on a new standard adopted in the National Healthcare Agreement 2015 by which specific causes of death are classified as 'potentially avoidable' in the context of the current Australian health system. The new classification leads to a smaller number of deaths categorised as 'potentially avoidable' than the previous classification did for both Indigenous and non-Indigenous deaths. Therefore, the counts and rates of potentially avoidable deaths presented here are different to those published in previous AIHW reports.

### What is missing from the picture?

There are many complex interactions determining Indigenous health and mortality rates that still have data gaps or lack timely data. The national-level Aboriginal and Torres Strait Islander health surveys are carried out only once in 6 years, and coverage is not large enough to provide reliable small-area estimates. There is increasing use of health administrative data sets, such as hospital records or cancer registries, but the identification of the Indigenous status of all persons in these records is incomplete (though increasing).

There are also data gaps in the extent of, and reasons for, the inequalities in health status within the Indigenous population itself. These are important analyses to undertake. Better reporting of Indigenous health outcomes and analyses of causal factors can be achieved through a more coordinated effort to combine or link administrative health data from a number of sources and covering a number of years.

## Where do I go for more information?

More information on the general and specific health condition of Indigenous Australians is available in the AIHW report [\*The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples 2015\*](#).

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SCRGSP 2016. Report on government services 2016. Vol. E, Health. Canberra: Productivity Commission.

## 5.8 Main contributors to the Indigenous life expectancy gap

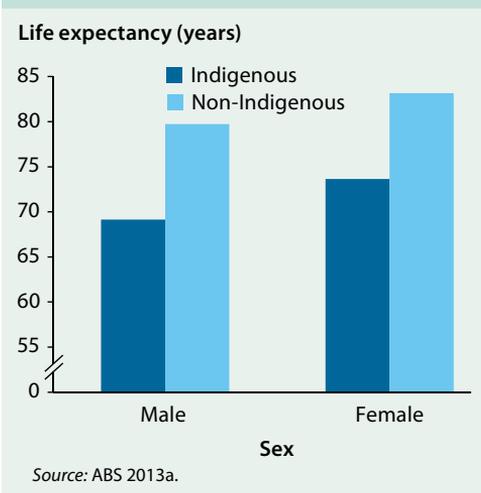
Life expectancy is an important measure of the health status of a population: it indicates how long a person can expect to live, based on current mortality patterns. Indigenous Australians tend to die at younger ages than non-Indigenous Australians and as such have shorter life expectancies. Life expectancy is affected by a range of factors, including disease incidence and prevalence; health behaviours such as smoking; social determinants such as education, income and employment; and access to health services (AHMAC 2015).

This article presents estimates of the contribution of different age groups and causes of death to the current gap in life expectancy between Indigenous and non-Indigenous Australians. This analysis will assist policymakers by showing where interventions are best targeted to reduce the gap. It is important to note that the gap in life expectancy is a relative measure and, as such, the size of the gap is not just influenced by changes in Indigenous life expectancy, but also by changes in the life expectancy of the non-Indigenous population.

The main analyses presented are for the 3-year period 2010–2012, to align with the most recent Indigenous life expectancy estimates available. Contextual information presented on the age profile and main causes of death among the Indigenous population is based on data for the 5-year period 2009–2013 (5 years of deaths are combined for reporting of Indigenous mortality to overcome the small number of Indigenous deaths from some conditions and age groups each year). All mortality data in this article relate to the five jurisdictions for which the quality of Indigenous identification is considered to be of acceptable quality for reporting—New South Wales, Queensland, Western Australia, South Australia and the Northern Territory (AIHW 2015a).

As this analysis refers to the life expectancy gap based on the 2010–2012 time period only, any comparisons over time (or with other time periods) should be made with caution. This is due to changes over time in the propensity of individuals to identify as Aboriginal or Torres Strait Islander, which may affect both the estimation of the size of the life expectancy gap, and comparability of associated analyses over time (see [The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples 2015](#) for more information on Indigenous identification).

**Figure 5.8.1: Life expectancy at birth, by Indigenous status and sex, 2010–2012**



## What do we know?

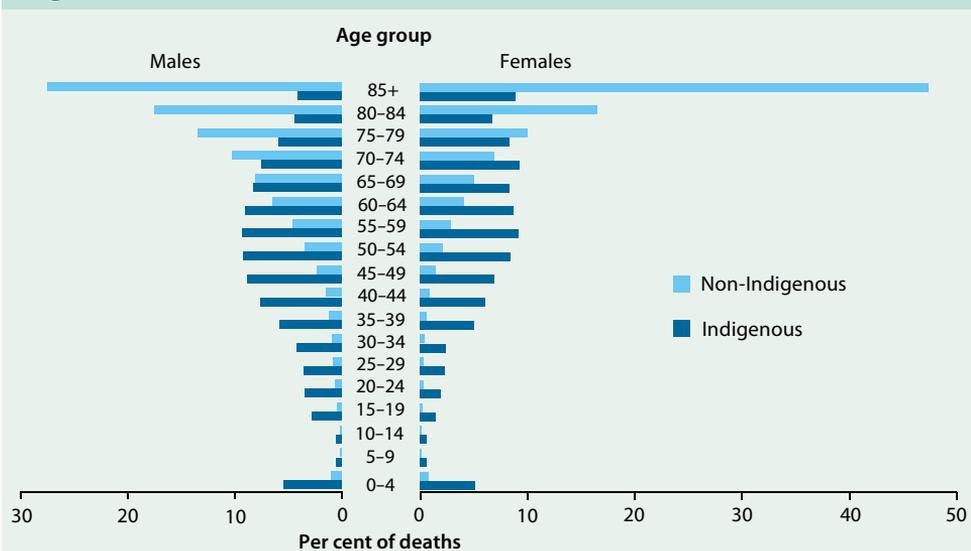
### How big is the gap?

The gap in life expectancy between Indigenous and non-Indigenous Australians in 2010–2012 was around 10 years: 10.6 years for males (Indigenous life expectancy at birth 69.1 years, non-Indigenous 79.7) and 9.5 years for females (Indigenous life expectancy at birth 73.7 years, non-Indigenous 83.2) (Figure 5.8.1).

## Mortality age profile

Most deaths for Indigenous Australians occur in the middle age groups. In contrast, most deaths for non-Indigenous Australians occur in the older age groups. This partly reflects the younger age profile of the Indigenous population. A relatively large proportion of Indigenous deaths were premature (for example, before age 75) (Figure 5.8.2). During the 5-year period 2009–2013, around 81% of deaths among Indigenous people occurred before the age of 75, compared with 34% of deaths for non-Indigenous people (AIHW 2015a). (See 'Chapter 3.2 Premature mortality').

**Figure 5.8.2: Age distribution of deaths, by Indigenous status, age and sex, 2009–2013**

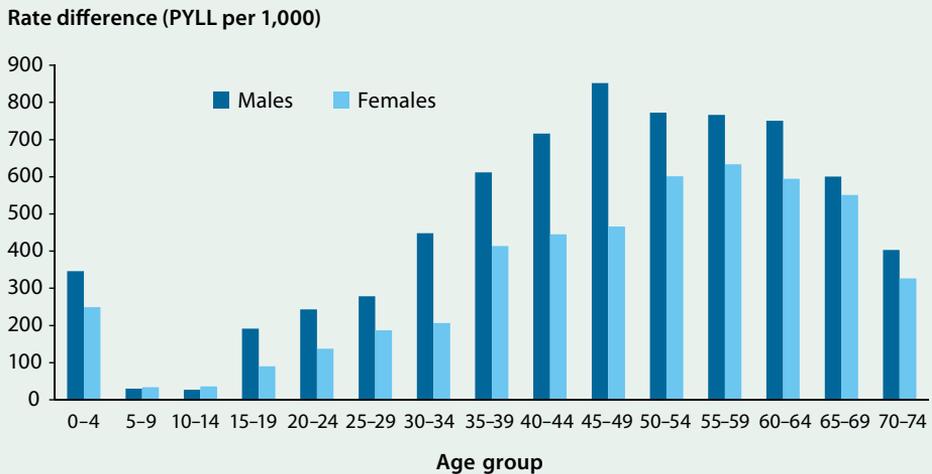


Note: Data are for NSW, Qld, WA, SA and NT.

Source: AIHW National Mortality Database.

The largest gaps in mortality between Indigenous and non-Indigenous Australians were in the 35–59 age groups, based on potential years of life lost (PYLL) due to premature mortality (Figure 5.8.3). PYLL is the number of additional years a person would have been expected to live had they not died before the age of 75.

**Figure 5.8.3: Gap (rate difference) in potential years of life lost (PYLL) before age 75 between Indigenous and non-Indigenous Australians, by age and sex, 2009–2013**



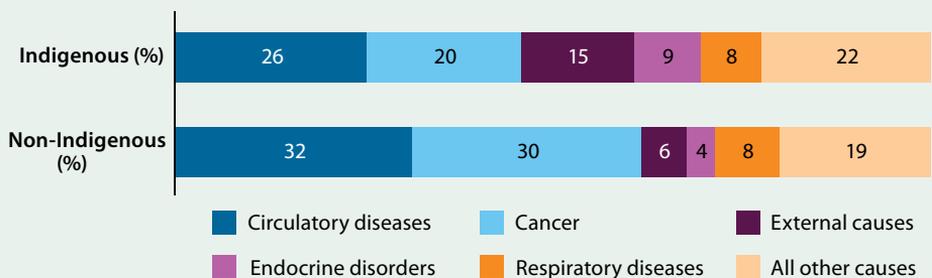
Note: Data are for NSW, Qld, WA, SA and NT.

Source: AIHW National Mortality Database (AIHW 2015a).

## Main causes of death

The main broad causes of deaths among Indigenous Australians in the 2009–2013 period were cardiovascular disease (25%); cancer (neoplasms) (20%); external causes (including suicide and transport accidents) (15%); endocrine, metabolic and nutritional disorders (including diabetes) (8.9%); and respiratory diseases (7.9%) (Figure 5.8.4). Compared with non-Indigenous Australians, cardiovascular diseases and cancer represented a smaller proportion of deaths, and external causes and endocrine, metabolic and nutritional disorders represented a larger proportion of deaths, among Indigenous Australians.

**Figure 5.8.4: Causes of death, by Indigenous status, 2009–2013**



Notes

1. Data are for NSW, Qld, WA, SA and NT.

2. Proportions may not sum to 100%, due to rounding.

Source: AIHW National Mortality Database.

# The contribution of age group and causes of death to the life expectancy gap

New analysis undertaken by the AIHW measures the contributions of age and causes of death to the gap in life expectancy between Indigenous and non-Indigenous Australians (see Box 5.8.1).

## Box 5.8.1: Estimating the contribution of age group and causes of death to the life expectancy gap

There were two steps in estimating the contribution of age groups and causes of death to the gap in life expectancy between Indigenous and non-Indigenous Australians in 2010–12:

1. Indigenous and non-Indigenous life expectancy estimates and associated age-specific mortality rates for Australia for the period 2010–2012 (the latest available data for life expectancy) were sourced from the ABS (ABS 2013a, 2013b, 2014, 2015). Causes of death data for 2010–2012 were obtained from five jurisdictions: New South Wales, Queensland, South Australia, Western Australia and the Northern Territory (analysis of the AIHW National Mortality Database).
2. Decomposition methods were used to estimate the contribution (in number of years) of age groups and causes of death to the life expectancy gap for 2010–2012 (Arriaga 1984; Pollard 1982; Preston et al. 2001; Wilson et al. 2007). This involved estimating the contribution of the difference in all-cause mortality between the Indigenous and non-Indigenous populations in each 5-year age group (<1, 1–4, 5–9 and so forth, to 85 years and over) to the difference in life expectancy at birth for both males and females. The sum of the contribution of age groups to the life expectancy gap between Indigenous and non-Indigenous Australians is equal the total life expectancy gap. The proportion of deaths in each age group in the Indigenous and non-Indigenous populations due to each of the six causes of death examined (cardiovascular diseases, diabetes, external causes, cancer, respiratory diseases and other causes) were then applied to the all-cause mortality differences, to estimate the relative contribution of each cause of death to the life expectancy gap.

## Which age groups contribute the most to the life expectancy gap?

The analysis presented was undertaken by 5-year age group; however, results are presented in broader 20-year age groups for ease of interpretation.

Deaths in the 55–74 age group contributed the most to the life expectancy gap in 2010–2012 for both males and females, with each 5-year age group contributing around 1 year to the life expectancy gap (Table 5.8.1). This age group contributed 42% to the total life expectancy gap for males and 45% to the total life expectancy gap for females. The 35–54 age group made the second largest contribution to the life expectancy gap for both males and females (31% and 26% respectively). The very young and very old made a smaller contribution to the gap.

**Table 5.8.1: Contribution of age groups to the life expectancy gap, by sex, 2010–2012**

| Age group    | Life expectancy gap (years) |            | Life expectancy gap (%) |              |
|--------------|-----------------------------|------------|-------------------------|--------------|
|              | Males                       | Females    | Males                   | Females      |
| 0–14         | 0.5                         | 0.5        | 4.7                     | 5.3          |
| 15–34        | 1.3                         | 0.8        | 12.3                    | 8.4          |
| 35–54        | 3.3                         | 2.5        | 31.1                    | 26.3         |
| 55–74        | 4.4                         | 4.3        | 41.5                    | 45.3         |
| 75+          | 1.0                         | 1.4        | 9.4                     | 14.7         |
| <b>Total</b> | <b>10.6</b>                 | <b>9.5</b> | <b>100.0</b>            | <b>100.0</b> |

Sources: AIHW analysis of the AIHW National Mortality Database and ABS 2013a.

## Which causes of death contribute the most to the life expectancy gap?

The contribution of different age groups to the life expectancy gap between Indigenous and non-Indigenous Australians is largely determined by patterns in the disease profiles of those age groups.

In 2010–2012, for males, the largest contributors to the life expectancy gap were cardiovascular diseases (2.9 years), external causes (or injuries) (1.9 years) and cancer (neoplasms) (1.5 years). For females, the largest contributors were also cardiovascular diseases (2.7 years), cancer (1.6 years) and external causes (1.3 years).

Different age groups had different disease profiles. For the 0–14 age group, the main causes of death contributing to the gap were conditions originating in the perinatal period (included in the 'other' category in Figure 5.8.4 and Table 5.8.2). External causes (injuries) contributed the most to the gap in life expectancy in the 15–34 age group, for both males and females. For age groups 35–54, 55–74 and 75 years and over, cardiovascular diseases contributed the most to the gap in life expectancy for both males and females (Table 5.8.2).

**Table 5.8.2: Contribution of causes of death to life expectancy gap, by age and sex, 2010–2012 (years)**

| Age group              | Causes of death |            |            |            |             |                      | Total       |
|------------------------|-----------------|------------|------------|------------|-------------|----------------------|-------------|
|                        | Cardiovascular  | Diabetes   | External   | Cancer     | Respiratory | Other <sup>(a)</sup> |             |
| <b>Males (years)</b>   |                 |            |            |            |             |                      |             |
| 0–14                   | 0.0             | 0.0        | 0.1        | 0.0        | 0.0         | 0.4                  | 0.5         |
| 15–34                  | 0.2             | 0.0        | 1.0        | 0.0        | 0.0         | 0.1                  | 1.3         |
| 35–54                  | 1.1             | 0.3        | 0.5        | 0.3        | 0.2         | 0.9                  | 3.3         |
| 55–74                  | 1.3             | 0.6        | 0.2        | 1.0        | 0.5         | 0.8                  | 4.4         |
| 75+                    | 0.3             | 0.2        | 0.0        | 0.1        | 0.2         | 0.2                  | 1.0         |
| <b>Total</b>           | <b>2.9</b>      | <b>1.1</b> | <b>1.9</b> | <b>1.5</b> | <b>0.9</b>  | <b>2.3</b>           | <b>10.6</b> |
| <b>Females (years)</b> |                 |            |            |            |             |                      |             |
| 0–14                   | 0.0             | 0.0        | 0.1        | 0.0        | 0.0         | 0.3                  | 0.5         |
| 15–34                  | 0.1             | 0.0        | 0.6        | 0.0        | 0.0         | 0.1                  | 0.8         |
| 35–54                  | 0.8             | 0.2        | 0.4        | 0.3        | 0.1         | 0.6                  | 2.5         |
| 55–74                  | 1.2             | 0.6        | 0.2        | 1.1        | 0.4         | 0.7                  | 4.3         |
| 75+                    | 0.5             | 0.2        | 0.0        | 0.2        | 0.3         | 0.3                  | 1.4         |
| <b>Total</b>           | <b>2.7</b>      | <b>1.0</b> | <b>1.3</b> | <b>1.6</b> | <b>0.9</b>  | <b>2.1</b>           | <b>9.5</b>  |

(a) Includes digestive diseases, conditions originating in the perinatal period, nervous system diseases, kidney diseases, infectious and parasitic diseases, and other causes.

Sources: AIHW analysis of the AIHW National Mortality Database and ABS 2013a.

## What are the implications of these findings?

The findings suggest that chronic diseases, such as cardiovascular diseases and cancer, as well as injuries, which usually occur in the 35 to 74 year age groups in the Indigenous population, are responsible for the majority of the life expectancy gap. In comparison, the relative contribution of infant and child deaths to the gap is small. Strategies and programs to close the gap, however, should consider addressing disparities in childhood as well as the older age groups, because health conditions that become more apparent at older ages can begin in childhood or young adulthood. For example, factors such as poor diet, smoking, and unresolved mental trauma early in life can lead to heart disease or depression later in life.

## What is the AIHW doing?

The AIHW's Enhanced Mortality Database project is using data linkage to improve estimates of Indigenous deaths and life expectancy. Death registrations are linked with hospital, residential aged care and perinatal data to investigate opportunities to improve the measurement of Indigenous deaths and life expectancy.

The AIHW is currently undertaking a study to measure the burden of disease experienced by the Indigenous population. The study will provide updated information on the impact of diseases and injuries on Indigenous Australians, as well as estimates of the gap in disease burden between Indigenous and non-Indigenous Australians. An initial report has been published: *Australian Burden of Disease Study: fatal burden of disease in Aboriginal and Torres Strait Islander people 2010* (AIHW 2015b). A comprehensive report with 2011 and 2003 estimates of fatal and non-fatal burden, as well as the burden attributable to selected risk factors, will be released later this year.

## What is missing from the picture?

Behavioural risk factors (such as smoking, diet and physical activity) as well as social determinants (such as income, education and employment) are also important factors which contribute to disparities in health outcomes between Indigenous and non-Indigenous Australians and, consequently, to the life expectancy gap. While previous studies have shown the importance of social determinants in addressing the health gap between Indigenous and non-Indigenous people (AIHW 2014; Booth & Carroll 2005; DSI Consulting 2009; Marmot 2011; Zhao et al. 2013), these were based on survey data now over a decade old. These studies did not look at the contribution of lack of access to affordable and culturally acceptable health services to the life expectancy gap, which is another important determinant of health that is difficult to measure. The evidence suggests that a complex relationship exists between health service access, social disadvantage, health behaviours, and health outcomes. Additional research, using the latest available data, on the overlap and causal links between these factors for the Indigenous population will provide a broader and more comprehensive understanding of the main drivers of the life expectancy gap, and where interventions are best targeted to reduce this gap. (For more information see 'Chapter 4.2 Social determinants of Indigenous health' and 'Chapter 6.6 Indigenous Australians' access to health services').

## Where do I go for more information?

More information about Indigenous life expectancy and the gap in health status between Indigenous and non-Indigenous Australians is available at [www.aihw.gov.au/indigenous-observatory](http://www.aihw.gov.au/indigenous-observatory).

Information on Indigenous burden of disease is available at <http://www.aihw.gov.au/burden-of-disease/>.

The report [\*Australian Burden of Disease Study: fatal burden of disease in Aboriginal and Torres Strait Islander people 2010\*](#) and other recent publications are available for free download.

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## 5.9 Health of Australians with disability

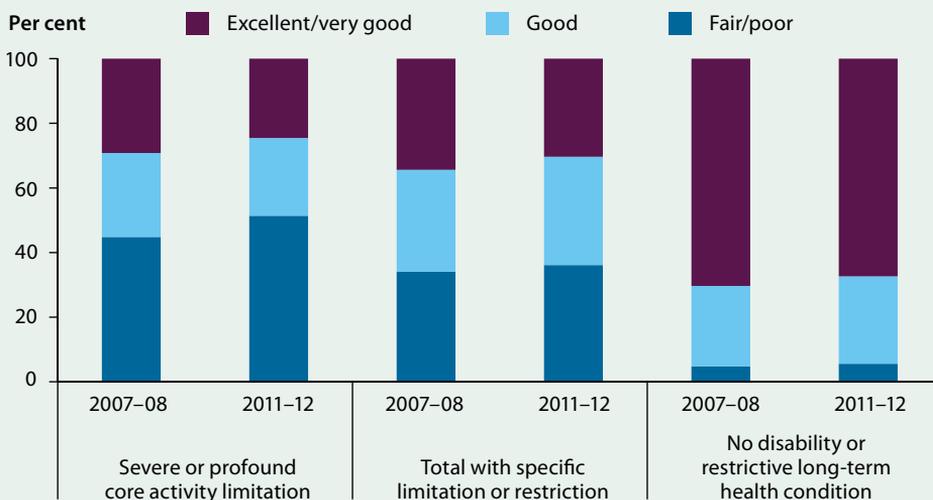
One of six priority outcomes of the National Disability Strategy 2010–2020 is ‘People with disability attain the highest possible health and wellbeing outcomes throughout their lives’ (DSS 2012). The Australian Bureau of Statistics (ABS) short disability module was first included in the ABS 2007–08 National Health Survey (NHS) and again in the 2011–12 NHS collection. This snapshot focuses on people aged under 65 years, as disability prevalence among older people is under-reported in the NHS due to the exclusion of institutional care settings.

### Disability and self-assessment of health

Due to a range of factors—some of which may be directly related to a person’s disability—people with disability, as a group, experience significantly poorer health than those without disability.

Based on survey data, in 2011–12, half (51%) of people aged 15–64 with severe or profound core activity limitation (that is, ‘sometimes or always needing help with activities of self-care, mobility or communication’) self-assessed their health as ‘poor’ or ‘fair’, compared with 5.6% for people without disability. The gap in self-assessed health between the two population groups remained large between 2007–08 and 2011–12 (Figure 5.9.1).

**Figure 5.9.1: Self-assessed health status, people aged 15–64, by disability status, 2007–08 and 2011–12**



*Note:* Percentages have been age-standardised to the Australian population as at 30 June 2001.

*Sources:* AIHW analysis of ABS 2007–08 and 2011–12 National Health Survey confidentialised unit record files.

## Long-term health conditions

In 2011–12, people aged under 65 with severe or profound core activity limitation had a higher prevalence of various types of long-term health conditions and were 3.3 times as likely as people without disability to have three or more long-term health conditions (74% versus 23%).

- Half (50%) of people aged under 65 with severe or profound core activity limitation had mental health conditions, compared with 7.7% of people without disability.
- One in 5 (21%) people aged under 65 with severe or profound core activity limitation had arthritis—3.9 times the rate for people without disability (5.3%).
- Other conditions more commonly reported by people with severe or profound core activity limitation were back problems (27%), deafness (22%), cardiovascular diseases (18%), asthma (18%) and migraine (16%).

## Health risk factors and behaviours

In 2011–12, a higher proportion of adults aged 18–64 with severe or profound activity limitation were overweight or obese, compared with people without disability (70% versus 60%). People with severe or profound core activity limitation were 1.7 times as likely as those without disability to be obese (43% versus 25%).

Almost half (46%) of people aged 15–64 with severe or profound disability did no exercise, compared with 31% of people without disability. Between 2007–08 and 2011–12, the difference in the proportions doing no exercise increased by 6 percentage points.

People aged 15–64 with severe or profound disability were twice as likely as those without disability to be current daily smokers (31% versus 15%) and 1.8 times as likely to start daily smoking before the age of 18 (41% versus 23%).

Adults aged 18–64 with severe or profound core activity limitation were 18 times as likely as those without disability to have a very high level of psychological distress (22% versus 1.2%).

### What is missing from the picture?

As discussed earlier, because the NHS excludes institutional care settings and therefore underestimates disability prevalence among older people, the associated analysis of health status and risks of people with disability is limited to younger people. Similarly, the experiences of older people (with and without disability) in their encounters with the health care system are restricted to people living in the community (see 'Chapter 6.17 Health care use by older Australians').

There is also limited information on the relationship between health status and other priority outcomes of the National Disability Strategy, such as employment and social participation.

### Where do I go for more information?

The report [Health status and risk factors of Australians with disability 2007–08 and 2011–12](#) is available for free download on the AIHW website. More information on the health of Australians with disability based on analysis of national population survey data is available for free download on the AIHW website: [Health of Australians with disability: health status and risk factors](#), [The use of health services among Australians with disability](#), and [Access to health services by Australians with disability 2012](#).

### Reference

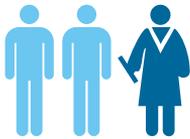
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## 5.10 Health of prisoners in Australia

There were over 36,000 people in prisons in Australia on 30 June 2015, and more than 50,000 people were in prison at some time during 2014. With thousands of people leaving prison and returning to the community each year, the health of prisoners is also a health care issue for the general community. This snapshot presents an overview of prisoner health issues followed by a closer look at an area of current policy debate in Australia, that is, smoking among prisoners and the impact of prison smoking bans.

The National Prisoner Health Data Collection (NPHDC) is the main source of national data about the health of prisoners in Australia. In 2015, data were collected from 1,011 prisoners entering prison (prison entrants), 437 prisoners expecting to be released from prison in the following 4 weeks (prison discharges), over 9,500 prisoners who visited the prison health clinic, and about 9,400 prisoners taking medication.

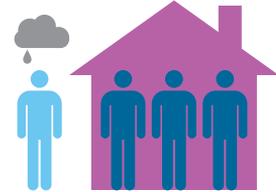
People entering prison in 2015 often came from socioeconomically disadvantaged backgrounds:



2 in 3 had not studied past Year 10 schooling

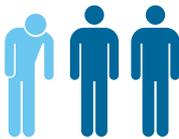


1 in 2 were unemployed in the 30 days before entering prison

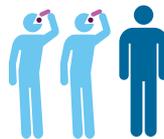


1 in 4 were homeless or in insecure accommodation in the 4 weeks before entering prison

Health issues faced by prison entrants in 2015 included:



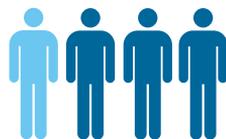
1 in 3 had a chronic health condition (most commonly asthma)



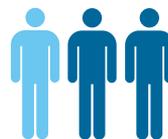
2 in 3 used illicit drugs in last 12 months, more than 2–3 times the rate in the general population for most drug types



2 in 5 drank alcohol at risky levels, and unlike those in the general community, their risky drinking persists with age



1 in 4 were receiving medication for mental health issues



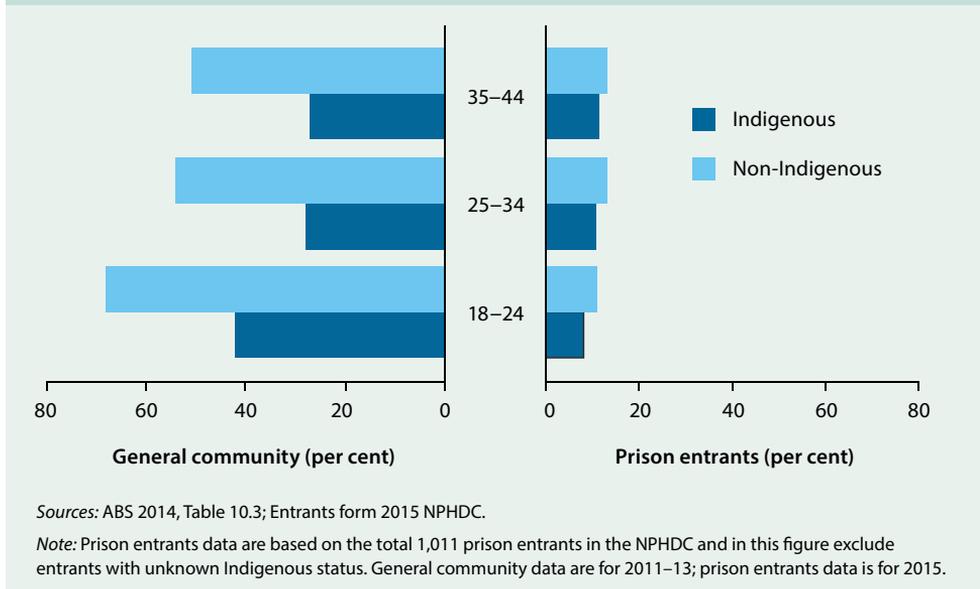
1 in 3 had limitations to daily activities or restrictions in education or employment—more than twice the rate in the general population

Most prisoners are male (92%) and relatively young—68% are aged under 40 compared with 38% of the general adult population (ABS 2015a, 2015b). Aboriginal and Torres Strait Islander people are over-represented in the prison system: Indigenous Australians were imprisoned at an age-standardised rate of 1,951 per 100,000 of the adult population, 13 times that of the non-Indigenous population (153 per 100,000) (ABS 2015b).

## Tobacco smoking among prisoners

Smoking rates among prison entrants are high, with 74% being current smokers; almost all of whom (93%) did so daily—69% of all entrants. A further 9.4% were ex-smokers, and 13% had never smoked. The falls in smoking rates that have occurred in recent decades in the general community have not occurred in the prison population. Data on those who have never smoked indicate that fewer young people are taking up smoking in the general community, but not for prison entrants. Among younger prison entrants (aged 18–24), the proportion of never smokers remains low (11% non-Indigenous and 8.2% Indigenous). In comparison, in the general community, never smokers now make up the majority of younger people (68% non-Indigenous and 42% Indigenous) (Figure 5.10.1). Prison entrants share many characteristics of those in the general community who are most likely to be smokers, including being socially and economically disadvantaged (AIHW 2013). For more information on smoking in the general population, see ‘Chapter 4.7 Tobacco smoking’.

**Figure 5.10.1: Proportion of never smokers, general community and prison entrants, people aged 18–44, by Indigenous status, 2011–13 and 2015**



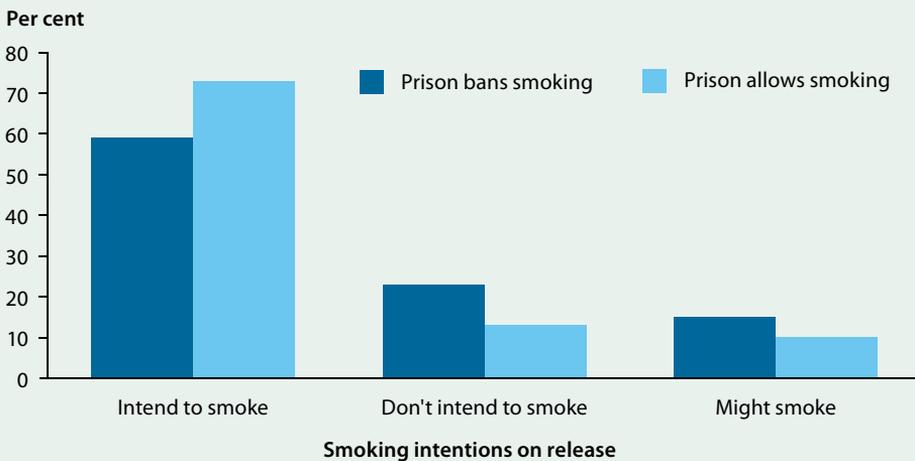
## Smoking bans in prisons

One of the policy changes that accompanied the reduction in smoking in the general community over the last 20 years has been the introduction of bans on smoking in public places. Until recently, this policy has not been reflected in prisons in Australia.

Beginning in the Northern Territory in July 2013, smoking bans have been implemented in prisons across Australia and are currently in place also in New South Wales, Victoria, Queensland and Tasmania. In 2015:

- almost 1 in 5 (18%) discharges in prisons with smoking bans considered themselves to be current smokers, compared with 74% of discharges in prisons without bans
- of people who smoked on entry to prison, discharges from prisons with smoking bans were less likely to intend to smoke after release than discharges from prisons in which smoking is allowed (59% and 73%, respectively) (Figure 5.10.2)
- two-thirds (67%) of discharges reported that smoking cessation assistance was available in their prison, and discharges in prisons with smoking bans were more likely than others to use available assistance to quit (26% compared with 10%).

**Figure 5.10.2: Smoking intentions on release, prison discharges who smoked on entry to prison, by prison smoking ban status, 2015**



*Notes*

1. Excludes New South Wales, as data were not provided for discharges.
2. Only includes discharges who smoked on entry to prison.

Source: Dischargee form, NPHDC 2015.

### What is missing from the picture?

The NPHDC has yet to achieve full participation. In 2015, data for New South Wales were collected from entrants only. About 84% of all prisons in Australia participated in the collection, including 49% of prison entrants and 42% of sentenced discharges. The AIHW is working with states and territories to improve the coverage of this collection.

The collection provides data from prison entrants, the main population of prisoners in custody, and discharges. Currently there is little information regarding the health and health risks of recently released prisoners. This means, for example, that information is currently lacking on whether the reductions in smoking from the smoking bans in prisons are maintained after release.

## Where do I go for more information?

More information on the health of prisoners in Australia is available at [www.aihw.gov.au/prisoner-health/](http://www.aihw.gov.au/prisoner-health/). The report *The health of Australia's prisoners 2015* is also available for free download.

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AIHW (Australian Institute of Health and Welfare) 2013. Smoking and quitting smoking among prisoners 2012. Bulletin no. 119. Cat. no. AUS 176. Canberra: AIHW.

## 5.11 Rural and remote health

In 2013, 29% of the Australian population lived in rural and remote areas: 18% in *Inner regional* areas, 8.9% in *Outer regional* areas, 1.4% in *Remote* areas and 0.9% in *Very remote* areas.

In this snapshot, the term 'rural and remote' encompasses all areas outside Australia's *Major cities*. Using the Australian Standard Geographical Classification System, these areas are classified as *Inner regional*, *Outer regional*, *Remote* or *Very remote*. In many instances, the term 'rural and remote' is used interchangeably with the classification terms 'regional and remote'.

Australians living in rural and remote areas tend to have lower life expectancy, higher rates of disease and injury, and poorer access to and use of health services than people living in *Major cities*.

Poorer health outcomes in rural and remote areas may reflect a range of social and other factors that are detrimental to health, including a level of disadvantage related to educational and employment opportunities, income, and access to health services. People living in rural and remote areas may face more occupational and physical risks, for example, from farming or mining work and transport-related accidents, and experience higher rates of other risk factors associated with poorer health, such as tobacco smoking and alcohol misuse.

Despite poorer health outcomes for some, the Household, Income and Labour Dynamics in Australia (HILDA) survey found that people living in small towns (fewer than 1,000 people) and non-urban areas often experienced greater life satisfaction than those living in *Major cities* (Wilkins 2015).

### Health status

In 2009–2011, people living in *Remote* and *Very remote* areas had mortality rates 1.4 times as high as people living in *Major cities*. For nearly all causes of death, rates were higher for people living outside *Major cities*, with people in *Remote* and *Very remote* areas faring the worst.

- Coronary heart disease was the leading cause of death for all areas, and mortality rates were between 1.2 and 1.5 times as high in rural and remote areas as in *Major cities*.
- In *Remote* and *Very remote* areas, the rate of dying due to a land transport accident was more than 4 times as high as in *Major cities*.
- In *Remote* and *Very remote* areas, death rates due to diabetes were between 2.5 and 4 times as high, and, for suicide, between 1.8 and 2.2 times as high as in *Major cities*.

Disease prevalence is generally higher in rural and remote areas of Australia than in *Major cities*. Based on self-reported data from the 2014–15 National Health Survey (NHS) (ABS 2015), compared with people living in *Major cities*, people living in *Inner regional* and in *Outer regional/Remote* areas of Australia had higher rates of:

|   |                        |  Major cities |  Inner regional |  Outer regional/<br>Remote |
|---|------------------------|--|--|--|
|    | Arthritis              | 14%  | 20%  | 18%  |
|    | Back pain and problems | 16%  | 18%  | 16%  |
|    | Asthma                 | 10%  | 12%  | 12%  |
|    | COPD                   | 2.4%   | 3.4%   | 2.7%   |
|   | Blindness              | 0.5%   | 0.9%   | 0.8%   |
|  | Deafness               | 9.8%   | 15%  | 14%  |
|  | Diabetes               | 4.7%   | 6.0%   | 6.7%   |
|  | CVD                    | 4.7%   | 6.7%   | 5.8%   |
|  | Cancer                 | 1.6%   | 1.7%   | 1.8%   |
|  | Mental health problems | 17%  | 19%  | 19%  |

**Notes**

1. '%' represents prevalence of chronic diseases in each region (excluding *Very remote* areas of Australia).
2. Proportions are not age-standardised, and in some instances higher prevalence may reflect the older age profiles in *Inner regional* and *Outer regional/Remote* areas.
3. 'COPD' refers to chronic obstructive pulmonary disease.
4. 'Blindness' includes partial and complete blindness.
5. 'CVD' refers to heart, stroke and vascular disease.

## Health behaviours and risk factors

People living in rural and remote areas generally have higher rates of health risk factors. The rates among adults in *Major cities*, *Inner regional* and *Outer regional/Remote* areas, based on self-reported data from the 2014–15 NHS (ABS 2015), were:

|  |  |  |  |
|--|---|---|---|
|  | Major cities  | Inner regional  | Outer regional/Remote   |
|  Current daily smoker                   | 13%   | 17%   | 21%   |
|  Overweight or obese                    | 61%   | 69%   | 69%   |
|  No/low levels of exercise              | 64%   | 70%   | 72%   |
|  Exceed lifetime alcohol risk guideline | 16%   | 18%   | 23%   |
|  High blood pressure                    | 22%   | 27%   | 24%   |

### Notes

1. '%' represents prevalence of risk factor in each region (excluding *Very remote* areas of Australia).
2. 'Proportions' are not age-standardised and, in some instances, higher prevalence may reflect the older age profiles in *Inner regional* and *Outer regional/Remote* areas.

## Health care

People living in *Remote* and *Very remote* areas generally have poorer access to, and use of, health care services than people in regional areas and *Major cities*. They also have lower rates of breast and bowel cancer screening (see 'Chapter 6.2 Cancer screening'), higher rates of potentially avoidable hospitalisations, and lower access to selected hospital procedures (see 'Chapter 6 Preventing and treating ill health').

In 2014, the full-time equivalent (based on total weekly hours worked) rate of employed general practitioners (GPs) per 100,000 population was higher in *Remote* and *Very remote* areas (137) than in *Major cities* (109); however:

- the overall rate of employed medical practitioners (including specialists) was lower (253 per 100,000 population compared with 409)
- the number of GP services provided per person in *Very remote* areas during 2010–11 was about half that of *Major cities* (Duckett et al. 2013).

People living in remote areas of Australia may need to travel long distances or relocate to attend health services or receive specialised treatment. For example, based on combined data for 2005–2010, 57% of people with end-stage kidney disease who lived in *Very remote* areas at the start of their treatment moved to less remote areas within 1 year.

In 2013–14, the rate for emergency hospital admissions involving surgery was highest for people living in *Very remote* areas (22 per 1,000) and fell with decreasing remoteness to be lowest among people living in *Major cities* (12 per 1,000).

### What is missing from the picture?

It can be difficult to assess the implications of remoteness for health due to:

- the interactions between remoteness, low socioeconomic position and the higher proportion of Indigenous Australians in many of these areas compared with *Major cities*
- the variability in the distribution of disadvantage and of Indigenous Australians across all areas—for example, levels of disadvantage on the fringe of *Major cities* can be more akin to those in rural/remote areas than to inner-city areas
- gaps in the availability and coverage of health data in rural and remote areas, and in information available at the local area level.

It is also difficult to measure whether there is adequate supply of medical services because of the influence of factors such as varying health-seeking behaviours, professional scope of practice, and health system efficiency across remoteness areas.

### Where do I go for more information?

Information is presented by remoteness categories for a range of risk factors, health conditions and health care settings in various AIHW reports, including [Chronic kidney disease: regional variation in Australia](#), [Mortality inequalities in Australia 2009–2011](#), and [Health workforce](#). These reports can be viewed and downloaded for free.

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# Chapter 6

Preventing and treating ill health



## 6.0 Introduction

A fundamental aim of any health system is to prevent disease so that people remain as healthy as possible for as long as possible. Should they become ill, people need to have access to timely and appropriate treatment. This chapter examines these two functions of the health system: prevention and treatment.

Health prevention and promotion strategies—such as sanitation, immunisation, anti-smoking campaigns, clean air and water, food safety and workplace health and safety—have helped to prevent the spread of infectious diseases and to create safer, healthier environments in which to live.

Immunisation is one of the most effective health-prevention strategies, and in Australia more than 90% of children are fully immunised by the time they start school.

Population-based cancer screening is another major area of prevention activity in Australia, with national programs for breast, cervical and bowel cancers. In each of the 2-year periods 2012–2013 and 2013–2014, more than 3.8 million women took part in the National Cervical Screening Program. Although this program reached almost 60% of the eligible population, there is room for improvement.

As outlined in Chapter 2, Australia's health system is a complex network of providers, services and settings, not all of which are covered in *Australia's health 2016*. This chapter focuses principally on primary health care and hospital services, and on selected specialised treatment services: mental health services and alcohol and other drug treatment services. This chapter also includes feature articles on end-of-life care and on Indigenous women's access to maternal health services.

Primary health care is generally the first point of contact that people have with the health system, and it is also the gateway for access to other, specialised health services. In 2014–15, more than one-third of the 335 million out-of-hospital Medicare services claimed were for non-referred consultations with general practitioners who, along with allied health professionals, play a major role in primary care.

Despite the importance of the primary health care sector, only limited data are available on the delivery of primary health care in Australia. (An exception is the Indigenous primary health care sector, where regular and comprehensive performance data are collected, and this is profiled in 'Chapter 6.5 Using data to improve the quality of Indigenous health care'.)

This chapter also includes an overview of Australia's public and private hospitals, which provide nearly 90,000 hospital beds and about 28 million days of patient care each year. It examines safety and quality in hospitals, how hospital care is changing, and health care use by older Australians, who account for an increasing share of our population and hospital patients.

# 6.1 Prevention and health promotion

A fundamental aim of any health system is to prevent disease and reduce ill health so that people remain as healthy as possible for as long as possible. Reducing the impacts of preventable illness, disability and injury increases participation rates in the labour force and education and increases the quality of life enjoyed by individuals and society (Gruszyn et al. 2012). In Australia, health prevention activities have long played a part in improving the health of Australians—for example, early prevention measures in the 1800s included sewerage systems and water supply in Sydney to improve public sanitation (Hector 2011). Some prevention activities target all people in a given population (for example, fluoridated water), while others target particular groups based on age or other risk factors (for example, breast cancer screening).

Health promotion (for example, education, social marketing, legislation and regulation) is an important part of disease prevention and can be used to help build social and physical environments that support healthy behaviours. In the past, prevention and promotion strategies, such as sanitation, immunisation, quarantine, workplace health and safety, safe birthing practices, and better food and water supply, have helped to prevent the spread of infectious diseases, improve maternal and child health, and create safer, healthier environments in which to live and work. These strategies continue to be vital today.

In 2013–14, \$2.2 billion, or 1.4% of total health expenditure, went to public health activities, which included prevention and health promotion (AIHW 2016). This did not include spending in non-health sectors such as road safety, the environment, and schools. The proportion of health expenditure allocated to public health has been declining since it peaked in 2007–08 (2.2%) (AIHW 2016).

This snapshot highlights selected prevention and promotion activities.

## Immunisation and vaccination

Immunisation is an important public health intervention to stop the spread of diseases that can cause serious illness and death. Worldwide, immunisation programs prevent an estimated 3 million deaths every year (Department of Health 2015a).

In Australia, immunisation begins at birth and vaccinations for children cover 13 diseases, including measles, mumps, diphtheria and whooping cough (Department of Health 2015a).

For immunisation to provide the greatest benefit, a large proportion of the community must be fully immunised. In the past, target coverage rates have been around 90%, with these rates for children being largely achieved (Table 6.1.1). However, due to a higher level of vaccine coverage required to achieve community immunity for measles, a recent national aspirational immunisation target (that is, the proportion of people who are fully immunised) has been set at 95% (Department of Health 2016c).

**Table 6.1.1: Children assessed as fully immunised, by age group, 2015**

|  | Age (years) <sup>(a)</sup> |       |       |
|--|----------------------------|-------|-------|
|  | 1                          | 2     | 5     |
| <br>All children        | 92.3%                      | 89.3% | 92.6% |
| <br>Indigenous children | 88.7%                      | 86.2% | 93.9% |

(a) Children aged 1, 2 and 5 refer to 12–<15 months, 24–<27 months and 60–<63 months, respectively.

Sources: Department of Health 2016a, 2016b.

A national Human Papillomavirus (HPV) vaccination program (using the quadrivalent HPV vaccine which protects against four types of HPV) was introduced for females in 2007 and extended to males in 2013. Australia was the first country to introduce such a program and there has been a fall in HPV-related infection in females, high-grade cervical abnormalities (for example, precancerous lesions of the cervix) in young women, and genital warts among females and males since it began (Department of Health 2015b; NCIRS 2014). For example, 4 years after the beginning of the program, there was a substantial decrease in vaccine-targeted HPV genotypes (the specific types of HPV covered by the vaccine) among women aged 18–24—from 29% in 2004–2007 to 6.7% in 2010–2011 (Tabrizi et al. 2012). Of children turning 15 in 2014, 73% of girls were fully immunised (having received three HPV vaccinations) and 60% of boys were fully immunised (NHPVVPR 2015).

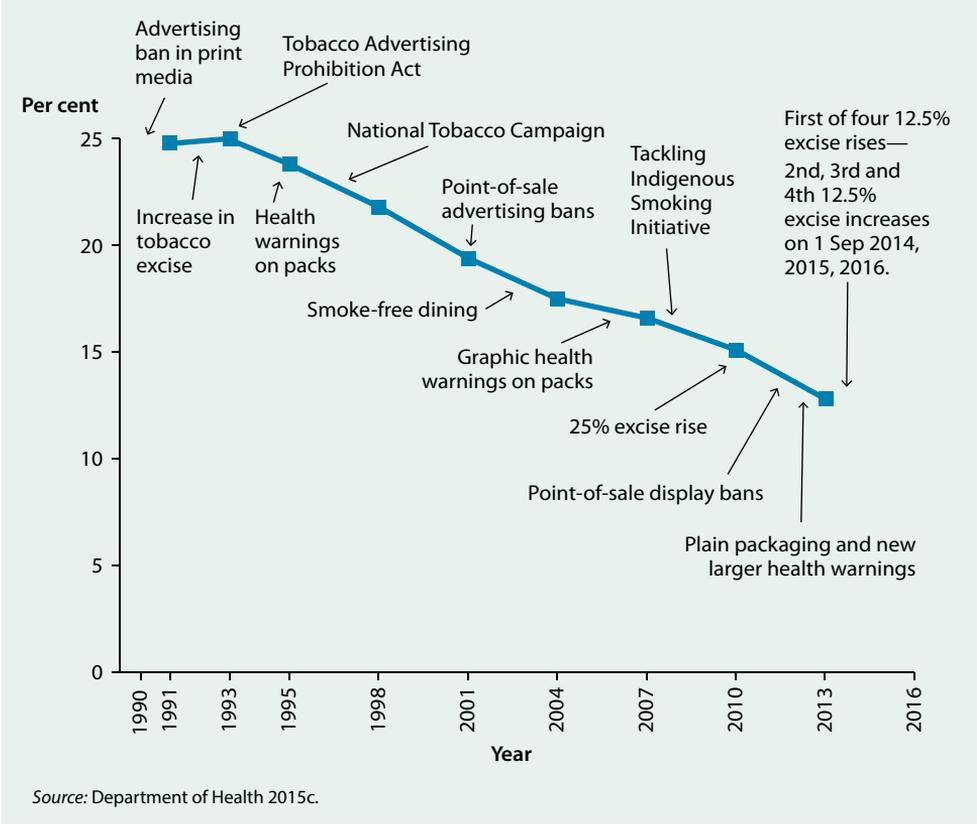
The Australian Government also funds a range of vaccinations for eligible people under the Immunise Australia Program. For example, the flu vaccine is available, for free, to pregnant women, Aboriginal and Torres Strait Islander Australians, people aged 65 and over, and people who are medically at risk and thus more likely to experience complications from flu (Department of Health 2015a).

## Success stories

Two of the biggest prevention success stories in Australia have been reductions in road deaths and tobacco smoking rates. Even though the number of registered vehicles continues to increase over time, road deaths have fallen—from nearly 3,800 in 1970 to fewer than 1,200 in 2014 (BITRE 2010, 2015). During that time, a number of national road safety initiatives were introduced, including the compulsory wearing of seat belts, random breath testing and 50 km/h residential street speed limits.

Similarly, comprehensive public health policy approaches, including promotion, regulation and increased taxation on tobacco products, have contributed to the steady reduction in the daily tobacco smoking rate from 24% in 1991 to 13% in 2013 for people aged 14 and over (Figure 6.1.1). This reduction has been particularly marked for younger people, with the fall in daily smoking rates over the past decade occurring predominantly among people aged 18–49. The average age at which young people aged 14–24 smoked their first cigarette has risen steadily since 2001 (15.9 years in 2013 compared with 14.3 in 2001) and the proportions of secondary school students aged 12–17 who reported smoking in their lifetime, in the past 4 weeks, past week or on 3 days of the last 7, continues to decline (White & Williams 2015) (see ‘Chapter 4.7 Tobacco smoking’).

**Figure 6.1.1: Daily smokers aged 14 and over and key tobacco control measures, Australia, 1990–2016**



## Preventing chronic disease

Chronic diseases, such as coronary heart disease, cancer and diabetes, are the leading causes of illness, disability and death in Australia, and accounted for 17 of the 20 top causes of death in 2013 (see ‘Chapter 3.3 Chronic disease and comorbidities’). Strategies to help reduce the impact of chronic disease and associated risk factors are a focus for all Australian governments.

Key risk factors associated with chronic disease include poor diet, physical inactivity, tobacco smoking, excessive alcohol consumption, high body mass and high blood pressure (see 'Chapter 3.1 Burden of disease and injury in Australia' and 'Chapter 4 Determinants of health'). These risk factors are largely preventable and can be reduced or eliminated through behavioural changes or managed with medical treatments (for example, medication for high blood pressure). Population health strategies targeting risk factors are wide-ranging, from guidelines and legislation to health programs and media campaigns (see Box 6.1.1 for examples in relation to diet).

#### **Box 6.1.1: Population health approaches targeting diet and nutrition**

- Australian Dietary Guidelines
- Mandatory fortification, for example folate fortification of bread
- Legislative instruments (for example Australia New Zealand Food Standards Code; mandatory food labelling)
- Policy and programs for healthy eating and good nutrition in schools
- National campaigns such as the Swap It, Don't Stop It campaign (2008) and the Go for 2&5 campaign (2005)
- Initiatives such as the National Heart Foundation 'Tick' endorsement program and other food labelling (beginning 1989) and the Health Star Rating System (2014)

### **What is missing from the picture?**

Evaluating the impact and cost of community and nationwide initiatives can be difficult. Directly attributing outcomes to a specific initiative can also be a challenge, especially when multiple strategies are being applied at once (for example, legislation, taxation and promotion campaigns). Adding to this challenge is the fact that the impact of an intervention will often be delayed, meaning evidence to support the effectiveness of prevention activities may not be available for many years.

Vaccinations are recorded in Australia for children up to the age of 7, but there is no register for adults. The national system for recording childhood vaccinations is the Australian Childhood Immunisation Register (ACIR). A 'whole-of-life' Australian Immunisation Register will be introduced during the second half of 2016, starting with expansion of the ACIR to record vaccines delivered during adolescence (NCIRS 2015).

### **Where do I go for more information?**

More information on the Immunise Australia Program is available at <http://www.immunise.health.gov.au/>. The reports [National Drug Strategy Household Survey detailed report: 2013](#) and [Australia's food and nutrition 2012](#) are also available for free download.

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## 6.2 Cancer screening

Population-based cancer screening is an organised, systematic and integrated process of testing for signs of cancer or pre-cancerous conditions in populations without obvious symptoms. In Australia, there are national population-based screening programs for breast, cervical and bowel cancers. They are run through partnerships between the Australian Government and state and territory governments. The programs target particular populations and age groups where evidence shows screening is most effective at reducing cancer-related morbidity and mortality.

### BreastScreen Australia

BreastScreen Australia, established in 1991, provides free, 2-yearly screening mammograms (see Glossary) to women aged 40 and over, and actively targets women aged 50–74.

The target age group for BreastScreen Australia was expanded from women aged 50–69 to women aged 50–74 from 1 July 2013. The target age group 50–69 is used here because during the years reported, most data were collected when only women aged 50–69 were actively targeted.

- High attendance for screening is needed to maximise the number of breast cancers detected early, and subsequent reductions in mortality from breast cancer.
- In 2012–2013 and 2013–2014, more than 1.4 million women aged 50–69 participated in BreastScreen Australia, which is around 55% of the population.
- Participation was lower among Aboriginal and Torres Strait Islander women, at around 36% of the population in 2012–2013, as well as among women living in *Very remote* areas (47%) and women from a culturally or linguistically diverse background (49%).
- Over time, participation in BreastScreen Australia has remained relatively steady, being around 55–57% between 1996–1997 and 2011–2012, before falling slightly to 54% in the latest available reporting periods of 2012–2013 and 2013–2014 (Figure 6.2.1).
- More than half of all breast cancers detected through BreastScreen Australia are small, and small breast cancers are associated with more treatment options and improved survival.

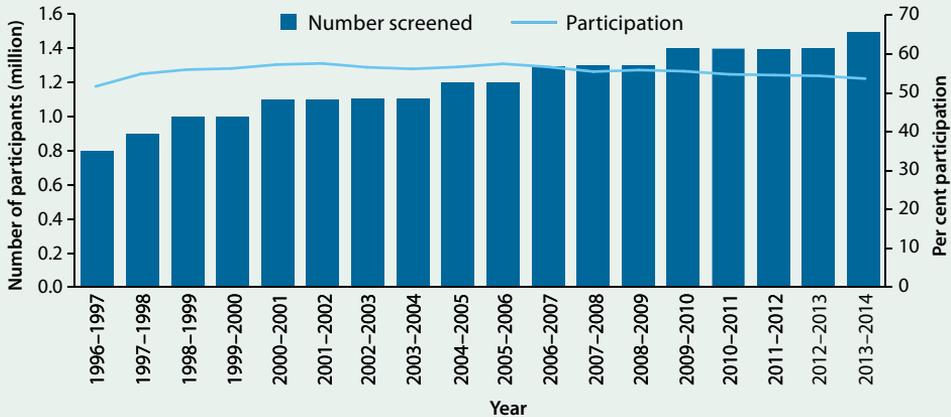
### National Cervical Screening Program

The National Cervical Screening Program (NCSP), established in 1991, targets women aged 20–69 for a 2-yearly Papanicolaou smear, or 'Pap test' (see Glossary).

- High attendance for screening means that more cervical abnormalities can be detected and treated that could otherwise develop into cervical cancer, leading to a reduction in cervical cancer incidence and mortality.
- In 2012–2013 and 2013–2014, more than 3.8 million women aged 20–69 participated in the NCSP, which is around 58% of the eligible population.

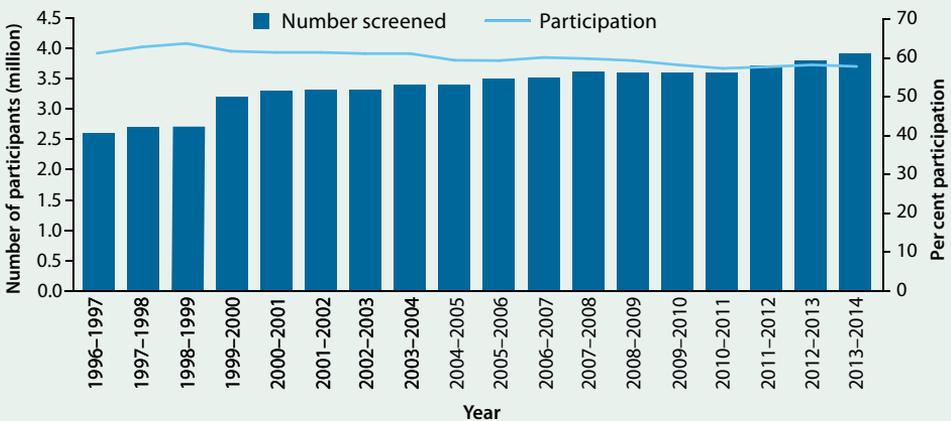
- Participation in 2012–2013 was similar across remoteness areas—highest in *Inner regional* areas (60%) and lowest in *Very remote* locations (55%), but increased with increasing socioeconomic position (from 52% in the lowest socioeconomic group to 64% in the highest group).
- Participation has remained steady since 2004–2005 at around 57%–59% (Figure 6.2.2).
- For every 1,000 women screened, around 8 have a high-grade abnormality detected, providing an opportunity for treatment before possible progression to cervical cancer.

**Figure 6.2.1: Number of women screened and age-standardised participation rate, BreastScreen Australia, 1996–1997 to 2013–2014**



Sources: AIHW analysis of BreastScreen Australia data; AIHW analysis of state and territory cervical cytology register data.

**Figure 6.2.2: Number of women screened and age-standardised participation rate, National Cervical Screening Program, Australia, 1996–1997 to 2013–2014**



Sources: AIHW analysis of BreastScreen Australia data; AIHW analysis of state and territory cervical cytology register data.

## National Bowel Cancer Screening Program

The National Bowel Cancer Screening Program (NBCSP), established in 2006, currently targets men and women turning 50, 55, 60, 65, 70 and 74, inviting them to screen for bowel cancer using a free faecal occult blood test (FOBT) (see Glossary). In 2014, the Australian Government announced that the program was to be expanded, and once fully implemented in 2020 would offer free 2-yearly screening for all Australians aged 50–74.

From 1 July 2013 to 30 June 2014, 1.4 million FOBT invitation kits were issued to eligible Australians. Of these:

- nearly 510,000 returned a completed FOBT kit for analysis—a participation rate of 36%. Participation was higher among women (39%) than men (34%)
- of the people who returned a valid screening test, 7.5% returned a FOBT with a positive screening result and 68% of those had a follow-up colonoscopy (see Glossary) recorded
- of those participants who underwent a colonoscopy, 1 in 25 were diagnosed with a confirmed or suspected bowel cancer, and 1 in 11 were diagnosed with an advanced adenoma (pre-cancerous tumour).

### What is missing from the picture?

National cancer data do not include whether a new case of cancer was identified through screening.

Participation in cervical screening cannot be measured nationally for Aboriginal and Torres Strait Islander women as Indigenous status is not included on all pathology forms in all states and territories, which is the only source that provides information to cervical screening registers. However, available evidence on the participation in cervical screening by Indigenous women suggests that Aboriginal and Torres Strait women are under-screened.

### What is the AIHW doing?

A recent AIHW study compared bowel cancer outcomes of those invited to participate in the NBCSP with those of similar age who had not yet been invited. To do this, data from the NBCSP were linked to the Australian Cancer Database and the National Death Index data set. Of people aged 50–69 who were diagnosed with bowel cancer in 2006–2008, those without a previous NBCSP invitation had a 15% higher risk of dying from bowel cancer by 2012 than those diagnosed after a NBCSP invitation. The study found that bowel cancers diagnosed in non-invitees were, on average, more likely to be at a more advanced stage of cancer development. It is planned that this study will be updated with additional years of cancer incidence and mortality data in the next few years.

### Where do I go for more information?

The [BreastScreen Australia monitoring report 2012–2013](#), [Cervical screening in Australia 2012–2013](#) and [National Bowel Cancer Screening Program: monitoring report 2013–14](#) are available for free download.

## 6.3 Primary health care

In Australia, primary health care is typically the first contact an individual with a health concern has with the health system. 'Primary health' broadly encompasses health care that is not related to a hospital visit, and includes activities such as health promotion, prevention, early intervention, treatment of acute conditions, and management of chronic conditions (Department of Health 2015d).

Primary health services are delivered in settings such as general practices, community health centres, allied health practices, and through communication technology such as telehealth and video consultations. General practitioners (GPs), nurses, nurse practitioners, allied health professionals, midwives, pharmacists, dentists, and Aboriginal health practitioners are all considered primary health care professionals.

### What is the scale and nature of primary health care delivery in Australia?

The vast majority of health care services in Australia are delivered in primary health care settings. For example, in 2014–15, there were:



**139 million** non-referred encounters with GPs claimed through Medicare—from a total of 335 million out-of-hospital services. Other Medicare-funded out-of-hospital services included pathology and allied health such as physiotherapy (Department of Health 2015a).

↑  
**17%**

from 119 million non-referred encounters with GPs in 2010–11.



**117 million** medications were prescribed by a GP and a further 11 million medications were provided directly to the patient (Britt et al. 2015).

↑  
**17%**

from 100 million medications prescribed by GPs in 2010–11.



**3.5 million** episodes of care were delivered by Aboriginal and Torres Strait Islander-specific services.

↑  
**42%**

from 2.5 million episodes of care in 2010–11.

In comparison, Australian public hospitals provided around 18 million occasions of service for outpatient care in 2013–14 (excluding Victoria, which provided 3.7 million occasions of service in 2012–13). In 2013–14, public hospitals also provided 5.7 million episodes of admitted care (hospitalisations), and responded to 7.2 million emergency department presentations (see 'Chapter 6.11 Emergency department care').

Data from the Australian Bureau of Statistics (ABS) 2014–15 Patient Experience Survey showed:

- more than 4 in 5 people (83%) had consulted a GP at least once in the previous 12 months, and females were more likely than males to see a GP (88% and 78%, respectively)
- almost 1 in 5 (18%) saw three or more health professionals for the same health condition
- about 1 in 11 (8.7%) had seen an after-hours GP in the previous 12 months
- almost 1 in 2 (49%) had seen a dental professional in the previous 12 months (ABS 2015).

About \$55 billion of total health expenditure was spent on primary health care in 2013–14. This equates to 38% of total health funding and was similar to spending on hospital services (40%).

## How is primary health care in Australia changing?

The health care system in Australia faces a number of ongoing challenges, including the provision of effective and coordinated care, an ageing population, rising prevalence of some risk factors such as obesity and physical inactivity, and increased incidence of chronic disease and multiple chronic diseases (see 'Chapter 2.1 How does Australia's health system work?' and 'Chapter 3.3 Chronic disease and comorbidities').

During 2014–15, the Australian Government established the Primary Health Care Advisory Group and Primary Health Networks (PHNs) (Box 6.3.1) as part of its reform of the primary health care system. Priorities of the reform program include complex and chronic disease management; better recognition and treatment of mental health conditions; and greater connection between primary health care and hospital care.

Primary health care delivery, efficacy, accessibility and integration with other facets of the health care system may also be informed by and impacted upon by Australian Government-led reviews of:

- after-hours primary health care (Jackson 2014)
- services reimbursed under the Medicare Benefits Schedule (Department of Health 2015b)
- Pharmaceutical Benefits Advisory Committee Guidelines (Department of Health 2015c).

### **Box 6.3.1: Primary Health Networks**

On 1 July 2015, the Australian Government established PHNs with the aim of increasing the efficiency and effectiveness of health services, and to ensure patients receive the right care in the right place at the right time.

The 31 PHNs replace the 61 Medicare Locals, and are aligned with Local Hospital Networks, to assist with the management of patients with complex or chronic conditions between the primary health care and hospital systems. PHNs work directly with GPs, other primary health care providers, secondary care providers, hospitals, and the broader community for the purpose of ensuring better outcomes for patients.

## What is missing from the picture?

Primary health care has not experienced the same national focus on data capture, collation and reporting as other parts of the Australian health system. As a result, there is limited or no detailed information on primary health care consultations; national data for ambulance, aeromedical and allied health services; or state-funded community health activity data.

Australia's emerging e-Health system may provide an additional source of data to improve our understanding of primary health care; however, the extent of this contribution is not yet clear. Other means of improving primary health care information include improving GP surveys or improving the extraction and analysis of core GP data; making better use of existing national data in reporting at the PHN level, and collating existing data for reporting at the national level; and assessing the benefits of data linkage to report on patient journeys through the health system.

## Where do I go for more information?

More information on primary health care in Australia is available in previous editions of this report, including [Australia's Health 2014](#), which can be downloaded for free. In addition, further information is available at <http://www.aihw.gov.au/primary-health-care/>.

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## 6.4 Medicines in the health system

Medicines are used to treat, prevent and manage a wide range of health conditions. Some require prescriptions; others can be bought without a prescription over the counter at a pharmacy or through other retail outlets such as supermarkets. Data on medicines are mainly available for medications available through these community outlets and come from Australian Government subsidy schemes, the Pharmacy Guild of Australia and from market surveys for over-the-counter goods purchased from pharmacies and supermarkets. There is little information collected nationally regarding the medications provided to patients by hospitals, apart from information from the Australian Government Section 100 program which allows supply of restricted medicines under a special arrangement in public and private hospitals (Department of Health 2015b).

The Pharmaceutical Benefits Scheme (PBS) and the Repatriation Pharmaceutical Benefits Scheme (RPBS) are the two main government subsidy schemes for medicines. The PBS and RPBS specify a price for each listed pharmaceutical to be paid to the pharmacy when dispensing the medication. This price includes an amount to cover the services provided by the pharmacist, as well as the cost of the pharmaceutical. Consumers pay out-of-pocket costs up to a maximum copayment limit (\$38.30 for general patients or \$6.20 for concession card holders).

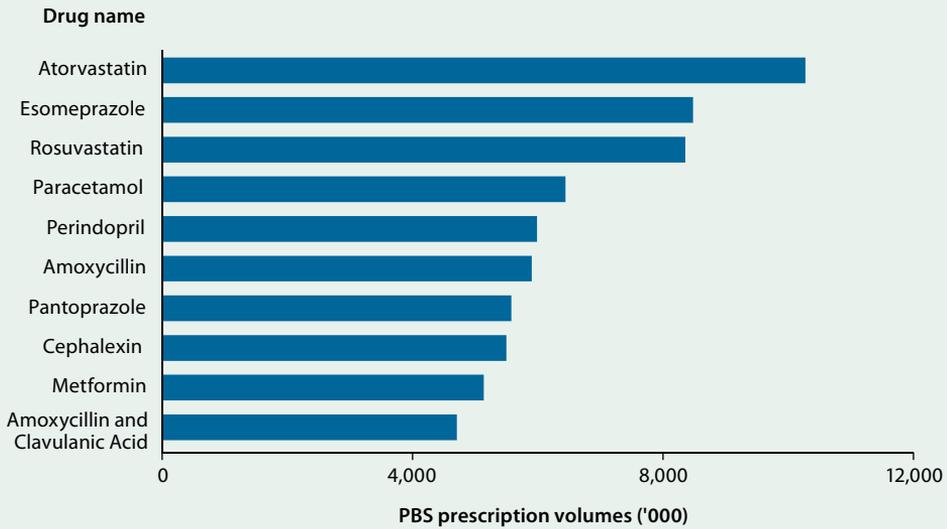
### Medicines dispensed through the PBS and RPBS

The best available data on the dispensing of medicines comes from the PBS and RPBS and the most recent financial year with data on the total number of dispensed PBS and RPBS prescriptions is 2014–15. In 2014–15, there were nearly 225 million subsidised prescriptions dispensed under the PBS and RPBS that were priced over the maximum copayment limit. This was an increase of 21% from 185 million in 2004–05 (DHS 2015). In the same period, Australia's population increased from 20.0 million to 23.3 million people, a growth of 16%. About 91% of PBS services in 2014–15 were provided to concession card holders.

Some of the medicines dispensed under the PBS and RPBS are dispensed at a price less than the maximum copayment and do not attract a government subsidy. In 2013–14, the most recent year with data on these under-copayment medicines, there were 72 million prescriptions dispensed under the copayment level (Department of Health 2015a). This is in addition to the 210 million subsidised medicines in 2013–14. This was an increase from 62 million in 2012–13. Prior to 1 April 2012, data on PBS prescriptions priced below the copayment level were not collected by the Australian Government.

In 2013–14, of all drugs dispensed under the PBS or RPBS, including those where there was no subsidy from the Government, the most commonly dispensed groups of drugs were cholesterol-lowering drugs (atorvastatin and rosuvastatin); drugs treating gastro-oesophageal reflux disease (esomeprazole and pantoprazole); and antibiotics (amoxicillin, cephalixin, and amoxicillin with clavulanic acid) (see Figure 6.4.1). The analgesic paracetamol and the anti-hypertensive perindopril were also commonly dispensed. Metformin, a drug used for treatment of diabetes, was the ninth highest prescribed drug.

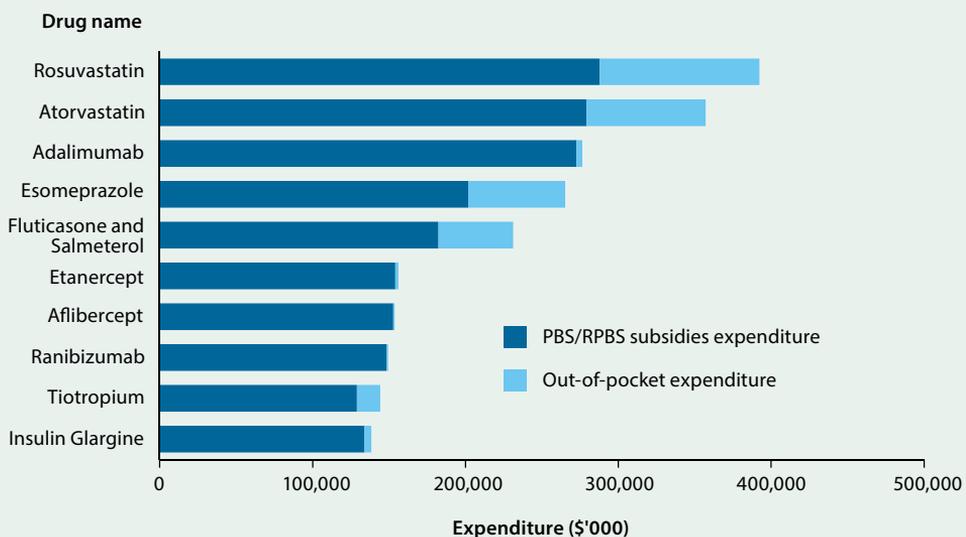
**Figure 6.4.1: PBS and RPBS dispensed drug volumes, including under- and over-copayment prescriptions, 2013–14**



Source: Department of Health 2015a.

Cholesterol-lowering drugs also had the highest total expenditure in 2013–14 of all drugs under the PBS and RPBS (see Figure 6.4.2). Other high-expenditure drugs were those used for the treatment of severe arthritis (adalimumab and etanercept); the treatment of gastro-oesophageal reflux disease (esomeprazole); the management of respiratory disorders (fluticasone with salmeterol and tiotropium); the treatment of macular degenerative disorders (aflibercept and ranibizumab); and for long-acting control of blood sugar levels in diabetics (insulin glargine).

**Figure 6.4.2: PBS and RPBS dispensed drug expenditure, including under- and over-copayment prescriptions, 2013–14**



Source: Department of Health 2015a.

In 2013–14, more than half of the drugs subsidised through the PBS and RPBS—that is, drugs where the cost was above the maximum copayment level and there was a subsidy paid by government—affected the cardiovascular system (31%) or the nervous system (22%). In 2003–04, the subsidised drugs most supplied were also medicines for the cardiovascular system and nervous system, but these made up a lower proportion of the total subsidised medicines (30% and 18%, respectively) (Department of Health 2015a).

According to the Bettering the Evaluation and Care of Health survey of general practice, antibiotics and analgesics (used for pain relief) were the medicines most commonly prescribed by general practitioners in 2013–14. It is not known whether these were then dispensed through the PBS or RPBS. This pattern has not changed since 2003–04 (Britt et al. 2015).

## Medicines expenditure

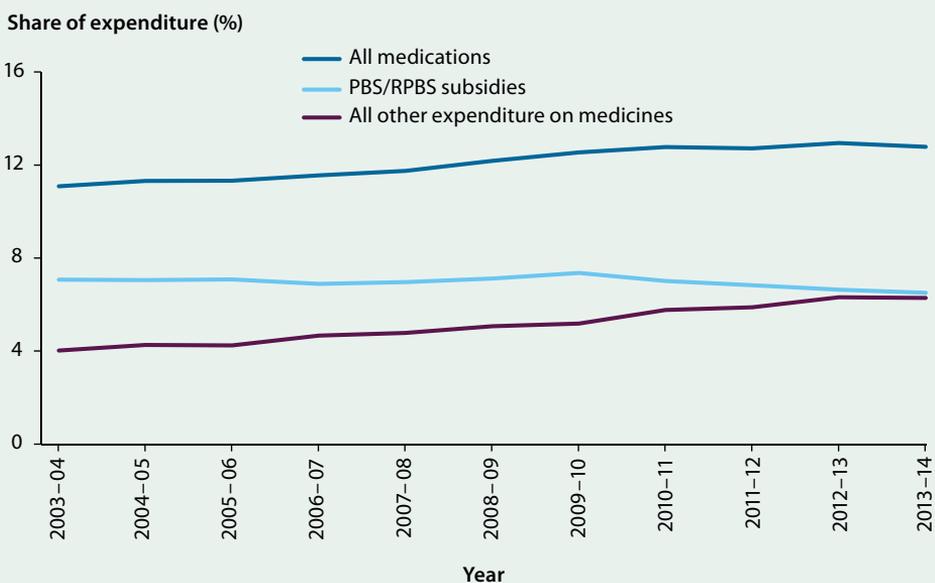
Expenditure on medicines grew in absolute terms, from \$10.3 billion in 2003–04 to \$19.8 billion in 2013–14, and as a proportion of recurrent health expenditure, from 11% in 2003–04 to 14% in 2013–14. The estimate of the expenditure on medicines includes expenditure by the Australian Government, such as expenditure on medicines subsidised through the PBS and RPBS, and non-government expenditure, which includes expenditure on below-copayment prescriptions. Apart from expenditure on medicines dispensed in hospitals under the Section 100 provisions, it does not include expenditure on medicines supplied in hospitals, which is regarded as hospital expenditure.

The growth in medications expenditure was mostly related to expenditure for non-PBS and non-RPBS subsidised medicines, referred to as *All other expenditure on medicines*, which is mostly non-government expenditure such as expenditure on over-the-counter medicines and below-copayment prescriptions. However, it includes some government expenditure such as incentive payments to pharmacies to process prescription subsidies using PBS Online, and payment for medicines provided under the Life Saving Drugs program. *All other expenditure on medicines* rose from 4.2% of recurrent health expenditure in 2003–04 to 6.7% in 2013–14. PBS and RPBS subsidies reduced from 7.4% of recurrent health expenditure in 2003–04 to 6.7% in 2013–14 (Figure 6.4.3).

In real terms, PBS and RPBS expenditure generally increased since 2003–04, but decreased recently, from \$9.1 billion in 2011–12 to about \$9 billion in 2013–14.

Lower expenditure does not necessarily mean fewer prescriptions dispensed. The volumes of prescriptions subsidised increased from 201 million government-subsidised medicines dispensed in 2011–12 to 210 million in 2013–14.

**Figure 6.4.3: Proportion of recurrent health expenditure on medications, constant prices, 2003–04 to 2013–14**



Source: AIHW health expenditure database.

## What is missing from the picture?

In most cases where a medicine is dispensed there is little information captured and collated at a national level on the purpose for which it was prescribed, whether the medicine was taken, and the outcome that occurred from use of the medicine. This information at the patient level would greatly enhance monitoring of the use of medicines in Australia.

Nationally collected information on all medicines provided through hospitals would add extra understanding of the use of medicines in Australia and expenditure on them.

## Where do I go for more information?

For more information on medicine statistics in Australia, visit the [Medicare Statistics](#) website.

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## 6.5 Using data to improve the quality of Indigenous health care

For nearly a decade now, the AIHW has collected data from Aboriginal and Torres Strait Islander primary health care organisations for national performance reporting. Over this time there have been major developments in the processes used to collect the data, as well as an expansion of the content and scope of the data collection.

The national data are collected directly from Indigenous health care providers and there is now a rich source of information on the quality of health care from the organisation level upwards. These data allow primary health care organisations to track their performance over time, and for comparing the performance of organisations against peers. This type of data is increasingly being used to drive improvements in the quality of health care provided to Aboriginal and Torres Strait Islander Australians.

This feature article describes some of the national data developments in the Indigenous primary health care sector and how these data are being used. It also includes two case studies from the sector that show how data has been used to improve the quality of health care.

### Indigenous primary health care data

Primary health care is generally the first point of contact that people have with the health system and is also the gateway to access other health services. It includes most services not delivered by hospitals, and encompasses a range of providers and services across public, private and the non-government sectors (AIHW 2014a). There are, however, only limited data available on the delivery of primary health care in Australia. An exception to this is the Indigenous primary health care sector where regular and comprehensive performance data are collected.

It is particularly important that Indigenous Australians have good access to primary health care services because of their poorer health (AIHW 2011). The Australian Government provides funding to organisations to provide primary health care to Indigenous Australians. Many of these organisations are Aboriginal Community Controlled Health Organisations which provide access to a range of primary health care services, including prevention, diagnosis, treatment and referral, in one location.

At the national level, organisations funded by the Department of Health to provide primary health care to Aboriginal and Torres Strait Islander people are required to report six-monthly organisation-level data for the national key performance indicators (the nKPIs) for Aboriginal and Torres Strait Islander primary health care. There are similar efforts in place for organisations funded by state and territory governments, for example the Northern Territory Aboriginal Health Key Performance Indicators (NTAHKPIs) which have been in place since July 2009. This means that data are regularly collected about how individual services are performing, along with comparative data from other services. These data have increasingly been used to improve the quality of health care provided to consumers at the service level through formal continuous quality improvement (CQI) or other quality improvement processes (Box 6.5.1).

### **Box 6.5.1: Continuous quality improvement in Aboriginal and Torres Strait Islander primary health care**

Continuous quality improvement is a process of using objective information at the health service level to understand and improve the quality of care that clients are receiving. It is an iterative process that includes the collation and analysis of patient and provider data to measure service level activities, and the identification of needs and gaps in these activities by comparing these data against an agreed set of standards.

The Plan-Do-Study-Act cycle is a key component of CQI, a process where health services assess their present service delivery against objective criteria, plan and implement changes, and then reassess their progress. This cycle allows ongoing improvements to specifically meet the priority health outcomes identified by individual services.

There are a number of CQI initiatives operating in the Indigenous primary health care sector at national, state/territory and regional levels, driven from the state, territory and national governments and from frontline services upwards. At the national level there are the Australian Primary Care Collaboratives, One21seventy and Healthy for Life initiatives, while state-based initiatives include the Northern Territory CQI Strategy and the Queensland Aboriginal and Torres Strait Islander Health Council Achieving Clinical Excellence program.

The uptake of CQI initiatives in Aboriginal and Torres Strait Islander primary health care has, however, not been uniform across Australia. Recognising these disparities, the Department of Health commissioned a first report that outlined the current state of play in relation to CQI activity and evidence, and identified barriers and linkages relevant to the development of a national CQI framework (Lowitja 2014). A second stage, involving the development of the national CQI framework for Aboriginal and Torres Strait Islander primary health care, is currently under way.

*Sources: Bailie et al. 2007; Lowitja Institute 2014.*

## **The nKPIs**

The nKPIs are a set of indicators developed under the National Indigenous Reform Agreement. The nKPIs focus on maternal and child health, and chronic disease management, and were designed to support the Council of Australian Governments Closing the Gap targets: to close the gap in life expectancy within a generation and to halve the gap in mortality rates for Indigenous children under 5 within a decade. The nKPI data are collected from organisations that provide primary health care to Aboriginal and Torres Strait Islander people. The AIHW is responsible for the ongoing collection and reporting of these indicators.

The nKPIs were developed based on the experience of the Healthy for Life program (HfL), and many of the initial nKPIs had forerunners in the HfL Essential Indicators (Box 6.5.2). They embedded the concept of CQI in their design, with a focus on measuring and improving health service processes and outcomes that were specifically related to the quality of care provided to clients.

### Box 6.5.2: The Healthy for Life program

The HfL program was introduced by the Australian Government in 2005–06 to improve the health of Aboriginal and Torres Strait Islander mothers, babies and children; to improve the early detection and management of chronic disease; and to reduce the incidence of adult chronic disease. HfL pioneered the collection of national health data specifically for CQI processes and to improve health care delivery (AIHW 2013).

An external evaluation of the HfL program, conducted by Urbis in 2009, found considerable evidence of a wide range of improvements that services had made to health service systems, practices and service delivery as a result of HfL funding. A significant legacy for most participating services was the improvement in their capacity to collect, report and act on good quality data that reflected the processes and outcomes of their service (Urbis 2009).

The evaluation report noted that HfL provided a model for other program areas in aggregating local-level data for national reporting and establishing reporting frameworks that demonstrate tangible population-level outcomes (Urbis 2009). The evaluation found that the program had led to a wide range of service quality improvements such as:

- improved physical access to care—including through transport services and visiting community members in their homes, in hospitals and in schools
- new approaches to care delivery—including targeted clinics such as diabetes clinics, peer support programs and other initiatives that support healthy living
- new approaches to care planning and coordination—including new program areas, individualised care planning, internal coordination activities and improved relationships with other agencies (Urbis 2009).

Sources: AIHW 2013; Urbis 2009.

The nKPIs are categorised as either process-of-care indicators or outcome indicators (for more information about the indicators see the [AIHW nKPI website](#).) The process-of-care indicators, in particular, reflect activities that are largely under the control of organisations, for example *Birthweight recorded* or *Smoking status recorded* (AIHW 2015c). The number of indicators in the nKPI collection increased progressively, from 11 in the first reporting round in June 2012 to 21 indicators in the December 2014 reporting round.

An electronic data extraction tool extracts aggregate nKPI data directly from the health organisations' clinical information systems and this is submitted to OCHREStreams, a web portal from which the AIHW can access the data. The AIHW then works with health care organisations to improve their data quality, in a process of data checking and resubmission, before it is used to meet various reporting requirements.

The number and scope of services providing nKPI data has increased over time. The first collection round only included services participating in the HfL program (about 90 services) and in January 2013 this was expanded to include all Indigenous primary health services funded by the Australian Government. Services funded by the Northern Territory Government were included in the collection from December 2014, when 233 services provided nKPI data (Table 6.5.1).

**Table 6.5.1: Number of nKPI services, by type of governance arrangement and jurisdiction, December 2014**

| Governance arrangement  | NSW/<br>ACT | Vic/<br>Tas | Qld       | WA        | SA        | NT        | Total      | %            |
|---|-------------|-------------|-----------|-----------|-----------|-----------|------------|--------------|
| Aboriginal and Torres Strait Islander Community Controlled Health Organisations | 40          | 26          | 21        | 17        | 10        | 20        | 134        | 57.5         |
| State and territory governments   | 13          | 2           | 3         | 5         | 6         | 54        | 83         | 35.6         |
| Medicare Locals <sup>(a)</sup>  | 10          | 1           | 2         | 0         | 0         | 0         | 13         | 5.6          |
| Other non-government  | 0           | 1           | 2         | 0         | 0         | 0         | 3          | 1.3          |
| <b>Total</b>  | <b>63</b>   | <b>30</b>   | <b>28</b> | <b>22</b> | <b>16</b> | <b>74</b> | <b>233</b> | <b>100.0</b> |

(a) Medicare Locals were abolished in 2014 and replaced by Primary Health Networks.

Source: AIHW nKPI collection.

## Reports provided to organisations

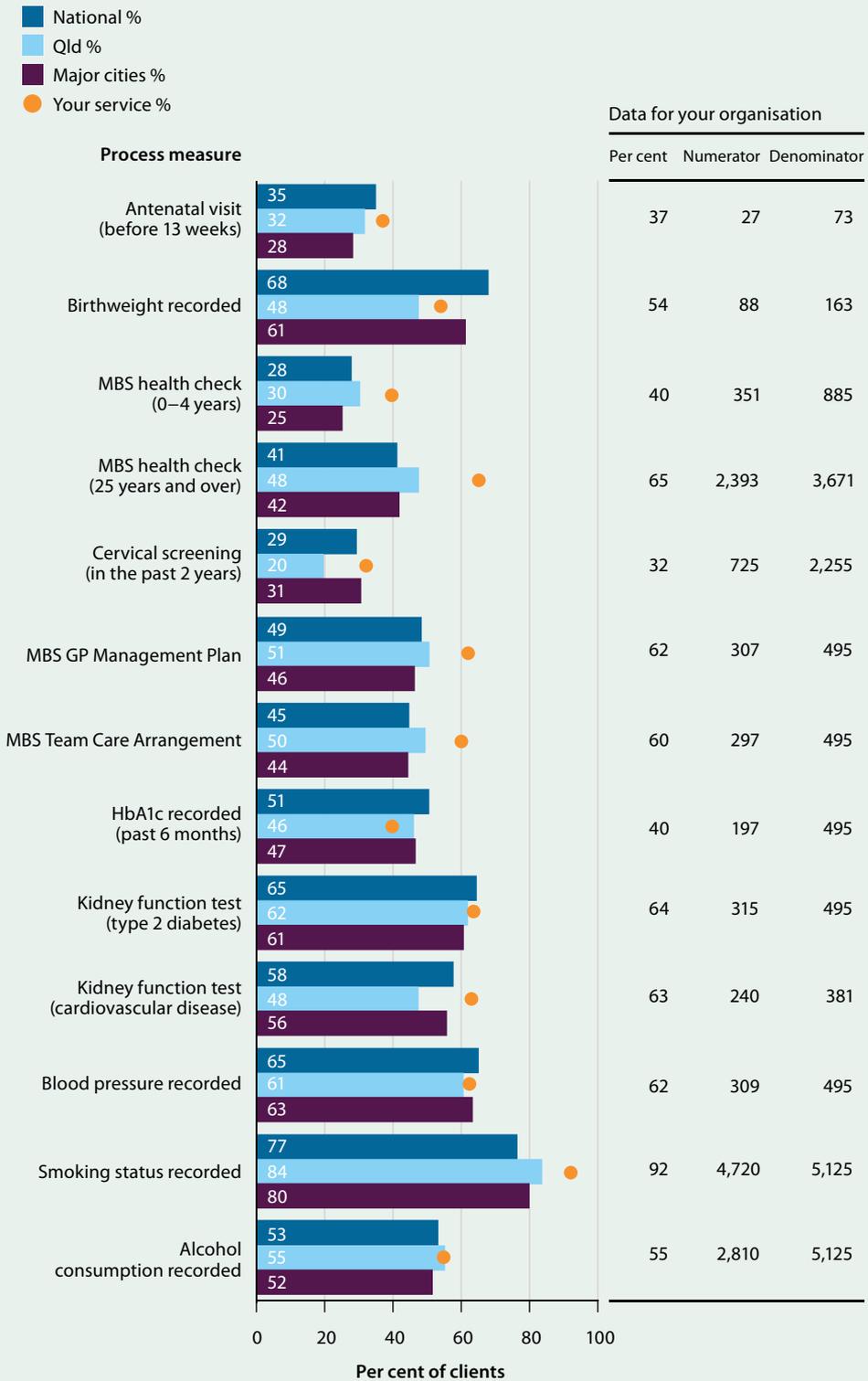
The AIHW provides organisations that submit data with a written report and PowerPoint presentation specifically for their service. These show the data for the relevant reporting period, time series data and national, state/territory and regional averages for use in comparing and assessing their own performance (Figure 6.5.1). This information allows services to track their performance relative to others and over time. It can be readily used by the organisation for a range of purposes including CQI, staff training and as input for Board or executive meetings.

## Tracking organisations' performance

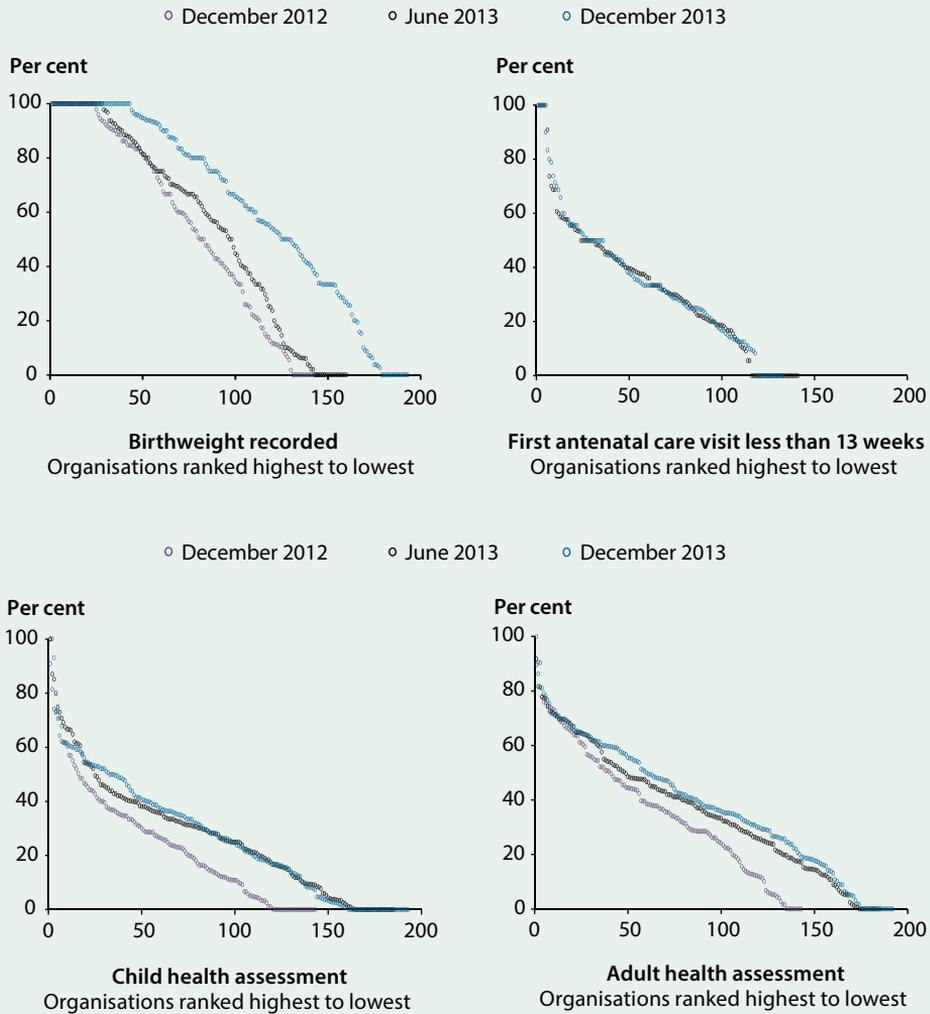
The AIHW produces national reports and presentations based on the aggregated nKPI data (AIHW 2014b, 2014c, 2015c). The national reports show that performance on most of the nKPIs has improved over time, but there is a wide variation in organisations' performance for most indicators.

For example, the national nKPI reports include graphs of where individual services fit within the national distribution for all process-of-care indicators (Figure 6.5.2). The performance of each organisation is represented as a point on the graph and this can range widely depending on the indicator and what proportion of clients have been provided with a particular service. The shape of the curve reflects this distribution and the three lines show how the performance distribution has changed over time, relative to the first reporting period.

Figure 6.5.1: Examples of nKPI organisation-level and comparison data



**Figure 6.5.2: Distribution of performance of all organisations on selected nKPI indicators**

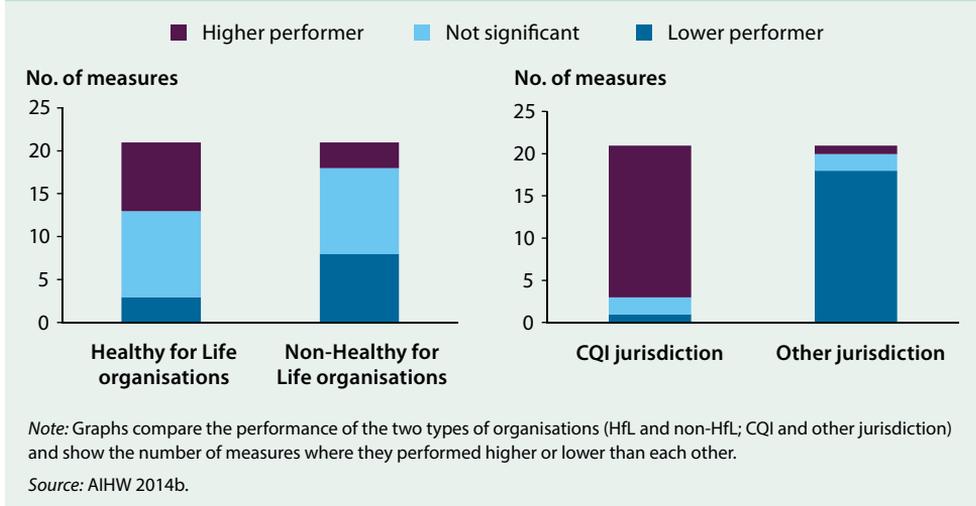


*Note:* Organisation performance can range from 0 to 100% on each nKPI for the relevant reporting period, with 100% being the optimal score. The performance of each organisation is represented by a dot on the graph for the relevant nKPI.

*Source:* AIHW 2014c.

Analyses of the variation in performance over time showed that clients at organisations that had participated in HfL—the national CQI program—had better results than clients at other organisations. The clients attending HfL organisations had better results than those attending non-HfL organisations on eight measures, while clients at the non-HfL organisations had better results on only three measures. Similarly, clients at organisations in jurisdictions with a history of using CQI processes (that is, the Northern Territory and Queensland) had better results than clients at organisations that did not use these processes (Figure 6.5.3) (AIHW 2014b).

**Figure 6.5.3: Comparison of organisation performance on nKPIs over three reporting periods, June 2012–June 2013**



## Case studies

### Northern Territory Department of Health

The Northern Territory Aboriginal Health Forum developed the NTAHKPIs for monitoring service delivery and improvement in maternal and child health programs, as well as early intervention and chronic disease management. Making these data visible has been a critical element of service improvement for health care services delivered by Aboriginal Community Controlled Organisations as well as for the Northern Territory Government.

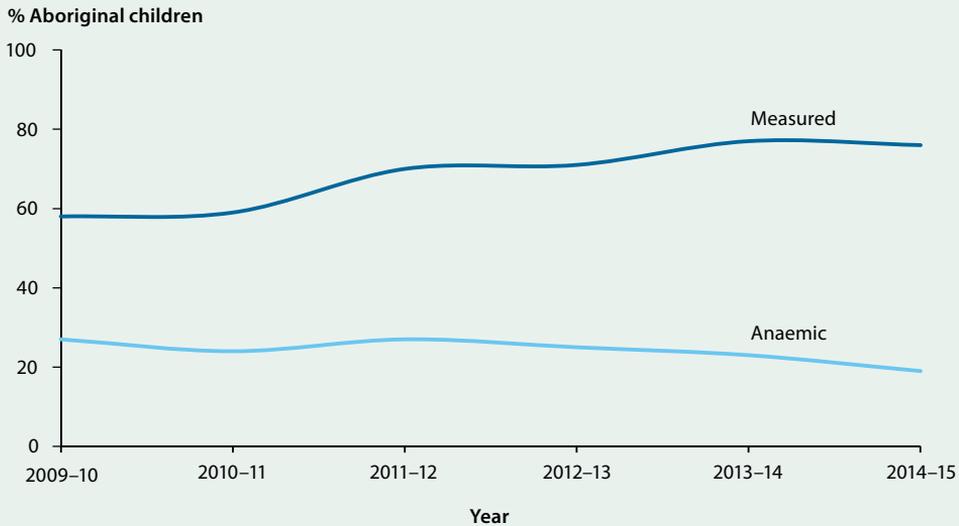
The indicators are used by policy and program staff to identify areas of concern and target areas where improvements can be made across the Territory. Strategies are then put in place to address these. Health care services with strong performance in a particular area can also be identified, and the strategies they used to obtain these results are shared with other services.

In the area of improving childhood iron deficiency and anaemia, for example, persistent high rates were noted in the NTAHKPIs. The data showed the range of performance across organisations and indicated that improvements in service delivery were possible. A combination of strategies was used to address the issue:

- The Northern Territory Department of Health developed and led a more systematic approach and monitored progress with monthly data
- the Northern Territory CQI Collaborative led by Aboriginal Medical Services NT held forums bringing together clinicians, managers and policymakers to learn from successful services and to train and motivate staff
- a regional approach was used in Katherine with three collaborating Aboriginal health services and in East Arnhem through a clinical advisory group.

The outcome of these strategies could then be tracked through the indicator results for anaemia. These showed that there was a large increase across organisations in the proportion of children assessed (with the range 29% to 96% in 2012–13 rising to 49% to 96% in 2014–15) and a decline in the proportion of Aboriginal children recorded as being anaemic (the range 18% to 41% in 2012–13 falling to 11% to 30% in 2014–15) (Figure 6.5.4).

**Figure 6.5.4: Performance indicator results for anaemia, Northern Territory**



Source: NT Department of Health presentation, unpublished.

## The Goondir Health Service Dashboard

Goondir Health Service has developed its own visually appealing and easy-to-use electronic reporting system to improve service delivery. The service is located in regional Queensland and operates multiple clinics across 160,000 kilometres. The Clinical Performance Dashboard is a service-planning and management tool that brings together three types of data: clinical data from the patient information recording system, organisational data from the quality management system, and financial data. It provides clinicians, managers and the executive with up-to-date data to inform clinical and management decisions (Hansford 2015).

The dashboard provides different levels of information, beginning with high-level summary data, and then allows users to 'drill down' to more detailed views of key measures. The first level includes measures such as patient numbers, appointments, services delivered and performance indicator results (Figure 6.5.5). Large ticks are used to indicate where the service is on target or improving and crosses indicate areas that are not doing well.

Figure 6.5.5: Goondir Health Service Clinical Performance Dashboard manager's snapshot



Note: This image is a low resolution screenshot included to provide an overall impression of the dashboard.

Source: Hansford 2015.

Drilling down further to the performance data, for example, a dashboard summary graph shows trends over time in the number of performance indicators that are improving or not, and then provides a list of the indicators where the service is performing poorly. For example, the health service manager could check how they are performing on smoking rates or the proportion of overweight/obese clients. With this information, health service managers can assess and develop strategies, such as targeted health-promotion activities, to improve performance against these indicators (Hansford 2015).

## What is the AIHW doing?

There is an increasing interest in using data to improve health outcomes at the local level, where there can be large variations in the quality of health care delivered. The Indigenous primary health care sector is leading the way in the use of organisation-level data to improve the quality of health care through a variety of different quality improvement strategies.

As detailed in this feature article, the nKPIs contribute to these processes by providing regular standardised indicators and comparison data that can be used by organisations to assess their performance. This is in line with the AIHW's strategic priority to provide value-added feedback to data providers (AIHW 2015a), and its support for individual organisations to improve the quality of their data—and, in turn, the quality of the health care they provide.

Over time, the scope of the nKPI collection is also likely to be widened to include state- and territory-funded services, in addition to the Northern Territory. This will mean better quality data about a wider range of primary health care services provided to Aboriginal and Torres Strait Islander Australians.

## Where do I go for more information?

More information about the nKPIs available at

<http://www.aihw.gov.au/indigenous-australians-health-and-welfare-publications/>.

Reports including [\*National Key Performance Indicators for Aboriginal and Torres Strait Islander primary health care: first national results for June 2012 to June 2013\*](#) and [\*National Key Performance Indicators for Aboriginal and Torres Strait Islander health care: results from December 2014\*](#) available for free download.

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## 6.6 Indigenous Australians' access to health services

Access to health services is an important contributor to health and wellbeing. It is a particularly important influence on the health status of Aboriginal and Torres Strait Islander people, given their overall poorer health and the greater need for health care compared with the non-Indigenous population.

Measuring access to health care is complex, due to its inherently multidimensional nature. 'Access' incorporates measures of physical proximity to services, such as distance or drive time (availability); financial aspects (affordability); and cultural aspects (acceptability). Ideally, assessment of access also includes consideration of need for care. In practice, however, much of the available data on usage of health services by different populations does not fully account for differences in health care needs. Services may be mainstream or targeted to a specific population group (such as specialist Indigenous services). Access to primary health care services is key because it is usually an individual's first point of contact with the health system.

Although three-quarters of the Indigenous population live in *Major cities* and regional areas where mainstream health services are typically located, these services are not always accessible, for geographic, social and cultural reasons (AIHW 2014b). Indigenous-specific health services are therefore important providers of comprehensive primary health services for Indigenous Australians.

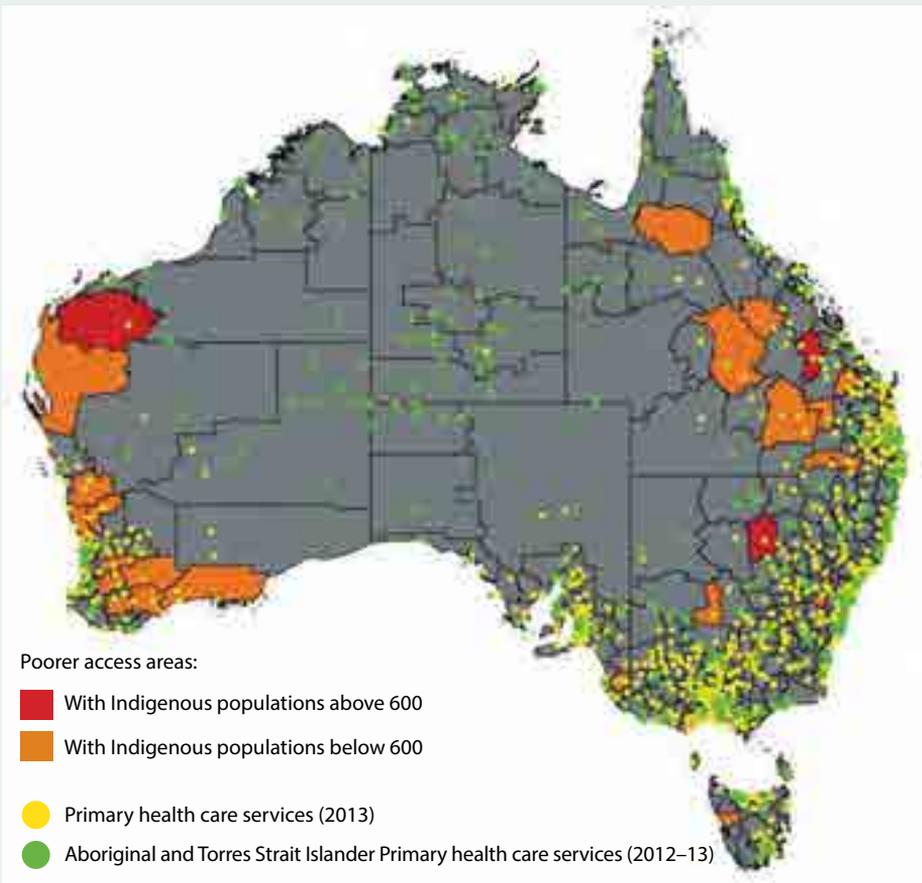
Medicare data provide information on general practitioner (GP) and specialist services claimed for Indigenous Australians. These services can be delivered through mainstream or Indigenous-specific health services, but not all services delivered by Indigenous primary health care services can be claimed through Medicare.

As there are currently no comprehensive data on Indigenous Australians accessing health services, this chapter reviews four selected aspects related to access: (i) an AIHW-developed small-area-level measure of access to primary health care services relative to the distribution of the Indigenous population (ii) health services provided as Indigenous-specific primary health care services, funded by the Australian Government; (iii) health services for Indigenous Australians claimed through Medicare, including selected specialist services; and (iv) hospital services used by Indigenous Australians.

### Access to primary health care services relative to population distribution

Identifying areas where access is poor can help to inform policy decisions and planning of health services. The AIHW has mapped access to primary health care services (Indigenous-specific primary health care services and other GP-based primary health services) relative to the distribution of the Indigenous population (AIHW 2015b). This has revealed areas where critical primary health care service gaps exist for the Indigenous population (Figure 6.6.1).

**Figure 6.6.1: Areas where Indigenous Australians have poor access to primary health care services, by SA2, and location of services, 2012–13 and 2013**



Source: AIHW 2015b.

Access to services was measured in terms of: (a) physical access to Indigenous-specific primary health care services based on drive time to services; and (b) physical access to GP services in general, relative to the per capita need for primary health care. The need for primary health care was estimated using demographic and socioeconomic characteristics of the local population (AIHW 2014a).

This work shows that, overall, Australian Government-funded Indigenous-specific primary health care services appear to be well positioned relative to the geographic distribution of the Indigenous population, and relative to the distribution of other GP services. There are, however, several areas where the Indigenous population has very limited access to both Indigenous-specific services and GP services in general.

In total, 37 Statistical Areas Level 2 (SA2—medium-sized areas) were identified as service-gap areas, with no Indigenous-specific primary health care services within one hour's drive and with poor access to GP services in general. These service-gap areas are highlighted in red and orange in Figure 6.6.1 (with other areas shown in grey).

- Many of these areas are in *Remote* and *Very remote* areas of Queensland and Western Australia.
- Ten of these service-gap areas have an Indigenous population of 600 or more, which are areas shaded in red in the map. (Only three of these red areas are large enough to be clearly seen. Of the remaining seven small areas, six are in Queensland and one is in New South Wales. See AIHW 2015b for details of these locations).

See also 'Chapter 6.7 Spatial variation in Indigenous women's access to maternal health services', which presents more detailed analyses of access to that sub-category of health services.

## Use of Indigenous-specific primary health care services

A growing network of Indigenous-specific primary health care services is administered and run by a combination of Aboriginal Community Controlled Health Organisations, Primary Health Network services, other non-government organisations, and state/territory local health services. The clients of these services are predominantly, but not exclusively, Aboriginal and Torres Strait Islander people.

In 2014–15, there were 203 Indigenous-specific primary health care organisations that reported data on their total clients, contacts made, and episodes of care. They provided services to 434,600 clients through over 5 million contacts—an average of 12 contacts per client. Over three-quarters (79%) of these clients identified as Aboriginal and Torres Strait Islander people. Over time, the episodes of health care provided to clients of these organisations have almost tripled, from 1.2 million in 1999–2000 to 3.5 million in 2014–15 (AIHW 2016b).

These services provided clinical health care; population health programs; child and maternal health services; screening programs and health checks; access to allied health and specialist services; group activities; health-related community services; and substance-use treatment and assistance.

The national key performance indicators (nKPIs) for Aboriginal and Torres Strait Islander primary health care provide information on the process-of-care and health outcomes for clients attending Indigenous-specific primary health care organisations funded by the Australian and state and territory governments. Altogether 24 nKPIs have received in-principle approval from the Australian Health Ministers' Advisory Council for regular reporting, and data on 22 nKPIs were reported by 233 primary health care organisations for the December 2014 period. These indicators focus on maternal and child health, preventative health and chronic disease management. See also 'Chapter 6.5 Using data to improve the quality of Indigenous health care'.

## Use of selected health services claimed through Medicare

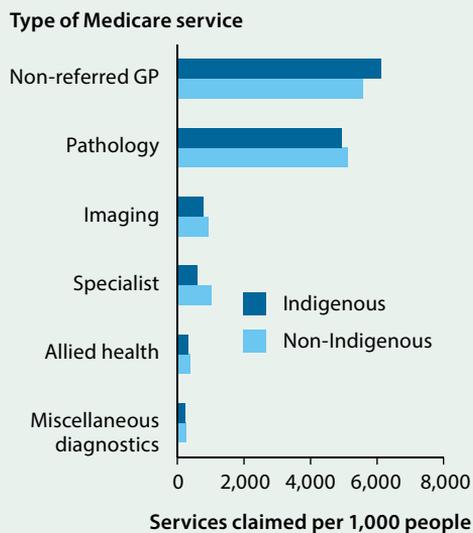
Medicare data for 2013–14 showed that over 3.6 million GP services had been claimed through Medicare for Indigenous Australians in that year, at an average rate of 6,115 GP services per 1,000 population.

The number of GP services claimed per 1,000 Indigenous Australians was 10% higher than that for non-Indigenous Australians, but claim rates for specialist services were 43% lower for Indigenous Australians (Figure 6.6.2). The lower claim rates for specialist services may be explained partly by the differences in the relative population distributions of the Indigenous and non-Indigenous populations across urban, regional and remote areas. Access to specialist services is generally lower in more remote areas, and since a greater proportion of the population of remote areas are Indigenous (compared with other areas) this difference affects their overall access to specialist services.

The uptake of the Medicare Benefits Schedule (MBS) item for annual health assessments of Indigenous Australians has increased significantly over time (Figure 6.6.3). In 2013–14, primary health care providers carried out:

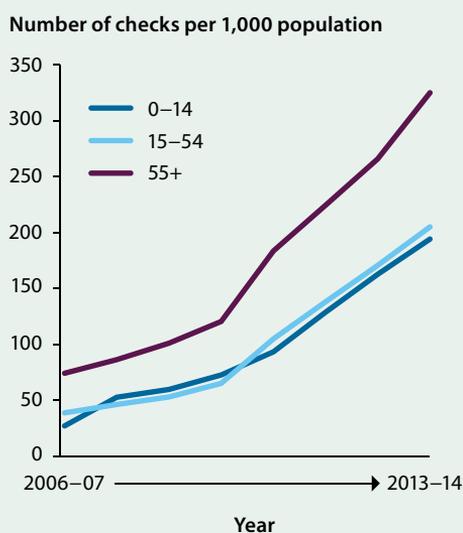
- 47,400 Indigenous child health checks—a rate of 194 checks per 1,000 Indigenous children aged 0–14
- 80,600 Indigenous adult health checks—a rate of 205 checks per 1,000 Indigenous Australians aged 15–54
- 22,300 Indigenous older-person health checks—a rate of 325 checks per 1,000 Indigenous Australians aged 55 and over.

**Figure 6.6.2: Age-standardised rate of Medicare services claimed per 1,000 people, by Indigenous status, 2013–14**



Source: AIHW 2015a.

**Figure 6.6.3: MBS health checks, Indigenous Australians, by age, 2006–07 to 2013–14**



Source: AIHW 2015a.

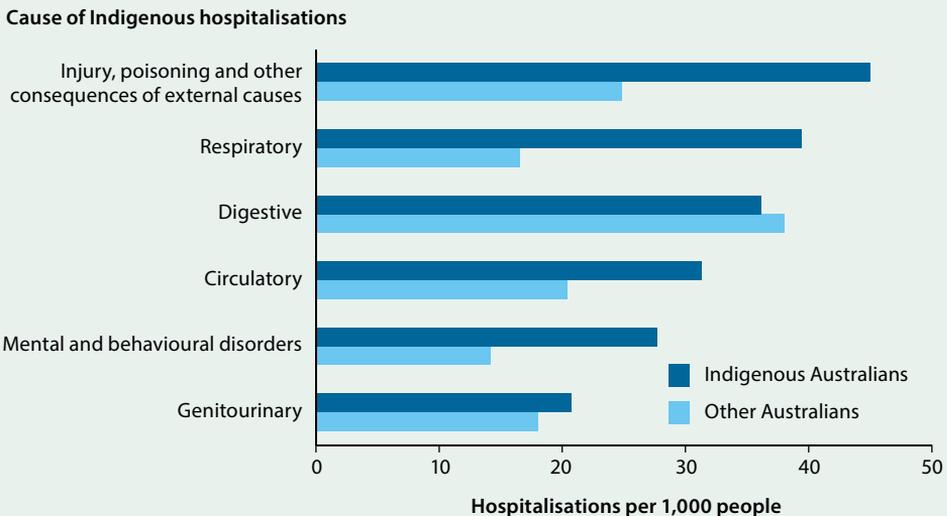
## Hospital services

Indigenous Australians are relatively high users of hospital services, the majority of which are accessed via public hospitals.

- In 2013–14, there were about 408,000 hospitalisations reported for Indigenous Australians, accounting for 4.2% of all hospitalisations.
- After adjusting for differences in age structure, Indigenous Australians were 2.3 times as likely as other Australians to be hospitalised (rates of 896 and 384 per 1,000 population, respectively). Much of this difference (86%) was due to the substantially higher rate of hospitalisations for dialysis among Indigenous Australians (with individuals typically undergoing dialysis treatment multiple times a week).
- Excluding dialysis, Indigenous Australians were hospitalised at 1.2 times the rate of other Australians.

More detailed data on the main causes of hospitalisation for Indigenous Australians in 2013–14, and comparative cause-specific hospitalisation rates (age-standardised) with other Australians, are in Figure 6.6.4.

**Figure 6.6.4: Age-standardised rates of the leading causes of Indigenous hospitalisation (excluding dialysis and pregnancy/childbirth), and comparative rates for other Australians, 2013–14**



Source: AIHW 2016a based on analysis of National Hospital Morbidity Database.

- In 2013–14, the leading cause of hospitalisation for Indigenous Australians was injury and poisoning (external causes) (46 hospitalisations per 1,000 people).
- The largest relative difference in hospitalisation rates between Indigenous and other Australians was for respiratory system diseases (2.2 times as high for Indigenous as for other Australians).
- The hospitalisation rate for digestive system diseases was higher for other Australians.

## What is missing from the picture?

Comprehensive and complete information on the use of primary health care services or specialist health services by Aboriginal and Torres Strait Islander people is not currently available. For example, primary health care services funded only by the state and territory governments do not report regularly on their activities and on the number of their Indigenous clients (apart from the Northern Territory). There is incomplete information on outreach services (which supplement other primary and specialist health services) operating in some parts of Australia. Complete details on Indigenous Australians' use of mainstream health services are also affected by incomplete identification of Indigenous status in the service records. It is therefore not possible to report reliably on the full range of Indigenous patient journeys through the health system.

Australia's emerging e-health system may provide an additional source of data to improve our understanding of the use of primary health care services by both the Indigenous and total Australian populations—however, the extent of e-health records contributing to secondary analyses of data is not yet clear.

## Where do I go for more information?

More information on Indigenous people's access to health services can be found on the AIHW's [Indigenous Observatory](#).

More information on geographical variation in Indigenous peoples access to primary health care services can be found in these two AIHW reports: [Spatial variation in Aboriginal and Torres Strait Islander people's access to primary health care](#), and [Access to primary health care relative to need for Indigenous Australians](#).

## References

- AIHW (Australian Institute of Health and Welfare) 2014a. Access to primary health care relative to need for Indigenous Australians. Cat. no. IHW 128. Canberra: AIHW.
- AIHW 2014b. Australia's health 2014. Australia's health series no. 14. Cat. no. AUS 178. Canberra: AIHW.
- AIHW 2015a. Aboriginal and Torres Strait Islander Health Performance Framework 2014 report: detailed analyses. Cat. no. IHW 167. Canberra: AIHW.
- AIHW 2015b. Spatial variation in Aboriginal and Torres Strait Islander people's access to primary health care. Cat. no. IHW 155. Canberra: AIHW.
- AIHW 2016a. Admitted patient care 2014–15: Australian hospital statistics. Health services series no. 68. Cat. no. HSE 172. Canberra: AIHW.
- AIHW 2016b. Aboriginal and Torres Strait Islander health organisations: Online Services Report—key results 2014–15. Aboriginal and Torres Strait Islander health services report No. 7. IHW 168. Canberra: AIHW.

## 6.7 Spatial variation in Indigenous women's access to maternal health services

### Introduction

The gap between the health of Aboriginal and Torres Straits Islander children and non-Indigenous children begins before birth, with Indigenous babies significantly more likely to have been exposed to tobacco smoke in utero, to be born pre-term, and to have a low birthweight (weighing less than 2,500 grams at birth) (AIHW 2015a). Inequalities continue throughout early childhood for Aboriginal and Torres Strait Islander children, with higher mortality rates and higher rates of illness and poor health (see 'Chapter 5.2 Trends and patterns in maternal and perinatal health' and 'Chapter 6.6 Indigenous Australians' access to health services').

The factors that contribute to poor infant and child health are complex. These factors include maternal health (for example, maternal weight, pre-existing health conditions); maternal behaviours (smoking and alcohol consumption during pregnancy, maternal nutrition and breastfeeding); maternal age; social determinants (socioeconomic position and education); and access to health services (such as antenatal care and child health services). Ensuring that Aboriginal and Torres Strait Islander families have access to high quality, evidence-based and culturally competent maternal and child health care services has been the goal of a number of state, territory and Australian Government programs and is an important policy issue.

This article highlights the findings from a series of analyses the AIHW has been undertaking which are aimed at identifying geographic areas with potential gaps in services for Aboriginal and Torres Strait Islander Australians (AIHW 2015b), by focusing on Indigenous women's spatial access to two broad types of maternal health services: birthing units within hospitals and antenatal/postnatal services.

Four types of antenatal/postnatal care services are analysed:

- those available from hospitals with a birthing unit
- those provided by Indigenous-specific primary health care services (ISPHCS)
- those available at Royal Flying Doctor Service (RFDS) clinics
- those provided by general practitioners (GPs).

Box 6.7.1 presents an overview of the methodology used to calculate spatial access to maternal health services.

### Box 6.7.1: Measuring the spatial accessibility of services

The spatial accessibility of services in this report is measured as the percentage of the relevant population in an area who are within an hour's drive of a particular type of service. Thus, access is measured in terms of physical access only—although even if services are physically accessible, they may not be culturally appropriate or financially accessible or may not be able to provide services when needed due to capacity issues.

The data are presented at the SA2 level (Statistical Area Level 2), which forms part of the Australian Statistical Geography Standard, developed by the Australian Bureau of Statistics (ABS) for the collection and dissemination of geographic statistics. There are 2,214 SA2 areas, with populations between 3000 and 25,000. SA2s are contiguous and cover the entire landmass of Australia. Wherever possible, the SA2 boundaries were based on officially gazetted suburbs and localities. In urban areas SA2s largely conform to whole suburbs and combinations of whole suburbs, while in rural areas they define functional zones of social and economic links.

The percentage of the SA2 population within a one-hour drive from a particular type of service was calculated using several steps (see AIHW 2015b for detailed information on the methodology). The address for each service location was geocoded to a point location then geospatial software was used to calculate the drive time from the manually adjusted population centroid (the point location in an area that aims to represent where people live) of each SA1 (Statistical Area Level 1, the smaller geographic areas that aggregate to an SA2). These results were then used to calculate the proportions of the population within SA2s who were inside or outside a one-hour drive. Women and children living in migratory zones or unable to be classified into an SA2 were excluded from these analyses.

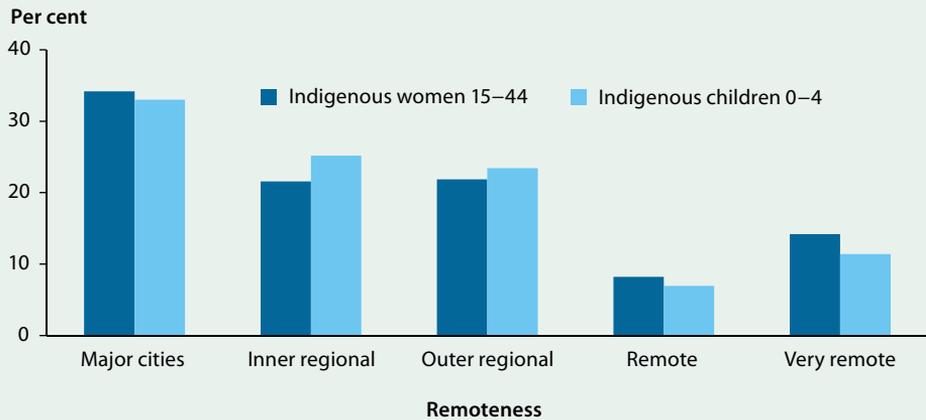
## Where do Indigenous women and children live?

The spatial distribution of Aboriginal and Torres Strait Islander women of child-bearing age and children is a critical issue for the development and delivery of a range of maternal and child health services.

There are an estimated 124,000 Aboriginal and Torres Strait Islander women of child-bearing age in Australia (ages 15–44), and each year approximately 10% give birth (Hilder et al. 2014). There are also just over 67,000 Indigenous children under 5 years of age. Figure 6.7.1 shows that, while the highest proportions of Indigenous women and young children live in *Major cities*, over one-fifth (22%) of Indigenous women of child-bearing age live in *Remote* or *Very remote* areas, as do nearly one-fifth (18%) of Indigenous children under age 5.

This population distribution is important because distance often poses significant challenges for workforce recruitment and health service delivery in areas outside cities, particularly in areas in which populations are widely dispersed or isolated. While service availability is less of an issue in urban areas, ensuring that these services are culturally appropriate and accessible to Aboriginal and Torres Strait Islander women is essential for effective care.

Figure 6.7.1: Distribution of Indigenous women aged 15–44 and Indigenous children aged 0–4, by remoteness, 2011



## Spatial distribution of hospitals with a birthing unit

Access to high quality, evidence-based and culturally competent maternity care close to where women live is one of the goals of the National Maternity Services Plan (AHMAC 2011), and is expected to help close the demonstrated gap in infant and child health outcomes between Indigenous and non-Indigenous babies and children.

The geographic supply and accessibility of hospitals offering birthing services is a critical issue for Aboriginal and Torres Strait Islander women and families, and for residents of rural and remote areas in general. In rural and remote areas where no birthing facilities are available, women assessed at normal risk of poor outcomes are often required to relocate to an urban or regional hospital location at 36–38 weeks of pregnancy. Those at higher risk—because of prior pre-term delivery, stillbirth, or baby born of low birthweight; maternal age; obesity; or because of identified medical conditions—may need to spend weeks away from home and family. Available data show that Indigenous mothers are 1.6 times as likely to be obese as non-Indigenous mothers and are also more likely to have higher rates of pre-existing hypertension and pre-existing diabetes (AIHW 2015a).

From a woman's and a family's perspectives, having to travel long distances to give birth can be costly and disruptive to life in general, as well as to continuity of care. For Aboriginal and Torres Strait Islander women, there are also additional stressors such as being separated from land and community, and the cultural impact of not giving birth on country; language barriers; isolation; fear of asking for culturally appropriate birthing options; and the need to negotiate an unfamiliar health system (Williams 2011; Wyndow & Jackiewicz 2014). The impact of these factors is that some women may go back to their communities prior to birth and require emergency medical evacuation (Williams 2011), while others delivering in hospitals far from where they live may be more likely to discharge themselves and their babies prematurely (Henry et al. 2007).

Challenges for the health system include ensuring that there is good communication among providers in the local community and the hospital at which the woman gives birth, and that postnatal follow-up care is available in the community where the mother and baby live.

In order to examine the spatial accessibility of hospitals with birthing units, the AIHW has compiled and geocoded a list of public and private hospitals in Australia with birthing units, based on publicly available information on health websites; information included in state/territory 'Mothers and babies' reports; and communication with state and territory officials. Hospitals were included only if they offered a dedicated birthing unit—they were not included if they only provided emergency delivery services.

In 2015, 27% of hospitals in Australia had dedicated birthing units in:

- 219 public hospitals (out of 746 public hospitals)
- 63 private hospitals (out of 281 private hospitals).

These include hospitals with small birthing units for women at low risk of complications, through to tertiary centres with full services for women at high risk, including neonatal services for the babies. Table 6.7.1 presents the number of hospitals, by remoteness and by whether the birthing unit is in a public or private hospital. This distinction is important, because public birthing units provide services to all women, while private birthing units offer an additional option for those with the resources to access them.

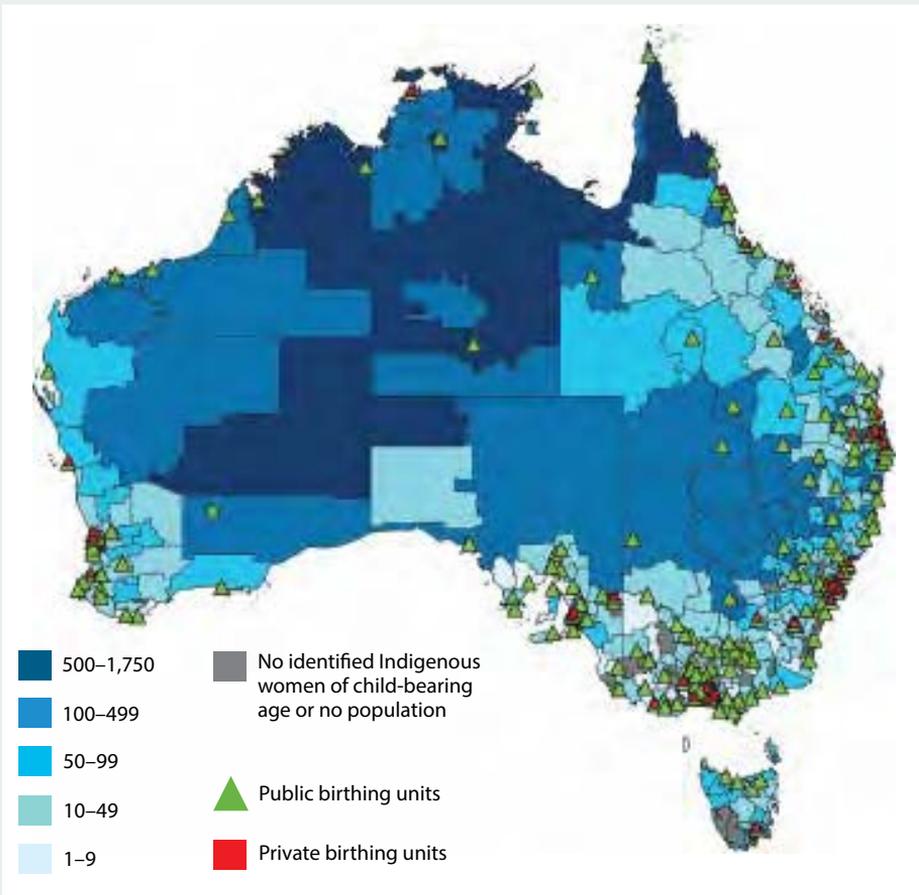
**Table 6.7.1. Number of public and private hospitals with birthing units by remoteness, 2015**

|                | Public hospitals with birthing units | Private hospitals with birthing units | Total hospitals with birthing units | Percent of birthing units that are public |
|----------------|--------------------------------------|---------------------------------------|-------------------------------------|---|
| Major cities   | 70                                   | 48                                    | 118                                 | 59.3                                      |
| Inner regional | 74                                   | 9                                     | 83                                  | 89.2                                      |
| Outer regional | 52                                   | 6                                     | 58                                  | 89.7                                      |
| Remote         | 16                                   | 0                                     | 16                                  | 100.0                                     |
| Very remote    | 7                                    | 0                                     | 7                                   | 100.0                                     |
| <b>Total</b>   | <b>219</b>                           | <b>63</b>                             | <b>282</b>                          | <b>77.7</b>                               |

Nearly all (196 out of 219) public hospitals with birthing units are in *Major cities* or regional areas, although there are 16 public hospitals in *Remote* areas with birthing units, and 7 in *Very remote* areas. Private birthing facilities make up 41% of all birthing units in *Major cities*, and there are no private hospitals in *Remote* or *Very remote* areas with birthing units.

Figure 6.7.2 shows the locations of the hospitals with birthing units, contrasted against the number of Indigenous women of child-bearing age at the SA2 level. This map illustrates the concentration of hospitals with birthing units in metropolitan areas, as well as the overlap in locations of public and private birthing units in metropolitan areas. It also shows that there are a large number of SA2s with at least 100 Indigenous women of child-bearing age who appear to be far from a hospital with a birthing unit, particularly in the Northern Territory, Western Australia and northern Queensland. The next section builds on this map by calculating spatial accessibility to these units.

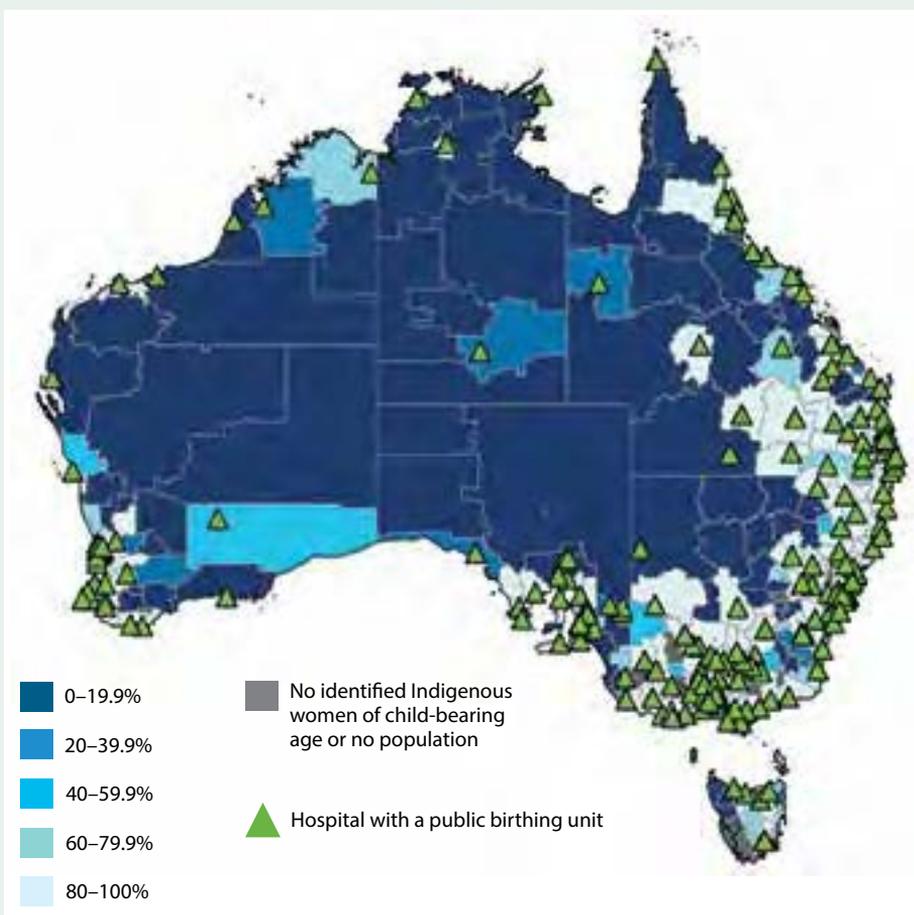
Figure 6.7.2: Public and private birthing units and number of Indigenous women of child-bearing age, by SA2, 2015



### Drive time to hospitals with public birthing units

Figure 6.7.3 shows the percentage of Indigenous women of child-bearing age within each SA2 who live within a one-hour drive from a hospital with a public birthing unit. Only public birthing units are included in this analysis, as they provide services to all pregnant women. The darker colours on the map illustrate the areas with poorer spatial access to public birthing units. There are 126 SA2s where at least 75% of Indigenous women of child-bearing age live more than a one-hour drive from a public hospital with a birthing unit; 18 SA2s where between 50% and 75% of Indigenous women live outside a one-hour drive; and an additional 64 SA2s where up to 50% of Indigenous women live outside a one-hour drive.

**Figure 6.7.3: Proportion of Indigenous women of child-bearing age who live within a one-hour drive from a hospital with a public birthing unit, by SA2, 2015**

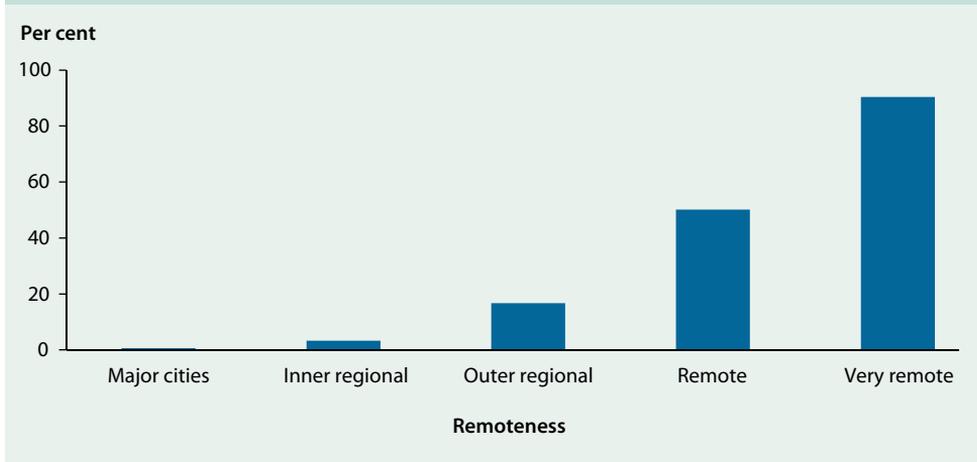


The one-hour travel time was selected as a reasonable upper limit for a pregnant woman to be driven to a hospital after the onset of contractions/spontaneous rupture of amniotic membranes or a medical emergency such as vaginal bleeding, based on a similar study in the United States (Rayburn et al. 2012). Research in rural British Columbia has shown that the incidence of poor birth outcomes is higher for women living outside an hour's drive of a birthing service, even after controlling for maternal characteristics (Grzybowski et al. 2011).

Comparing figures 6.7.2 and 6.7.3 shows that even if there is a hospital with a birthing unit within the SA2, spatial accessibility may be limited due to distance and road conditions. The results show that approximately one-fifth (21%) of Indigenous women of child-bearing age (around 26,600) live more than one hour's drive from the nearest hospital with a public birthing unit. Poorer spatial accessibility is high in areas with large numbers of Indigenous women of child-bearing age: in 11 of the 14 SA2s with more than 500 Indigenous women of child-bearing age, less than 20% of Indigenous women live within a one-hour drive from a hospital with a public birthing unit.

Figure 6.7.4 shows the significant variation in spatial accessibility by remoteness.

**Figure 6.7.4: Percentage of Indigenous women of child-bearing age who live outside a one-hour drive from a hospital with a public birthing unit, by remoteness, 2015**



Only 1 in 10 (9.6%) Indigenous women of child-bearing age in *Very remote* areas live within an hour's drive of a public hospital with a birthing unit, compared with nearly 50% of Indigenous women in *Remote* areas and almost all women in *Major cities*.

## Spatial accessibility of antenatal and postnatal services

One way to improve outcomes for Indigenous mothers and babies is through better access to antenatal care services, as studies have shown an association between inadequate antenatal care and increased risk of stillbirths, perinatal deaths, low birthweight and pre-term births (AIHW 2014; also see 'Chapter 5.2 Trends and patterns in maternal and perinatal health').

Comprehensive antenatal care services address a number of risk factors—not only maternal health issues, but also maternal behaviours such as smoking and alcohol use during pregnancy and maternal nutrition. For example, identifying women who smoke during pregnancy and offering them effective services for reduction or cessation during antenatal care has the potential to reduce low birthweight, particularly as smoking rates for Indigenous mothers are much higher than those for non-Indigenous mothers. The most recent age-standardised data shows that 48% of Indigenous mothers smoked during pregnancy, compared with 13% of non-Indigenous mothers (AIHW 2015a). Programs such as the Australian Nurse Family Partnership Program (ANFPP) have helped to reduce rates of smoking during pregnancy from 39% at commencement in the program to 23% at 36 weeks (ANFPP 2015).

Culturally competent antenatal care services are those in which woman-centred care is provided in ways that are respectful, understanding of local culture, and meet the emotional, cultural, practical and clinical needs of the women. There are a number of aspects which characterise culturally competent maternal care services, some of which include having specific Indigenous programs, having Aboriginal and Torres Strait Islander staff members, providing continuity of care, viewing women as partners in their care, having a welcoming physical environment and ensuring that cultural awareness and safety is the responsibility of all staff members in the service (Kruske 2011).

Currently, rates of antenatal care use early in pregnancy are lower for Indigenous mothers than they are for non-Indigenous mothers (51% of Indigenous mothers attend an antenatal visit in the first trimester, compared with 62% of non-Indigenous mothers).

Pregnant women can access antenatal care from three main types of health professionals, depending on their needs, preferences, resources, and location: midwives/nurse-midwives, GPs, and specialist obstetricians. Aboriginal health workers also provide support to Indigenous women. Antenatal care may be offered through a number of different sites and programs, such as hospitals, community health services, Indigenous specific health services, outreach clinics, private GPs' surgeries, and specialist obstetric practices.

Table 6.7.2 shows the numbers and distributions by remoteness of the four services offering antenatal/postnatal care that were included in this analysis. It illustrates the importance of RFDS and ISPHCS as primary health care providers in regional and remote areas.

**Table 6.7.2: Number of service locations providing maternal health services, by remoteness and service type, 2015**

|                | Hospitals with public birthing units <sup>(a)</sup> | GP practice locations <sup>(b)</sup> | ISPHCS <sup>(c)</sup> | RFDS <sup>(d)</sup> |
|----------------|---|--------------------------------------|-----------------------|---------------------|
| Major cities   | 70  | 5,372                                | 24                    | 0                   |
| Inner regional | 74  | 1,336                                | 46                    | 4                   |
| Outer regional | 53  | 791                                  | 50                    | 53                  |
| Remote         | 16  | 189                                  | 31                    | 55                  |
| Very remote    | 7   | 318                                  | 100                   | 183                 |
| <b>Total</b>   | <b>220</b>  | <b>8,006</b>                         | <b>251</b>            | <b>296</b>          |

(a) Only hospitals with public birthing units in 2015 were included in the analysis. This includes one private hospital in Tasmania which services public patients. The effect of not including other private hospitals in the spatial access measure is negligible, as the private birthing units are generally located in close proximity to public birthing units within the metropolitan and regional areas.

(b) GP practice locations were sourced from AMPCo 2013. One of the roles of GPs is to provide antenatal and postnatal care for low-risk women and to refer to more specialised services where appropriate (see AIHW 2015b for further detail on the GP data).

(c) The ISPHCS data represent Australian Government-funded services which report to the OSR collection (Online Services Report). We have not included any services that are only funded by the Northern Territory or other states/territories.

(d) These data were provided by the RFDS and include RFDS clinic locations which provided maternal and child health services at some point over the period 2013–2015.

Each of the four types of services has an important role in antenatal and postnatal care. Hospitals with public birthing units may provide the advantage of continuity of care throughout pregnancy, childbirth, and postnatal care/discharge and may offer specific programs for Aboriginal and Torres Strait Islander women. They also generally provide access to specialist obstetric care when required.

GP-led or GP-shared care is able to incorporate pregnancy-related care within the context of the broader primary health system, with referrals made to specialist obstetric services as needed.

Although well known for its medical extraction services, the RFDS is less well known for the primary care clinics it delivers to Australians in remote and isolated communities, where many of its patients are Aboriginal and Torres Strait Islander people. The clinics include GP and nurse-midwife services, and there is a GP helpline for RFDS clients that delivers telephone-based consultations.

Indigenous specific primary health care services embed their antenatal/postnatal care within a broader framework of culturally safe services and protocols, and a number of initiatives run by ISPHCS have led to higher rates of antenatal care attendance and improved birth outcomes for Indigenous mothers and babies (see AIHW 2014, Chapter 3).

Figures 6.7.5 and 6.7.6 present the physical locations of the maternal health services included in this analysis, for western and eastern Australia, by the number of Indigenous women of child-bearing age, followed by maps for Sydney, Darwin and Perth (figures 6.7.7, 6.7.8 and 6.7.9).

The maps highlight several key points:

- While there is overlap between the service types in urban and some regional areas, outlying areas may be covered by only one type of service.
- There are a number of ISPHCS and the RFDS clinics in the large, remote SA2s with larger numbers of Aboriginal and Torres Strait Islander women of child-bearing age (the darker blue areas on the maps).
- Regional areas in eastern Australia appear to have more services than similar areas in western and central Australia.
- The maps for the included cities (Sydney, Perth and Darwin) show that many of the SA2s with more than 100 Indigenous women of child-bearing age have multiple services.

Figure 6.7.5: Locations of maternal health services and number of Indigenous women aged 15–44, by SA2, western and central Australia

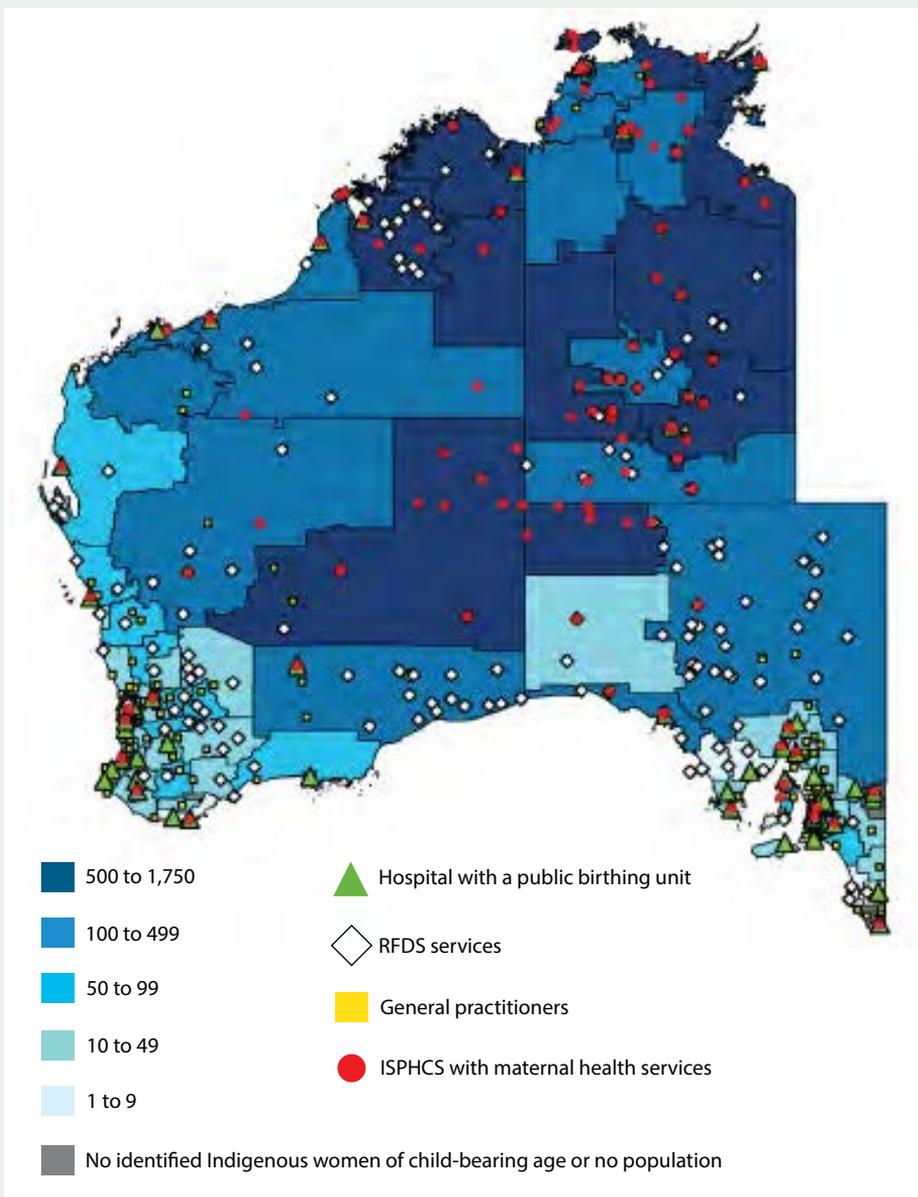


Figure 6.7.6: Locations of maternal health services and number of Indigenous women aged 15–44, by SA2, eastern Australia, 2015

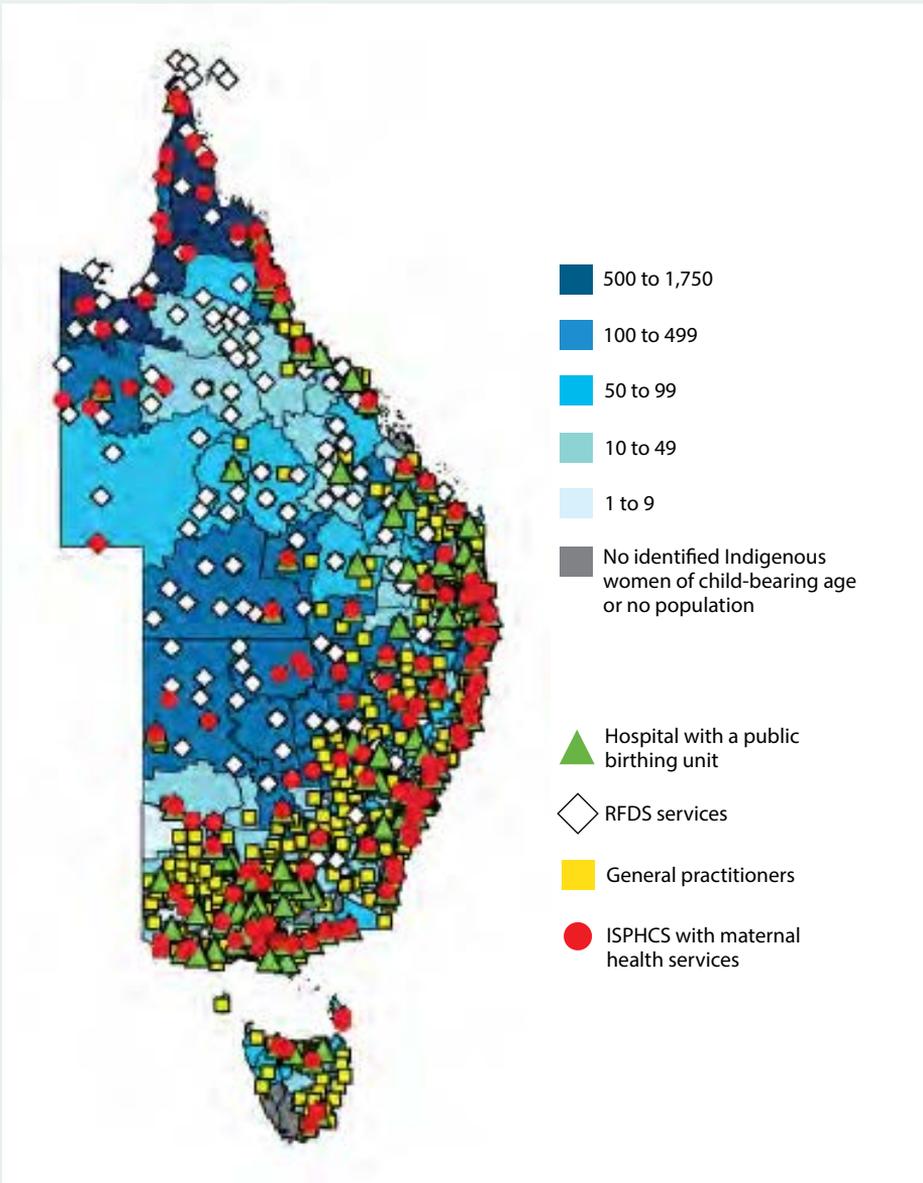
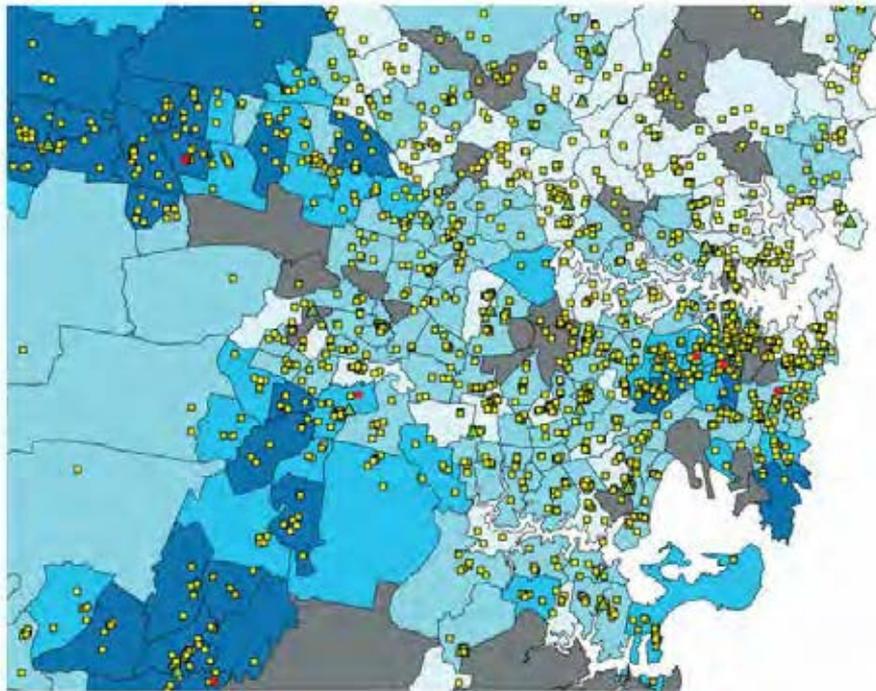


Figure 6.7.7: Locations of maternal health services and number of Indigenous women aged 15–44, by SA2, Sydney, 2015



- 100 to 499
- 50 to 99
- 10 to 49
- 1 to 9
- No identified Indigenous women of child-bearing age or no population
- Hospital with a public birthing unit
- General practitioners
- ISPHCS with maternal health services

|  |  |   |   |
|--|--|---|---|
| Indigenous women of child-bearing age<br>5,863 | Hospital with a public birthing unit<br>19 | Number of GP practice locations<br>1877 | ISPHCS with maternal health services<br>5 |
|--|--|---|---|

Figure 6.7.8: Locations of maternal health services and number of Indigenous women aged 15–44, by SA2, Darwin, 2015

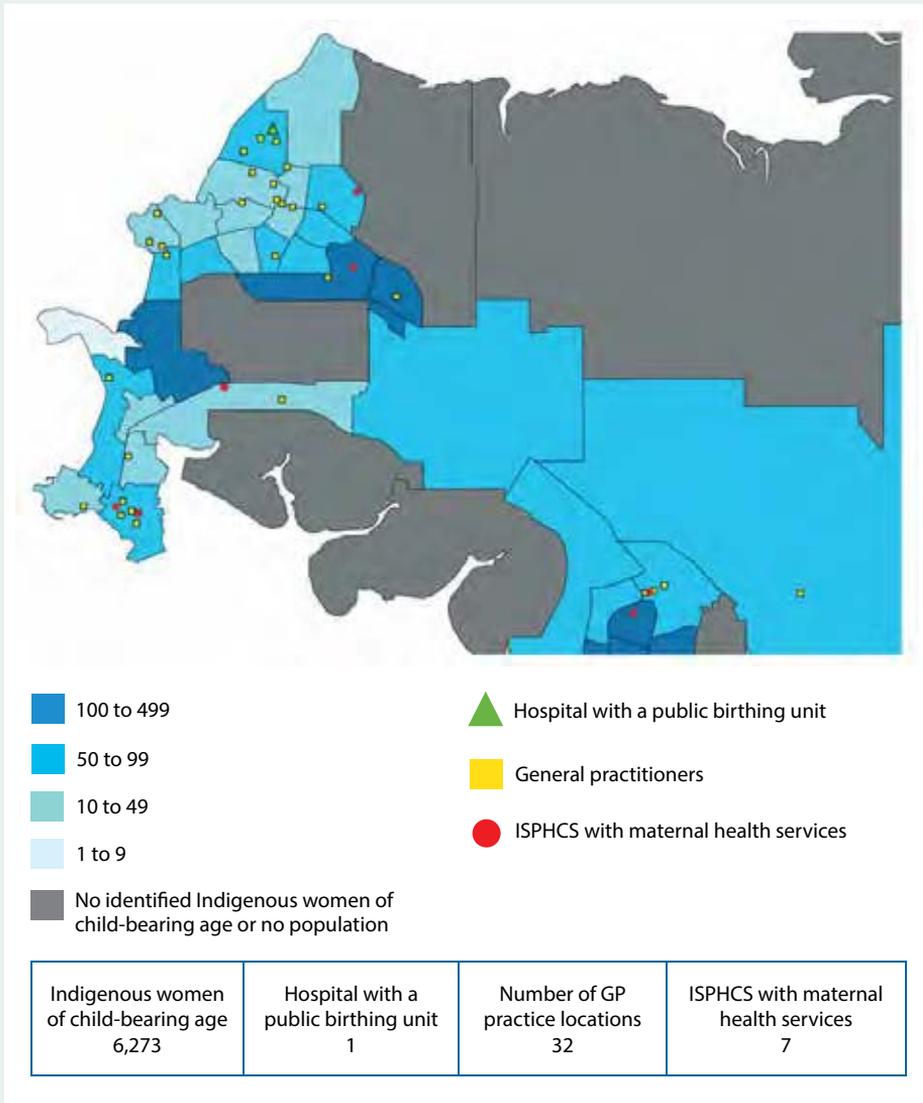
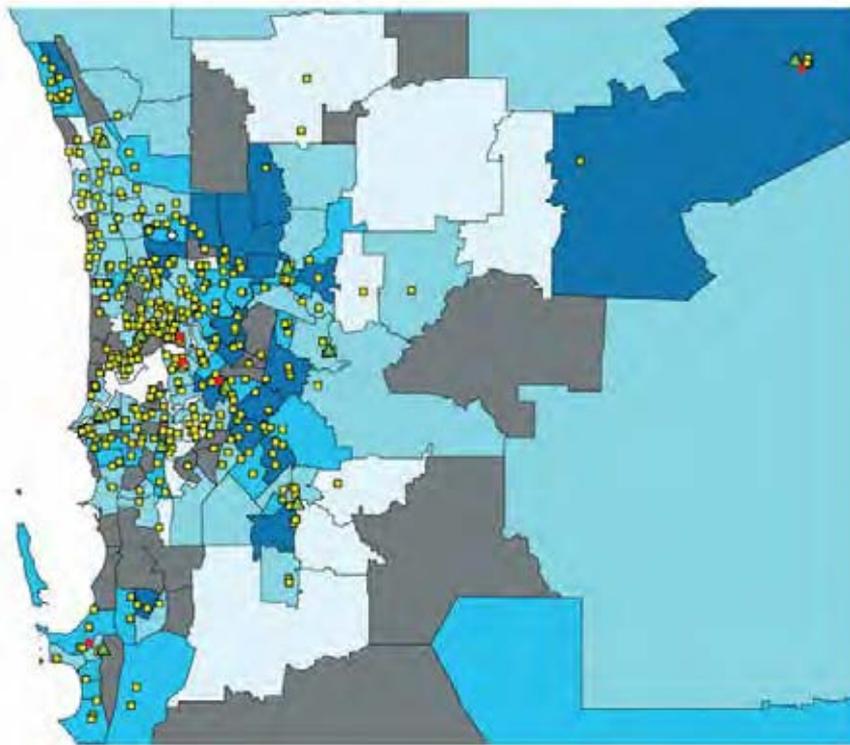


Figure 6.7.9: Locations of maternal health services and number of Indigenous women aged 15–44, by SA2, Perth, 2015



- 100 to 499
- 50 to 99
- 10 to 49
- 1 to 9
- No identified Indigenous women of child-bearing age or no population
- Hospital with a public birthing unit
- General practitioners
- ISPCHS with maternal health services

|  |  |  |   |
|--|--|--|---|
| Indigenous women of child-bearing age<br>1,366 | Hospital with a public birthing unit<br>10 | Number of GP practice locations<br>437 | ISPCHS with maternal health services<br>4 |
|--|--|--|---|

Table 6.7.3 presents the percentage of Indigenous women of child-bearing age in each SA2 who are within a one-hour drive to each type of service as well as a measure of how many women are within a one-hour drive to at least one type of service. It is important to acknowledge that the results measure the availability of any type of service—they are not able to take into account individual women's preference for a particular type of service.

**Table 6.7.3: Percentage of Indigenous women of child-bearing age (15–44) living within a one-hour drive of a maternal health service, by remoteness and service type**

|                | Hospital<br>with a public<br>birthing unit | GP          | ISPHCS      | RFDS <sup>(a)</sup> | Any of the<br>services | Number of<br>Indigenous<br>women |
|----------------|--|-------------|-------------|---------------------|------------------------|----------------------------------|
| Major cities   | 99.7                                       | 99.9        | 99.3        | 1.2                 | 100.0                  | 42,439                           |
| Inner regional | 96.7                                       | 99.8        | 88.8        | 23.6                | 100.0                  | 26,765                           |
| Outer regional | 83.3                                       | 99.8        | 84.4        | 28.0                | 99.9                   | 27,140                           |
| Remote         | 49.8                                       | 85.1        | 76.6        | 26.8                | 93.2                   | 10,209                           |
| Very remote    | 9.6  | 64.8        | 49.4        | 60.2                | 84.2                   | 17,605                           |
| <b>Total</b>   | <b>78.6</b>                                | <b>93.6</b> | <b>86.6</b> | <b>28.0</b>         | <b>97.0</b>            | <b>124,158</b>                   |

(a) The RFDS clinics are conducted at specific locations (such as schools, roadhouses, a shed) to which patients from surrounding areas must travel in order to access the service. Thus, travel times are still applicable for RFDS clinics.

The table highlights several patterns:

- Nearly all Indigenous women of child-bearing age (97%) have access to at least one type of maternal health service within a one-hour drive. The lowest percentages of women are in *Very remote* and *Remote* areas, where 84% and 93%, respectively, have access to at least one type of service, although the lack of spatial access to birthing units needs to be acknowledged.
- Indigenous women of child-bearing age in *Major cities* and regional areas have more types of services available to them within a one-hour drive than do women in more remote areas. Thus, they have more choice in which service they use.
- From a service planning perspective, the locations of the ISPHCS and RFDS in *Remote* and *Very remote* areas are complementing, not duplicating, each other. However, it is important to remember that the RFDS services are planned clinics—they are not 'on the ground' all the time.

## What is the AIHW doing?

The AIHW is undertaking similar spatial analyses of access to child health services. The next step in this work is examining the extent to which access to birthing services and maternal and child health services has an effect on infant and child health.

### What is missing from the picture?

The data do not include information on services which are wholly funded by states and territories and do not report to the Online Services Report data collection. This analysis has focused on spatial accessibility of services only. Other aspects of accessibility (such as cultural competence, financial accessibility, and the capacity of services) are important, but are not able to be assessed given the scope of this analysis.

## Where do I go for more information?

For related reports on Indigenous Australians' access to services, see [Spatial variation in Aboriginal and Torres Strait Islander people's access to primary health care](#) and [Access to primary health care relative to need for Indigenous Australians](#).

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## 6.8 Overview of hospitals

Australia's hospital services are provided by public and private hospitals. Public hospitals are owned and managed by state and territory governments, and private hospitals are owned and managed by private for-profit and not-for-profit organisations. Private hospitals that are contracted by state or territory governments to provide public hospital services are included here under public hospitals.

This snapshot provides an overview of Australia's hospitals and the services they provide. For information on hospital funding and spending, see 'Chapter 2.2 How much does Australia spend on health care?' For information on changes over time in the type of care received in both the private and public sector, see 'Chapter 6.9 Changes in the provision of hospital care'.

Public hospitals vary from large principal referral hospitals (see Glossary), mainly in *Major cities*, that provide a broad range of services, to small hospitals that provide a narrower range of services and are typically located in regional and remote areas. Private hospitals similarly range from large hospitals in *Major cities* that provide a wide range of services, to smaller hospitals that provide a limited range of procedures on a day-only basis. Table 6.8.1 presents the main characteristics of Australia's hospitals.

**Table 6.8.1: Characteristics of Australia's hospitals, 2013–14**

| <br><b>Hospitals</b>                                     | Public hospitals<br>747                                      | Private hospitals<br>612                                    |
|--|--|---|
| <br><b>Beds</b><br><br><b>Beds per 1,000 population</b> | 58,568 (up by an annual average of 0.7% since 2009–10)       | 30,920 (up by an annual average of 2.7% since 2009–10)      |
| <br><b>Number of hospitalisations</b>                   | 5.7 million (up by an annual average of 3.0% since 2009–10)  | 4.0 million (up by annual average of 3.6% since 2009–10)    |
| <br><b>Days of patient care provided</b>                | 18.8 million (up by an annual average of 1.0% since 2009–10) | 9.1 million (up by an annual average of 2.3% since 2009–10) |

## Types of hospitalisations and care

Admitted patient services, or 'hospitalisations', are provided either on the same day or involve an overnight stay of one or more nights in hospital. Non-admitted patient services include emergency departments and outpatient clinics. Public hospitals provide the majority of these services (94% of emergency department services and 96% of outpatient care) (see also 'Chapter 6.11 Emergency department care').

In 2013–14, the majority of hospitalisations in both public and private hospitals (97% and 93%, respectively) were for acute care, that is, care focused on curing a condition, alleviating symptoms, or managing childbirth. See Table 6.8.2 for the main features of hospitalisations.

**Table 6.8.2: Features of hospitalisations, 2013–14**

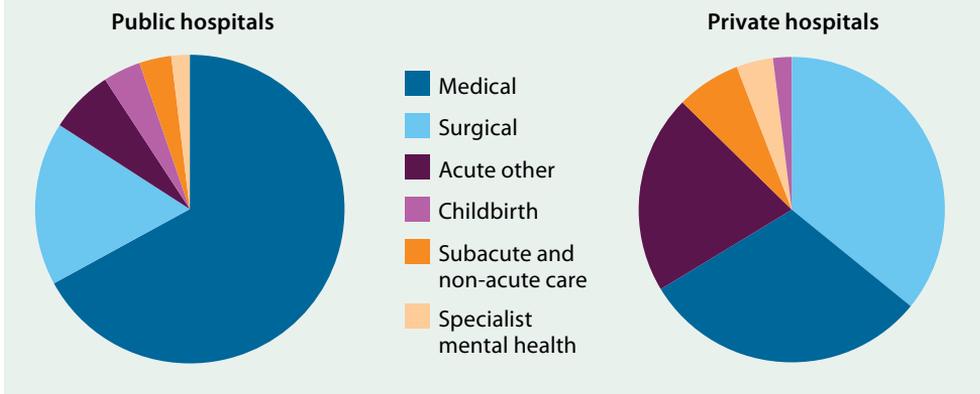
|   | Public hospitals  | Private hospitals  |
|---|---|--|
| <b>Same-day acute care hospitalisations</b>               | 2.9 million (up by an annual average of 3.3% since 2009–10) | 2.6 million (up by annual average of 3.7% since 2009–10)     |
| <b>Most common reason for same-day acute care</b>         | <i>Care involving dialysis</i> 1.1 million hospitalisations | <i>Chemotherapy</i> about 254,800 hospitalisations           |
| <b>Overnight acute care hospitalisations</b>              | 2.6 million (up by an annual average of 2.6% since 2009–10) | 1.1 million (up by and annual average of 2.0% since 2009–10) |
| <b>Subacute and non-acute care hospitalisations</b>       | 192,000 (up by an annual average of 5.8% since 2009–10)     | 271,000 (up by an annual average of 10.1% since 2009–10)     |
| <b>Most common reason for subacute and non-acute care</b> | <i>Rehabilitation</i> about 99,000 hospitalisations         | <i>Rehabilitation</i> about 255,500 hospitalisations         |
| <b>Average length of overnight stay</b>                   | 5.7 days (down from 6.2 in 2009–10)                         | 5.1 days (down from 5.3 in 2009–10)                          |

The services provided in hospital can be described in terms of the broad categories of care. Acute care includes *Medical* (care not involving a procedure), *Surgical* (involving an operating room procedure), *Childbirth*, *Specialist mental health* and *Acute other* (non-surgical procedures, such as endoscopy). *Subacute and non-acute care* includes *Rehabilitation*, *Palliative care*, *Geriatric evaluation and management*, *Psychogeriatric care* and *Maintenance care*.

More than two-thirds (67%) of hospitalisations in public hospitals were for *Medical* care and around one-third (30%) in private hospitals. *Surgical* care comprised the highest proportion of care in private hospitals (36%), compared with 17% in public hospitals.

About 3% of hospitalisations in public hospitals and 7% in private hospitals were for *Subacute and non-acute care* (Figure 6.8.1).

Figure 6.8.1: Proportion of hospitalisations by type of care, 2013–14



### What is missing from the picture?

Although well-developed hospitalisation data are available, there are variations between jurisdictions in how hospital services are defined and counted. The data are based on each hospitalisation, rather than each patient, and current national data cannot easily be used to analyse care patterns for patients hospitalised several times, or to monitor outcomes of care. Similarly, it is difficult to analyse patterns of care across admitted and non-admitted patient settings (including non-hospital settings such as primary care).

Private hospital data are collected, analysed, and disseminated through different reporting pathways. As a result, private hospital data may not be consistent across the various collections or with data for public hospitals.

### Where do I go for more information?

More information on hospitals in Australia is available in the reports [Admitted patient care 2013–14: Australian hospital statistics](#); [Non-admitted patient care 2013–14: Australian hospital statistics](#); [Hospital resources 2013–14: Australian hospital statistics](#); and [Australia's hospitals 2013–14: at a glance](#), available for free download.

More information on private hospital activity is also available on the [Australian Bureau of Statistics](#) website.

## 6.9 Changes in the provision of hospital care

Hospitals are an important part of Australia's health landscape, providing services to millions of Australians each year and accounting for around 40% of Australia's health expenditure (AIHW 2015b).

This article explores the changing nature of the services provided for patients admitted to Australia's public and private hospitals over the last 10 years. It presents data from the AIHW's National Hospital Morbidity Database (NHMD), comparing activity for 2004–05 and 2013–14 and trends over this period.

The main measure of admitted patient activity in hospitals is the number of episodes of admitted patient care (referred to as hospitalisations in this article). Because episodes can vary in length from 'same-day' to many days or weeks, another useful measure of activity is days of patient care, or the total number of days of care provided to patients.

Information on hospital use can also be found in 'Chapter 6.8 Overview of hospitals' and 'Chapter 6.17 Health care use by older Australians'.

### More hospital care, particularly for older people

In 2013–14, there were around 9.7 million hospitalisations, an increase from around 7.0 million in 2004–05—an increase of 3.7% on average each year.

Hospitalisations increased faster than population growth between 2004–05 and 2013–14. The numbers of hospitalisations per 1,000 population increased from 347 per 1,000 in 2004–05 to 395 per 1,000 in 2013–14, or 1.5% on average each year.

The numbers of hospitalisations per 1,000 population were higher at every age group in 2013–14 than in 2004–05. The highest annual average increase was for people aged 85 and over, followed by people aged 65–84 and 45–64 (Figure 6.9.1). Hospitalisation rates for infants (children aged under 1, excluding healthy newborns) increased from 532 hospitalisations per 1,000 population to 570. However, changes in reporting practices over this period are likely to be partly responsible for this increase.

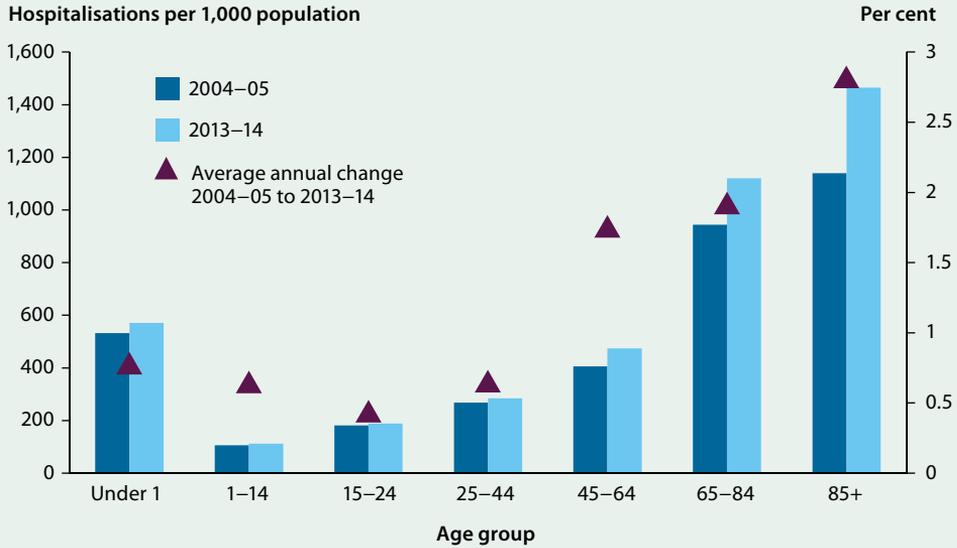
In 2013–14, around 27.9 million days of patient care were recorded, an increase from around 23.9 million in 2004–05—a 1.8% increase on average each year. However, the number of days of patient care per 1,000 population decreased from 1,186 per 1,000 in 2004–05 to 1,117 per 1,000 in 2013–14—a decrease of 0.7% on average each year.

Between 2004–05 and 2013–14, the number of days of patient care per 1,000 population decreased for every age group with the exception of people aged 45–64, where there was an increase of less than 0.6% on average each year.

Increasingly, people are admitted to and discharged from hospital in a single day, that is, they are not staying overnight. The proportion of all hospitalisations that were same-day increased from 55% in 2004–05 to 59% in 2013–14.

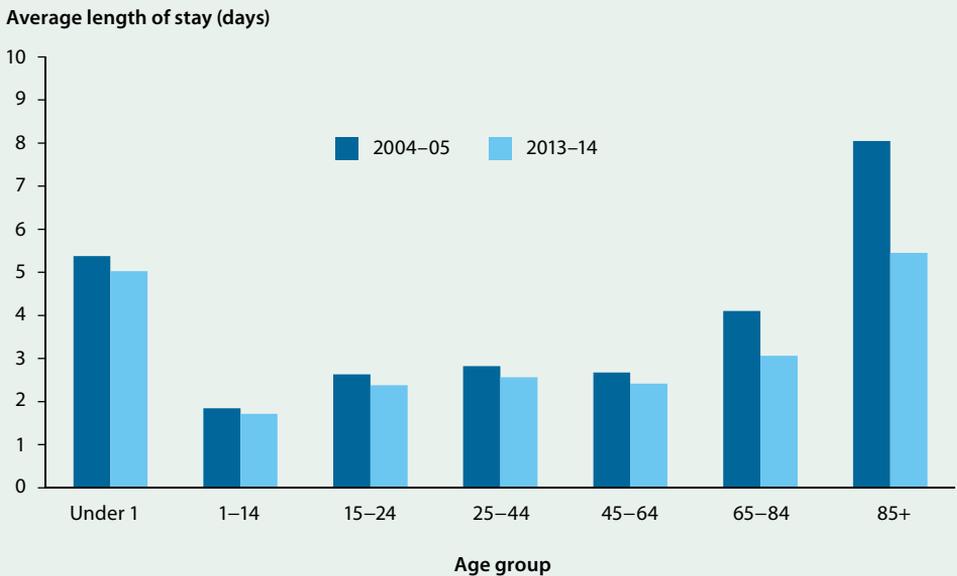
In 2013–14, the average length of stay (including same-day hospitalisations) was 2.9 days, a decrease from 3.4 days in 2004–05. The average length of hospital stay decreased for all age groups; the largest decrease was for people aged 85 and over, for whom it fell from 8.0 days in 2004–05 to 5.5 days in 2013–14 (Figure 6.9.2).

**Figure 6.9.1: Hospitalisations and annual average change, by age, 2004–05 and 2013–14**



Note: For infants (aged under 1 year), changes in reporting practices are likely to be partly responsible for the increase in hospitalisations between 2004–05 and 2013–14.

**Figure 6.9.2: Average length of stay, by age, 2004–05 and 2013–14**



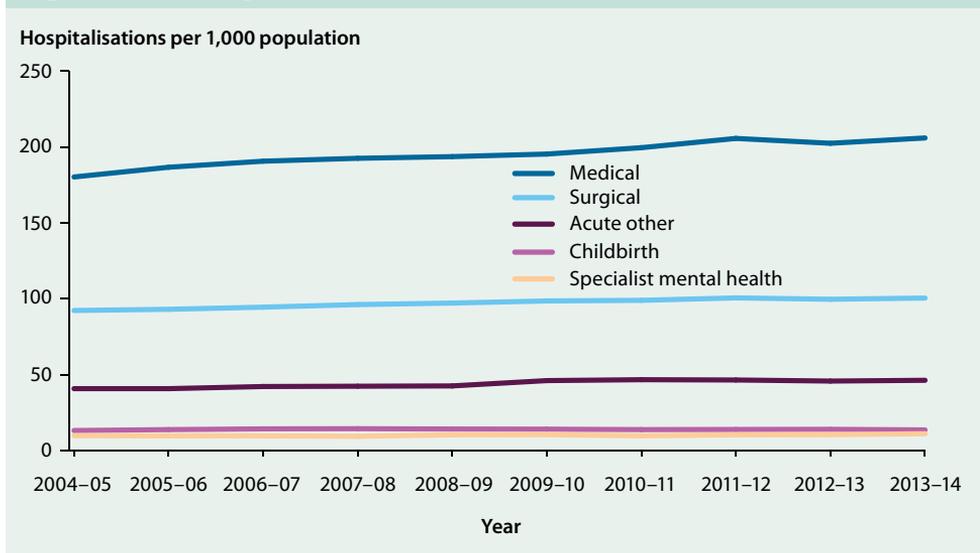
# Acute and subacute and non-acute care

## Acute care

Acute care for patients admitted to hospital is intended to cure illness, alleviate symptoms of illness or manage childbirth. It includes *Childbirth*, *Specialist mental health*, *Surgical* (involving an operating room procedure such as surgery for appendicitis), *Medical* (for treatment that does not involve surgery or non-operating room procedure, for example dialysis) and *Acute other* (treatment that includes a non-operating room procedure, for example endoscopy).

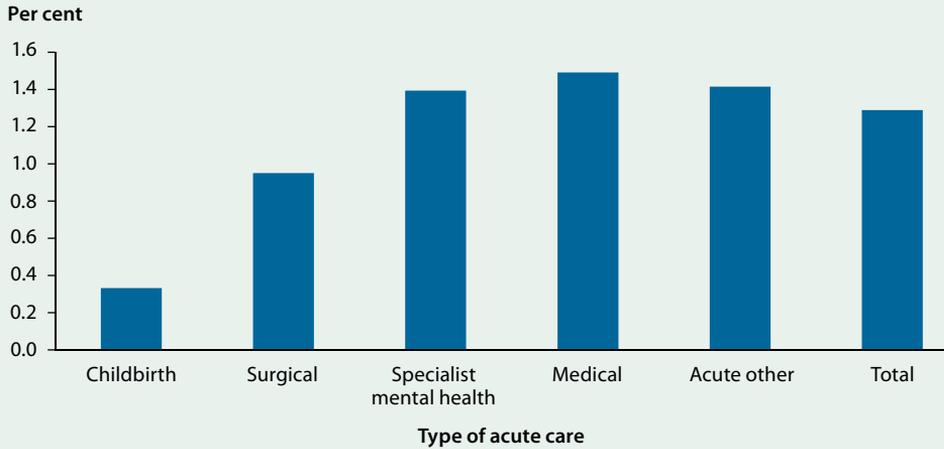
*Medical* was the most common type of care provided in hospitals, at 180 hospitalisations per 1,000 population in 2004–05 (around 3.7 million hospitalisations) and 206 per 1,000 in 2013–14 (around 5.0 million hospitalisations). *Surgical* was the next most common type of care, with 92 hospitalisations per 1,000 in 2004–05 (around 1.9 million hospitalisations) and 100 per 1,000 in 2013–14 (around 2.4 million hospitalisations) (Figure 6.9.3).

**Figure 6.9.3: Hospitalisations for acute care, 2004–05 to 2013–14**



Overall, acute hospitalisations per 1,000 population increased at an annual average of 1.3% between 2004–05 and 2013–14. *Medical* care grew by an annual average of 1.5% and *Specialist mental health* and *Acute other* both had annual average increases of 1.4%. On average each year, *Surgical* care increased by 1.0% and *Childbirth* by 0.3% (Figure 6.9.4).

**Figure 6.9.4: Annual average change in hospitalisations per 1,000 population, acute care, 2004–05 to 2013–14**

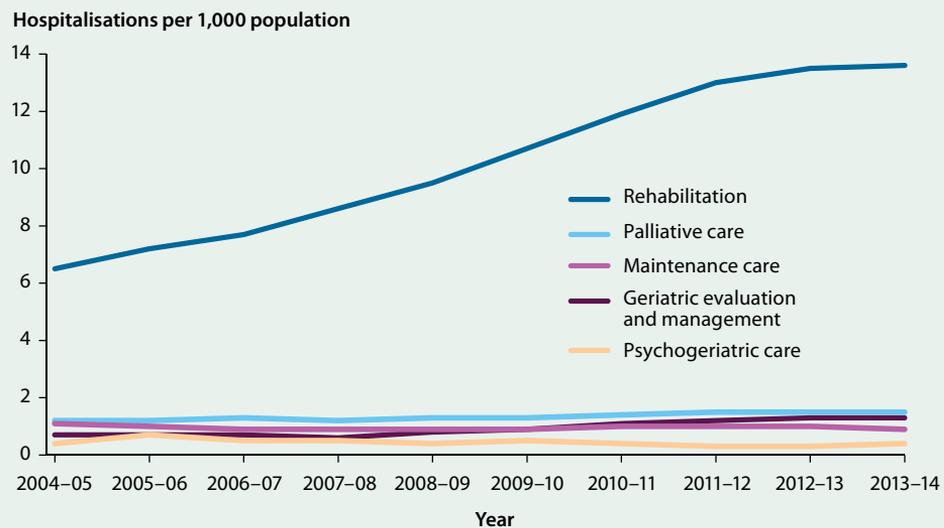


### Subacute and non-acute care

Subacute and non-acute hospital care includes *Rehabilitation, Palliative care, Geriatric evaluation and management, Maintenance care, and Psychogeriatric care*.

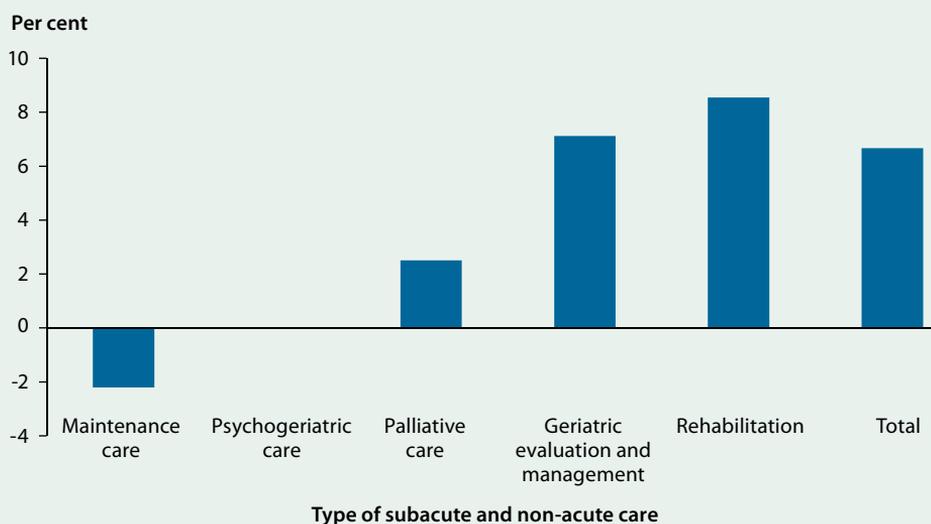
Subacute and non-acute care accounted for about 10 hospitalisations per 1,000 population in 2004–05 and about 18 per 1,000 in 2013–14, an increase of 6.7% on average each year (Figure 6.9.5). Due to the low numbers of hospitalisations for subacute and non-acute care other than *Rehabilitation* in 2004–05, the annual average changes for them should be interpreted with caution.

**Figure 6.9.5: Hospitalisations for subacute and non-acute care, 2004–15 to 2013–14**



*Rehabilitation* had an annual average increase in hospitalisations per 1,000 population of 9.0% between 2004–05 and 2013–14 (Figure 6.9.6) and the number of patient days per 1,000 population increased by an annual average of 3.2%. The lower increase in patient days per 1,000 compared with hospitalisations per 1,000 indicates that the average length of stay for *Rehabilitation* hospitalisations decreased between 2004–05 and 2013–14. The proportion of hospitalisations that were on a same-day basis for *Rehabilitation* increased from 39% in 2004–05 to 62% in 2013–14 and contributed to the fall in average length of stay.

**Figure 6.9.6: Annual average change in hospitalisations per 1,000 population, subacute and non-acute care, 2004–05 to 2013–14**



Note: There was no change in *Psychogeriatric care*.

## Changes in care provided by public and private hospitals

Between 2004–05 and 2013–14, hospitalisations grew more in private hospitals than in public hospitals, with annual average increases of 4.2% and 3.3%, respectively. The proportion of all hospitalisations that were in public hospitals decreased from 61% in 2004–05 to 59% in 2013–14.

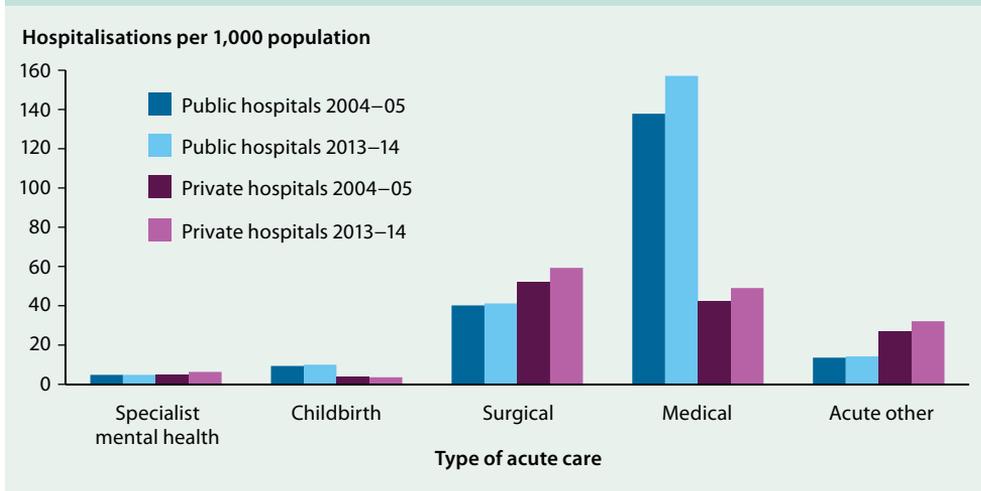
In 2004–05, there were around 4.3 million hospitalisations in public hospitals and this increased to 5.7 million in 2013–14. For private hospitals, there were around 2.7 million in 2004–05 and 4.0 million in 2013–14.

Same-day hospitalisations in private hospitals increased from 86 to 111 hospitalisations per 1,000 population (an increase of 2.9% on average per year). Same-day hospitalisations in public hospitals increased at a lower rate (from 104 to 120, an increase of 1.6% on average per year).

For both public and private hospitals, the largest increase in hospitalisations per 1,000 population was for acute *Medical* care. For public hospitals, *Medical* hospitalisations rose from 138 per 1,000 in 2004–05 to 157 per 1,000 in 2013–14 (an increase of 1.5% on

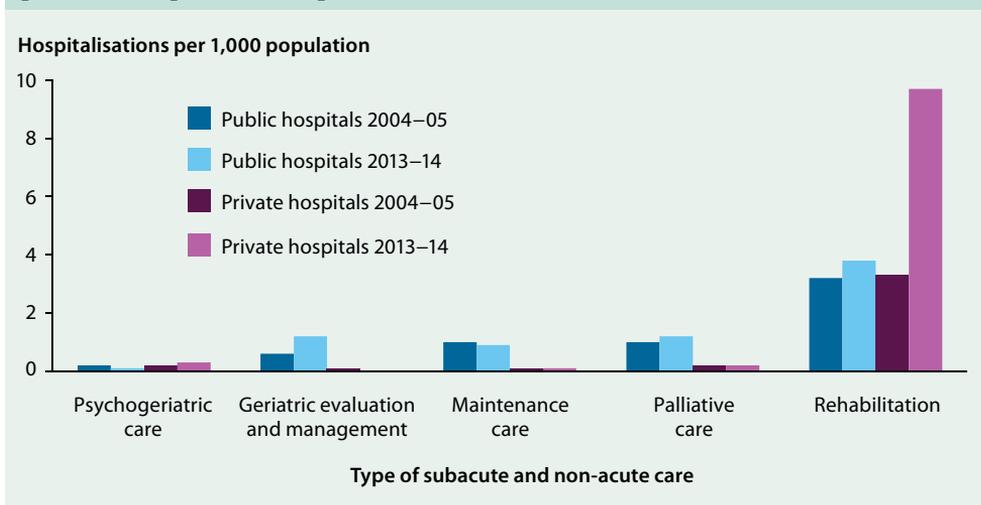
average each year). For private hospitals, *Medical* hospitalisations rose from 43 per 1,000 in 2004–05 to 49 per 1,000 in 2013–14 (an increase of 1.6% on average each year). *Surgical* care hospitalisations in public hospitals increased from 40 to 41 per 1,000 population (an increase of 0.3% on average each year) and in private hospitals from 52 to 59 per 1,000 (an increase of 1.4% on average each year) over the same period (Figure 6.9.7).

**Figure 6.9.7: Hospitalisations for acute care, public and private hospitals, 2004–05 and 2013–14**



Between 2004–05 and 2013–14, *Rehabilitation* increased from 3.3 to 9.7 hospitalisations per 1,000 in private hospitals (an increase of 13% on average each year) (Figure 6.9.8). Most of this increase was for rehabilitation for musculoskeletal conditions including osteoarthritis of the knee and hip (including after replacement surgery), other joint disorders and back pain.

**Figure 6.9.8: Hospitalisations for subacute and non-acute care in public and private hospitals, 2004–05 and 2013–14**



*Geriatric evaluation and management* in public hospitals increased from 0.6 to 1.2 hospitalisations per 1,000 between 2004–05 and 2013–14 (an increase of 8.0% on average each year) (Figure 6.9.8). As previously noted, due to the low numbers of hospitalisations for *Geriatric evaluation and management* in 2004–05, the relatively high annual average change should be interpreted with caution.

## Increases in some procedures, decreases in others

This section presents information on changes in selected hospital procedures between 2004–05 and 2013–14. Procedures presented are those in the National Health Performance Framework performance indicator ‘differential access to hospital procedures’ (for further information, see ‘Chapter 7.1 Indicators of Australia’s health’). The procedures were selected because of the frequency with which they are undertaken, because they are often elective and/or discretionary, and because alternative treatments are sometimes available (AIHW 2015a).

Per 1,000 population, *Cataract extraction* was the most common of the selected procedures undertaken in hospitals between 2004–05 and 2013–14. This was followed by *Cystoscopy*, a procedure to examine the bladder. *Coronary angioplasty* (a procedure to widen the arteries), *Coronary artery bypass graft* and *Varicose veins stripping and ligation* had the lowest numbers of hospitalisations per 1,000 population (Table 6.9.1).

**Table 6.9.1: Hospitalisations per 1,000 population for selected procedures, 2004–05 and 2013–14**

| Procedure                           | 2004–05 | 2013–14 | Average annual change between 2004–05 and 2013–14 (per cent) |
|-------------------------------------|---------|---------|--|
| Coronary artery bypass graft        | 0.7     | 0.5     | -3.7   |
| Varicose veins stripping & ligation | 0.7     | 0.6     | -2.3   |
| Hysterectomy                        | 2.8     | 2.4     | -1.8   |
| Inguinal herniorrhaphy              | 2.4     | 2.1     | -1.6   |
| Prostatectomy                       | 2.9     | 2.6     | -1.3   |
| Coronary angioplasty                | 1.6     | 1.5     | -1.2   |
| Cholecystectomy                     | 2.3     | 2.2     | -0.3   |
| Myringotomy                         | 1.7     | 1.6     | -0.2   |
| Cataract extraction                 | 8.3     | 8.9     | 0.8  |
| Septoplasty                         | 1.0     | 1.1     | 1.3  |
| Hip replacement                     | 1.4     | 1.6     | 1.3  |
| Cystoscopy                          | 4.4     | 5.4     | 2.2  |
| Haemorrhoidectomy                   | 1.6     | 1.9     | 2.4  |
| Knee replacement                    | 1.5     | 1.9     | 2.9  |
| Tonsillectomy                       | 1.7     | 2.5     | 4.1  |

*Notes*

1. For *Hysterectomy*, the rate per 1,000 population was calculated for females aged 15 to 69 years.
2. For *Prostatectomy*, the rate per 1,000 population was calculated for males.
3. The selected procedures are presented in order from those with the largest decrease to those with the largest increase in the number of hospitalisations per 1,000 population.

Of the selected procedures, between 2004–05 and 2013–14, hospitalisations per 1,000 population increased the most for *Tonsillectomy*, with an average annual increase of 4.1%, followed by *Knee replacement*, increasing by 2.9% on average each year. Hospitalisation rates decreased most for *Coronary artery bypass graft* (a decrease of 3.7% on average each year) and *Varicose veins stripping and ligation* (a decrease of 2.3% on average each year). These changes should be considered in the context of the number of hospitalisations for these procedures. For example, while there was a large annual average increase in the rate for *Tonsillectomy*, there were fewer of these procedures performed than, for example, *Cystoscopy* or *Cataract extraction*.

## More same-day procedures

Same-day hospitalisations increased from 190 to 231 per 1,000 population, while overnight hospitalisations increased from 157 to 164 per 1,000 (Figure 6.9.9). This was an annual average increase of 2.2% for same-day hospitalisations and 0.5% for overnight hospitalisations.

Almost two-thirds of the increase in same-day hospitalisations was due to five specific reasons for admission. *Dialysis* accounted for about 31% of the increase in same-day hospitalisations (increasing from 40.3 hospitalisations per 1,000 to 53.2) (Figure 6.9.10). Same-day hospitalisations for *Rehabilitation* accounted for about 17% of the increase (rising from 6.8 hospitalisations per 1,000 to 13.7). A further 16% of the increase in same-day hospitalisations was related to increases in *Investigation related to the digestive system* (for example, by endoscopy or colonoscopy, which rose from 7.7 hospitalisations per 1,000 population to 11.3); in *Chemotherapy* (14.1 hospitalisations per 1,000 to 16.6); and in *Cataract extraction* (8.3 hospitalisations per 1,000 to 8.9).

**Figure 6.9.9: Same-day and overnight hospitalisations, public and private hospitals, 2004–05 and 2013–14**

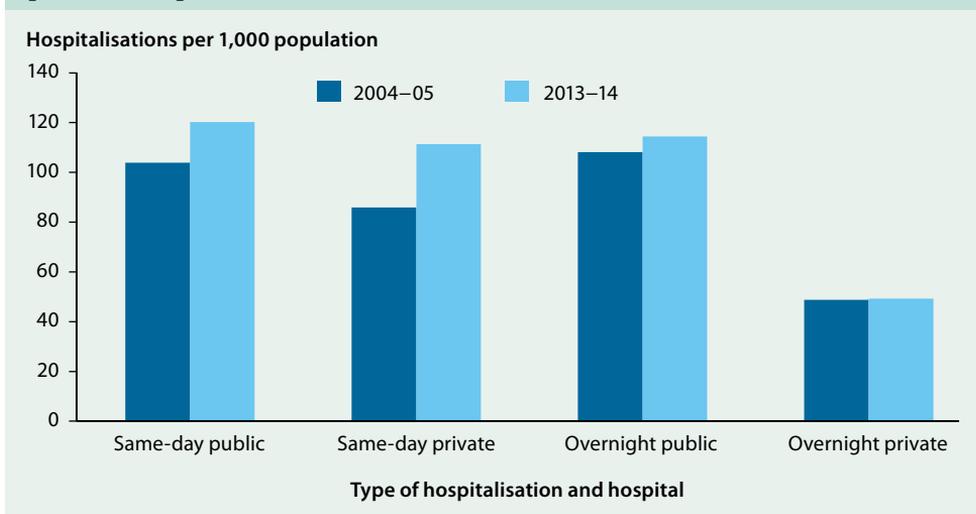
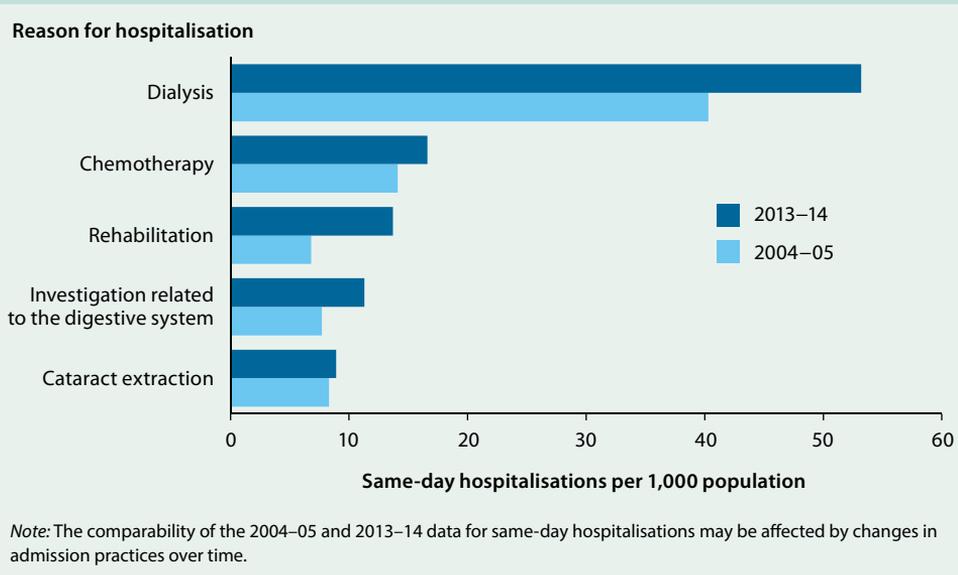


Figure 6.9.10: Same-day hospitalisations, by selected reasons for admission, 2004–05 and 2013–14



## What is the AIHW doing?

The AIHW, through the Australian Health Ministers' Advisory Council National Health Information Standards and Statistics Committee, is examining variation in admission policies and practices across hospitals in Australia. For example, a condition treated through an admission to hospital in one state or territory might be treated as a non-admitted service in another. Better documentation of the variations in admission practices and policies in hospitals—and potentially more consistency in the way admissions are recorded—may improve the national information on hospitalisation.

### What is missing from the picture?

The NHMD does not currently include information on the length of stay (in hours) for short-stay hospitalisations (for example, same-day or one night). This further level of detail would provide better national information on hospital care as same-day hospitalisations increase.

The data are based on each admission, and it is not possible to count the number of individual patients or to analyse care patterns in patients hospitalised several times. Similarly, it is not possible to analyse patterns of care across admitted and non-admitted patient settings (including non-hospital settings such as primary care).

### Where do I go for more information?

AIHW's *Australian hospital statistics* series of publications and web products are available for free download at <http://www.aihw.gov.au/hospitals/>. In addition, the website <http://www.myhospitals.gov.au> provides performance information for public and private hospitals.

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AIHW (Australian Institute of Health and Welfare) 2015a. Admitted patient care 2013–14: Australian hospital statistics. Health services series no. 60. Cat. no. HSE 156. Canberra: AIHW.

AIHW 2015b. Health expenditure Australia 2013–14: analysis by sector. Health and welfare expenditure series no. 55. Cat. no. HWE 65. Canberra: AIHW.

## 6.10 Elective surgery

Elective surgery is planned surgery that can be booked in advance, as a result of a specialist clinical assessment, resulting in placement on an elective surgery waiting list. Prioritising and scheduling patients for elective surgery is an important consideration for Australian hospitals. Waiting time for elective surgery is calculated from the time a patient is placed on a waiting list until they are admitted for their surgery.

Private hospitals perform about two-thirds of elective surgery in Australia (1.4 million hospitalisations compared with about 695,000 for public hospitals in 2013–14). Waiting time information is available for patients having elective surgery in public hospitals.

### How much and what type of elective surgery was performed in public hospitals?

In 2014–15, Australia's public hospitals admitted almost 700,000 patients from elective surgery waiting lists. For these patients:

- around 23% were admitted for *General surgery* (surgery on organs of the abdomen) and about 15% were admitted for *Orthopaedic surgery* (surgery on bones, joints, ligaments and tendons, including knee and hip replacements)
- the most common surgical procedure was *Cataract extraction* (65,000 admissions).

Between 2011–12 and 2014–15:

- elective surgery admissions increased by an average of 1.8% each year, while admissions per 1,000 population remained stable at around 30
- there were relatively large increases in admissions for *Total hip replacement* (4.5% per year) and *Total knee replacement* (4.0% per year).

### How long did people wait for elective surgery in public hospitals?

In 2014–15:

- the median waiting time was 35 days, meaning that 50% of patients were admitted within 35 days of being placed on the waiting list. Overall, 90% were admitted within 253 days, while 1.8% waited more than 1 year
- the shortest median waiting time was in Queensland (27 days) and the longest was in Tasmania (55 days)
- the median waiting time for Indigenous Australians (42 days) was higher than for other Australians (35 days), and a higher proportion of Indigenous Australians waited more than a year for elective surgery than other Australians (2.3% and 1.8%, respectively).

Between 2010–11 and 2013–14, the median waiting time was stable at 36 days, although in 2014–15 the median waiting time decreased to 35 days. Between 2010–11 and 2014–15, the proportion of patients who waited more than a year to be admitted for their procedure decreased from 2.8% to 1.8%.

# How did waiting times vary by surgical specialty?

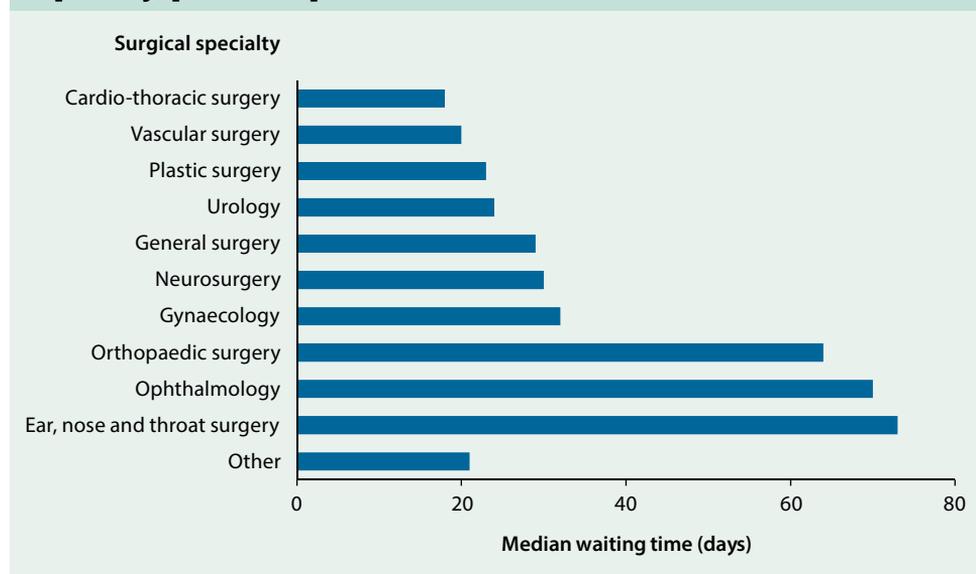
In 2014–15:

- the longest median waiting times were for the surgical specialties *Ear, nose and throat surgery*; *Ophthalmology*; and *Orthopaedic surgery* (73, 70, and 64 days, respectively). *Cardio-thoracic surgery* had the shortest median waiting time (18 days) (Figure 6.10.1)
- *Ear, nose and throat surgery* had the highest proportion of patients who waited more than a year to be admitted (4.8%).

Comparing 2010–11 and 2014–15:

- median waiting times decreased for *Urology*; *Neurosurgery*; *General surgery*; and *Plastic surgery* and increased for *Ear, nose and throat surgery*; *Cardio-thoracic surgery*; *Gynaecology*; and *Orthopaedic surgery*
- there was no change for *Vascular surgery* or *Ophthalmology*. The largest decrease was for *Urology*, from 28 days in 2010–11 to 24 days in 2014–15. The largest increase was for *Ear, nose and throat surgery*, from 64 days in 2010–11 to 73 days in 2014–15.

**Figure 6.10.1: Median elective surgery waiting times, by surgical specialty, public hospitals, 2014–15**



## What is missing from the picture?

Data on the urgency of the need for elective surgery has not been reported here. In 2011, an expert panel established by the Council of Australian Governments noted inconsistencies in clinical urgency categorisation for elective surgery among the states and territories. In response, the AIHW, in collaboration with the Royal Australasian College of Surgeons, developed revised definitions for urgency categories that were implemented from 1 July 2015, so it is expected that urgency category information will be more nationally comparable from the 2015–16 collection period.

Private hospitals do not report to the National Elective Surgery Waiting Times Data Collection and therefore there is no information available about waiting times in this sector. Neither is there nationally consistent information available on the amount of time waited before the patient's first appointment with the surgeon (for example after referral from a general practitioner).

### Where do I go for more information?

The reports [\*Elective surgery waiting times 2014–15: Australian hospital statistics\*](#); [\*Admitted patient care 2013–14: Australian hospital statistics\*](#) and [\*National definitions for elective surgery urgency categories: proposal for the Standing Council on Health\*](#) are available for free download.

# 6.11 Emergency department care

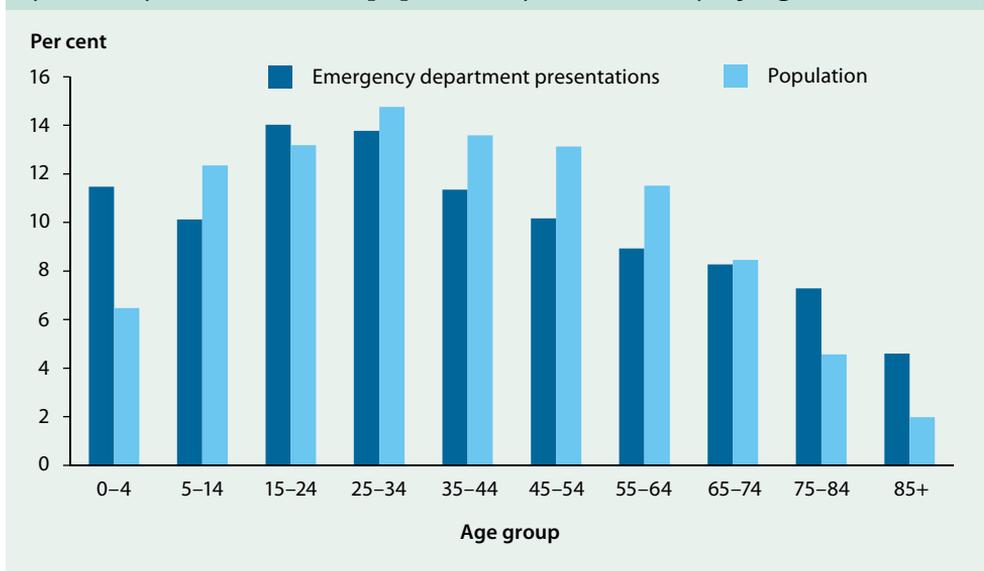
Emergency departments are a critical component of Australia’s health care system, providing care for patients who require urgent medical attention.

Most larger public hospitals have an emergency department. Smaller public hospitals may not, but can provide emergency services through informal arrangements. The information presented here is about the 290 Australian public hospitals that have purpose-built emergency departments staffed 24 hours a day, which reported to the AIHW’s National Non-Admitted Patient Emergency Department Care Database (NNAPEDCD).

## How busy are emergency departments?

- In 2014–15, there were about 7.4 million presentations to emergency departments across Australia, equivalent to just over 20,000 presentations each day.
- Between 2010–11 and 2014–15, after adjusting for hospital coverage changes, the number of emergency department presentations increased by an average of 3.4% each year.
- In 2014–15, 51% of emergency department presentations were for men and boys.
- Children aged 0 to 4 years accounted for about 11% of presentations, despite comprising around 6.5% of the population. People aged 65 and over accounted for about 20% of all presentations, higher than the proportion of the population that this age group comprises (15%) (Figure 6.11.1).
- People aged 35 to 64 accounted for 30% of presentations, despite comprising around 38% of the population.

**Figure 6.11.1: Proportion of emergency department presentations (2014–15) and Australian population (30 June 2015), by age**



## How and why were services accessed?

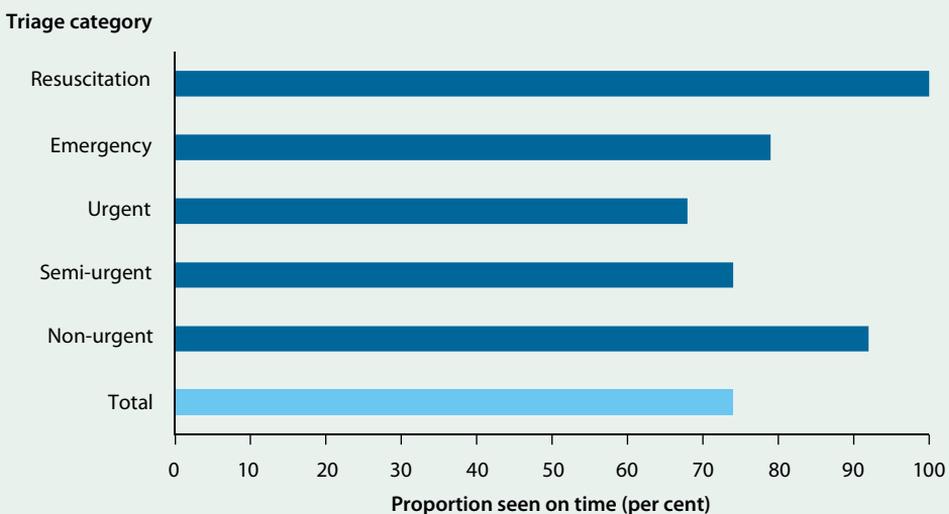
- In 2014–15, about 24% of all patients arrived by *Ambulance, air ambulance or helicopter rescue service*. About 84% of *Resuscitation* patients (who need to be treated immediately) arrived in this manner, compared with fewer than 4% of *Non-urgent* patients (who need to be treated within 2 hours).
- About 69% of patients presented to the emergency department between 8:00 am and 8:00 pm, and there were more presentations on the weekends and on Mondays than on other days of the week.
- About 27% of all emergency department presentations had a principal diagnosis (or main reason for care) of an injury or poisoning (over 1.8 million).
- About 30% of emergency department presentations ended in admission to the hospital.
- For patients who were subsequently admitted to hospital, the three most common principal diagnoses were *Abdominal and pelvic pain; Pain in throat and chest; and Pneumonia*.

## Were patients seen on time?

Patients who present to the emergency department are 'triaged' on presentation, according to the urgency of their need for care. A patient is said to be 'seen on time' if the time between presentation at the emergency department and the commencement of their clinical care is within a specified time that is appropriate for their triage category.

In 2014–15, about 74% of patients were seen on time, including almost 100% of *Resuscitation* patients (who must be seen immediately, or within seconds) and 79% of *Emergency* patients (who must be seen within 10 minutes). For *Non-urgent* patients, the proportion seen on time (within 2 hours) was 92% (Figure 6.11.2)—higher than that for patients assessed as *Urgent* (to be seen within 30 minutes) and *Semi-urgent* (within 60 minutes).

**Figure 6.11.2: Proportion of patients seen on time by triage category, 2014–15**



- The proportion of patients seen on time ranged from 59% in the Australian Capital Territory to 81% in New South Wales.
- The proportion of all *Emergency* presentations that were seen on time increased from 70% in 2010–11 to 75% in 2013–14, and was 74% in 2014–15.

## How long did people stay?

The length of stay in the emergency department is measured from the time the patient arrives to the time they physically leave to go home, are admitted to hospital or are transferred to another hospital. Between 2011–12 and 2014–15, the proportion of emergency department visits completed in 4 hours or less increased from 64% to 73%.

- In 2014–15, Western Australia had the highest proportion of visits completed in 4 hours or less (79%) and the Northern Territory had the lowest (62%).
- For the 30% of patients who were subsequently admitted to hospital in 2014–15, about 47% were admitted in 4 hours or less.
- Queensland had the highest proportion (57%) of emergency department patients admitted to hospital in 4 hours or less and the Northern Territory had the lowest (23%).

## What is missing from the picture?

Because the scope of the Non-Admitted Patient Emergency Department Care National Minimum Data Set is limited to emergency departments that meet nationally agreed criteria, most of the information here relates to hospitals in *Major cities*. It therefore may not be representative of the emergency services provided by hospitals that do not have formal emergency departments (for example, those in more remote areas). For 2014–15, it is estimated that the proportion of emergency services reported to the NNAPEDCD was 88%.

It is not possible to determine whether the patient had been referred to the emergency department by another doctor or health service. It is also not possible to identify the admitted patient episode for those patients who are subsequently admitted. Linked data would enable the patient journey to be mapped on an individual level to understand how patients interact with the different components of the health system, and to monitor outcomes of care.

In 2014–15, principal diagnosis information was not reported uniformly, with a variety of classifications used, and it was only reported for about 94% of presentations. There was no information on the procedures or on other treatments provided in the emergency department.

## Where do I go for more information?

More information on emergency department care in Australia is available at [www.aihw.gov.au/hospitals](http://www.aihw.gov.au/hospitals). The report [Emergency department care 2014–15: Australian hospital statistics](#) is also available for free download.

## 6.12 Radiotherapy

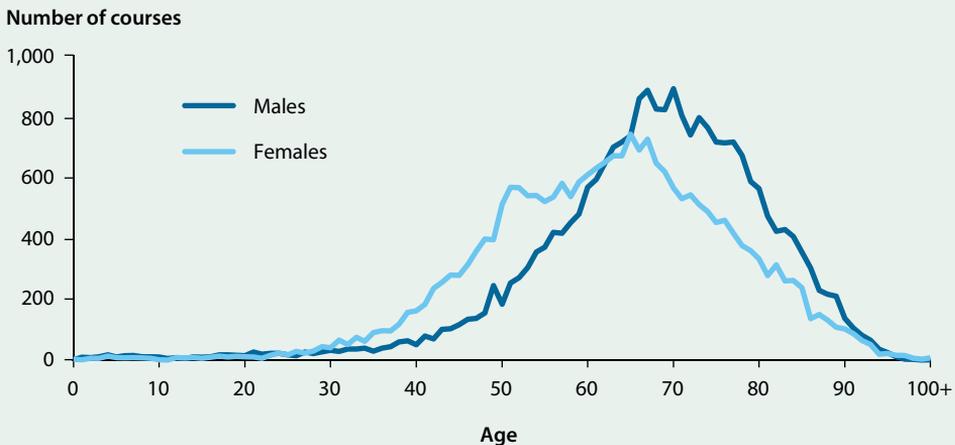
Radiotherapy is an important type of treatment which can be given with the intention to cure or control cancer, or to relieve symptoms such as pain. A pilot collection of data from radiotherapy service providers (including most public and some private service providers) has contributed information on radiotherapy in Australia in 2013–14. The focus of this collection is on waiting times for megavoltage external beam radiotherapy (that is, radiotherapy provided by a linear accelerator), which is the most common form of radiotherapy in Australia. It is estimated that about one-half of all patients with cancer would benefit from external beam radiotherapy (RANZCR 2015).

### Activity and patients

In 2013–14, radiotherapy was delivered at 72 locations across Australia—37 out of 38 public sites and 16 out of 34 private provider sites contributed activity data to the pilot collection. The 53 participating service-provider locations supplied data for about 47,700 courses of radiotherapy (a series of one or more treatments, see Glossary) that started in 2013–14:

- About 37,700 courses were delivered in public settings, and 10,000 in private settings.
- The most common types of cancer treated were breast, prostate and lung cancers.
- More than half (53%) of treatments had an intention of treatment that was curative, 40% were palliative and 1.9% were prophylactic (see Glossary). The remaining 4.4% did not report intent.
- Where emergency status data were provided, 2.9% were clinically assessed as emergency cases (that is, radiation treatment should begin within 24 hours). The majority of these emergency cases were palliative (92%), and 6.9% were curative.
- For non-emergency radiotherapy, 38% was palliative, 59% was curative and 2.7% was prophylactic in intent.
- About half (51%) of all courses were delivered to males (Figure 6.12.1), and 68% of all radiotherapy courses were delivered to patients aged 60 and over. Only 0.8% of courses were delivered to patients aged under 20.

**Figure 6.12.1: Radiotherapy courses, by age and sex, 2013–14**



Source: AIHW 2015.

# Waiting times

Delays in treatment can lead to poorer clinical outcomes. In this collection, the waiting time is the number of days from when the patient is ready for care (ready to be treated with radiotherapy in the opinion of the treating radiation oncologist, and with the agreement of the patient) until the day the patient first receives radiotherapy treatment. Reported waiting times include 'non-working days' (such as weekends or public holidays) and would also include days on which a service could not be provided (such as when key staff are unavailable or where equipment had failed).

Waiting times were reported for 38,700 courses. For public and private providers combined:

- 90% of treatment for emergency cases, which should start within 24 hours, was started on the same or next day
- 50% of treatment for non-emergency cases started within 13 days of the patient being ready for care and 90% within 33 days. There is currently no agreed benchmark for non-emergency waiting times in Australia.

Waiting-times data were provided by 36 of the 38 public treatment sites nationally, but only 5 out of 34 private provider sites, so may not be representative of the waiting times overall.

## What is missing from the picture?

Other waiting periods—such as the times between contacts with a general practitioner, medical oncologist, and radiation oncologist, and the time between the first consultation with a radiation oncologist and the patient becoming ready for care—are not collected in this data set.

This collection does not count numbers of people receiving radiotherapy treatment, as a patient may receive multiple courses of radiotherapy in the reporting period.

Agreement about appropriate benchmark waiting periods for non-emergency patients (for example, benchmarks based on relevant clinical characteristics) would allow better reporting of the appropriateness of waiting times for radiotherapy. Better information on the time of day that a patient becomes ready for care, and then receives treatment, could allow better measurement of whether emergency patients are treated on time (that is, within 24 hours).

## Where do I go for more information?

More information on radiotherapy in Australia is available in the report [Radiotherapy in Australia: report on a pilot data collection, 2013–14](#), which can be downloaded for free.

## References

AIHW (Australian Institute of Health and Welfare) 2015. Radiotherapy in Australia: report on a pilot data collection 2013–14. Cat. no. HSE 167. Canberra: AIHW.

RANZCR (The Royal Australian and New Zealand College of Radiologists) 2015. What is radiation therapy? Sydney: RANZCR. Viewed 2 July 2015, <<http://www.ranzcr.edu.au/radiation-oncology/what-is-radiation-therapy>>.

## 6.13 Organ and tissue donation

Organ and tissue donation is the process of collecting organs and tissues from suitable donors for the purpose of transplanting into a recipient. There are two types of donation: deceased (after brain or cardiac death) and living. Organs that can be donated include the heart, lungs, liver, kidneys and pancreas. Tissues that can be donated include heart tissue, bone, tendons, ligaments, skin and parts of the eye.

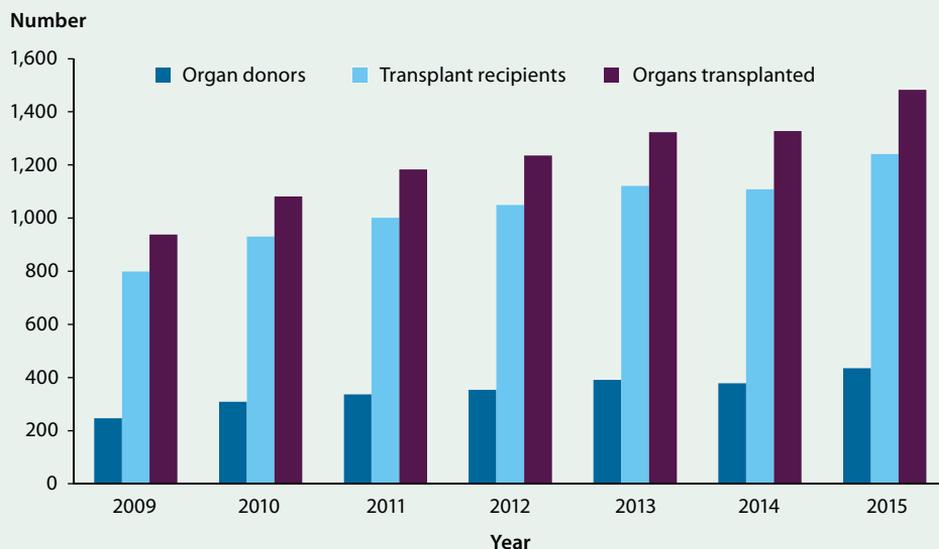
In Australia, organ and tissue donation is an altruistic act. Few people die in a way that allows them to donate organs—in fact, only about 1% of people who die in hospital each year are suitable to become organ donors. Many more people can donate tissue because live donation is possible.

Where a person has died and donation is a possibility, the family's permission is sought. People over the age of 16 who wish to become donors in this way can sign on to the Australian Organ Donor Register (AODR), which is also checked when families are asked about donation. Around 1,600 people are on Australian organ transplant waiting lists at any time (AOTDTA 2015).

### Organ donation

In 2015, there were 435 deceased organ donors (Figure 6.13.1)—a 76% increase from 247 in 2009 and 15% more than the 378 donors in 2014. There were also organ donations from living donors, whereby a person donates one of their kidneys for transplantation to another person (see 'Transplants' later in this snapshot).

**Figure 6.13.1: National deceased organ donations and transplants, 2009 to 2015**



Source: AOTDTA 2016.

# Tissue donation

In 2015, there were 4,027 donors of tissue including musculoskeletal, cardiovascular and skin, but excluding eyes. Of these, 368 were deceased donors, who gave 569 tissue donations, a 9.0% increase from the 522 donated in 2014 and a 74% increase from the 327 donated in 2012. The 3,659 living tissue donors (91%) were mainly patients undergoing joint replacement surgery. (Joint replacement surgery makes someone a candidate for live tissue donation because their hip joint is being removed and replaced with a prosthetic, and bone from the damaged hip joint can then be donated.) There were 3,687 living tissue donors in 2014 and 3,652 in 2012.

There were 1,266 deceased eye donors in 2015—a 37% increase from 922 donors in 2009 and a 9% increase from 1,162 donors in 2014 (AOTDTA 2015).

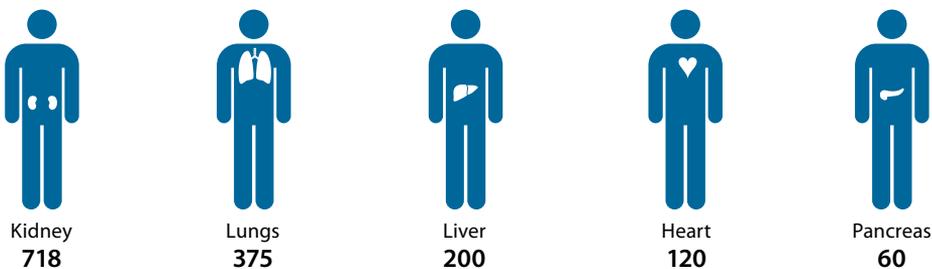
# Transplants

The numbers of organs transplanted and of transplant recipients increased by 58% and 55%, respectively, between 2009 and 2015. In 2015, 1,483 organs were transplanted from deceased donors, compared with 938 in 2009, and 1,241 people received transplants compared with 799 in 2009.

The number of organs transplanted and the number of transplant recipients in 2015 were both 12% higher than in 2014 (1,328 organs transplanted and 1,108 transplant recipients) (Figure 6.13.1).

In 2015, kidneys were the organ most frequently transplanted from deceased donors (718), followed by lungs (375) (AOTDTA 2016). In 2014, there were 267 living donor kidney transplants (ANZDATA 2016).

## Organs transplanted from deceased donors, 2015



Note: One intestinal transplant is not included.

In 2015, there were 2,124 corneal transplants from deceased donors, with all requests for eye tissue for transplantation being met. This was a 45% increase from the 1,467 corneal transplants in 2009 and a 12% increase from the 1,897 in 2014 (AOTDTA 2016).

## What is missing from the picture?

The AIHW's National Hospital Morbidity Database has the potential to complement the Australian Organ and Tissue Donation and Transplantation Authority's (AOTDTA) reported data, with information available on procedures, patient diagnoses and other information for most deceased donations, all live donations and all transplants.

## Where do I go for more information?

More information is available from the [AOTDTA](#), the Australian and [New Zealand Dialysis and Transplant Registry](#) and the [AODR](#).

## References

ANZDATA (Australia and New Zealand Dialysis and Transplant Registry) 2016. Chapter 9: kidney donors. In: 38th Annual ANZDATA Report. Adelaide: ANZDATA.

AOTDTA (Australian Organ and Tissue Donation and Transplantation Authority) 2015. Facts and statistics. Canberra: AOTDTA. Viewed 26 February 2016, <<http://www.donatelife.gov.au/discover/facts-and-statistics>>.

AOTDTA 2016. Australian donation and transplantation activity report 2015. Canberra: AOTDTA.

## 6.14 Safety and quality in Australian hospitals

The safety and quality of care provided to patients in Australia's hospitals is of utmost importance to all patients, and it is a key focus for Australian governments and service providers.

The definition of safety and quality can vary slightly, depending on source. Australia's National Health Performance Framework (NHPF), defines safety as 'the avoidance, or reduction to acceptable limits, of actual or potential harm from health care management or the environment in which health care is delivered' (NHISSC 2009). The Australian Commission on Safety and Quality in Health Care (the Commission) defines safety as 'reducing the risk of unnecessary harm associated with health care to an acceptable minimum' (ACSQHC 2015).

In the NHPF there is no specific 'quality' domain, as quality is described as relating to a number of domains including 'Effectiveness', 'Continuity of care', 'Accessibility' and 'Responsiveness' (see 'Chapter 7.1 Indicators of Australia's health'). The Commission defines quality as 'the degree to which health services for individuals and populations increase the likelihood of desired health outcomes, and are consistent with current professional knowledge' (ACSQHC 2015).

The Commission is Australia's key agency providing national leadership for improving health care safety and quality for both hospitals and other health care providers (see Box 6.14.1). There are also many other organisations integral to efforts to improve safety and quality at the state or territory level, or for particular components of the health sector. The efforts to improve safety and quality include public reporting of information on health care safety and quality, including that undertaken by the AIHW. These efforts are also accompanied by activities undertaken by health service providers to measure and monitor performance within their organisations to improve clinical outcomes and the appropriateness of services.

This article summarises how information on the safety and quality of care in Australia's hospitals is publicly reported. It presents information on the safety and quality measures that are routinely reported, including international comparisons. It also reports on the recent work of the Commission on variation in health care across Australia as it relates to the safety and quality of hospital care.

### Box 6.14.1: The Australian Commission on Safety and Quality in Health Care

The Commission is a national agency that leads and coordinates improvements in safety and quality in health care across Australia. The Commission engages in collaborative work in patient safety and health care quality that benefits service providers and receivers using the Australian health system including through:

- provision of strategic advice to health ministers on best practices to improve the safety and quality of health care
- developing and supporting national clinical care standards
- developing national health care safety and quality related indicators
- working to reduce unwarranted variation in practice and outcomes for individuals and populations
- coordinating national action to address health care-associated infections and antimicrobial resistance (ACSQHC 2015).

A key area of work for the Commission is the development and implementation of the first National Safety and Quality Health Service (NSQHS) Standards. The 10 NSQHS Standards provide a nationally consistent statement about the level of care consumers can expect from health services. All public and private hospitals in Australia are required to be accredited against these standards through an accreditation scheme developed by the Commission. The work of the Commission supports the implementation of these standards to drive ongoing safety and quality improvement in Australian hospitals.

The first NSQHS standard, 'Governance for safety and quality in health service organisations', requires that regular reports on safety and quality indicators and other safety and quality performance data are monitored by health service organisation leaders.

To support such local efforts to monitor and improve hospital safety and quality, the Commission develops and maintains a number of indicators, and produces tools to support their use (ACSQHC 2016). These include 'Core hospital-based outcome indicators'; 'Hospital-acquired complications'; 'Classification of hospital-acquired diagnosis'; and indicators to support the implementation of clinical care standards. The Commission is also developing 'core common questions' for patient experience surveys in hospitals and 'staff experience and organisational culture measurement'.

In addition, the Commission disseminates information relating to health care safety and quality in its annual report *The state of safety and quality in Australian health care* and in reports such as the *Australian atlas of healthcare variation* (see 'Health care variation and hospitals' later in this article).

# National reporting on hospital safety and quality

National reporting on safety and quality (across jurisdictions and over time) supports accountability and transparency in service provision and also has the potential to create incentives for improved safety and quality.

There are a number of national agreements and frameworks that support national monitoring and reporting of the safety and quality of patient care in hospitals. For example, performance indicators are included in the National Healthcare Agreement (NHA), the NHPF, and the Performance and Accountability Framework of the National Health Reform Agreement. (See 'Chapter 7.1 Indicators of Australia's health' for more information on these indicator frameworks and Table 6.14.1 in this article).

## Selected indicators of hospital safety and quality

This section presents information on national indicators of safety and quality of the care for admitted patients in Australian hospitals that are routinely nationally reported. The indicators are:

- health care-associated infections: *Staphylococcus aureus* bacteraemia (SAB) cases in public hospitals
- adverse events treated in hospital
- falls resulting in patient harm in hospitals
- unplanned hospital readmission rates
- patient satisfaction/experience.

Information on adverse events, falls and unplanned readmissions is derived from the AIHW's National Hospital Morbidity Database (NHMD). It should be noted that the data in the NHMD are collected primarily for the purposes of recording care provided to admitted patients and that their use for purposes such as reporting adverse events has not been validated for accuracy in Australia. The results should therefore be treated with caution (AIHW 2015a).

Note too, that the available information does not provide a complete picture. For example, there is no routinely available information on some aspects of quality, such as continuity or responsiveness of hospital services.

### Health care-associated infections: *Staphylococcus aureus* bacteraemia cases in public hospitals

SAB is a type of infection often associated with health care. It occurs when *Staphylococcus aureus* bacteria ('Golden staph') cause an infection of the bloodstream (bacteraemia). When associated with health care procedures, these infections are considered to be potentially preventable.

Patients who develop SAB are more likely to suffer complications that result in longer stays in hospital, and the most serious infections can result in death.

The bacteria that cause SAB are frequently found on the skin or in the nose and are commonly spread from person to person in the community. In this form, they are usually harmless and most people are unaware that they are carrying them.

Table 6.14.1: National reporting frameworks and safety and quality indicators for hospitals

| Framework  | Purpose   | Indicators of safety and quality in hospitals  | Reported in  |
|--|---|--|--|
| The National Health Performance Framework 2009 (revised) | To provide a structure for reporting on Australia's health status and the performance of the Australian health system at the national level   | Adverse events treated in hospitals<br>Falls resulting in patient harm in care setting   | AIHW's <i>Australian hospital statistics</i> series annually and in <i>Australia's health</i> every two years  |
| Performance and Accountability Framework 2011            | To support a safe, high quality Australian health system, through improved transparency and accountability  | <i>Staphylococcus aureus</i> bacteraemia cases in hospitals<br>Patient experience<br>Unplanned readmissions <sup>(a)</sup><br>Hospital standardised mortality ratio <sup>(a)</sup><br>Death in low-mortality diagnostic related groups <sup>(a)</sup><br>In hospital mortality rates <sup>(a)</sup><br>Health care-associated <i>Clostridium difficile</i> infections <sup>(a)</sup><br>Rate of community follow-up within the first seven days of discharge from a psychiatric admission <sup>(a)</sup> | Individual hospitals on the <i>MyHospitals</i> website (managed by AIHW from July 2016 and formerly by the National Health Performance Authority)<br>Primary Health Networks on the <i>MyHealthyCommunities</i> website (managed by AIHW from July 2016 and formerly by the National Health Performance Authority) |
| The National Healthcare Agreement 2012                   | To clarify the roles and responsibilities that guide the Commonwealth and states and territories in delivery of services across the health sector and to define shared objectives, outcomes, and performance indicators | <i>Staphylococcus aureus</i> bacteraemia cases in hospitals<br>Unplanned readmissions<br>Patient experience  | AIHW's <i>Australian hospital statistics</i> series<br>The Steering Committee for the Review of Government Service Provision's <i>Review of government services reports</i><br>Australian Bureau of Statistics (ABS) <i>Patient experiences in Australia</i>   |

(a) Not yet reported.

In hospitals, transmission is most commonly via the hands of health care workers. Bacteria can gain direct entry into the patient's bloodstream if they have open wounds or when devices that pierce the skin are used, such as for giving intravenous fluids or for taking blood samples. Hospitals aim to have as few SAB cases as possible.

Patients who have a greater risk of infection than the general public are those with open wounds; invasive devices such as catheters; weakened immune systems (associated with cancer, or with transplant receipt, or with being very young or elderly); chronic disease such as diabetes or severe underlying illness; or prolonged or recurrent exposure to antibiotics (AIHW 2015b).

The rate of SAB is a performance indicator for the NHA outcome area of *Australians receive appropriate high quality and affordable hospital and hospital-related care*. A performance benchmark for public hospital-associated SAB is included for that outcome area: the rate of SAB (including methicillin-resistant *Staphylococcus aureus*, or MRSA) is no more than 2.0 per 10,000 days of patient care for acute care public hospitals in each state and territory.

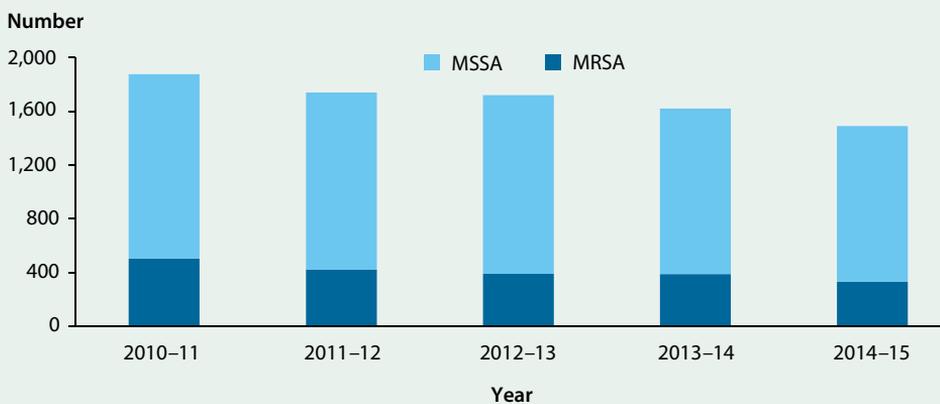
In 2014–15:

- the national rate of SAB in public hospitals was 0.8 cases per 10,000 days of patient care
- all jurisdictions had rates below the national benchmark
- most cases of SAB (78%) were treatable with commonly used antibiotics. These cases are termed methicillin-sensitive *Staphylococcus aureus* (MSSA) cases, while 22% of cases were MRSA (antibiotic resistant) cases (AIHW 2015b).

Between 2010–11 and 2014–15:

- rates of SAB decreased from 1.1 cases to 0.8 cases per 10,000 days of patient care
- the overall number of SAB cases decreased from 1,876 to 1,490. The number of MRSA cases decreased from 505 to 331 (Figure 6.14.1).

**Figure 6.14.1: Cases of *Staphylococcus aureus* bacteraemia (SAB) in public hospitals, by antibiotic sensitivity status (MSSA or MRSA), 2010–11 to 2014–15**



Source: AIHW 2015b.

Improvement in the hand hygiene of health care workers is the highest priority for reducing the risk of health care-associated infections. Between July 2009 and June 2015, hand hygiene compliance in public hospitals increased from about 64% to 82% (HHA 2015).

## Adverse events treated in hospitals

'Adverse events treated in hospitals' is an NHPF performance indicator under the dimension of 'Safety' (see 'Chapter 7.1 Indicators of Australia's health'). It is a measure of the safety and quality of the care provided to admitted patients, and encompasses a range of events, rather than focusing on one type, such as readmissions or falls.

Adverse events are defined as incidents in which harm resulted to a person receiving health care. They include adverse effects of drugs, injuries that occur during care, and conditions that occur following procedures such as infections and bleeding. Some of these adverse events may be preventable.

Adverse events such as these can lead to increased length of stay and poorer patient outcomes, along with increased costs of treatment. 'Adverse events treated in hospitals' is based on events that have been identified by the treating doctor in the clinical record, indicating that an adverse event has resulted in, or affected, hospital admission.

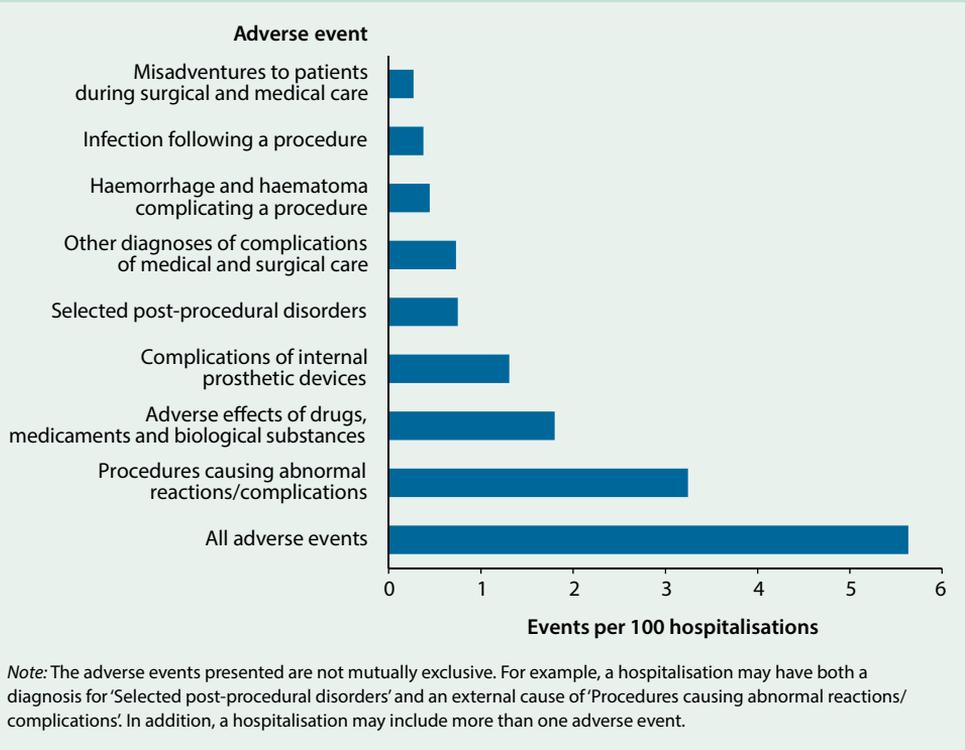
This indicator is limited to adverse events that can be identified by specific codes and therefore may not include all adverse events.

In 2013–14:

- almost 547,000 hospitalisation reports indicated that one or more adverse events had resulted in, or affected the hospitalisation. These reports accounted for about 6.7 per 100 hospitalisations in public hospitals and 4.1 per 100 hospitalisations in private hospitals (Figure 6.14.2). The data for public hospitals are not comparable with the data for private hospitals because their casemixes differ and recording practices may be different
- the most common adverse event groups reported for public hospitals were *Procedures causing abnormal reactions/complications* (52%) and *Adverse effects of drugs, medicaments and biological substances* (37%)
- the most common adverse event group reported for private hospitals was *Procedures causing abnormal reactions/complications* (70%)
- overnight hospitalisations had higher rates of adverse events (11 per 100) than same-day hospitalisations (1.7 per 100)
- hospitalisations for subacute and non-acute care had higher rates of adverse events (10.5 per 100) than acute care hospitalisations (5.4 per 100)
- emergency hospitalisations had higher rates of adverse events (9.9 per 100) than non-emergency hospitalisations (4.1 per 100).

Other ways to assess the safety and quality of care provided to admitted patients cover a wider range of issues reported as either arising (or being acquired) during the hospital episode; these measures are not recognised as performance indicators and information on them is presented in Box 6.14.2.

**Figure 6.14.2: Adverse events per 100 hospitalisations, all hospitals, 2013–14**



**Box 6.14.2: Other measures relating to the overall safety and quality of care in hospitals**

Information presented in this box relates to other measures of the overall safety and quality of care provided to admitted patients that are not performance indicators. These measures overlap with each other and with the safety and quality performance indicators presented in this article. These measures and the performance indicators should not be added together due to the overlap.

**Conditions that arose during the hospital stay**

This measure includes all conditions which arose during the episode of admitted patient care and were not present on admission. Not all conditions that arise during a hospitalisation are classified as adverse events. Conditions that arise during a hospital stay are identified using a 'condition onset flag' (this is a means of differentiating between conditions that were present on admission, or arose during the episode of care).

These condition onset flag data are available for about 91% of hospitalisations in public hospitals and about 72% of hospitalisations in private hospitals.

*(continued)*

**Box 6.14.2 (continued): Other measures relating to the overall safety and quality of care in hospitals**

In 2013–14:

- about 717,000 hospitalisations were affected by a condition that arose during the hospital stay. These accounted for about 10% of hospitalisations in public hospitals and 6% of hospitalisations in private hospitals
- hospitalisations for childbirth had the highest proportion recording a condition that arose during the hospital stay, in both public and private hospitals and for same-day and overnight hospitalisations. This was 58% and 54% for overnight hospitalisations in public and private hospitals respectively and 33% and 36% for same-day, public and private hospitalisations respectively
- approximately 31% of conditions that arose during the hospital stay were also classified as adverse events and 91% were classified as a hospital-acquired diagnosis.

**Hospital-acquired conditions (diagnoses)**

The 'Classification of hospital-acquired diagnoses' is a classification system that allows hospitals to identify, count and monitor adverse events, as markers of patient safety. For the most part, the occurrence of a hospital-acquired condition is identified using the condition onset flag along with diagnosis information. These condition onset flag data are available for about 91% of hospitalisations in public hospitals and about 72% of hospitalisations in private hospitals.

In 2013–14:

- more than 709,000 hospitalisations reported a hospital-acquired condition. These accounted for about 9.9% of hospitalisations in public hospitals and 6.0% in private hospitals
- for public hospitals, the most common hospital-acquired conditions were *Labour, delivery and postpartum complications* and *Cardiovascular complications* (accounting for 20% and 16% of hospitalisations that included a hospital-acquired condition, respectively)
- for private hospitals, the most common hospital-acquired conditions were *Gastrointestinal complications* accounting for 18% of hospitalisations that included a hospital-acquired condition
- *Post-procedural complications* accounted for about 14% of hospital-acquired conditions in public hospitals and 16% in private hospitals
- about 31% of hospital-acquired conditions were also classified as 'Adverse events treated in hospital' and 97% were classified as 'Conditions that arose during the hospital stay'.

## Falls resulting in patient harm in hospitals

'Falls resulting in patient harm in hospitals' is a performance indicator under the NHPF domain of 'Safety' (see 'Chapter 7.1 Indicators of Australia's health'). This indicator is intended to report where a fall occurred in hospital during the episode of care, resulting in patient harm. 'Falls resulting in patient harm in hospitals' is a subset of 'Adverse events treated in hospital'.

The indicator identifies falls occurring in any health service area as it is not currently possible to identify falls as occurring specifically in hospitals. Therefore, these rates may overestimate falls in hospitals. However, patients with an injury as the primary reason for hospitalisation are excluded to minimise the inclusion of falls that occurred before admission. These rates may also be underestimated as the place of occurrence was not reported for about 26% of hospitalisations with a fall recorded.

In 2013–14, more than 30,000 hospitalisations, or 3.1 per 1,000 hospitalisations, reported a fall. More falls were reported for public hospitals (4.2 per 1,000 hospitalisations) than for private hospitals (1.6 per 1,000). The difference between the rates in public and private hospitals may reflect differences in casemix and recording practices.

These data should be treated with caution. A study by the Commission showed that the rate of recording falls in the medical records varied between hospitals, with some hospitals recording falls better in incident reporting systems (ACSQHC 2012).

## Unplanned readmissions

'Unplanned or unexpected readmissions after surgery' is an NHA performance indicator for the outcome *Australians receive appropriate high quality and affordable hospital and hospital-related care*. It is regarded as an indicator of the safety and quality of admitted patient care in hospitals.

This indicator includes hospitalisations for which an unplanned readmission to the same public hospital occurred within 28 days following surgery (for selected surgical procedures) (Figure 6.14.3), and the cause of the hospitalisation was an adverse event. The diagnosis codes used to identify adverse events for unplanned readmissions are a subset of those used in 'Adverse events treated in hospitals', and 'Unplanned readmissions' account for 0.4% of hospitalisations with 'Adverse events'.

In 2013–14, rates of readmission to the same public hospital were 33 per 1,000 hospitalisations for *Tonsillectomy and adenoidectomy* and 3.1 per 1,000 for *Cataract extractions* (Figure 6.14.3). The rate for *Tonsillectomy and adenoidectomy* readmissions was higher than in 2011–12, when it was 28 per 1,000, but similar to 2012–13 (33). *Cataract extraction* readmission rates were similar for all 3 years (3.2 per 1,000 in 2011–12 and 3.4 in 2012–13) (AIHW 2013, 2014).

## Patient experience

'Patient experience' is an NHA performance indicator in the outcome area of 'Australians have positive health and aged care experiences which take account of individual circumstances and care needs'. A patient experience survey is one tool that health services can use to assess whether they are meeting the needs of the patient.

**Figure 6.14.3: Readmissions within 28 days to the same public hospital after selected types of surgery, 2013–14**



The ABS Patient Experience Survey included about 19,000 people aged 15 and over in 2014–15. Of these, more than 2,500 people (14%) had attended a hospital in the past 12 months, either as an admitted patient or as an emergency department patient.

The survey asked patients whether doctors or nurses:

- listened carefully to them
- showed respect to them
- spent enough time with them.

The survey found that at least 86% of patients responded 'always' or 'often' to each of these questions for both doctors and nurses. More than 90% of patients responded 'always' or 'often' to the questions about whether the doctors or nurses showed respect to them (ABS 2015).

## Health care variation and hospitals

In 2015 the Commission published the *Australian atlas of healthcare variation* (ACSQHC and NHPA 2015). Understanding variation across geographic areas is important to improving the appropriateness of health care, including hospital care, and increasing the value obtained from resources allocated to health.

The *Australian atlas of healthcare variation* reported substantial variation in health care use in six clinical areas, including prescribing and diagnostic, medical and surgical interventions. Some of these differences would reflect variation in the provision of hospital care, although many would also reflect variation in the provision of non-hospital care. Some variation in health care use is expected if associated with differences in patients' health, or personal preferences. However, the Commission found that much of the variation was likely to be unwarranted. This may mean that some people are receiving inappropriate or unnecessary care, while others may be missing out on care that might be beneficial.

Hospital-related examples from the *Australian atlas of healthcare variation* include *Knee arthroscopy* and *Hysterectomy and endometrial ablation*.

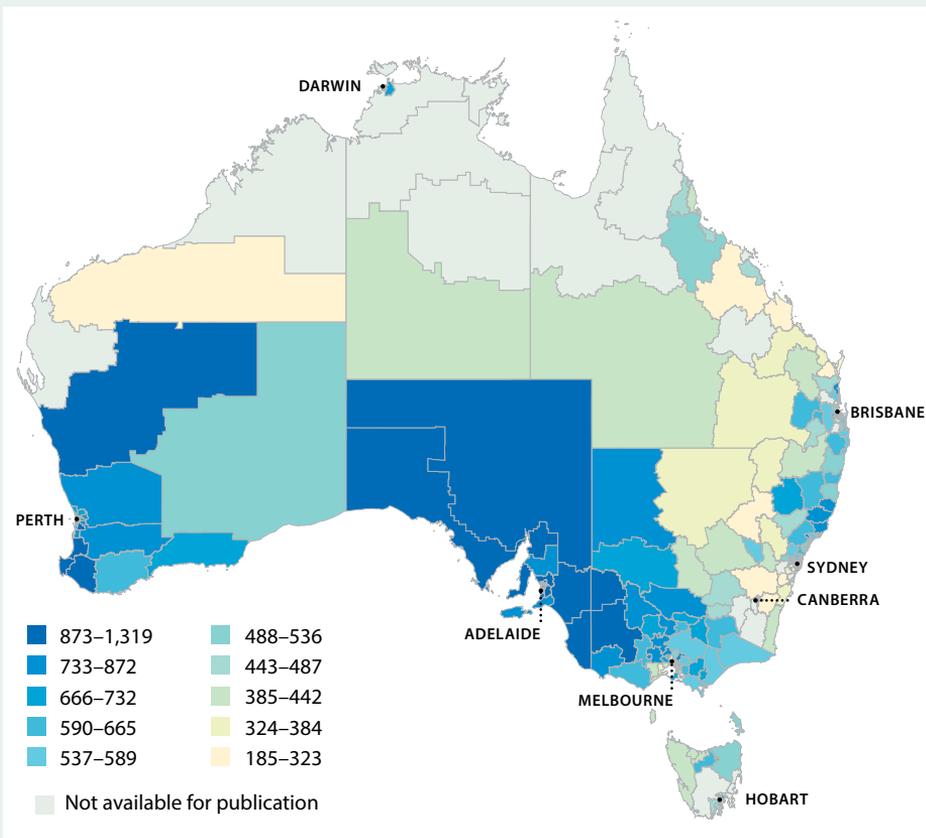
## Variation in knee arthroscopy rates

In 2012–13, more than 33,000 knee arthroscopy operations were performed for patients aged 55 and over. This was the case despite evidence that knee arthroscopy is of limited value for people with osteoarthritis and may cause harm.

The rates of knee arthroscopy varied across states and territories, from 264 per 100,000 people aged 55 and over in the Australian Capital Territory, to 980 in South Australia. Hospitalisations for patients aged 55 and over were seven times as high in some local areas than other areas, ranging from 1,319 hospitalisations per 100,000 population to 185 per 100,000 (Figure 6.14.4). After excluding the highest and lowest results, the knee arthroscopy hospitalisation rates were up to 4.2 times higher in some areas compared with others.

Hospitalisation rates for knee arthroscopy tended to be higher in *Inner* and *Outer regional* areas than in *Major cities* (ACSQHC and NHPA 2015).

**Figure 6.14.4: Age-standardised rate of knee arthroscopy hospitalisations per 100,000 people aged 55 and over, by local area, 2012–13**



Note: For this item, 'local area' refers to an ABS standard geographic region known as a **Statistical Area Level 3 (SA3)**.

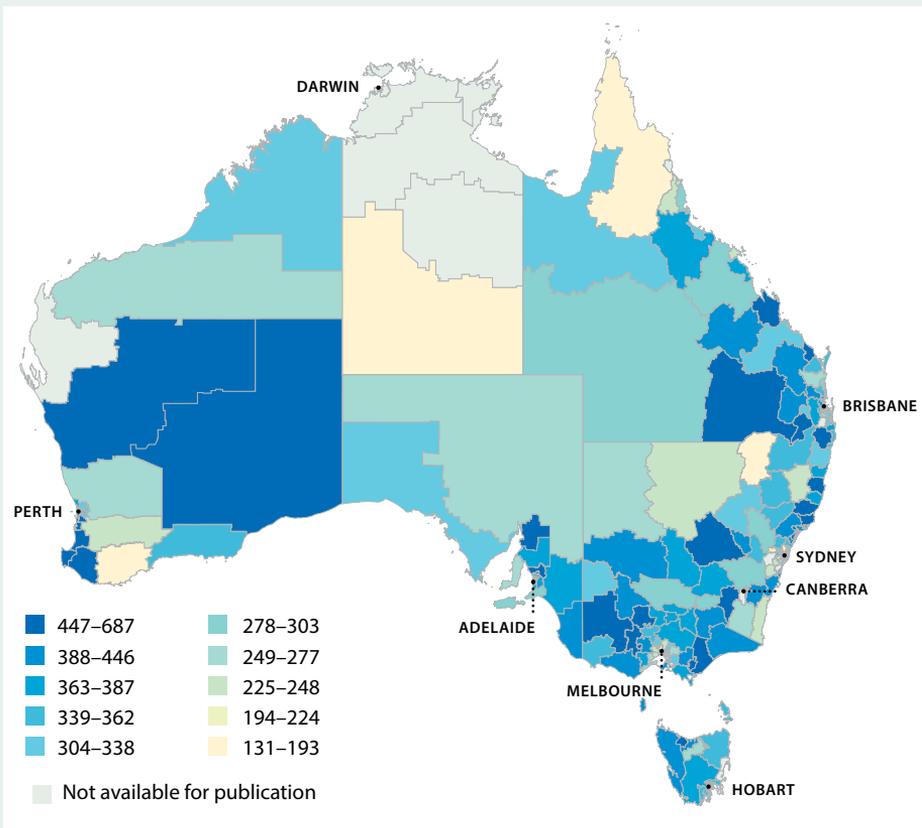
Source: ACSQHC and NHPA 2015.

## Variation in hysterectomy and endometrial ablation rates

The average number of hospitalisations for hysterectomy and endometrial ablation varied across states and territories, from 225 per 100,000 women in the Northern Territory, to 349 in Western Australia. The number of hospitalisations ranged from 131 per 100,000 women in a local area to 687 (Figure 6.14.5). After excluding the highest and lowest results, the hysterectomy and endometrial ablation hospitalisation rates were up to 3.3 times higher in some areas compared with others.

Hospitalisation rates for hysterectomy and endometrial ablation were markedly higher in *Inner* and *Outer regional* areas than in *Major cities* or in *Remote* areas. There was no clear link between rates and high or low socioeconomic areas (ACSQHC & NHPA 2015).

**Figure 6.14.5: Age-standardised rate of hysterectomy and endometrial ablation hospitalisations per 100,000 women, by local area, 2012–13**



Note: For this item, 'local area' refers to an ABS standard geographic region known as a **Statistical Area Level 3 (SA3)**.  
Source: ACSQHC and NHPA 2015.

## International comparisons

Australia also monitors the safety and quality of Australia's health services through participation in the Organisation for Economic Co-operation and Development (OECD) Health Care Quality Indicators (HCQI) project. The HCQI project defines a common set of indicators for use across OECD member countries, which are reported at the national level and enable international comparison. The OECD publishes selected data in the OECD's *Health at a glance* series (OECD 2015).

The OECD acknowledges the challenge in collating data of this type in a comparable manner, and suggests that some caution should be taken in interpreting the results. Differences in hospital admission practices/criteria, data coding practices, and sources of data (for example, whether based on hospital administrative data or registry-based data) can result in large variations in rates reported.

Table 6.14.2 lists the patient safety-related indicators that were reported to the most recent OECD collection, and indicates how Australia compares against the OECD averages.

In Australia the *Post-operative wound dehiscence* rate per 100,000 (75) was lower than the OECD average (220), as was the rate for *Post-operative pulmonary embolism* (363 per 100,000 compared with 531). Other patient safety indicator rates were higher than the OECD average.

**Table 6.14.2: OECD HCQI patient safety indicators, Australia (2012–13) and OECD average (2013)**

| HCQI indicator                                       | Australia | OECD average |
|--|-----------|--------------|
| <b>Rate per 100,000 hospitalisations</b>             |           |              |
| Foreign body left in during procedure                | 8.6       | 5.7          |
| Post-operative deep vein thrombosis                  | 787       | 336          |
| Post-operative pulmonary embolism                    | 363       | 531          |
| Post-operative sepsis                                | 1,445     | 967          |
| Post-operative wound dehiscence (wound rupture)      | 75        | 220          |
| <b>Rate per 100 vaginal deliveries</b>               |           |              |
| Obstetric trauma—vaginal delivery with instrument    | 7.3       | 6.0          |
| Obstetric trauma—vaginal delivery without instrument | 2.4       | 1.6          |

*Notes*

1. Caution should be taken in interpreting these findings due to differences in data capture and reporting that may influence the reported rates.
2. OECD rate is for 2013 (or nearest year).

Source: AIHW 2016.

In addition to variation in recording practices, *Health at a glance 2015* notes that in ‘some cases, higher adverse event rates may signal more developed patient safety monitoring systems and a stronger patient safety culture rather than worse care’ (OECD 2015:144). A number of features of Australian patient safety monitoring would support the claim that Australia is one of those countries that has a more developed patient safety monitoring system (AIHW forthcoming).

## What is the AIHW doing?

The AIHW is currently undertaking work to improve the NHA unplanned hospital readmission rates performance indicator.

The AIHW’s work involves the refinement of the list of principal diagnoses that can be used to indicate an unplanned readmission as specifically relevant to each of the seven types of surgical procedures. The work is also incorporating different lengths of time (between 7 and 60 days) for a principal diagnosis to signal an unplanned readmission for each type of surgery. Work is also being undertaken towards identification of readmissions to hospitals other than the one in which the surgery was performed.

## What is missing from the picture?

Current public reporting on safety and quality using admitted patient care data is only a small component of what could potentially be reported. There is ongoing effort to enhance the information value of this data collection through the improvement of consistent data collection across states and territories and through the development of indicators and other data analysis methods.

Routine national data linkage to inform safety and quality improvement is also an area for future work. The ability to link data across hospitals or across different health services would enhance our understanding of the patient's journey through the health system and outcomes of care.

Although most jurisdictions and many hospitals already collect and analyse patient experience information, there is a lack of consistency in the information collected that prevents meaningful comparisons between jurisdictions. However, work is being conducted by the Commission to develop standard patient experience measures. These will comprise two short sets of core common questions to assess patients' experiences of overnight hospital care and same-day care. Unlike in the existing ABS Patient Experience Survey, which is population-based, the questions will be administered to recently discharged patients. The resulting information will be a resource for use by public and private services across Australia to pinpoint areas for local service improvement, as well as offering the opportunity for national-level comparisons.

## Where do I go for more information?

More information is available at the Commission's website [Australian Commission in Safety and Quality in Health Care](#).

Selected safety and quality information for individual hospitals is available at [MyHospitals.gov.au](#).

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## 6.15 Specialised alcohol and other drug treatment services

Alcohol and other drug (AOD) treatment services assist people to address their drug use through a range of treatments. Treatment objectives can include reduction or cessation of drug use as well as improving social and personal functioning. Assistance may also be provided to support the family and friends of people using drugs. Treatment services include detoxification and rehabilitation, counselling, and pharmacotherapy, and are delivered in residential and non-residential settings. Opioid pharmacotherapy is one treatment option for dependence on opioid drugs, such as heroin and morphine.

In 2011, the cost of treatment (excluding pharmacotherapy treatment alone) for illicit drug use, including amphetamines, cannabis, cocaine, ecstasy and opioids, was estimated at \$298 million (Smith et al. 2014). In addition to this, the cost of opioid pharmacotherapy treatment was estimated at \$185 million.

Information on publicly funded AOD treatment services in Australia, and the people and drugs treated, are collected through the Alcohol and Other Drug Treatment Services National Minimum Data Set (AODTS NMDS). The National Opioid Pharmacotherapy Statistics Annual Data (NOPSAD) collection contains information on treatment services provided to people dependent on opioid drugs.

### Who uses treatment services?

Key characteristics of clients in 2014–15:

| AOD publicly funded agencies (2014–15)  | Opioid pharmacotherapy (June 2015 snapshot day)  | Recent trends  |
|---|--|--|
| Around 115,000 clients (or about 1 in 200 people in the general population) received treatment (around 170,000 episodes). | Over 48,000 clients (or about 1 in 700 people) were on a course of pharmacotherapy treatment for dependence on opioid drugs. | There have been small but steady increases in client numbers in recent years.                                      |
| Just over 2 in 3 clients (67%) were male.   | Nearly 2 in 3 clients (65%) were male.   | This profile has remained consistent over time across both client groups.  |
| Over half of clients (54%) were aged 20–39.   | Clients were slightly older on average than those in AOD agencies—more than 2 in 3 (68%) were aged 30–49.                    | In recent years the age profile of people receiving treatment suggests an ageing cohort across both client groups. |
| Nearly 1 in 7 (15%) clients were Indigenous Australians.  | One in 10 clients (10%) were Indigenous Australians.   | Indigenous Australians continue to be over-represented.  |

*(continued)*

Key characteristics of clients in 2014–15 (continued):

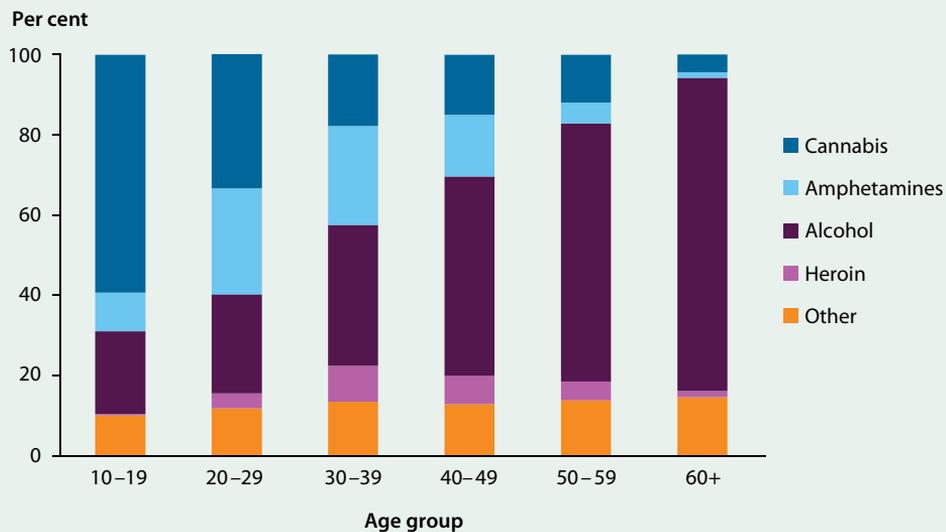
| AOD publicly funded agencies (2014–15)   | Opioid pharmacotherapy (June 2015 snapshot day)   | Recent trends  |
|--|---|--|
| Most clients (86%) received treatment at one agency.                                 | Nearly three-quarters (72%) of clients received their pharmacotherapy drug from a pharmacy. | This profile has remained consistent over time.  |
| Just over three-quarters (76%) of agencies provided treatment for up to 200 clients. | Two in 5 (40%) of prescribers treated between 1 and 5 clients.                              | Treatment services have continued to expand: since 2010–11 the number of AOD agencies has risen by 27% and the number of prescribers of opioid pharmacotherapy by 60%. |

## Which drugs do people seek treatment for?

From the AODTS NMDS:

- Alcohol (38%), cannabis (24%), amphetamines (20%) and heroin (6%) were the top four drugs leading clients to seek treatment in 2014–15.
- The proportion of clients receiving treatment for alcohol increased substantially with age—whereas the opposite was true for cannabis (Figure 6.15.1).
- In more than half (53%) of treatment episodes in 2014–15, the client reported additional drugs of concern—most commonly nicotine and cannabis (AIHW 2016a).

**Figure 6.15.1: Principal drug of concern for clients, by age, 2014–15**



Source: AODTS NMDS.

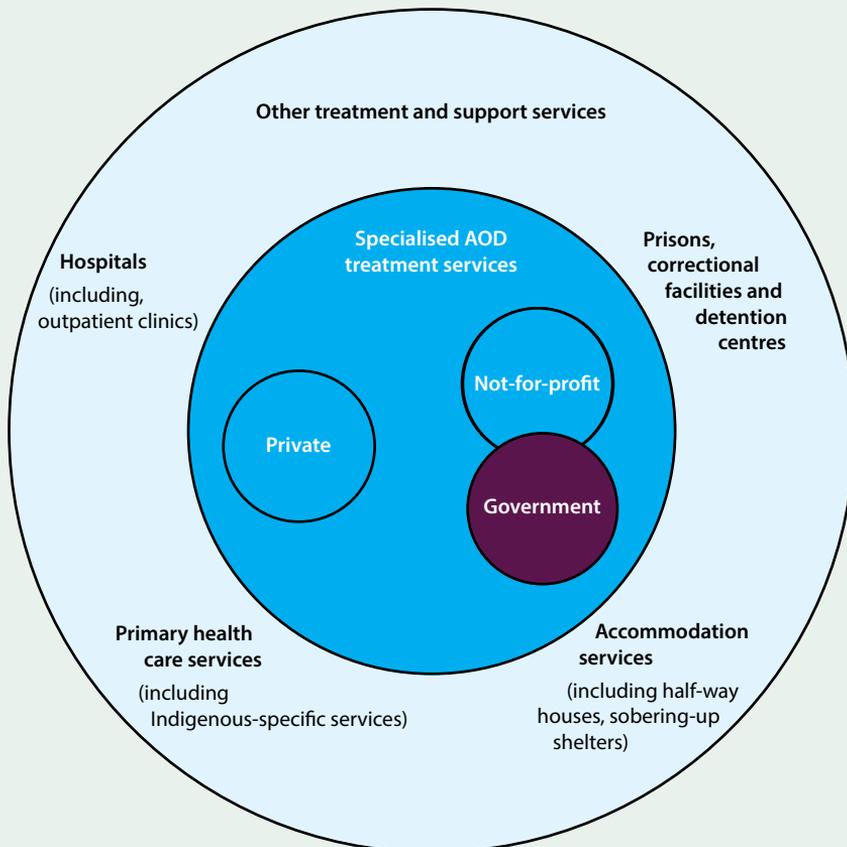
From NOPSAD:

- Heroin was the most common opioid drug of dependence for clients on a course of pharmacotherapy treatment for their opioid drug of dependence, and 2 in 3 clients were treated with methadone on a snapshot day in June 2015 (AIHW 2016b).

### What is missing from the picture?

It is difficult to fully quantify the scope of AOD services in Australia. There are a variety of settings in which people receive treatment for alcohol and other drug-related issues that are not in scope for the AODTS NMDS. These include services provided by not-for-profit organisations and private treatment agencies that do not receive public funding; for example, hospitals, prisons, correctional facilities and detention centres, primary health care services, and accommodation services (Figure 6.15.2).

Figure 6.15.2: AOD treatment and support services in Australia



Note: Those in scope for the AODTS NMDS are shaded darker.

Because of the specifications for each collection and the complexities of the sectors, it is not possible to identify people who receive a course of pharmacotherapy treatment via a dosing point site as well as treatment from a publicly funded AOD service. In addition, the AODTS NMDS and the NOPSAD collection do not cover all agencies providing substance-use services to Indigenous Australians. These agencies provide data to the [Online Services Report](#) collection.

### Where do I go for more information?

More information on specialised AOD treatment services in Australia is available at [www.aihw.gov.au/alcohol-and-other-drugs/](http://www.aihw.gov.au/alcohol-and-other-drugs/). The reports [Alcohol and other drug treatment services in Australia 2013–14](#) and [National opioid pharmacotherapy statistics 2014](#) can be downloaded for free.

For more information on issues related to AOD treatment services, see 'Chapter 4.5 Illicit drug use' and 'Chapter 4.6 Alcohol risk and harm'.

### References

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## 6.16 Mental health services

Mental illness contributes substantially to the burden of disease in the community (see 'Chapter 3.11 Mental health' and 'Chapter 5.5 Mental health of Australia's young people and adolescents'). In Australia, people with mental illness have access to a variety of support services provided by a range of health care professionals in a number of care settings (Figure 6.16.1).

**Figure 6.16.1: Overview of mental health services and workforce**

| Where might people go for mental health care?     | Who might people see for mental health care? |
|---|--|
| Specialised hospital services; public and private | General practitioners                        |
| Residential mental health care services           | Psychiatrists and other medical staff        |
| Community mental health care services             | Psychologists                                |
| Private clinical practices                        | Nurses; registered and enrolled              |
| Non-government organisation services              | Social workers                               |
|   | Other allied health professionals            |
|   | Peer workers                                 |
|   | Other personal care staff                    |

### Service use

A substantial number of support services are provided to people with a mental illness each year. For example, state and territory community mental health care services provided more than 8.7 million contacts in 2013–14 (Table 6.16.1).

### Medicare-subsidised mental health-related services

Medicare-subsidised services are provided by psychiatrists, general practitioners (GPs), psychologists and other allied health professionals (social workers, mental health nurses and occupational therapists). The services are provided in a range of settings—hospitals, consulting rooms, home visits and over the phone.

There was an average annual increase of 6.7% in the number of Medicare-subsidised mental health-related services over the 5-year period to 2013–14 (Figure 6.16.2).

This can be mainly attributed to increasing uptake of the Better Access initiative (implemented in November 2006), which gives patients Medicare-subsidised access to psychologists and other allied health providers after the preparation of a Mental Health Treatment Plan by a GP.

**Table 6.16.1: Selected mental health-related services provided (latest available data from 2012–13 to 2013–14)**

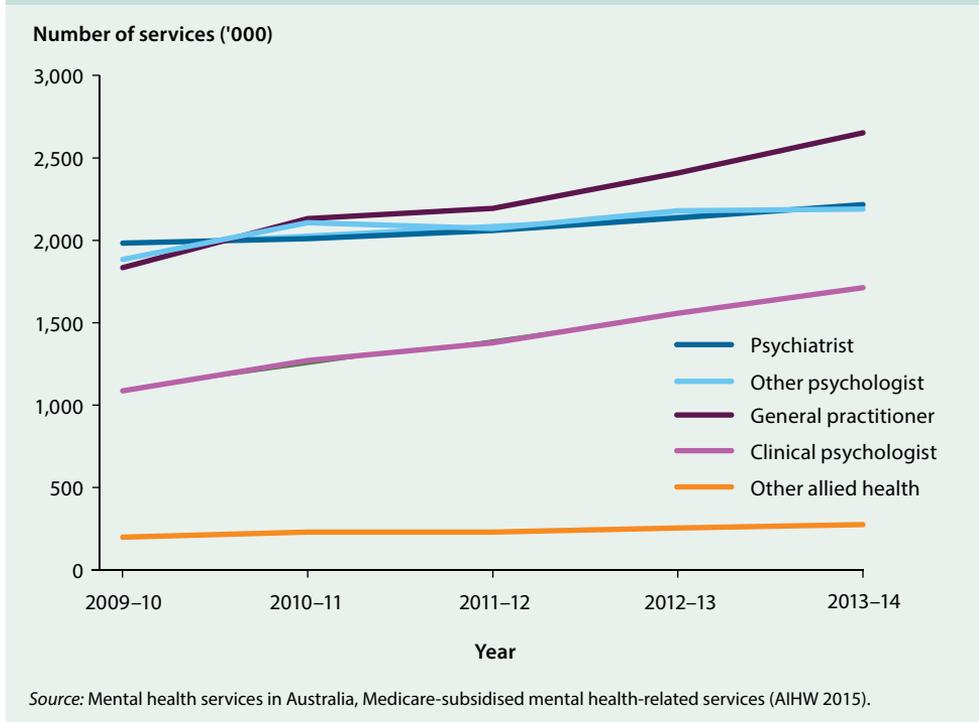
| Service type   | Volume                   | Selected findings  |
|--|--------------------------|--|
| Medicare-subsidised mental health-related services <sup>(a)</sup>                  | 9 million services       | General practitioners (29%) were the largest providers of these services.  |
| People accessing Medicare-subsidised mental health-related services <sup>(a)</sup> | 1.9 million people       | More females (1,200,000) than males (750,000) used these services.   |
| PBS/RPBS subsidised prescriptions  | 34 million prescriptions | Antidepressant medication accounted for over 67% of all subsidised mental health-related prescriptions.                          |
| Community mental health care service contacts                                      | 8.7 million contacts     | About one-quarter of all contacts were provided to patients with a principal diagnosis of schizophrenia.                         |
| Emergency department services  | 280,000 services         | Almost one-quarter of people accessing these services were aged 15–34.   |
| Admitted patient hospitalisations  | 240,000 hospitalisations | Admitted patient hospitalisations with specialised mental health care made up 61% of all mental health-related hospitalisations. |

(a) Includes psychiatrists, general practitioners, clinical psychiatrists, other psychologists and other allied health services. These services are billed as mental health-related items; which underestimates the total mental health-related activity, especially for services provided by general practitioners.

Note: PBS refers to Pharmaceutical Benefits Scheme; RPBS refers to Repatriation Pharmaceutical Benefits Scheme.

Source: AIHW 2015.

**Figure 6.16.2: Medicare-subsidised mental health-related services, by provider type, 2009–10 to 2013–14**

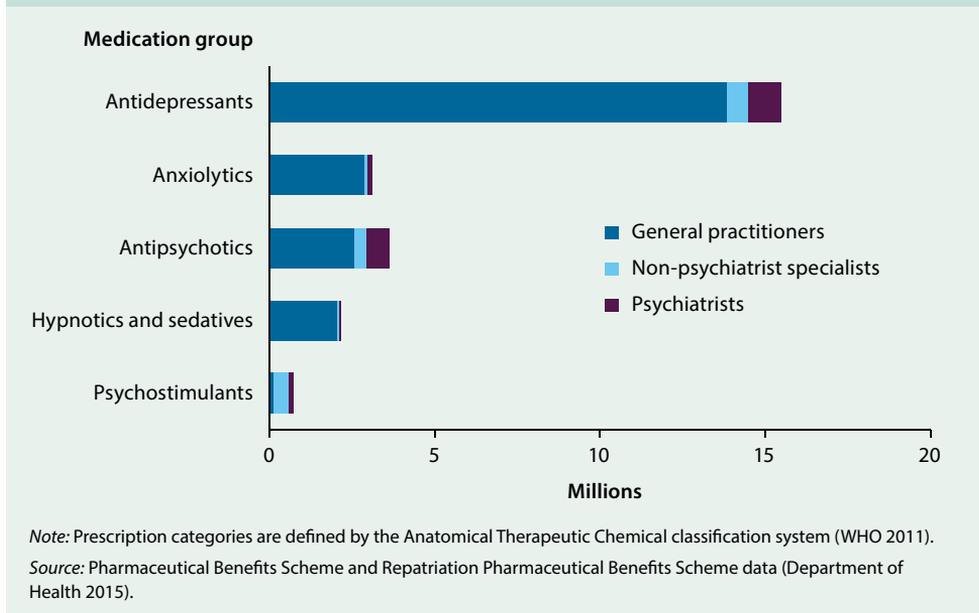


## Mental health-related prescriptions

There were an estimated 34 million prescriptions for mental health-related medications dispensed in 2013–14, of which 73% (25 million) were subsidised by the Australian Government under the Pharmaceutical Benefits Scheme (PBS) or Repatriation Pharmaceutical Benefits Scheme (RPBS). Of the subsidised prescriptions, the majority (86%) were prescribed by GPs, with another 8.0% prescribed by psychiatrists and 6.5% by non-psychiatrist specialists.

Most mental health-related subsidised prescriptions were for antidepressants (62%, or 15 million), followed by antipsychotics (14%), anxiolytics (12%), and hypnotics and sedatives (8.6%) (Figure 6.16.3).

**Figure 6.16.3: Mental health-related subsidised prescriptions dispensed, by group of medication prescribed and prescribing medical practitioner, 2013–14**



## Workforce

It is not possible to definitively count the total number of people delivering care and support to people with a mental illness. However, we do know that in 2013:

- there were about 23,000 registered psychologists, 20,000 mental health nurses, and 3,000 psychiatrists in Australia
- about one-third (32%) of mental health nurses were male, compared with 1 in 10 (10%) of the general nursing workforce. About two-thirds (63%) of psychiatrists were male compared with 7 in 10 (72%) of all medical specialists. About one-quarter (23%) of psychologists were male
- about one-third (30%) of mental health nurses and 43% of psychiatrists were aged 55 and older. The age profile of registered psychologists was younger, with 73% under 55.

In 2013–14, there were over 30,500 full-time equivalent (FTE) staff employed in state and territory specialised mental health care services. Nationally, this equates to 131 FTE staff per 100,000 population. In the same period, there were about 2,500 FTE staff employed in private hospitals in specialised mental health services, equating to 11 FTE staff employed per 100,000 population. (See 'Chapter 2.3 Who is in the health workforce?' for more information).

## Spending

- An estimated \$7.6 billion, or \$332 per capita, was spent on mental health-related services in 2012–13. This increased by an annual average of almost 6.4% per capita in the 5 years to 2012–13.
- In 2012–13, \$4.6 billion, or \$201 per capita, was spent on state and territory specialised mental health services, including \$2.0 billion on public hospital services and \$1.8 billion on community mental health care.
- In 2013–14, \$971 million, or \$42 per capita, was spent on Medicare-subsidised services. This spending increased by 2.5% per capita over the 5 years to 2013–14.
- In 2013–14, \$753 million, or \$32 per capita was spent on mental health-related PBS/RPBS-subsidised prescriptions, mostly for subsidy of antipsychotic (57%) and antidepressant (36%) drugs.

## What is missing from the picture?

In response to the National Mental Health Commission's 2014 review of existing mental health services and programs, the Australian Government has outlined nine interconnected areas of proposed reforms to its funding and reform role based around six platforms: person-centred funding; a regional approach to service planning and integration; stepped care; early intervention; optimal use of digital technology; and strengthening national leadership. The development of a Fifth National Mental Health Plan (2016–2021), in cooperation with the states and territories, has also been proposed.

Given the systematic reform being proposed, it is anticipated that there will be fundamental changes to the way in which mental health programs and services are integrated and delivered in Australia in the future, and that these will create new and different information needs. The AIHW is currently working with the Australian Government and states and territories to put in place the requisite national mental health data collection infrastructure and the associated reporting mechanisms to be able to monitor and report on relevant data for the mental health system in this changing environment. For example, it is anticipated that data development work will be undertaken to improve the availability and quality of data on coercive practices (such as seclusion and restraint) and on consumer-related measures, including experiences of care.

## Where do I go for more information?

More information on mental health and mental health services is available at [mhsa.aihw.gov.au/home/](http://mhsa.aihw.gov.au/home/).

More information on national outcome measures is available at the Australian Mental Health Outcomes and Classification Network website at <http://amhocn.org/>.

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## 6.17 Health care use by older Australians

Australia's population is ageing, with an increase in both the number of older Australians and the proportion of the total population that is 65 and over. For example, in 2016 there is an estimated 3.7 million people aged 65 and over, up from 2.6 million in 2004 (ABS 2015a). This is expected to double to 7.5 million over the next 30 years (ABS 2013b). However, the change in proportion of older people is less dramatic, growing from 15% of the total population in 2016 to 20% in 2046, as Australia's total population will also grow.

Improved health and changing social attitudes are reshaping the circumstances of our older population, redefining what it means to be 'old' (see Box 6.17.1). Around 7 in 10 Australians aged 65 and over considered themselves to be in good health in 2014–15 (ABS 2015c) and many manage to live independently—with or without community-based supports—until their final days (AIHW 2015c). And good health is itself a resource, enabling older people to contribute socially, culturally and economically to the community.

### **Box 6.17.1: What do we mean by older Australians?**

For many purposes, 'older' is defined as aged 65 and over, based on the original qualifying age for the Age Pension. While this article also uses this convention, a person does not necessarily become frail or dependent at age 65 (or at any other nominated age).

Like the broader Australian population, the group of older people is far from uniform. This diversity, combined with ongoing changes in the health, economic and social circumstances faced by all Australians, results in a very complex range of differing circumstances and needs as we grow older.

Ageing will present challenges to the health care system, given the larger number of older people; the fact that many health conditions and associated disability become more common with age; and that older people are generally higher users of health services than younger Australians. For example, the *2015 Intergenerational report* (Treasury 2015) showed that Australian Government expenditure on the Pharmaceutical Benefits Scheme (PBS) in 2012–13, for a person aged 85 or older, was more than four times the average expenditure per person. More generally, the report showed that the ageing of the population is expected to contribute around 10% of the projected increase in Australian Government health spending per person over the next 40 years. The bulk of the remaining projected increase is attributed to non-demographic factors, such as increased consumption, higher wages for health workers, changes in disease patterns, and technological changes.

This article describes major types of health service use for those aged over 65; change over time; and differences in use for the age groups 65–74, 75–84 and 85 and over. It presents results from population surveys and collections on services provided to people aged 65 and over. For more information on data sources, see Box 6.17.2.

Other topics within this publication present information on the health of Australians aged 65 and over (see 'Chapter 3.5 Coronary heart disease', 'Chapter 3.8 Kidney disease', 'Chapter 3.12 Dementia', 'Chapter 3.16 Incontinence' and 'Chapter 5.6 Health and risks of the very old').

## Population growth of older Australians

From 30 June 2004 to 30 June 2013, the population aged 65 and over grew by an annual average of 3.0%, compared with an annual average growth of 1.7% for the whole population. While the population aged 65–74 grew by the largest number, the population aged 85 and over grew at a quicker rate (Table 6.17.1).

**Table 6.17.1: Estimated resident population growth of Australians aged 65 and over, 30 June 2004 to 30 June 2013**

|         |             | Population ('000) |              | Growth        |          |                |
|---------|-------------|-------------------|--------------|---------------|----------|----------------|
|         |             | 30 June 2004      | 30 June 2013 | Number ('000) | Per cent | Annual average |
| Males   | 65–74       | 658.9             | 919.9        | 261.0         | 39.6     | 3.8            |
|         | 75–84       | 395.2             | 471.9        | 76.7          | 19.4     | 2.0            |
|         | 85 and over | 89.8              | 155.2        | 65.4          | 72.8     | 6.3            |
|         | 65 and over | 1,143.8           | 1,547.0      | 403.1         | 35.2     | 3.4            |
| Females | 65–74       | 694.5             | 943.2        | 248.6         | 35.8     | 3.5            |
|         | 75–84       | 524.0             | 565.3        | 41.3          | 7.9      | 0.8            |
|         | 85 and over | 196.5             | 282.1        | 85.6          | 43.6     | 4.1            |
|         | 65 and over | 1,415.0           | 1,790.5      | 375.5         | 26.5     | 2.6            |
| Persons | 65–74       | 1,353.4           | 1,863.0      | 509.6         | 37.7     | 3.6            |
|         | 75–84       | 919.2             | 1,037.2      | 118.0         | 12.8     | 1.4            |
|         | 85 and over | 286.3             | 437.3        | 151.0         | 52.8     | 4.8            |
|         | 65 and over | 2,558.9           | 3,337.5      | 778.6         | 30.4     | 3.0            |

Source: AIHW analysis of ABS (2015c).

### Box 6.17.2: Data used in this feature article

This article presents results from:

- information on medical practitioner consultations from the Medicare Benefits Schedule (MBS) (DHS 2015)
- data on the use of hospitals from the AIHW's National Hospital Morbidity Database (NHMD) and the National Non-admitted Patient Emergency Department Care Database (NNAPEDCD) (AIHW 2015a, 2014)
- the Survey of Disability, Ageing and Carers (SDAC) (ABS 2013a)
- information on specialised public sector mental health services from the AIHW's National Community Mental Health Care Database (NCMHCD) and National Residential Mental Health Care Database (NRMHCD) (AIHW 2015b).

(continued)

### **Box 6.17.2 (continued): Data used in this feature article**

The MBS is an itemised schedule of fees for all medical services that are subsidised by the Australian Government as part of the Medicare Benefits Scheme (DHS 2015). These benefits are based on fees determined for each item (service) provided and, when benefits are paid, statistics are collected on each item.

The NHMD is a compilation of episode-level records from admitted patient data collection systems in Australian hospitals (AIHW 2015a). The episodes of admitted patient care collected in the NHMD are called ‘hospitalisations’ in this article. The data supplied are based on the NMDS for admitted patient care and include demographic and length of stay information, as well as data on diagnoses of the patients, the procedures they underwent in hospital, and external causes of injury and poisoning. The scope of the NMDS includes all public and private acute and psychiatric hospitals, free-standing day hospitals, and alcohol and drug treatment centres in Australia.

The NNAPEDCD is a compilation of episode-level data for presentations to selected emergency departments (EDs) in Australian public hospitals (AIHW 2014). The data supplied are based on National Minimum Data Set (NMDS) standards and include demographics, triage (urgency) category, waiting times for treatment, and length of time spent in the ED.

The SDAC was most recently conducted by the ABS in 2012 (ABS 2013a). Survey data are created from responses given by a sample of the Australian population. The SDAC data used here focus on the experience of health care use by Australians aged 65 and over who responded in the survey, and exclude people living in cared accommodation and other institutions, or experiencing long-term hospitalisations.

Information in this article on mental health services is taken from the NCMHCD and the NRMHCD (AIHW 2015b). The NCMHCD contains data on community mental health service contacts provided by government-funded community mental health care services, as specified by the Community Mental Health Care NMDS.

The NRMHCD contains data on episodes of residential care provided by government-funded residential mental health services, as specified by the Residential Mental Health Care NMDS.

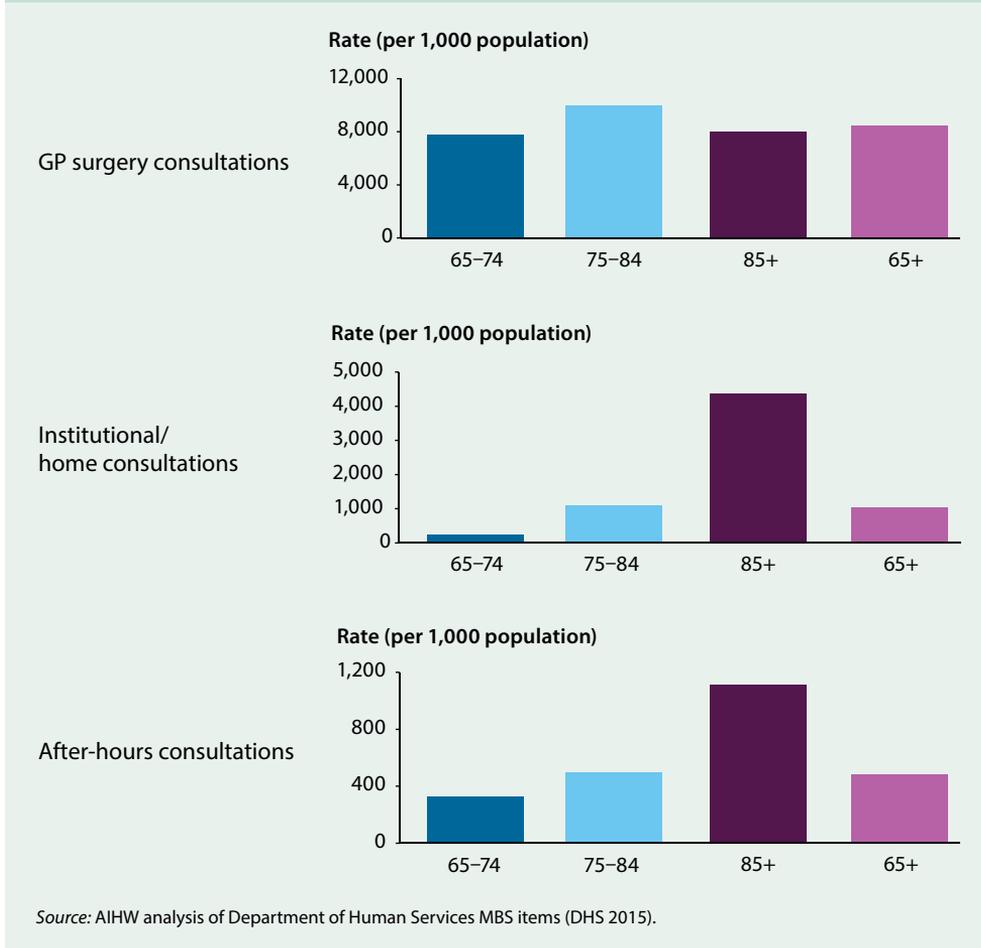
Care should be taken when comparing different information from data sources on a given topic, particularly where there is information on the SDAC and other data sources. For instance, the SDAC provides information on the number of people, whereas the NHMD provides information on the number of hospitalisations. As well, information on hospitalisations relates to different time periods compared with the SDAC. Data from health services tell a different story (for example, services provided or numbers of hospitalisations) compared with the story that can be told from the SDAC (for example, people’s experience of being admitted to hospital during the survey period).

## General practitioner consultations

In 2014–15, there were almost 35 million general practitioner (GP) attendances claimed through Medicare by people aged 65 and over (28% of the total 123.1 million). Nearly three-quarters (24.5 million) of all GP consultations for older people were brief or standard consultations of less than 20 minutes in duration and took place during normal hours at the GP's consulting rooms. However, for the oldest age group, a large proportion of consultations took place either at home or within an institutional setting (with residential aged care accounting for the majority).

Attendance rates per 1,000 population showed little variation between the age groups for consultations at a GP's surgery, but rates for institutional or home consultations and after-hours consultations both increased with age (Figure 6.17.1).

**Figure 6.17.1: General practitioner consultations, by setting, age-specific usage rates, people aged 65 and over, 2014–15**



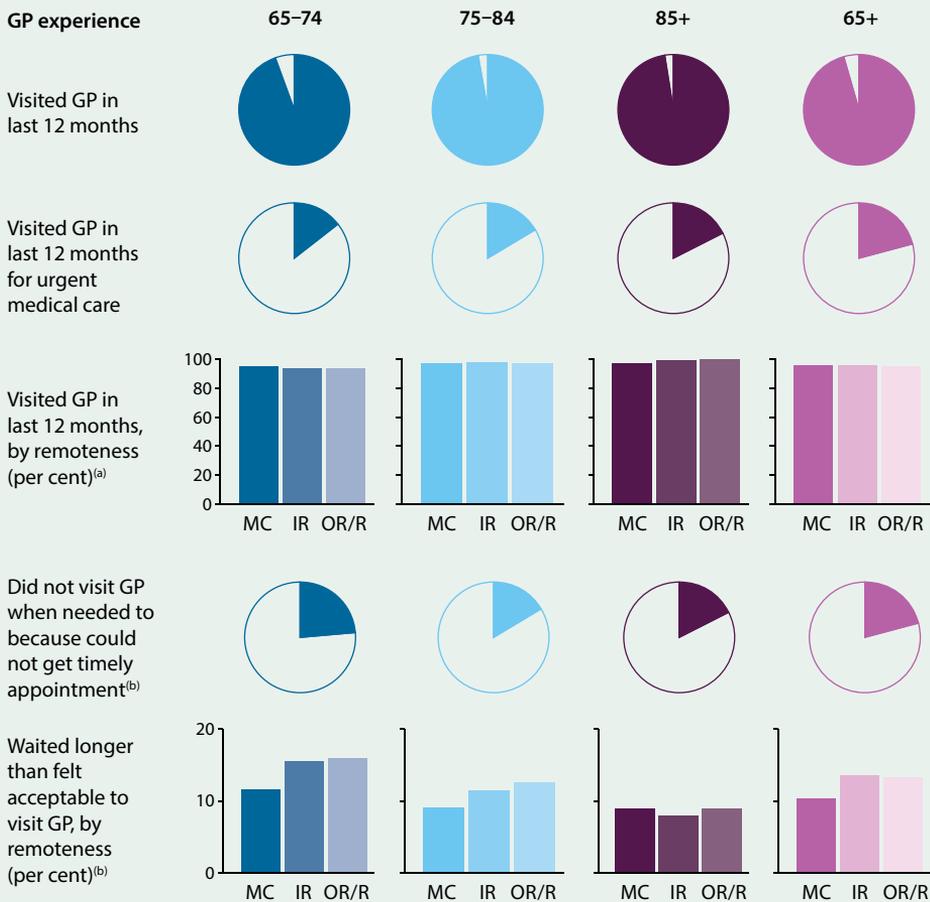
## Experience of GP use

According to the SDAC, in 2012 most people aged 65 and over had visited a GP in the last 12 months. The likelihood of visiting a GP at all, or for urgent medical care, increased slightly with age (Figure 6.17.2).

People aged 65–74 were more likely to report not being able to get a timely appointment as a reason for not visiting a GP. This age group also reported waiting longer than they felt was acceptable for a GP appointment, in all remoteness areas.

There were few differences between the proportions of men and women who had visited a GP in the last 12 months in 2012. Overall, 95% of men, and 98% of women aged 65 and over, had visited a GP.

**Figure 6.17.2: Experience of general practitioner consultations, people aged 65 and over, 2012**



(a) MC: Major cities; IR: Inner regional; OR/R: Outer regional and Remote.

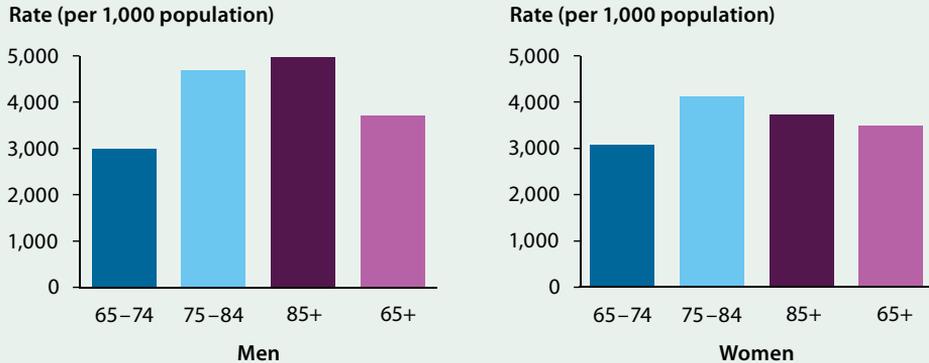
(b) For most recent visit.

Source: AIHW analysis of 2012 ABS Survey of Disability, Ageing and Carers.

## Medical specialist consultations

Older people accounted for 12.4 million specialist attendances claimed through Medicare in 2014–15—43% of all such attendances in that year (of which there were 29 million). Age-specific usage rates increased with age among men, but among women, usage rates were slightly higher for those aged 75–84 than for those aged 85 and over (Figure 6.17.3).

**Figure 6.17.3: Medical specialist attendances claimed through Medicare, age-specific usage rates by sex, people aged 65 and over, 2014–15<sup>(a)</sup>**



(a) Medical specialists as defined by the Medical Benefit Schedule Broad Type of Service for Specialist attendances, 'medical specialists'.

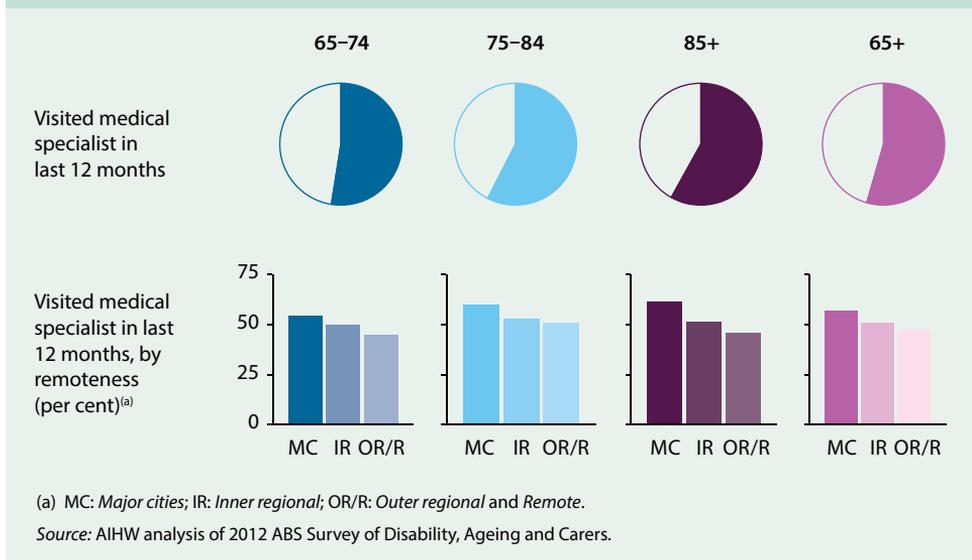
Source: AIHW analysis of Department of Human Services MBS items (DHS 2015).

## Experience of medical specialist use

The proportion of people in 2012 who had visited a medical specialist in the last 12 months increased with age, according to the SDAC (Figure 6.17.4). Across all age groups, people living in *Major cities* were most likely to have visited a specialist in the last 12 months, with the likelihood of visits declining as remoteness increased.

Men aged 65 and over were somewhat more likely to have visited medical specialists in the last 12 months in 2012 (58%, compared with 52% of women in the same age group). Similar differences were also evident between men and women within each age group—for instance, 64% of men and 52% of women aged 75–84 had visited a medical specialist.

**Figure 6.17.4: Experience of medical specialist use, people aged 65 and over, 2012**



## Experience of dentist use

The proportion of people in 2012 who had visited a dentist in the last 12 months declined with age, according to the SDAC (Figure 6.17.5). Within each age group, this also declined as remoteness increased: people aged 85 and over living in *Outer regional* and *Remote* areas were the least likely of any of these age groups and regions to have visited a dentist in the past 12 months. For those who had not visited a dentist, cost was more likely to be the main reason among the youngest age group.

Among those people who had visited a dentist, in all age groups, the majority had last visited a private dentist. For the small proportion of people who had visited a public dental clinic, wait time varied greatly by age: people aged 75–84 were the least likely to have waited 6 or more months to visit a public dental clinic, while those aged 85 and older were the most likely.

Approximately 51% of men and women aged 65 and over had visited a dentist in the last 12 months in 2012. There were differences between men and women within each age group, but overall, the proportions decreased with age for both genders: 54% of men and 58% of women aged 65–74 had visited a dentist, compared with 44% and 38% for people aged 85 and over.

Figure 6.17.5: Experience of dentist use, people aged 65 and over, 2012



(a) MC: Major cities; IR: Inner regional; OR/R: Outer regional and Remote.

(b) Excludes people who visited a dentist, or did not state main reason for not visiting a dentist.

(c) For most recent visit.

(d) Excludes people who did not visit a dentist.

(e) Excludes people who did not visit a public dental clinic.

Source: AIHW analysis of 2012 ABS Survey of Disability, Ageing and Carers.

## Hospitals

### Emergency department presentations

As with all Australians, visits by Australians aged 65 and over to EDs are often the initial step on a pathway to care as an admitted patient or for other specialised care. Most large public hospitals have an ED, whereas smaller hospitals are less likely to have an ED.

Information from the NNAPEDCD demonstrates that there were 1.4 million presentations of Australians aged 65 and over to EDs in 2013–14, representing 19.6% of all ED presentations that year. Of presentations by older Australians, 576,900 were for people aged 65–74, 516,400 for 75–84 year olds and 317,500 for people aged 85 and over.

From 2004–05 to 2013–14, there was an average increase of 6.5% per year in ED usage by Australians aged 65 and over. ED presentations by people aged 85 and over grew the fastest, by 8.3% per year, resulting in ED presentations for this older group more than doubling over the 10 years, from 155,000 to 317,500 (compared with the annual average growth of 6.9% for 65–74 year olds and 5.2% for 75–84 year olds).

In all the years between 2004–05 and 2013–14, there were more presentations to EDs by females aged 65 and over than males. For those aged 65–74, there were more male than female presentations to EDs. In contrast, there were more presentations of females aged 75–84 and 85 and over to EDs than of males.

In 2013–14, the top three diagnoses recorded for Australians aged 65 and over presenting to EDs were *Pain in throat and chest*, followed by *Abdominal and pelvic pain* and *Syncope and collapse* (fainting). *Pain in throat and chest* was the most common diagnosis for patients aged 65–74, followed by *Abdominal and pelvic pain*, and *Cellulitis*. *Pain in throat and chest* was also the most common diagnosis for patients aged 75–84, followed by *Syncope and collapse* and *Abdominal and pelvic pain*. The top three diagnoses for patients aged 85 and over were *Other symptoms and signs involving the nervous and musculoskeletal systems* (mostly for tendency to fall), *Syncope and collapse*, and *Pain in throat and chest*.

EDs in hospitals use ‘triage categories’ to indicate the urgency of a patient’s need for medical and nursing care (see Glossary). The overall distribution of triage categories assigned to Australians aged 65 and over on presentation to EDs was similar in 2004–05 and 2013–14:

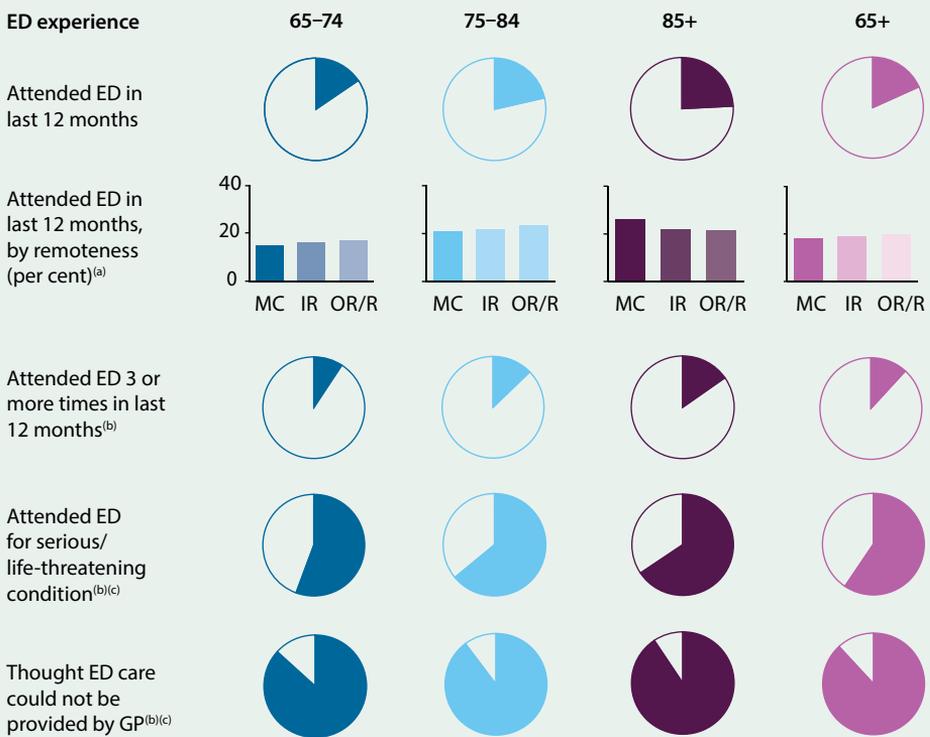
- *Resuscitation* (immediate, within seconds)—represented 1.2% (16,500), of presentations in this age group in 2013–14 and 1.5% in 2004–05. The number of presentations grew, on average, by 3.9% per year, with the largest average growth (6.5% per year) being those aged 85 and over.
- *Emergency* (within 10 minutes) care—represented 16.9% (237,700) of presentations in this age group in 2013–14 and 13.8% in 2004–05. The number of presentations grew, on average, by 8.9% per year, with the largest average growth (11.3% per year) being for those aged 85 and over.
- *Urgent* (within 30 minutes) care—represented the largest proportion (41.0%, or 577,600 presentations) of presentations in this age group in 2013–14 and 38.3% in 2004–05. The number of presentations grew, on average, by 7.3% per year, with the largest average growth (9.5% per year) being for those aged 85 and over.
- *Semi-urgent* (within 60 minutes)—represented 32.9% (462,900) of presentations in this age group in 2013–14 and 37.1% in 2004–05. The number of presentations grew, on average, by 5.1% per year, with the largest average growth (6.2% per year) being for those aged 85 and over.
- *Non-urgent* (within 120 minutes)—represented 8.1% (114,400) of presentations in this age group in 2013–14 and 9.2% in 2004–05. The number of presentations grew on average at 5.0% per year, with the largest average growth (6.7% per year), being for those aged 85 and over.

## Experience of emergency department use

According to the SDAC, the proportion of people in 2012 who reported they had attended an ED in the last 12 months increased for each older age group (Figure 6.17.6). People aged 65–74 were less likely to have attended an ED in the last 12 months, compared with their older counterparts, regardless of geographical region. People aged 85 and over living in *Major cities* were the most likely to have attended an ED. The likelihood of attending the ED three or more times, or of attending for a serious or life-threatening situation, also increased with age.

A similar proportion (18%) of men and women aged 65 and over had attended an ED in the last 12 months. However, 28% of men aged 85 and over reported attending an ED, compared with 22% of women in the same age group. Among people who had attended an ED, approximately 60% of both men and women aged 65 and over reported the seriousness of their condition as the reason. The likelihood of this was highest among men aged 85 and over (69%).

**Figure 6.17.6: Experience of emergency department use, people aged 65 and over, 2012**



(a) MC: *Major cities*; IR: *Inner regional*; OR/R: *Outer regional and Remote*.

(b) Excludes people who did not attend emergency department.

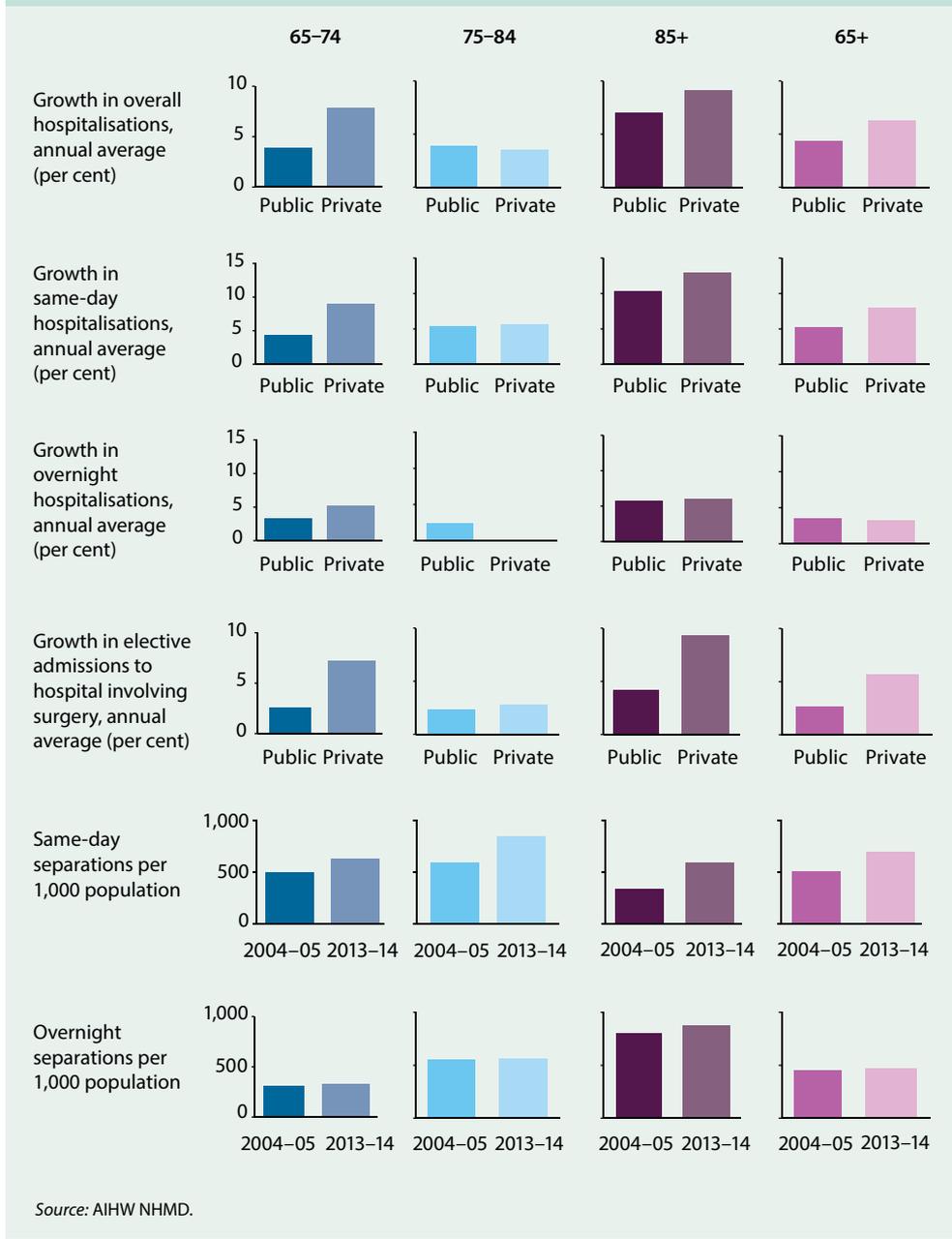
(c) For most recent visit.

Source: AIHW analysis of 2012 ABS Survey of Disability, Ageing and Carers.

# Hospitalisations

The AIHW's NHMD shows that, compared with 10 years ago, Australians aged 65 and over accounted for a greater proportion of all hospitalisations—increasing from 35% of all hospitalisations in 2004–05 to 40% in 2013–14. Hospitalisations for older Australians increased on average by 5.2% per year, from 2.5 million hospitalisations in 2004–05 to 3.9 million in 2013–14. The younger two age groups increased by 3.9% each, while hospitalisations for people aged 85 and over increased on average by 7.0% per year (Figure 6.17.7).

**Figure 6.17.7: Hospitalisations, selected measures, 2004–05 to 2013–14**



Source: AIHW NHMD.

The yearly increase in hospitalisations of people aged 65 and over in private hospitals was greater, at 6.3%, increasing from nearly 1 million hospitalisations in 2004–05 to 1.7 million in 2013–14. The increase was greatest for people aged 85 and over (9.1%) (Figure 6.17.7).

Patients admitted to hospitals can be discharged on the same day as admission, or go on to stay overnight. For Australians aged 65 and over, same-day and overnight hospitalisations increased, on average, by 6.6% and 3.4% a year, respectively, between 2004–05 and 2013–14. Same-day separations from private hospitals increased by 8.0% per year, compared with 5.3% for public hospitals.

The increases in hospitalisations in the 10 years to 2013–14 were only partly explained by an increased population of Australians aged 65 and over (Figure 6.17.7). Rates of same-day hospitalisations for older Australians increased over the 10 years for each age group, whereas overnight hospitalisation rates in all age groups were about the same in 2004–05 and 2013–14.

In 2004–05 and 2005–06 there were more female than male same-day hospitalisations, but from 2006–07 to 2013–14, there were more male than female same-day hospitalisations.

From 2004–05 to 2013–14 there were more female than male overnight hospitalisations for all Australians aged 65 and over. There were more male overnight hospitalisations for Australians aged 65–74 than female hospitalisations.

Most Australians aged 65 and over are discharged to their place of usual residence after their hospitalisation. However, hospitalisations for older Australians may also end with a transfer to residential aged care. Excluding people for whom residential aged care is already their usual place of residence, these transfers increased by 2.4% per year (and therefore at a lower rate than growth in hospitalisations overall for this age group), from 55,500 in 2004–05 to 68,700 in 2013–14. In 2004–05, 85% of these transfers were from public hospitals, increasing to 89% in 2013–14.

For Australians aged 65 and over, there was a slight increase (0.6% per year on average) in the number of deaths in hospital, from around 56,200 in 2004–05 to 59,200 in 2013–14. This compares with average annual growth in deaths of 1.4% from 2004 to 2013.

Between 2004–05 and 2013–14, the average length of stay in hospital for people aged 65 and over declined for both public hospitals (from 5.3 to 4.0 days) and private hospitals (from 3.6 to 2.8 days) (including same-day and overnight hospitalisations). The average length of stay for overnight separations for all Australians aged 65 and over also declined, from 9.4 to 7.3 days in public hospitals, and from 7.4 days to 6.6 days in private hospitals. The largest decline in the average length of stay was for those aged 85 and over in public hospitals, from 11.5 days in 2004–05 to 8.1 days in 2013–14.

## Type of care received in hospital

For Australians aged 65 and over, acute care (*medical, surgical and other*) was the most common broad type of care provided in 2013–14, accounting for 92% of hospitalisations for this age group (65–74, 93%; 75–84, 91%; 85 and over, 86%) (Figure 6.17.8). After acute care, rehabilitation was the next most common form of hospital admitted patient care received by older Australians, especially for the 85-and-over group.

**Figure 6.17.8: Hospitalisations for Australians aged 65 and over, by top five ranked broad types of care, 2013–14**

|   | 65–74                 | 75–84                    | 85+                      | 65+                   |
|---|-----------------------|--------------------------|--------------------------|-----------------------|
| 1 | Acute medical<br>54%  | Acute medical<br>59%     | Acute medical<br>62%     | Acute medical<br>57%  |
| 2 | Acute Surgical<br>24% | Acute Surgical<br>22%    | Acute Surgical<br>19%    | Acute Surgical<br>22% |
| 3 | Acute other<br>15%    | Acute other<br>10%       | Rehabilitation<br>8%     | Acute other<br>12%    |
| 4 | Rehabilitation<br>5%  | Rehabilitation<br>6%     | Acute other<br>6%        | Rehabilitation<br>6%  |
| 5 | Palliative care<br>1% | GEM <sup>(a)</sup><br>1% | GEM <sup>(a)</sup><br>2% | Palliative care<br>1% |

(a) Geriatric evaluation and management.

Source: NHMD.

In 2013–14, the main reasons older Australians of each age group (65–74, 75–84 and 85 and over) experienced same-day hospitalisation were for procedures such as care involving dialysis; use of rehabilitation services; radiotherapy; chemotherapy; and palliative care (1.2 million of the total 2.3 million same-day hospitalisations).

Overnight hospitalisations presented a different pattern of care for Australians aged 65 and over in 2013–14. The main reason for hospitalisation of older Australians of each age group (65–74, 75–84 and 85 and over) was *Diseases of the circulatory system*, representing 14.7% (88,800 hospitalisations), 16.5% (96,700) and 16.6% (63,500) respectively. *Injury, poisoning and certain other consequences of external causes* represented an increasing proportion of care as older Australians' age increased: 8.0% (48,600) for those aged 65–74 years, 9.5% (55,600) for 75–84 years and 13.6% (52,000) for 85 and over.

## Elective surgery

Elective hospitalisations for surgery among Australians aged 65 and over also increased between 2004–05 and 2013–14, by 4.6% per year on average (from 512,500 in 2004–05 to 768,500 in 2013–14), which was faster than the growth of this population (3.0%). Most of this increase occurred in private hospitals, growing on average by 5.6% per year (from 322,000 in 2004–05 to 527,600 in 2013–14). Elective surgery hospitalisations in public hospitals also increased, by 2.6% per year. All three age groups' rates of elective hospitalisation for surgery grew faster in private hospitals than in public hospitals (Figure 6.17.7). For both public and private hospitals, this growth was fastest for people aged 85 and over (9.3% for private hospitals, and 4.2% for public hospitals).

From 2004–05 to 2013–14, for Australians aged 65 and over, the average annual growth of male elective hospitalisations for surgery was 4.8% (from 254,500 in 2004–05 to 389,600 in 2013–14), while females grew at 4.4% (from 258,000 in 2004–05 to 378,800 in 2013–14). In particular, hospitalisations for males aged 85 and over grew at 8.5% per year, while those for females grew at 7.2% per year.

For Australians aged 65 and over, the three most common procedures in 2004–05 and 2013–14 were *Cataract extraction*, followed by *Cystoscopy* and *Total knee replacement*. This was also the pattern for the 65–74 and 75–84 age groups, although, for Australians aged 85 and over, the top three procedures were *Cataract extraction*, *Cystoscopy*, and then *Total hip replacement*.

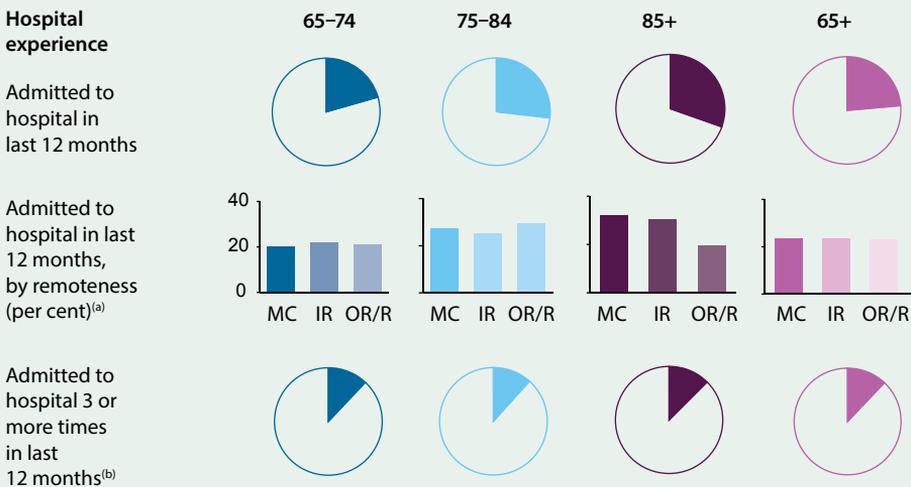
## Experience of hospitalisations

In 2012, the likelihood of being admitted to hospital in the last 12 months increased with age (Figure 6.17.9).

The hospital admission rates were similar across all remoteness areas for all people aged 65 and over. However, for *Outer regional* and *Remote* areas, people aged 75–84 were most likely to have been admitted to hospital in the last 12 months, and people aged 85 and older least likely.

A slightly higher proportion of men aged 65 and over had been admitted to hospital in the last 12 months (25%, compared with 22% of women). This was also the case within each age group: 21% of men aged 65–74 had been admitted to hospital (compared with 20% of women in the same age group), rising to 36% of men aged 85 and over (compared with 26% of women).

**Figure 6.17.9: Experience of hospital admissions, people aged 65 and over, 2012**



(a) MC: Major cities; IR: Inner regional; OR/R: Outer regional and Remote.

(b) Excludes people who were not admitted to hospital.

Source: AIHW analysis of 2012 ABS Survey of Disability, Ageing and Carers.

## Specialist mental health services

Mental health care services can be delivered in a variety of settings, from hospitals and residential facilities to community-based care and general and specialist practice. The AIHW collates data on state and territory specialised community mental health and on state and territory specialised residential mental health services. Generally, people aged 65 and over use mental health-related services at a lower rate than the total population.

Overall, older Australians accounted for around 8.7% of community mental health service contacts in 2013–14, and these service contacts have increased by 4.3% per year on average since 2006–07. More than half of all older people's service contacts in 2013–14 were among people aged 65–74 (54%, or 412,000), with people aged 75–84 accounting for 33% (248,000 contacts) and people aged 85 and over 13% (99,000 contacts).

Between 2006–07 and 2013–14, the rate of community mental health care service contacts for people aged 65 and over increased by an average of 0.9% per year—to 224 per 1,000 population, compared with 374 per 1,000 for the total population. For men aged 65–74, the rate of service contacts increased by 2.7% per year, and by 1.0% for women. The rates changed less for people aged 75–84 (0.1% for men and 0.7% for women), and those for 85 and over increased 0.5% for men and declined 0.1% for women.

Residential mental health care services offer specialist mental health care on an overnight basis in a domestic-like environment. Australians aged 65 and over comprised a small proportion of all episodes of residential mental health care, representing 2.9% (201 episodes, or 5.9 per 100,000 population) in 2013–14, compared with 29.9 per 100,000 of the total population.

There were around 163,000 people aged 65 and over who received Medicare-subsidised mental health-related services in 2013–14, representing 8.7% of all people who received such services. On average, older people received 4.3 services across all provider types (psychiatrists, GPs, psychologists and other allied health professionals—note that people were counted only once in the total, but may have received a service from more than one provider type during the year), compared with 4.7 services for the total population.

In 2012–13, people aged 65 and over accounted for over 22,000 mental health-related ED occasions of service. This represented 11% of all mental health-related occasions, while overall, older people accounted for 20% of all ED occasions of service.

There were 1.1 million people aged 65 and over for whom a mental health-related prescription was dispensed in 2013–14, accounting for 29% of all people. Concerns have been expressed about the higher observed prescription rates of mental health-related medications for older Australians, particularly for antipsychotic medications, which may be being over-prescribed to control challenging behaviours (NPS Medicinewise 2013).

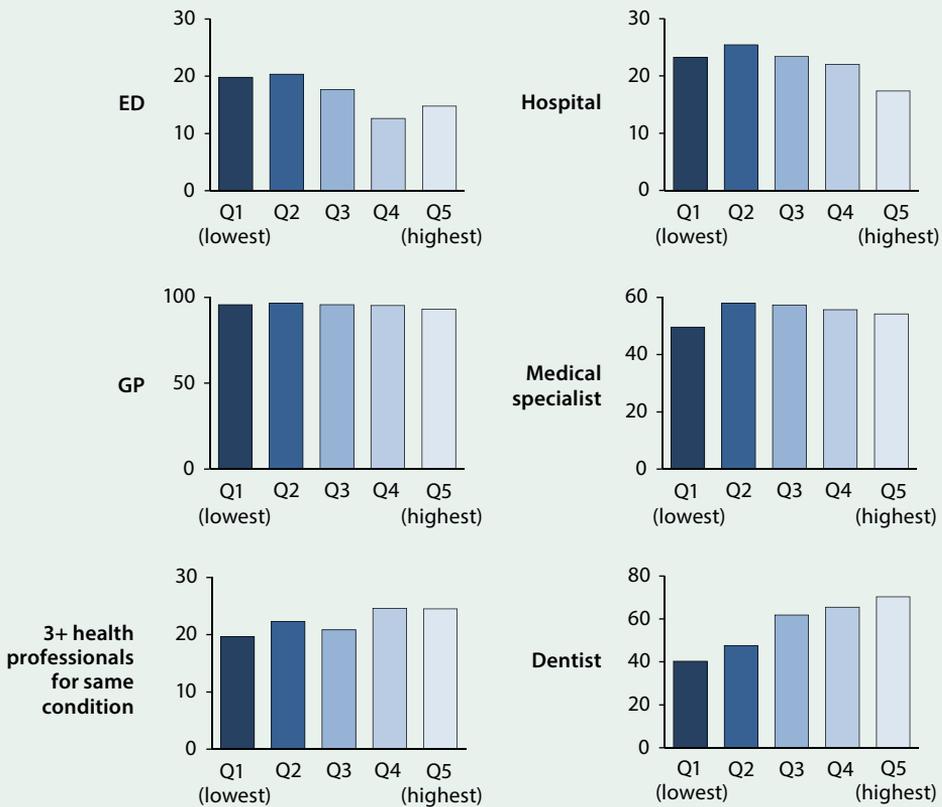
## The effect of income levels on health care use

For Australians aged 65 and over, income generally decreases with age: according to the ABS 2013–14 Survey of Income and Housing, median gross weekly income declined by age for each age group from age 35–44 onwards (ABS 2015b).

Detailed analysis of health care use, by age group and income group, is hampered by the small numbers in the SDAC, particularly among people aged 85 and over. However, analysis for the broader group of people aged 65 and over showed that hospital and ED use decreased as household income levels increased, but the likelihood of visiting a medical specialist or dentist, or of consulting multiple health professionals for one condition, was higher among people living in higher-income households (Figure 6.17.10).

The proportion of people with private health insurance also decreased as age increased. Almost two-thirds (59%) of people aged 65–74 had private health insurance, compared with 51% of people aged 75–84, and 42% of people aged 85 and over.

**Figure 6.17.10: Health care use by income quintile, people aged 65 and over, 2012**



Source: AIHW analysis of 2012 ABS Survey of Disability, Ageing and Carers.

### What is missing from the picture?

Most administrative data sources on health care use are based on individual episodes of care and are maintained separately, so it is not possible to identify multiple episodes for individuals in any data set, or across data sets. Linked data would enable patient pathways to be mapped on an individual level to understand how patients interact with the components of the health and aged care systems. This would provide more accurate information on the effectiveness and appropriateness of the care older Australians receive through the health and aged-care systems. In addition, it would allow diverse populations with specific characteristics to be examined in more depth—such as the health care use of people from non-English speaking backgrounds or people with particular health conditions.

Some research—even large-scale surveys such as the SDAC—excludes older people on certain grounds. Frail older people, older people with comorbid conditions, or older people not living in the community are frequently excluded. This limits the data available, and the extent to which the findings can be generalised.

## Where do I go for more information?

Where appropriate, the AIHW's work reports on older age groups, highlighting age-related patterns in health care use. More information about older Australians is available at [www.aihw.gov.au/ageing/](http://www.aihw.gov.au/ageing/). The report *Older Australia at a glance* (AIHW forthcoming) and other publications are available for free download.

Information about hospital use among Australians aged 65 and over is available at [www.aihw.gov.au/hospitals/](http://www.aihw.gov.au/hospitals/). The reports *Australian hospital statistics 2013–14: emergency department care* and *Admitted patient care 2013–14: Australian hospital statistics* are available for free download.

The report *Mental Health Services—in brief 2014* provides an overview of mental health services delivered in Australia, and it is accompanied by a comprehensive online portal of information at [mhsa.aihw.gov.au/](http://mhsa.aihw.gov.au/).

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## 6.18 End-of-life care

The inevitable human experience of dying has changed substantially in Australia over the last century. In the early 1900s, dying at home was common. While advances in medical interventions throughout the 20th century have substantially contributed to increased life expectancy for all Australians, these interventions have also had an impact on the dying experience, shifting a large proportion of end-of-life care into institutions such as hospitals and residential aged care facilities. Whether this institutional approach to dying can deliver what people want at the end of their life is a conversation gaining importance in Australia.

Emeritus Professor Ian Maddocks, Senior Australian of the Year 2013 and eminent palliative care specialist, has observed that ‘Sometimes I think it’s better to step back and say you don’t need all that procedural stuff, what you need is good care now. You are going to die. Let’s do it well.’ This concept of ‘dying well’ (Jones et al. 2013)—that is, that the end-of-life care experience is positive and meets the needs and expectations of the person dying and of their loved ones—is the focus of this feature article.

The terms ‘end-of-life care’ and ‘palliative care’ tend to be used interchangeably. However, they are different concepts. The Australian Commission on Safety and Quality in Health Care (the ACSQHC) recently released a national consensus statement titled *Essential elements for safe and high-quality end-of-life care* (ACSQHC 2015), which defines the broader end-of-life care and palliative care concepts (Box 6.18.1). Importantly, end-of-life care typically refers to the 12 months prior to death, in contrast to palliative care which is typically care specifically tailored to assist with the effects of life-limiting illnesses. The ACSQHC makes note of two different components of the end-of-life definition: likely to die in the next 12 months (involving periods of exacerbated illness that may be reversible); and likely to die in the short term (within days to weeks), where clinical deterioration is likely to be irreversible. In contrast, palliative care may not be limited to the last 12 months of life—the need for palliative care may be episodic over an extended period, depending on the illness.

Both end-of-life care and palliative care have been the subject of a number of state and territory and Australian government consultations and inquiries in recent years. The most recent of these consultations occurred in 2015, when the Victorian Parliament’s Legal and Social Issues Committee invited Victorians to have their say on end-of-life care and the services that they want to support them at their end of life (Parliament of Victoria 2015).

### Box 6.18.1: Definitions of end-of-life care and palliative care

**End-of-life care:** includes physical, spiritual and psychosocial assessment, care and treatment delivered by health professionals and ancillary staff. It also includes the support of families and carers, and care of the patient's body after their death. People are 'approaching the end of life' when they are likely to die within the next 12 months. This includes people whose death is imminent (expected within a few hours or days) and those with:

- advanced, progressive, incurable conditions
- general frailty and co-existing conditions that mean that they are expected to die within 12 months
- existing conditions, if they are at risk of dying from a sudden acute crisis in their condition
- life-threatening acute conditions caused by sudden catastrophic events.

**Palliative care:** an approach to treatment that improves the quality of life of patients and their families facing life-limiting illness, through the prevention and relief of suffering. It involves early identification and impeccable assessment and treatment of pain and other problems (physical, psychosocial and spiritual).

Source: ACSQHC 2015.

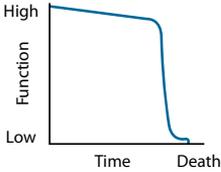
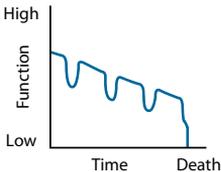
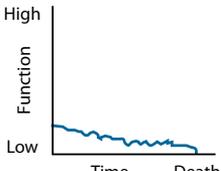
The need for appropriate end-of-life care and palliative care is important given that Australia's population is both growing and ageing. The proportion of the population aged 65 and over is forecast to increase from 12% (2.1 million people) in 1996 (ABS 1998) to around 15% (or 3.7 million people) in 2016 (ABS 2015a). By 2031, the proportion of people aged over 65 is forecast to be around 19% (or 5.7 million), and could be as high as 25% (between 9 and 12 million) by 2066 (ABS 2013). The vast majority of Australians who died in 2013 were people aged 65 and older (81%, or 119,000 people), with a further 8.9% and 4.6% aged 55–64 and 45–54 respectively (ABS 2014). Therefore, the number of people who will die each year will rise substantially over the next 50 years, and more people will die due to chronic progressive diseases, increasing the need for an end-of-life care system that meets the needs and expectations of individuals and their families.

## Pathways to death

Death can either be caused by sudden, unexpected events or be the result of longer term chronic health conditions. Sudden death events include accidents, infections, assault, anaphylactic shock, poisoning, suicide and unintended adverse consequences or mishaps from medical interventions. *Ischaemic heart disease* was the leading underlying cause of death in Australia in 2013, followed by *Dementia and Alzheimer disease*, and *Cerebrovascular diseases* (which includes stroke) (ABS 2015b). *Trachea, bronchus and lung cancer* and *Chronic lower respiratory diseases* made up the other top five leading underlying causes of death in Australia in 2013. While it is important to recognise that these sudden, unexpected circumstances are a type of pathway to death, end-of-life discussions are commonly associated with Australians experiencing a chronic and progressive decline in health and function associated with older age.

End-of-life experiences that involve chronic conditions and deterioration of body and/or cognitive function are unique to each individual, but typically follow three broad patterns, often characterised by the type of illness or condition encountered at the end of life (Table 6.18.1).

**Table 6.18.1: Types of chronic disease trajectories**

| Pattern of illness leading to death   | Functional capacity   | Time period  |   |
|---|---|--|---|
| Short period of evident decline (e.g. Cancer).  |  | Body function declines rapidly and shows no sign of recovery.  | Relatively short time period between onset of functional decline and death. |
| Long-term limitations with intermittent serious episodes (e.g. heart and lung failure). |  | Body function slowly declines with intermittent sudden decline but some recovery after each episode. | Longer time period between onset of condition and death.                    |
| Prolonged decline (e.g. frailty and dementia).  |  | Body function low with further decline progressing slowly over time.                                 | Longest time period of all chronic conditions.                              |

Source: Adapted from Lynne et al. 2003.

The pathway or trajectory that defines a person's end of life is integral to understanding the concept of 'dying well'. For example, those experiencing a sudden death will have a vastly different end-of-life care experience to a person who gradually approaches old age and eventually dies from a chronic illness. The resultant diversity in individual needs and expectations poses challenges for the design of efficient and effective health and welfare services that deliver quality end-of-life care.

## End-of-life care services in Australia

Australia's health system is well regarded internationally, ranking fourth overall behind the United Kingdom, Switzerland and Sweden in a recent Commonwealth Fund comparison (Davis et al. 2014). A recent international study ranked quality of death for Australians second out of 80 comparison countries, judged across a range of palliative care measures, including palliative care and health care environment; human resources; affordability; quality of care; and community engagement (The Economist 2015). However, there is also a perception that Australian end-of-life care services are fragmented and difficult to navigate for patients, their carers and families during an end-of-life journey that can be emotionally confronting and stressful (ACSQHC 2015).

Australian end-of-life care services are delivered across various government portfolios at both the federal and state and territory levels, with a range of government-subsidised and regulated services provided to people as they near their end of life. While many services are directly funded by the Australian Government, such as aged-care and Medicare-subsidised

services, states and territories all have different approaches to planning, investment and delivery of their publicly funded services, employ different local service delivery practices, and therefore have differently structured health care systems. The private and not-for-profit sectors are engaged differently in each state and territory to provide a range of health-related services. States and territories also have varying demographic and geographical remoteness profiles and, consequently, varying demands for particular types of services.

End-of-life care is provided in many health care settings in Australia, including neonatal units, paediatric services, public and private acute hospitals, general practices, and residential and community aged care services. Support services are also delivered to people in their own homes. Services targeted towards older Australians provide the majority of end-of-life care, and tend to be the focus of discussion about system-wide improvements; however, around 20% of deaths each year are for people aged under 65. Depending on the illness trajectory, this 20% may require acute medical care (for example, admitted patient care in hospital care, which adds the full spectrum of health services to the end-of-life care discussion). Specialist palliative care services, a component of end-of-life care services, also operate from a variety of settings, including specialist admitted patient consulting services; specialist admitted patient settings; hospices; and community-based specialist services.

A range of health professionals, other workers, carers and volunteers provide end-of-life and palliative care services. These include:

- nurses, both registered and non-registered, with and without specialised palliative care qualifications
- medical practitioners, including specialist palliative care physicians, hospital-based specialist palliative care trainees, other medical specialists, hospital-based non-specialists and general practitioners
- other health professionals, including psychologists, physiotherapists, occupational therapists, pharmacists
- social workers, spiritual and pastoral carers
- other occupations, including personal care assistants, chaplains, massage therapists and music therapists
- informal carers (such as relatives, friends and neighbours who provide care on an unpaid basis)
- volunteers.

## End-of-life care service activity in Australia

The end-of-life experience for Australians has become increasingly institutionalised over the last century, with only around 20% of Australians dying outside of hospital or residential aged care in the first decade of the 21st century (Broad et al. 2013)—one of the lowest rates in the developed world. While the majority of Australians report that they want to die at home if faced with a terminal illness (Foreman et al. 2006), the reality when the time comes can be vastly different. As Australians approach the end of their lives, they often confirm where they want to die, or sometimes make a change to their preferred place of death. However, even when a person has made their preferred place to die known to others, only around half of people have their preferences met. Similar results have been found across the developed world (Aoun et al. 2013; Burge et al. 2015; Hunt et al. 2014).

Information about where Australians die, their preferred place of death and the end-of-life support they received is fragmented, because data are not standardised or collated into a single source. Rather, information is typically collected and published according to the service individuals were receiving at their time of death, with variation among the way service types record this information. While an overall picture of the type, amount, and quality of end-of-life care Australians receive is not currently possible, nonetheless, data are available to describe the broad characteristics of end-of-life care at the time of death across Australia.

## Aged care services

For permanent residents of aged care facilities, the most common reason for separation from the facility for their last care episode was due to death, accounting for around 95%, or 54,000 people, in 2013–14 (AIHW 2015c). Less than half of these people had stayed for less than 12 months in the residential care facility. Around 15% of deaths in residential aged care facilities involved patients who were accessing palliative care services in 2013–14 (AIHW 2015b). While data are available on the proportion of services meeting national standards, there are no national level data on the quality of patient-assessed end-of-life care across the aged care service sector.

## Admitted patient care

There were over 60,000 public hospital separations that ended in the death of the patient and an additional 13,000 in private hospitals in 2013–14 (AIHW 2015a). This equates to around half of all deaths in Australia occurring in hospitals, with rates relatively unchanged over the last decade (AIHW 2014). While there are detailed data regarding hospital stays in the last year of life (for example, O'Connell et al. 2014), little is known about the patient's perspective of their end-of-life care experience.

## Palliative care services

Hospital separations with a palliative care component (about 57,000 separations) account for less than 0.6% of all hospital separations. However, they make up nearly one-third (32%) of all deaths in hospitals (AIHW 2015a). General practitioners provided an estimated 140,000 palliative care-related services in 2012–13, with an additional 63,000 MBS-subsidised services provided by palliative medicine specialists (AIHW 2014).

## Cost of end-of-life care

As previously noted, end-of-life care services are provided by all levels of government and cross a number of government portfolios. The national costs of hospital and residential aged care services in the last year of life have been estimated to be in the order of \$2.4 billion and \$2.3 billion respectively, substantially higher than the estimated \$77 million spent on community-based care (Swerissen et al. 2014). Observations about the cost of palliative care services have a similar theme, with estimates of around \$7,700 per episode of subacute hospital care compared with \$2,500 for community-based care (SCARC 2012).

As with other aspects of the end-of-life care discussion, data on the cost–benefit of providing home- or community-based care are mixed and difficult to interpret. It is known that hospital admissions increase in the last year of life, with an average of nearly eight admissions per person, for an average total of 44 care days, in the final year of life (Rosenwax et al. 2011). Silver Chain, a large Western Australian-based not-for-profit organisation operating in four states, provides some evidence that a well-coordinated community-based palliative care program has the potential to reduce emergency department presentations and hospital use in the last year of life, and increase the rate of dying out of hospital, thereby reducing the cost of hospital-based care and therefore overall palliative care costs (Silver Chain 2015) (see Box 6.18.2).

Unless the observed pattern of primarily dying in hospitals and residential aged-care facilities changes, there will be a substantial rise in the cost of providing end-of-life care to Australians over the next 25 years, simply due to the increasing number of people dying.

### **Box 6.18.2: Silver Chain—Hospice Care Services**

Silver Chain provides community-based Hospice Care Services (HCS), supporting people and families with complex needs to remain at home. As a part of the broader palliative care network of services, Silver Chain works closely with hospital palliative care teams and in-patient palliative care units to meet the unique individual needs and preferences of people with terminal illnesses. Care addresses physical symptoms, psychosocial and spiritual concerns through mixed palliative care teams consisting of nurses, doctors, care aides, social workers, counsellors and chaplains. The care provided is adaptable to the changing needs of the individual and their families/carers and is available 24 hours a day, seven days a week.

Silver Chain has evaluated the impact of their HCS in a ‘whole of population’ study using person-level linked data comprising those dying of cancer between 2001 and 2011 in Perth, Western Australia. More than half of all cancer patients who died (58%) had used HCS at some stage. The main outcomes of this work to date include:

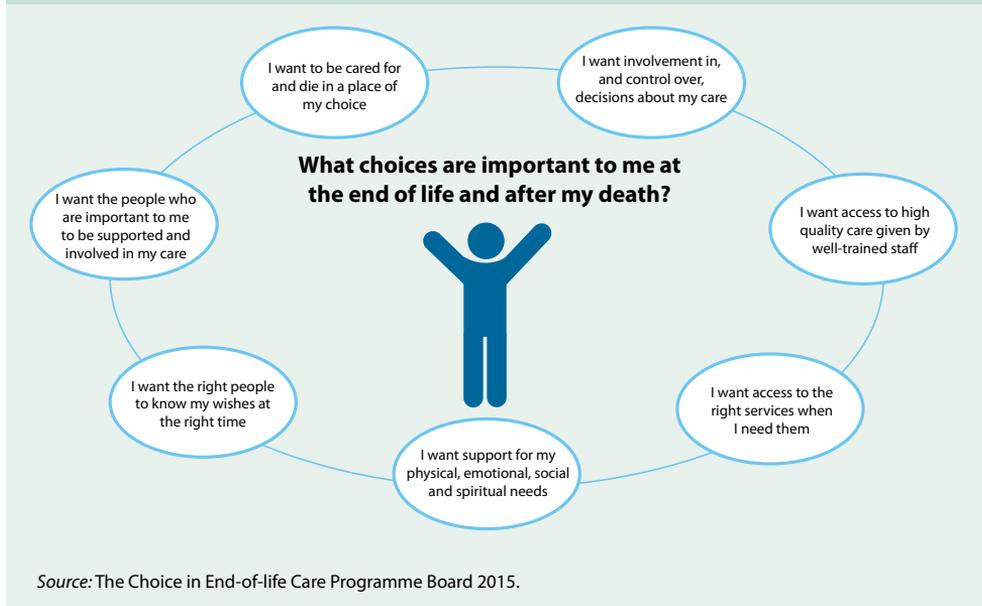
1. Reduced hospital-based care. HCS recipients had, on average, 8.0% fewer emergency department presentations and spent 5 days less in hospital over the last year of life, compared with those who did not access the service. The total effect of the service was a reduction of approximately 90,900 bed days over the 10-year period.
2. Increased likelihood of a person dying out of hospital. HCS recipients were three times more likely to die out of hospital, compared with those who did not access the service. Cancer patients aged under 50 years are eight times more likely to die out of hospital. Having a partner also increased the likelihood of death out of hospital by around four times.
3. Factors associated with increased likelihood of accessing the service were lower socioeconomic status, being born outside of Australia/New Zealand, being female, younger age, having a partner, and increasing time living with cancer.

*Source:* Silver Chain unpublished.

## Improving end-of-life care—‘dying well’

Gregory and Armstrong (2013) observe that, despite medical advances, mortality is 100%, and argue that a ‘good death’ is an important health outcome. However, exactly what constitutes a ‘good death’ or ‘dying well’ is open to conjecture. A 2015 Victorian Government consultation ‘Greater say for Victorians: improving end-of-life care’ generated a diverse range of views. A recent United Kingdom end-of-life care consultation generated a similar diversity of views which were distilled into seven main themes that mirrored the recent Victorian experience—see Figure 6.18.1.

**Figure 6.18.1: Person-centred view of their choice of end-of-life care**



Swerissen and Duckett (2014) suggest that four changes to the Australian end-of-life care setting would facilitate a ‘good death’ for more Australians:

- More public discussion about the limits of health care as death approaches, and what Australians want for the end of life.
- Increased planning of individual end-of-life choices to support improved compliance with choices.
- Increased compliance with an individual’s expressed choices.
- Reorientation of services providing end-of-life care so that they focus more on people’s wishes to die at home and in homelike settings, rather than in institutions.

Notwithstanding the diversity of opinion about what constitutes a ‘good death’, it is apparent that Australians expect that end-of-life care services should be high quality and meet the needs of the individual and their carers, as advocated by the ACSQHC’s national consensus statement (ACSQHC 2015). However, the term ‘quality’ can be subjective, and can mean different things depending on a person’s individual circumstances. For example, ‘quality’ for a person nearing the end of their life may mean comfort and wellbeing, which may be in contrast to ‘quality’ of a service which might include aspects such as safety and preventing harm.

## Planning for death: Advanced Care Plans

A lack of planning for, and talking about, death is considered to be a substantial barrier to quality end-of-life experiences. Trankle (2014:3) quotes an Australian intensive care specialist as saying:

...a good death...it shouldn't come as a surprise to everyone, that there's actually been some time...just to recognise that, the patient's life is ending, and so there's a plan in place; people know what they're doing and what they're treating.

Faced with illness and possible death, patients, clinicians and loved ones are forced to make decisions under adverse conditions—for example, making choices about medical interventions under stress due to the progression of a long-term illness along an unexpected path. Making choices under such circumstances can impact on the quality of the end-of-life experience.

There are circumstances where individuals and family members may not consider medical interventions aimed at prolonging life to be appropriate for the needs and wishes of the individual. An Advanced Care Plan (ACP) or Advanced Care Directive (ACD) provides a way to document personal expectations about medical intervention well in advance of any critical medical incident.

ACPs or ACDs need not only be made when illnesses begin to impact on a person's life. All Australians are able to develop plans that guide decisions about their care should the need arise. While ACPs/ACDs provide the basis for an individual's wishes to be met, there is evidence that sometimes plans are not followed (Rhee et al. 2012). This can occur for a number of reasons: for example, the presence of an ACP/ACD may not be known to medical staff, or the plan may provide insufficient detail to guide clinical decision making. Evidence on the reasons plans are not followed in Australia is very limited.

While all states and territories in Australia have regulatory and legislative frameworks to support the use of ACDs/ACPs, their use remains relatively low, with an estimated 14% of Australians having an ACP (White et al. 2014). Improvement in the use of ACPs/ACDs would imply that Australians are planning and talking about their individual needs and wishes prior to when the time arises, which may improve the end-of-life journey.

## Patient outcome measures—asking patients and their carers about services

Measures of patient experience of care, based on asking patients about their views on their level of care, are difficult to implement and administer, especially when the care provided can span a broad range of health and welfare service providers. Evidence regarding cancer patients suggests that data from patient-centred outcome measures (PCOMs) provide information on unmet need and may improve service providers understanding of patients' needs (Etkind et al. 2015).

Work is ongoing to develop outcome measures specific to end-of-life issues, for example, the End-of-life Patient-reported Outcome Measure, which assesses whether a patient has finalised their affairs at the end of life (McCaffrey et al. 2014). However, at present, standardised PCOMs tend to be highly specialised (for example, the recent publication of an international standardised measure for advanced prostate cancer) (Morgans et al. 2015).

Patient outcome measures are used by some Australian end-of-life care services, primarily palliative care services. At the national level, the Palliative Care Outcomes Collaboration (PCOC), established in 2005, uses a range of measures, collected from 106 Australian specialist palliative care service providers, to assess patient outcomes, including how long it takes for people to access palliative care, the amount of time a patient is in an unstable phase, and changes in pain experienced by patients. The most recent data (AIHW 2014) indicate that:

- The majority of patients (94%) requiring palliative care services started their episode of palliative care on the day of, or the day following, the day that they were ready for care.
- One-fifth (20%) of palliative care patient episodes involved an unstable phase of more than 3 days—that is, when a change in the plan of care or emergency treatment was required due to a new problem; there was a sudden deterioration of an existing condition; or a sudden change in family/carer circumstances had an impact on care.
- Pain management is meeting most benchmarks for the majority of patient episodes.

It is also important to understand the end-of-life journey from the perspective of carers of people who are dying. Research indicates that around half of caregivers report an experience of caregiving that was worse, or much worse, than expected (Burns et al. 2015). The reasons for this are unclear—however, there is evidence suggesting that the realities of caring 24 hours a day for a loved one who is dying can be vastly different to the imagined scenario (SCARC 2012).

## Service integration

Given the wide range of services providing end-of-life care, service fragmentation has been acknowledged as a major barrier to achieving quality outcomes for those at their end of life (SCARC 2012). Trankle 2014 comments that the ‘intensive care unit can be an inappropriate place to die and education and planning to allow death to occur elsewhere is crucial’. Person-centred, integrated services that enable effective communication between the services about a person’s changing needs are paramount to ensuring overall effectiveness of end-of-life care (ACSQHC 2015). The service integration challenge is not unique to end-of-life care, but there are examples of successfully integrated models of care which could guide reform.

Palliative care service integration has made inroads into integration of care. The Victorian Palliative Care Resource Allocation Model acknowledges the importance of integrated care to ensure people at the end of their life receive integrated care that responds in a timely manner to an individual’s changing needs (Department of Health 2011). Medicare-subsidised palliative medicine specialist services for case conferencing activities made up 7.9% of all services in 2012–13 (AIHW 2014), an increase from 6.1% in 2010–11 (AIHW 2012). However, there is no additional qualitative information about the utility or effectiveness of case conferencing. Also, system-wide approaches to care coordination must be based on strong evidence that the investment in coordination is of clear benefit to the patient (Yates 2015).

## What is the AIHW doing?

The AIHW will continue its discussions with Australian, state and territory governments and other state and territory stakeholders to expand the range of available national end-of-life and palliative care information, including filling data gaps in relation to the end-of-life care experience as a whole.

### What is missing from the picture?

Current data sources do not allow for reporting on a range of aspects of end-of-life and palliative care. For example, we do not have access to data to allow reporting on topics including palliative care-related expenditure; community-based palliative care services; MBS-subsidised services provided by general practitioners and non-palliative care medical specialists; and the number of palliative care beds in hospitals, both acute and subacute. This makes it difficult to provide a comprehensive overview of end-of-life and palliative care service provision in Australia.

It is apparent, from recent consultation activities, that end-of-life care remains a community concern. A number of themes about how the end of life could be improved for all Australians and better meet contemporary community expectations, are evident:

- Encouraging all Australians to have conversations about and plan for death.
- Providing timely advice about availability of end-of-life and palliative care services and carer respite.
- Facilitating Australian's ability to 'die in place' rather than in hospital.
- Better integration of end-of-life services between various components of the health sector, including potentially enhancing the role of primary care services in managing end-of-life care.
- Providing appropriate training and support for the end-of-life and palliative care workforce.
- Greater utilisation of ACP/ACD.
- Greater understanding of access to end-of-life care provision, including understanding barriers to accessing end-of-life care (Parliament of Victoria 2015).

A clear message from this is the need for 'consistent' data collection to better inform the community and enable decision-makers at all levels to monitor whether end-of-life care being provided to Australians is high quality and meeting their needs. The PCOC data illustrate that measurement of patient experiences can be achieved and can provide a valuable feedback mechanism to drive service level improvement (Currow et al. 2015). The publication and implementation of version 2 of the National Safety and Quality Health Service Standards is imminent, and includes standards for patients regardless of where they receive care—that is, whether they receive institution-based or home-based care.

A wide-ranging, standardised experience of end-of-life care measure for patients and carers, applicable to all death trajectories would also provide insight into whether services are supporting an experience of 'dying well', and how Australians feel about their end-of-life care.

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# Chapter 7

## Indicators of Australia's health



## 7.0 Introduction

The health of the population and the success of the health system can be evaluated and monitored using health indicators—statistics that report on a particular aspect of health or on the performance of the health system.

One such collection of indicators is set out in the National Health Performance Framework (NHPF) and, since 2008, at the request of Australia's health ministers, the AIHW has used its biennial *Australia's health* publication to report on the framework.

The NHPF covers three domains: health status; determinants of health; and health system performance.

This year, there is both good news and bad news in the 'health status' domain. The incidence of heart attacks continues to fall. Notification rates for hepatitis C have fallen, but the rates for a number of sexually transmissible diseases (syphilis, HIV, chlamydia and gonorrhoea) have increased. For the five cancers covered by the indicators, no changes in the incidence rates were seen in the most recent 10 years for which data are available.

Where sufficient data were available to assess a trend, most indicators of the 'determinants of health' generally showed either no change or favourable change. The one indicator in which an unfavourable trend was seen is the proportion of people who were obese or overweight. Overall, there were favourable changes in the proportions of: households with dependent children in which adults smoked inside the home; people with low income; people of working age who held a non-school qualification; adults who smoked daily; adults at risk of long-term harm from alcohol; and adults who were not sufficiently physically active to gain a health benefit.

The 'health system performance' domain includes indicators such as immunisation rates, potentially avoidable deaths and waiting times for emergency department care. Where trends could be assessed, most measures of health system performance showed either no change or favourable changes overall.

# 7.1 Indicators of Australia's health

Australians are generally considered to enjoy good health and to have an effective health system—but how can we be sure? Performance measurement is an important way in which we assess the health of our population and the success of health services and of the health system.

Performance measures, or health indicators, are summary measures designed to describe particular elements of our health or aspects of health system performance.

Indicators have a range of purposes, and can:

- provide us with an understanding of the health of Australians and the quality of our health system (and allow us to compare different population groups, different geographic regions, and internationally)
- improve accountability and transparency of service provision and support consumer choices relating to health care
- provide us with information on the effectiveness of changes to policies or new practices and programs (when measured consistently over time)
- encourage ongoing performance improvements in service delivery by highlighting quality improvements and innovation and areas where improvements are needed.

The indicators that are selected for reporting generally reflect what is important to governments, to services providers, to the funders of the services (including taxpayers), as well as to patients and the broader Australian community.

## Key national health indicator frameworks

Nationally agreed indicators are usually constructed as a 'set' of measures which are organised into frameworks. Health indicator frameworks provide the conceptual basis for the indicator sets and describe the broad aspects of health, its determinants and health care that are to be measured (for example, equity, quality and efficiency). They also depict the relationships between the indicators within the framework, and provide transparency in describing which aspects of the system are being assessed (or are not able to be assessed).

In Australia, a number of performance frameworks are used to assess aspects of our health and our health system. Some are related, and individual indicators may appear in more than one of the frameworks, but they have different purposes. In this article, the major national indicator frameworks are outlined and the latest data that enable us to measure performance against the indicators in the National Health Performance Framework (NHPF) are reported.

In addition to the national performance frameworks, there are a number of other (related) performance frameworks. These allow more in-depth monitoring of the health status of, and services delivered to, specific populations—for example, the Aboriginal and Torres Strait Islander Health Performance Framework (AHMAC 2015)—or focus on specific types of health services, such as the National Core Maternity Indicators (AIHW 2015e). Performance monitoring and reporting at other 'levels' of the health system is also undertaken, for example, by states and territories, and by some service provider organisations.

The national indicator framework and performance reporting arrangements are also accompanied by activities undertaken by health service providers to measure and monitor performance within their organisations, and to improve clinical outcomes and the appropriateness of services. These activities are related to (but not considered to be the same as) 'performance reporting'. In recent years these activities have been supported by the Australian Commission on Safety and Quality in Health Care (ACSQHC). As part of its work to lead coordinated improvement in safety and quality in health care across Australia, the Commission undertakes and facilitates the development of safety and quality related indicators for use in such local monitoring (see 'Chapter 6.14 Safety and quality in Australian hospitals' for more information).

## Other national health performance frameworks

### National Healthcare Agreement

The National Healthcare Agreement (NHA) is an agreement between the Australian and state and territory governments that outlines the role and aims of Australia's health system; the roles and responsibilities of the parties; policy and reform directions proposed to achieve desired outcomes; and accountability requirements (COAG 2012). These requirements include reporting against specific performance indicators and performance benchmarks that are outlined within the specified outcome areas (better health; better health services; social inclusion and Indigenous health; and sustainability of the health system). Where possible, indicator data are disaggregated for specific population groups to ensure that the aims of focusing on social inclusion and addressing Indigenous disadvantage are being met.

The NHA indicator set outlines 33 performance indicator topics and 7 performance benchmarks. The NHA indicators are reported annually in the *Report on government services* (RoGS) series.

In addition to the NHA, a range of other national agreements (for example, the National Health Reform Agreement, and the National Indigenous Reform Agreement) include performance indicators related to health and health service delivery. Some of these indicators are also included in the NHA.

### Review of Government Service Provision

The Review of Government Service Provision was established in 1993 by heads of government (now the Council of Australian Governments, or COAG) to provide information on the equity, efficiency and effectiveness of Australian government services and to promote ongoing performance improvement. National health performance information is released with information on other government services in the annual RoGS publications. The 2016 edition of RoGS included chapters on public hospitals, primary and community health, and mental health management (SCRGSP 2016).

The RoGS publications are based on performance indicators set against a framework that reflects the review's focus on outcomes, consistent with demand of governments for outcome-oriented performance information. This information is supplemented by information on outputs, grouped under equity, effectiveness and efficiency headings (SCRGSP 2016).

## The Performance and Accountability Framework

The Performance and Accountability Framework (PAF) was agreed under the National Health Reform Agreement (COAG 2011) to provide Australians with information about the performance of hospital and health services in ways that are nationally consistent and locally relevant. In providing this information, it was intended to enable Australians to make more informed choices in relation to their health care services, and also to support governing bodies to perform their role more effectively.

The framework adopted for the PAF is based on the RoGS framework and adopts the definitions used in RoGS for the key concepts of equity, effectiveness and efficiency. The 48 indicators are intended for reporting in 2 streams: for Primary Health Networks (PHNs), and for hospitals/Local Hospital Networks. Not all are currently reported, as suitable data sources are still being identified and/or the performance indicator specifications have not been developed (NHPA 2016). Reporting against this framework is currently undertaken by the National Health Performance Authority through the [MyHospitals](#) and [MyHealthyCommunities](#) websites. Responsibility for this reporting will transfer to the AIHW in July 2016.

## The National Health Performance Framework

The purpose of this article is to report on the latest data that are available for the indicators included in the NHPF. The NHPF was developed in 2001 by the National Health Performance Committee under the auspices of the Australian Health Ministers' Advisory Council (AHMAC) (AIHW 2012a; NHPC 2002). It provides a conceptual framework to understand and evaluate the health of Australians and the health system, and as such it was designed as an enduring framework—it is not linked to any particular agreement nor was it designed to support performance reporting relating to a specific policy agenda. Instead, it serves as a general support for performance assessment, planning and benchmarking in the health sector. It is consistent with health performance frameworks used internationally (ISO 2010; OECD 2013) so can support comparisons of Australia's performance internationally.

The NHPF has 14 health dimensions grouped under 3 domains: health status, determinants of health, and health system performance (Table 7.1.1).

A set of indicators was developed to populate the dimensions of the NHPF and, since 2008, at the request of health ministers, the AIHW has reported on these national health performance indicators biennially in the *Australia's health* report. The indicator set was most recently revised and agreed by health ministers in 2009. The indicators were developed so that they would meaningfully reflect the dimensions of the framework and be practical to implement in terms of cost effectiveness, timeliness and availability of quality data. There are 40 indicators across the 14 dimensions (tables 7.1.2, 7.1.3 and 7.1.4).

Table 7.1.1: The National Health Performance Framework (2nd edition)

| <b>Health status</b>  |   |  |  |
|---|---|--|--|
| <i>How healthy are Australians? Is it the same for everyone?<br/>Where are the best opportunities for improvement?</i>  |   |  |  |
| <b>Health conditions</b><br><i>Prevalence of disease, disorder, injury or trauma, or other health-related states.</i>   | <b>Human function</b><br><i>Alterations to body structure or function (impairment), activity limitations and restrictions in participation.</i>                                       | <b>Wellbeing</b><br><i>Measures of physical, mental and social wellbeing of individuals.</i>   | <b>Deaths</b><br><i>Mortality rates and measures of life expectancy.</i>   |
| <b>Determinants of health</b>   |   |  |  |
| <i>Are the factors determining good health changing for the better?<br/>Where and for who are these factors changing? Is it the same for everyone?</i>  |   |  |  |
| <b>Environmental factors</b><br><i>Physical, chemical and biological factors such as air, water and soil quality.</i>   | <b>Community and socioeconomic</b><br><i>Community factors such as social capital, support services, and socioeconomic factors such as housing, education, employment and income.</i> | <b>Health behaviours</b><br><i>Attitudes, beliefs, knowledge and behaviours such as patterns of eating, physical activity, smoking, and alcohol consumption.</i>   | <b>Biomedical factors</b><br><i>Genetic-related susceptibility to disease, and other factors such as blood pressure, cholesterol levels and body weight.</i> |
| <b>Health system performance</b>  |   |  |  |
| <i>How does the health system perform? What is the level of quality of care across the range of patient care needs? Is it the same for everyone? Does the system deliver value for money and is it sustainable?</i> |   |  |  |
| <b>Effectiveness</b><br><i>Care, intervention, or action provided is relevant to the client's needs and based on established standards. Care, intervention or action achieves desired outcome.</i>                  | <b>Continuity of care</b><br><i>Ability to provide uninterrupted, coordinated care or service across programs, practitioners, organisations and levels over time.</i>                 | <b>Safety</b><br><i>The avoidance—or reduction to acceptable limits—of actual or potential harm from health care management or the environment in which health care is delivered.</i>  |  |
| <b>Accessibility</b><br><i>People can obtain health care at the right place and right time irrespective of income, physical location and cultural background.</i>   | <b>Responsiveness</b><br><i>Service is client oriented. Clients are treated with dignity and confidentiality, and encouraged to participate in choices related to their care.</i>     | <b>Efficiency and sustainability</b><br><i>Achieving desired results with the most cost-effective use of resources. Capacity of the system to sustain workforce and infrastructure, to innovate and respond to emerging needs.</i> |  |

Source: NHISSC 2009.

# The NHPF indicators

The remainder of this article presents the latest data for the indicators that are currently in the NHPF. The indicators are reported in 3 sections that align with the NHPF domains. Each section includes a summary of findings, including a table listing the indicators, and columns indicating whether new data have become available since *Australia's health 2014* (AIHW 2014b) and whether the available data show a favourable or unfavourable trend (where this could be assessed). Data for each indicator are disaggregated by other variables (such as age, sex, or Indigenous status) and/or are presented over time. Decisions about which variables to present were based on availability and quality of the data, potential usefulness, and availability of analyses elsewhere in this, and other, reports.

## Assessment of trends

The assessment of trends has been made using the most recent 10 years of data that were available, and where comparable data were available for at least 3 time periods. The 10-year period was used for the trend assessment even where time series information is presented for longer periods. The exception is cancer survival rates and rates of overweight and obesity, for which the trend assessment is based on the longer time series information presented for the indicator.

A favourable trend is noted when the indicator has moved in the desired direction. (For example, life expectancy should increase and waiting times for elective surgery should decrease.) A trend is considered unfavourable if it is opposite to the desired direction. For indicators where the measure does not appear to have changed meaningfully over the time period, the trend is described as 'no change'. For indicators where there are insufficient data to support trend analysis, the trend is described as 'no data/insufficient data'.

## Limitations of the NHPF performance indicators

The indicators for the NHPF were last reviewed and endorsed by health ministers in 2009. With the passage of time, some limitations have become evident for a number of the NHPF performance indicators. Data quality may have diminished, for example, where changes in the delivery of services has meant that data would need to be captured from more disparate sources, or changes in policies and priority areas for monitoring have meant that the usefulness of some indicators is now questionable.

A small number of indicators in the NHPF are not reported here:

- *Survival following an acute coronary heart disease event* (also not reported in 2014). The AIHW has judged that, due to changes in the methodology used to identify acute coronary events, reporting on this indicator is not appropriate.
- *Proportion of people with diabetes who complete a GP annual cycle of care* (also not reported in 2014). The AIHW has assessed that the available data are likely to result in an underestimate, due to changes in treatment patterns and recognition that people with diabetes may use other avenues for care.

- *Selected potentially avoidable GP-type presentations to emergency departments.* Recent work has demonstrated limitations in the methodology used (AIHW 2015d) and the AIHW is working with relevant stakeholders to revise the specification for this indicator. Indicator data are presented in RoGS (SCRGSP 2016).
- *Cost per casemix-adjusted separation for acute and non-acute episodes.* The previous calculation method is considered by a range of stakeholders to be no longer appropriate, and a revised methodology has not yet been agreed.

For indicators where no new data are available or where new data could not be readily obtained, data that have been previously reported are re-presented, though new disaggregations are presented where appropriate.

## Indicators: health status

In the NHPF, health status is assessed by considering aspects of morbidity, mortality, functioning and wellbeing.

In relation to the aspects of morbidity, for the health conditions that are included in the NHPF (which are to some extent amenable to prevention or early intervention), findings were mixed. The incidence of heart attacks continued to fall, but hospitalisation rates for injury and poisoning increased in this period. For the five cancers examined, no changes in the incidence rate were seen in the most recent 10 years for which data are available.

For a number of sexually transmissible diseases (syphilis, HIV, chlamydia and gonorrhoea), available data show that the incidence is increasing—in particular, notification rates for chlamydia have increased by over 80% over the last 10 years. Notification rates for hepatitis B remained unchanged, and rates for hepatitis C have fallen.

For the measures of human functioning and wellbeing, there have been no meaningful changes in trends based on the available data.

There were favourable trends seen (overall) for all measures of mortality (deaths) for which sufficient data were available.

The indicators that are reported for health status are summarised in Table 7.1.2.

Table 7.1.2: Indicators of NHPF domain—health status

| NHPF dimension/Indicator   | New data available | 10-year trend assessment |
|--|--------------------|--------------------------|
| <b>Health conditions</b>   |                    |                          |
| Incidence of heart attacks   | Yes                | ✓                        |
| Incidence of selected cancers  |                    |                          |
| bowel  | Yes                | ~                        |
| melanoma   | Yes                | ~                        |
| lung cancer  | Yes                | ~                        |
| breast cancer (females)  | Yes                | ~                        |
| cervical   | Yes                | ~                        |
| Incidence of sexually transmissible infections and blood-borne viruses |                    |                          |
| syphilis   | Yes                | ✗                        |
| HIV  | Yes                | ✗                        |
| hepatitis B  | Yes                | ~                        |
| hepatitis C  | Yes                | ✓                        |
| chlamydia  | Yes                | ✗                        |
| gonorrhoea   | Yes                | ✗                        |
| Incidence of end-stage kidney disease                                  | No                 | ..                       |
| Hospitalisation for injury and poisoning                               | Yes                | ✗                        |
| <b>Human function</b>  |                    |                          |
| Severe or profound core activity limitation                            | No                 | ~                        |
| <b>Wellbeing</b>   |                    |                          |
| Psychological distress   | Yes                | ~                        |
| Self-assessed health status  | Yes                | ~                        |
| <b>Deaths</b>  |                    |                          |
| Infant/young children mortality rate                                   |                    |                          |
| infants (<1 year)  | Yes                | ✓                        |
| Indigenous infants (<1 year)   | Yes                | ✓                        |
| children aged 1–4 years  | Yes                | ✓                        |
| Life expectancy  |                    |                          |
| all males  | Yes                | ✓                        |
| all females  | Yes                | ✓                        |
| Indigenous males   | No                 | ..                       |
| Indigenous females   | No                 | ..                       |

- ✓ Favourable
- ✗ Unfavourable
- ~ No change
- .. No data/insufficient data

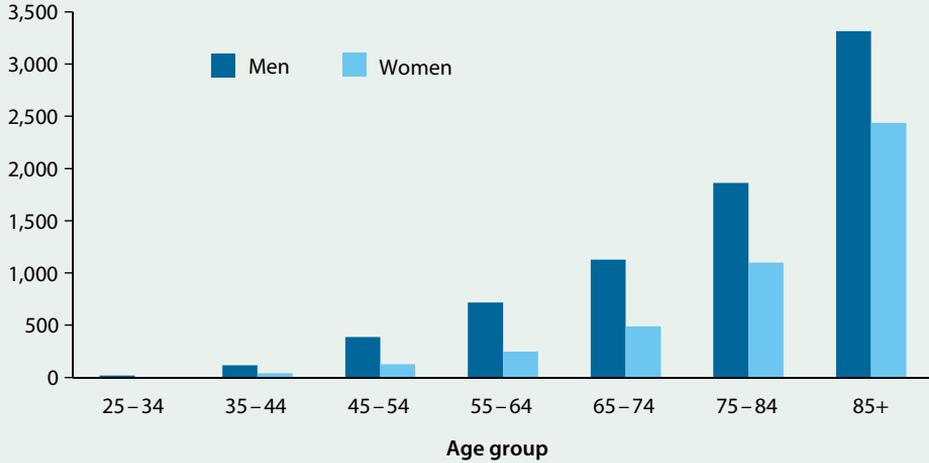
## Incidence of heart attacks

**Definition:** Number of deaths from coronary heart disease plus the number of non-fatal hospitalisations for heart attacks and unstable angina, per 100,000 population.

**More information available on this topic:** 'Chapter 3.5 Coronary heart disease'.

**Figure 7.1.1: Rates of heart attacks among people aged 25 years and over, 2013**

Per 100,000 population



Sources: AIHW National Hospital Morbidity Database; AIHW National Mortality Database.

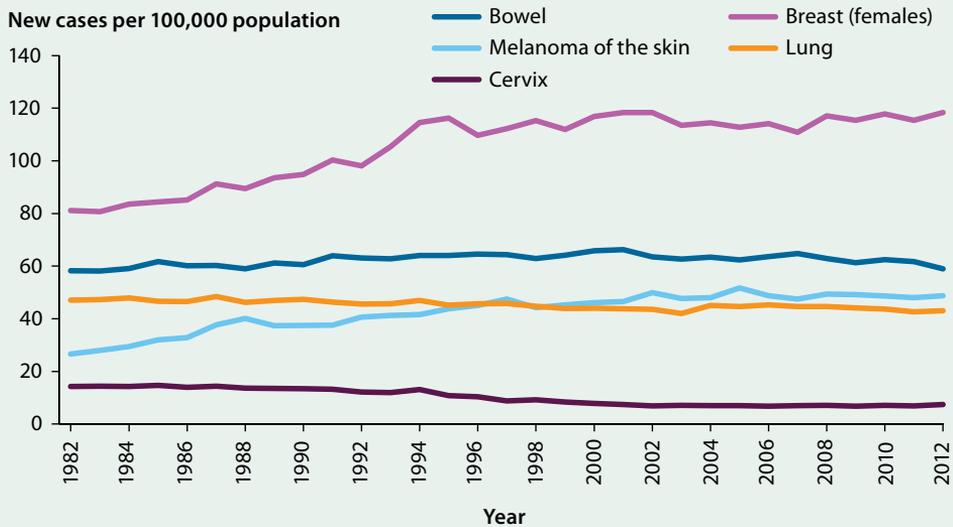
- In 2013, the age-standardised heart attack rate was 379 per 100,000 people—a 29% decline from the rate for 2007 (534 per 100,000 people).
- The heart attack rate for males was more than twice that for females—523 per 100,000 males compared with 246 per 100,000 females in 2013.
- Although the heart attack rate for Indigenous people (based on data from New South Wales, Queensland, Western Australia, South Australia and the Northern Territory) fell from 1,048 to 955 per 100,000 people between 2007 and 2013, it was higher than the rate for other Australians (528 per 100,000 people in 2007 and 382 in 2013).

## Incidence of selected cancers

**Definition:** The number of new cases of breast cancer in females; bowel cancer; melanoma of the skin; lung cancer; and cervical cancer. Presented as age-standardised numbers per 100,000 population (per 100,000 females for breast and cervical cancers).

**More information available on this topic:** 'Chapter 3.4 Cancer'.

**Figure 7.1.2: Age-standardised incidence rates of selected cancers, 1982–2012**



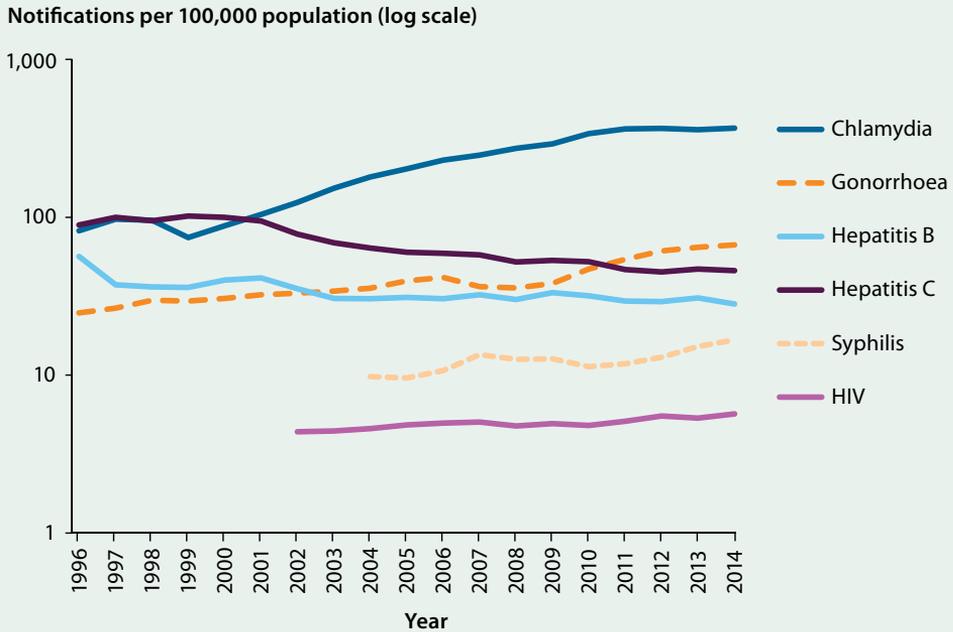
Source: AIHW Australian Cancer Database 2012.

- Between 1982 and 2012, incidence rates for lung cancer and bowel cancer remained relatively steady overall. However, the lung cancer incidence rate for males fell from 85 to 55 new cases per 100,000 males over this period, whereas the rate for females rose from 18 to 33 cases per 100,000 females.
- The incidence rate of melanoma rose between 1982 and 2002, and then remained fairly stable. The age-standardised rate for 2012 was 49 new cases per 100,000 people.
- The incidence rate of breast cancer (females only) rose between 1982 and 1994, and has remained fairly stable since then. The age-standardised rate for 2012 was 118 new cases per 100,000 females.
- For cervical cancer, the incidence rate fell between 1982 and 2001, and remained steady at 7 new cases per 100,000 for each year to 2012.

## Incidence of sexually transmissible infections and blood-borne viruses

**Definition:** The number of notifications of syphilis, human immunodeficiency virus (HIV), hepatitis B, hepatitis C, chlamydia and gonorrhoea.

**Figure 7.1.3: Notification rates of sexually transmissible infections and blood-borne viruses, 1996–2014**



Note: Data are presented using a log scale.

Sources: Kirby Institute 2011, 2012, 2013, 2014, 2015b; National Notifiable Diseases Surveillance System.

- While chlamydia notification rates have increased substantially since 1996 (from 82 to 367 infections per 100,000 people), the rate has remained between 360 and 370 for the last 4 years.
- Gonorrhoea notification rates have increased since 1996—most noticeably from 2008 to 2013, when the rate almost doubled, from 36 to 67 notifications per 100,000 people.
- Notification rates of hepatitis B and hepatitis C have fallen since 1996; however, the notification rates for hepatitis B have remained stable over the last 10 years whereas the notification rates for hepatitis C have continued to decline.
- The rate of syphilis notifications rose from 10 per 100,000 people in 2004 to 17 in 2014.
- The rate of HIV notifications per 100,000 people has risen by 30%, from 4.4 in 2002 to 5.7 in 2014.

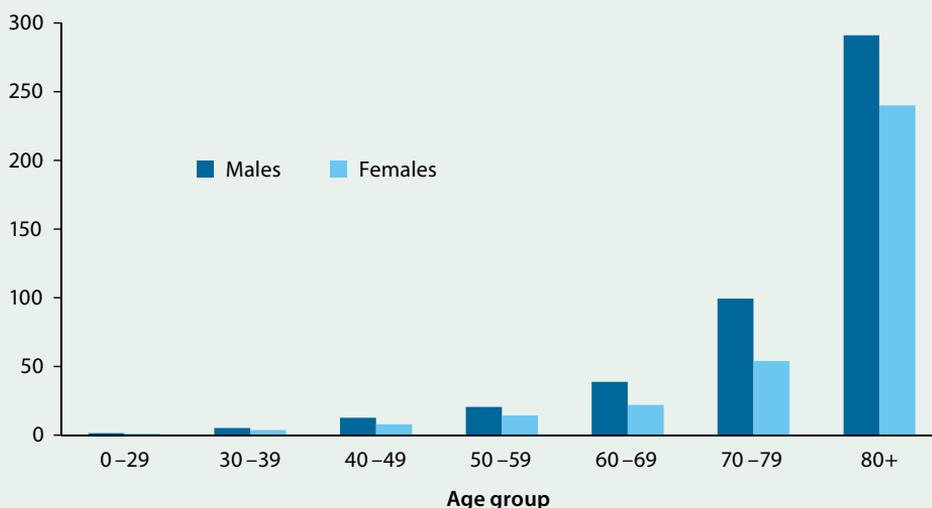
## Incidence of end-stage kidney disease

**Definition:** Number of new cases of treated end-stage kidney disease (ESKD) plus number of individuals who died with an *underlying cause of death* of 'renal failure' or an *associated cause of death* of 'chronic renal failure, end-stage', and did not receive dialysis or transplant treatment (untreated cases), per 100,000 population.

**More information available on this topic:** 'Chapter 3.8 Kidney disease'

**Figure 7.1.4: Incidence rate of ESKD, by age and sex, 2010**

Number per 100,000 population



Sources: Combined data from the Australia and New Zealand Dialysis and Transplant Registry, the AIHW National Mortality Database and the National Death Index.

- In 2010, there were 4,800 new cases of ESKD, equating to an age-standardised rate of 20 per 100,000 population, with the rate higher among males than females (24 compared with 16 per 100,000 population).
- Incidence rates increased with age—with rates over 8 times as high among those aged 80 and over, compared with those aged 60–69 (260 and 30 new cases per 100,000 people, respectively).
- In 2004–07, the age-standardised ESKD incidence rate for Aboriginal and Torres Strait Islander people (based on data from New South Wales, Queensland, Western Australia, South Australia and the Northern Territory) was 115 per 100,000 population, which is over 6 times the rate for non-Indigenous people (19 new cases per 100,000 population).
- ESKD incidence rates were substantially higher in *Very remote* areas of Australia: the age-standardised incidence rate for *Very remote* areas was twice that of *Remote* areas, 3.5 times the rate for *Outer regional* areas and 4 times the rate for *Major cities* and *Inner regional* areas in 2005–07.

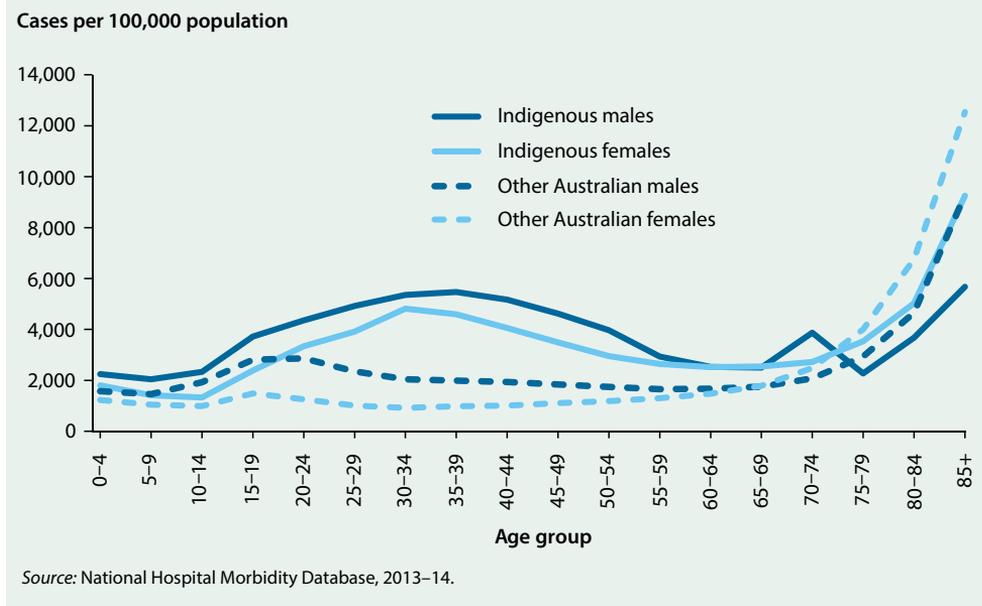
## Hospitalisation for injury and poisoning

**Definition:** The number of hospitalised injury cases with a principal diagnosis of injury or poisoning. This is presented as a number per 100,000 people (age-standardised).

Note that the calculation method for this indicator has changed since *Australia's health 2014* (AIHW 2014b). This means data presented here are not directly comparable with data reported in previous editions of *Australia's health*. Previously, all hospital episodes of care related to an injury were reported. For this article, estimated hospitalised injury cases (rather than episodes) are reported, which reduces the over-counting that occurs when there are multiple hospital episodes associated with the occurrence of an injury.

**More information available on this topic:** 'Chapter 3.13 Injury'.

**Figure 7.1.5: Rates of injury hospitalisations, by Indigenous status, age and sex, Australia, 2013–14**



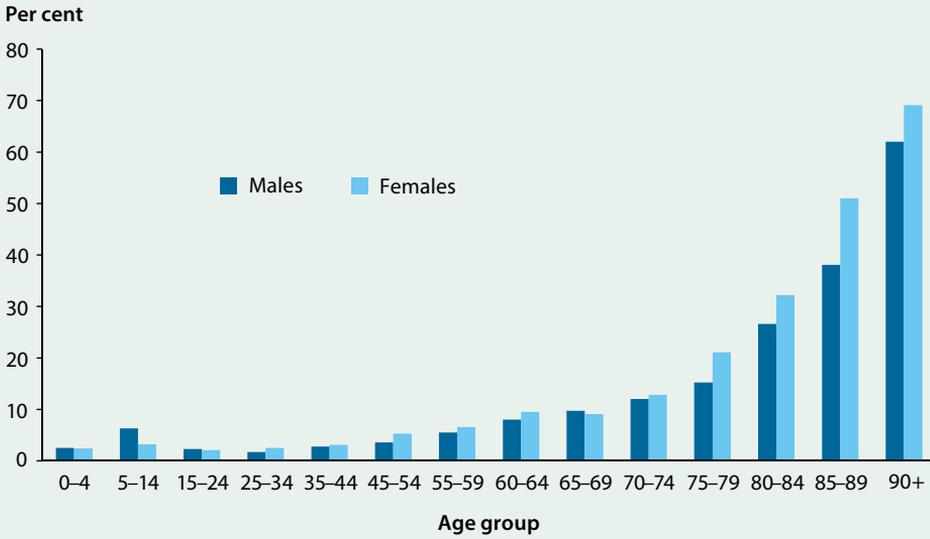
- In 2013–14, there were 461,000 hospitalised cases of injury and poisoning. The age-standardised rate of injury and poisoning was 1,914 cases per 100,000 population, an increase from 1,736 cases per 100,000 in 1999–00.
- Overall, males experience a higher (age-standardised) rate of injury hospitalisations (2,221 cases per 100,000 population) than females (1,581 per 100,000). People aged 85 and over had the highest rate of injury compared with other age groups (11,375 cases per 100,000 population).
- Indigenous Australians were hospitalised due to injury and poisoning at almost twice the rate of other Australians, at an age-standardised rate of 3,521 cases per 100,000 population compared with 1,863.
- Fifteen per cent of injury cases were considered to have a high threat to life (based on the likelihood that the person would die in hospital). Injuries of this severity are likely to have a large impact on the patient, often with persisting problems and ongoing need for health care services.

## Severe or profound core activity limitation

**Definition:** The percentage of people who 'sometimes' or 'always' need help with core activities of daily living (mobility, self-care or communication).

**More information available on this topic:** 'Chapter 5.9 Health of Australians with disability'.

**Figure 7.1.6: People with severe or profound core activity limitation, by age and sex, 2012**



Source: ABS 2013f.

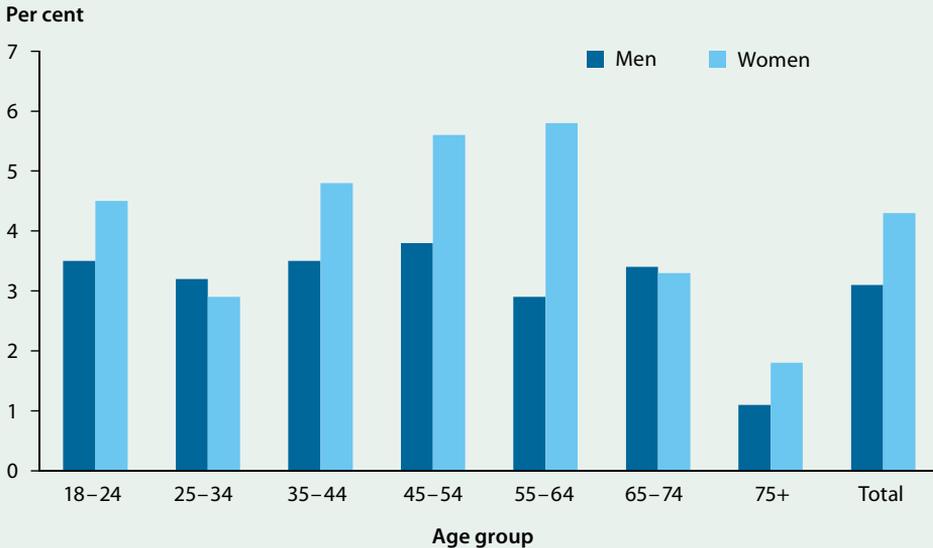
- In 2012, 6.1% of the population (1.4 million people) had a severe or profound core activity limitation—that is, a limitation in communication, mobility and/or self-care activities (ABS 2013f).
- Females (6.7%) were more likely than males (5.4%) to have a limitation of this type.
- After adjusting for differences in population structures, the rates remained broadly constant between 2003 (with an age-standardised rate of 6.2%) and 2012 (5.8%).

## Psychological distress

**Definition:** The proportion of adults with very high levels of psychological distress as measured using the Kessler Psychological Distress Scale—10 items (K10). The K10 is a scale of non-specific psychological distress based on 10 questions about negative emotional states in the 4 weeks before being interviewed.

**More information available on this topic:** 'Chapter 3.11 Mental health'

**Figure 7.1.7: Adults with very high levels of psychological distress, by age and sex, 2014–15**



Source: ABS 2015e.

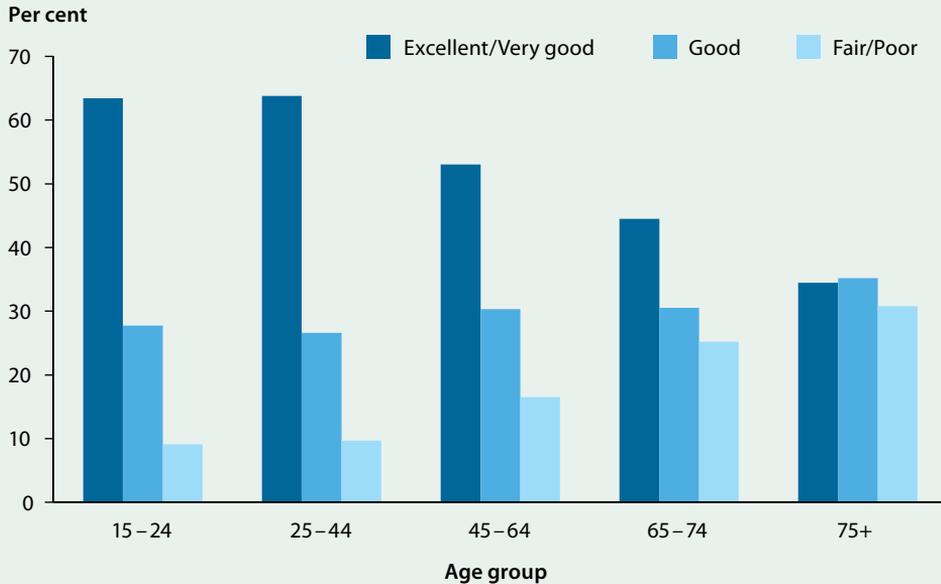
- In 2014–15, 3.7% of adults had a very high level of psychological distress (ABS 2015e).
- Women were more likely than men to have a very high level of psychological distress—4.3% for women compared with 3.1% for men.
- Women aged 55–64 had the highest rate of very high psychological distress (5.8%).
- Rates of very high psychological distress have remained similar over time, with 3.5% of people in 2007–08 and 3.4% of people in 2011–12 reporting a very high level of psychological distress (ABS 2009b, 2012a).

## Self-assessed health status

**Definition:** The proportion of people aged 15 and over who self-assess their health as 'excellent' or 'very good'.

**More information available on this topic:** 'Chapter 1.3 How healthy are Australians?'

**Figure 7.1.8: Self-assessed health status, by age, 2014–15**



Source: ABS 2015e.

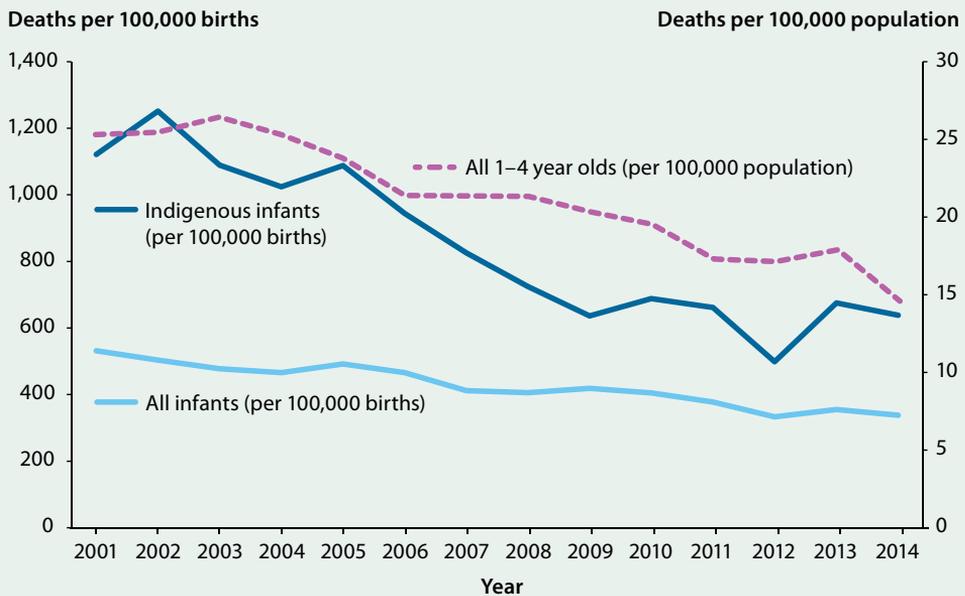
- In 2014–15, 56% of Australians aged 15 and over described their health as 'excellent' or 'very good' (ABS 2015e). This proportion has remained relatively stable over time.
- The percentage of people rating their health as 'excellent' or 'very good' decreases as age increases—63% of 15–24 year olds rated their health as 'excellent' or 'very good' compared with 34% of people aged 75 and over.
- Slightly more females than males described their health as 'excellent' or 'very good'—58% of females compared with 55% of males.

## Infant/young child mortality rate

**Definition:** The number of deaths of infants (aged under 1) divided by the number of live births, and the number of deaths of young children (aged 1–4) divided by the population of the same age.

**More information available on this topic:** 'Chapter 5.3 How healthy are Australia's children?'

**Figure 7.1.9: Mortality rate, Indigenous infants, all infants and all 1–4 year olds, 2001–2014**



### Notes

1. Indigenous infant mortality includes data for NSW, Qld, WA, SA and NT only. These five jurisdictions have been included because there are sufficient levels of identification and numbers of deaths to support mortality analysis. They do not represent an Australia figure.
2. Data for 2010 have been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010.

Sources: ABS 2006, 2007, 2008a, 2009a, 2010, 2012b, 2012c, 2013d, 2013e, 2014a, 2014b, 2015a, 2015b.

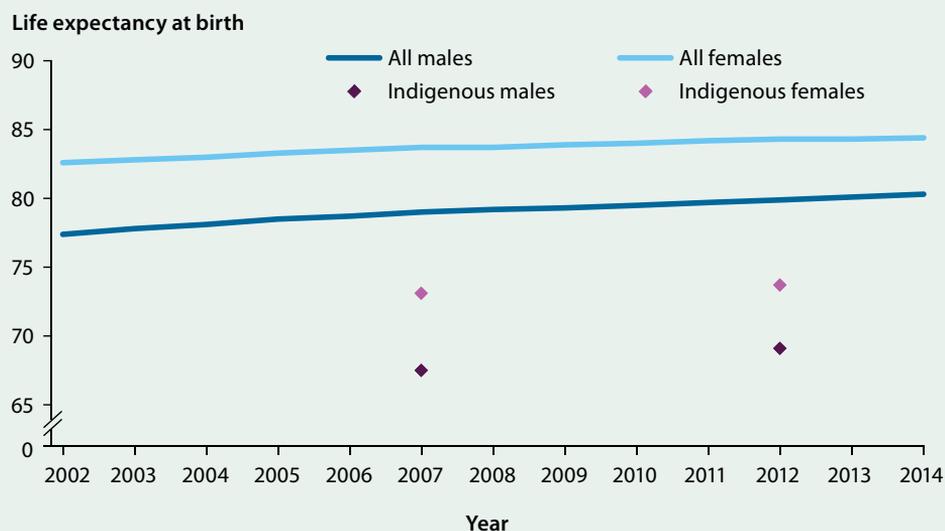
- The infant mortality rate has decreased by 36% from 531 deaths per 100,000 births in 2001 to 338 deaths per 100,000 births in 2014.
- Over the same the period (2001 to 2014), the mortality rate for Indigenous infants (based on data from New South Wales, Queensland, Western Australia, South Australia and the Northern Territory) has fallen from 1,121 deaths per 100,000 births to 638 deaths per 100,000 births, a decrease of 43%. This rate is almost twice that for all infants.
- The mortality rate for young children has also fallen from 25 deaths per 100,000 population in 2001 to 15 in 2014.

## Life expectancy

**Definition:** The number of years that a baby born in a given year can expect to live, if age-specific death rates do not change.

**More information available on this topic:** 'Chapter 1.3 How healthy are Australians?'

**Figure 7.1.10: Life expectancy at birth, by Indigenous status and sex, 2002–2014**



*Note:* These data refer to the 3-year period ending in the year shown (for example, '2014' data apply to babies born in the period 2012 to 2014).

*Sources:* ABS 2013e, 2013i, 2014b, 2015b.

- Life expectancy for a boy born in Australia between 2012 and 2014 was 80.3 years, and for a girl, 84.4 years.
- Over the last decade, the overall life expectancy at birth increased by 2.2 years for males and 1.4 years for females.
- The estimated life expectancy for an Indigenous boy born between 2010 and 2012 was 69.1—10.6 years lower than for a non-Indigenous boy. For Indigenous girls, the equivalent life expectancy was estimated to be 73.7—9.5 years lower than for non-Indigenous girls.

## Indicators: determinants of health

In the NHPF, determinants of health are assessed by considering aspects of the environment in which people live, features of community and socioeconomic life, health behaviours that increase the likelihood of developing a range of diseases (and that are modifiable), and biomedical risk factors that are often influenced by health behaviours.

Where sufficient data were available to assess a trend based on the most recent 10 years of data, most indicators of determinants of health showed either no change or favourable changes. The one indicator in which an unfavourable trend was seen is the proportion of people who were obese or overweight.

Favourable changes were seen in relation to: the proportion of households with children in which adults report smoking inside the home, the proportion of people with low income, the proportion of people of working age who hold a non-school qualification, the proportion of adults who smoke daily, the proportion of adults at risk of long-term harm from alcohol, and the proportion of adults who are not sufficiently physically active to gain a health benefit.

No meaningful changes were seen in the proportions of households connected to mains water (as an indicator of water quality), or of babies born with low birthweight.

The indicators that are reported for determinants of health are summarised in Table 7.1.3.

**Table 7.1.3: Indicators of NHPF domain—determinants of health**

| NHPF dimension/Indicator                                    | New data available | 10-year trend assessment |
|---|--------------------|--------------------------|
| <b>Environmental factors</b>                                |                    |                          |
| Children exposed to tobacco smoke in the home               | Yes                | ✓                        |
| Water quality   | No                 | ~                        |
| <b>Community and socioeconomic</b>                          |                    |                          |
| Proportion of people with low income                        | Yes                | ✓                        |
| Proportion of babies born with low birthweight              | Yes                | ~                        |
| Health literacy   | No                 | ..                       |
| Educational attainment for selected school years and adults | Yes                | ✓                        |
| <b>Health behaviours</b>                                    |                    |                          |
| Proportion of adults who are daily smokers                  | Yes                | ✓                        |
| Proportion of adults at risk of long-term harm from alcohol | Yes                | ✓                        |
| Fruit and vegetable intake                                  | Yes                | ..                       |
| Physical inactivity   | Yes                | ✓                        |
| <b>Biomedical factors</b>                                   |                    |                          |
| Proportion of persons obese and overweight                  | Yes                | ✗ <sup>(a)</sup>         |

- ✓ Favourable
- ✗ Unfavourable
- ~ No change
- .. No data/insufficient data

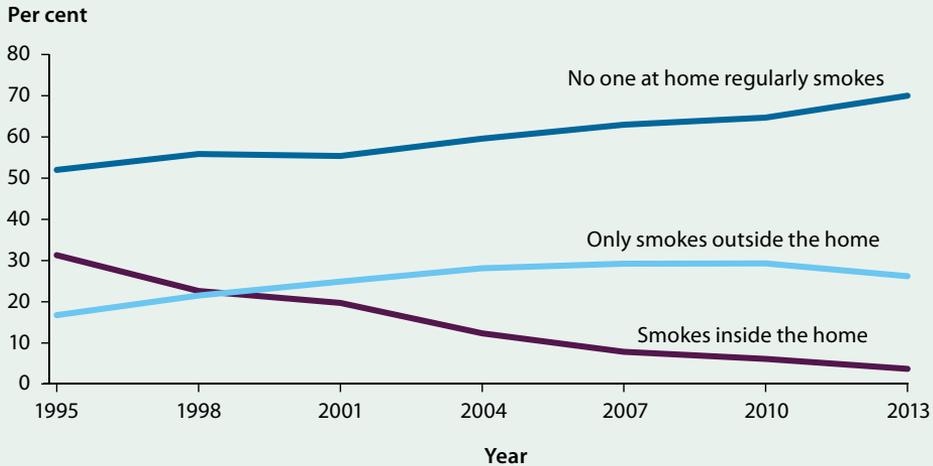
(a) The trend assessment for this indicator is based on 20 years of data (rather than 10).

## Children exposed to tobacco smoke in the home

**Definition:** The proportion of households with dependent children (aged 0–14) where adults report smoking inside the home.

**More information available on this topic:** 'Chapter 4.7 Tobacco smoking'

**Figure 7.1.11: Households with dependent children aged 14 and under, by whether adults smoke in the home, 1995–2013**



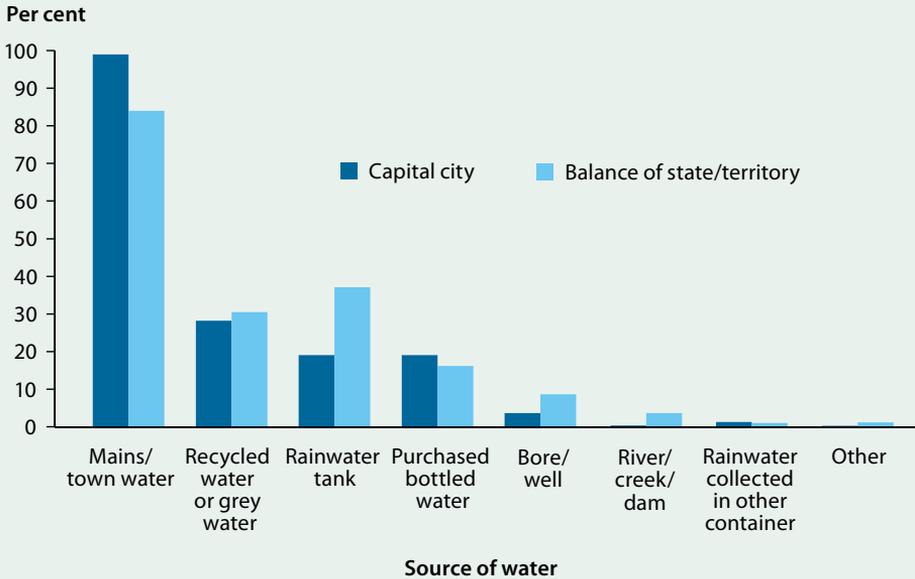
Source: AIHW 2014c.

- In 2013, fewer than 4% of households with children aged 14 and under included a person who smoked inside the home.
- This proportion has fallen by almost 90% since 1995, when 31% of households with dependent children included a person who smoked inside the home.
- For the first time since 1995 there was a drop in the proportion of people smoking outside the home—26% in 2013 compared with 29% in 2007 and 2010.
- The proportion of households where no one regularly smokes at home has increased over time, from 52% of households in 1995 to 70% in 2013.

## Water quality

**Definition:** The proportion of households connected to mains or town water.

**Figure 7.1.12: Sources of water for Australian households, by part of state, 2013**



Note: Households may have more than one source of water.

Source: ABS 2013h.

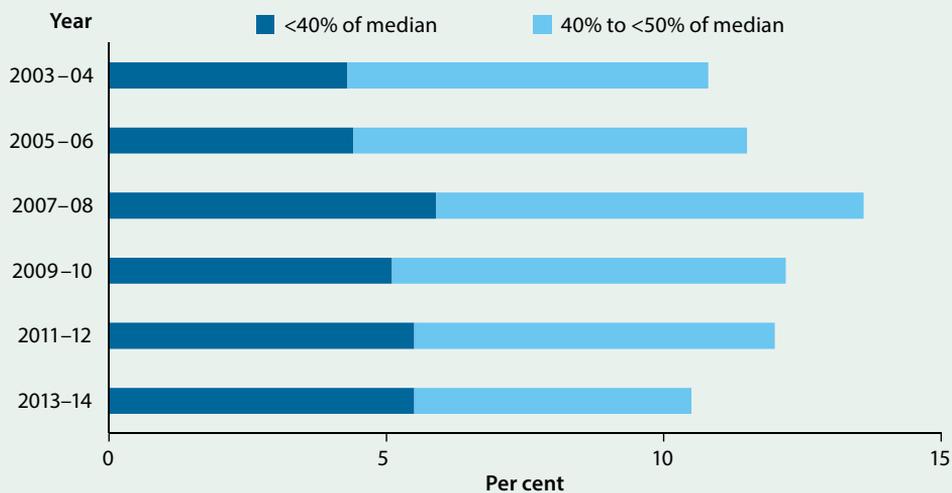
- In March 2013, 8.3 million (93%) of Australian households used mains or town water as a source of water (ABS 2013h).
- Nearly all households in capital cities used mains or town water (99%), compared with 84% of households outside the capital cities. Households outside the capital cities were more likely to use rainwater tanks as a source of water (37%) compared with households in capital cities (19%).
- Household sources of water in March 2013 were consistent with those for 2007 and 2010.

## Proportion of people with low income

**Definition:** There are numerous ways to measure low income. The method chosen for this indicator is to consider people living in households with an equivalised disposable household income (that is, after-tax income, adjusted for the number of people in the household) that is less than 50% of the national median. These data are presented as a proportion of all people.

**More information available on this topic:** 'Chapter 4.1 Social determinants of health'

**Figure 7.1.13: People living in households with a low weekly equivalised disposable household income, relative to the national median, 2003–04 to 2013–14**



Sources: Unpublished data from the ABS 2003–04, 2005–06, 2007–08, 2009–10, 2011–12 and 2013–14 Surveys of Income and Housing.

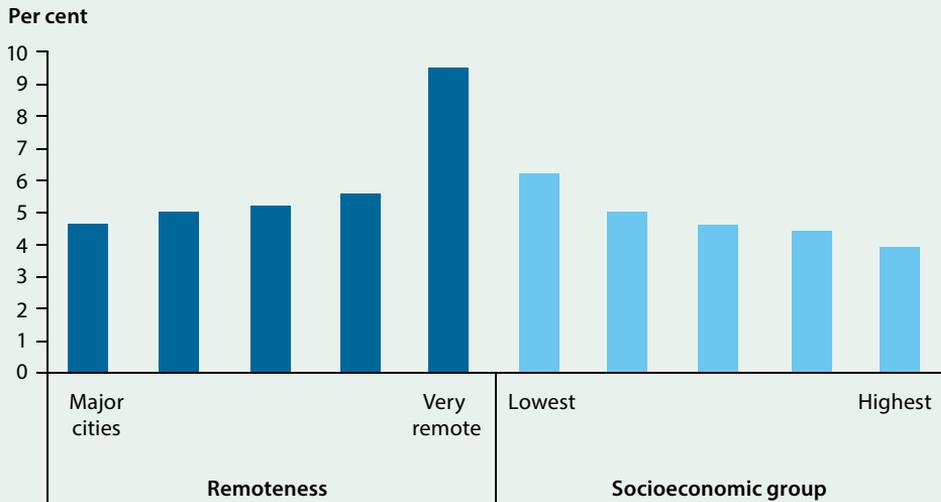
- In 2013–14, the median equivalised disposable household income was \$844 per week (ABS 2015d).
- In 2013–14, almost 2.4 million people lived on less than half the median equivalised household income (that is, less than \$422 per week), including more than 1.2 million people living on less than 40% of the median (\$338).
- The proportion of people living in low-income households (10.5% in 2013–14) is the lowest since 2003–04 (when it was a similar proportion, 10.8%), and follows a peak at 13.6% in 2007–08.

## Proportion of babies born with low birthweight

**Definition:** Proportion of liveborn singleton babies born with a birthweight of less than 2,500 grams.

**More information available on this topic:** 'Chapter 5.2 Trends and patterns in maternal and perinatal health'.

**Figure 7.1.14: Babies born with low birthweight, by remoteness and socioeconomic group, 2013**



Source: AIHW National Perinatal Data Collection.

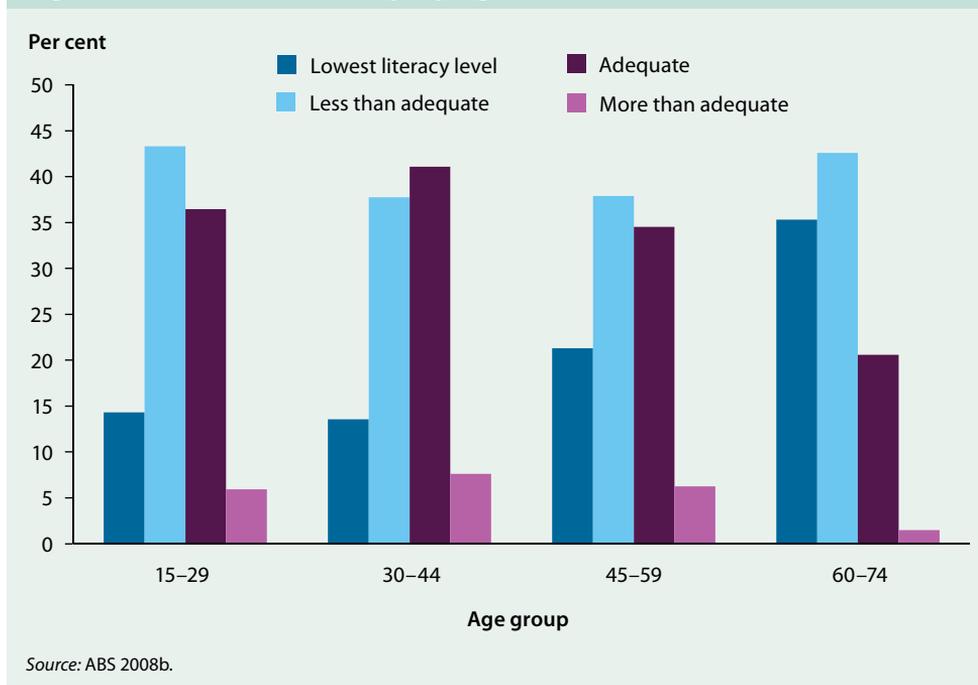
- In 2013, 4.8% (14,333) of live singleton babies were of low birthweight. This rate has not changed markedly over the past 10 years.
- The proportion of low birthweight babies increases with increasing levels of remoteness, with the proportion in *Very remote* areas being twice that in *Major cities*.
- The proportion of low birthweight babies was higher for mothers living in the lowest socioeconomic areas compared with those living in the highest socioeconomic areas.
- The proportion of low birthweight singleton babies born to Aboriginal and Torres Strait Islander mothers was 11% in 2013, 2.4 times the proportion of babies born to non-Indigenous mothers.

## Health literacy

**Definition:** Proportion of 15–74 year olds with health literacy above the minimum level regarded as necessary for understanding and using information relating to health issues.

**More information available on this topic:** 'Chapter 4.1 Social determinants of health'

**Figure 7.1.15: Health literacy, by age, 2006**



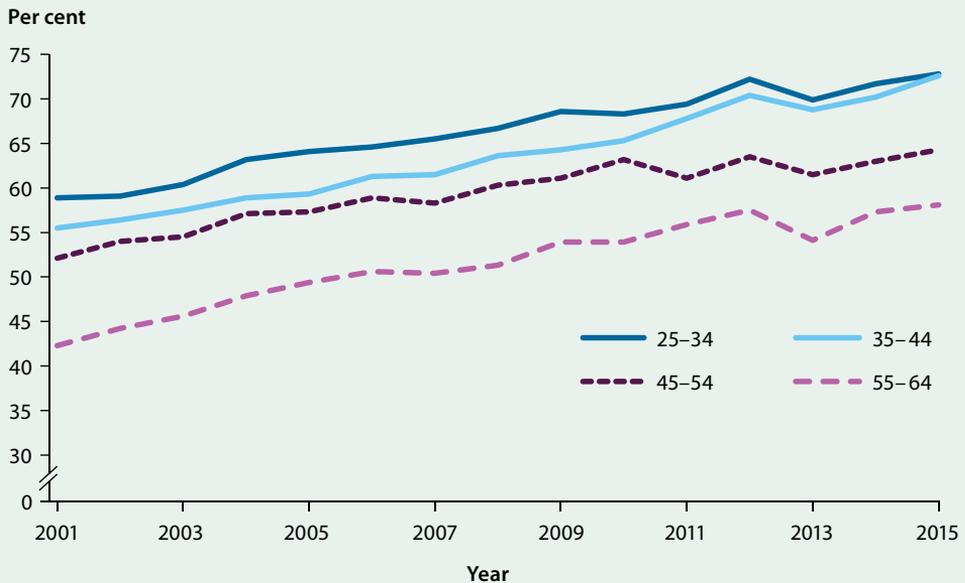
- In 2006, 41% of Australians aged 15–74 were assessed as having adequate or more than adequate health literacy skills (ABS 2008b).
- People aged 30–44 were most likely to have health literacy skills that were adequate or better (49%) and people aged 60–74 were least likely to have health literacy skills that were adequate or better (22%).
- Levels of health literacy skills were similar for males and females.

## Educational attainment

**Definition:** The proportion of people aged 25–64 with a non-school qualification (diploma, certificate or degree).

**More information available on this topic:** 'Chapter 4.1 Social determinants of health'

**Figure 7.1.16: People aged 25–64 with a non-school qualification, by age group, 2001–2015**



Note: From 2013, persons permanently unable to work were included in the scope of the Survey of Education and Work, and re-based Estimated Resident Population data were used from 2014. These factors may affect the comparison of data over time.

Sources: ABS 2011a, 2012d, 2013g, 2015c.

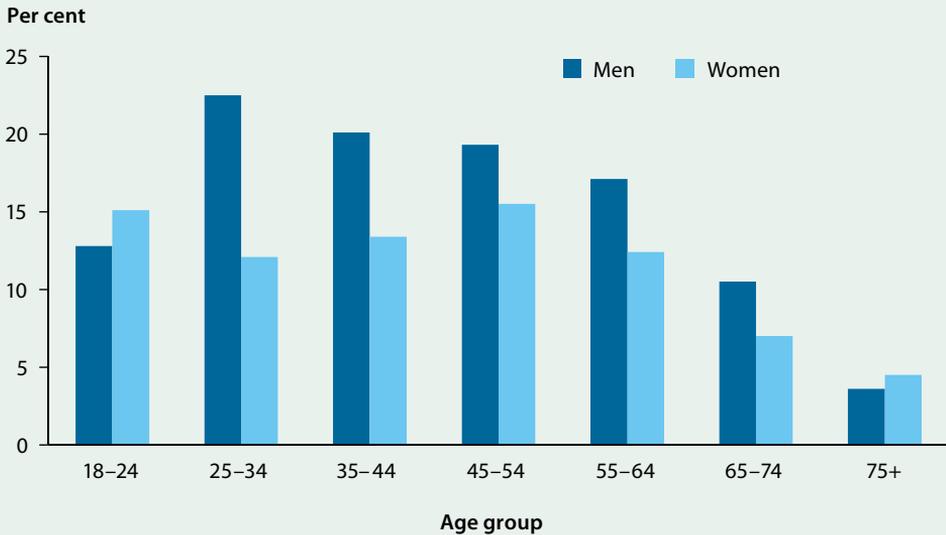
- More than two-thirds (67%) of people aged 25–64 had a non-school qualification in 2015, an increase from 53% in 2001.
- While more men (69%) than women (66%) had a non-school qualification in 2015, the gender gap has narrowed since 2001, when 58% of men and 49% of women had a non-school qualification.
- The proportion of people with a non-school qualification decreases with remoteness. Of people living in *Major cities*, 70% had a non-school qualification. This decreased to 63% for people living in *Inner regional* areas, 60% for people living in *Outer regional* areas and 55% for people living in *Remote* and *Very remote* areas.

## Proportion of adults who are daily smokers

**Definition:** Adults (aged 18 and over) who smoke tobacco every day.

**More information available on this topic:** 'Chapter 4.7 Tobacco smoking'

**Figure 7.1.17: Proportion of daily smokers, aged 18 and over, by age group and sex, 2014–2015**



Source: ABS 2015e.

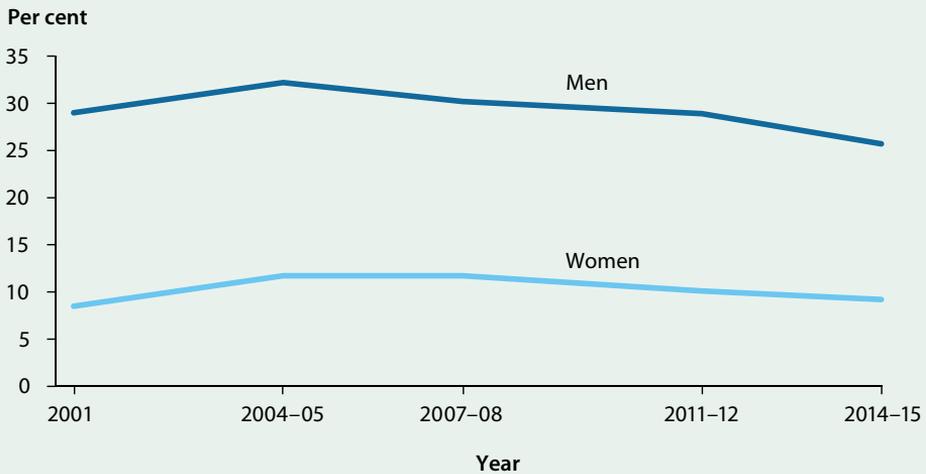
- In 2014–15, 15% of people aged 18 and over smoked daily (17% of males and 12% of females).
- Age-standardised daily smoking rates have fallen since 2001, when 25% of men and 20% of women smoked daily.
- In 2014–15, for men, the 25–34 age group had the highest daily smoking rate, whereas for women, the 45–54 age group had the highest daily rate.

## Proportion of adults at risk of long-term harm from alcohol

**Definition:** The proportion of people aged 18 and over whose alcohol consumption pattern puts them at risk of lifetime alcohol-related harm (consumed more than 2 standard drinks per day on average), according to 2009 National Health and Medical Research Council (NHMRC) guidelines (NHMRC 2009). Presented as an age-standardised percentage.

**More information available on this topic:** 'Chapter 4.6 Alcohol risk and harm'

**Figure 7.1.18: Age-standardised proportion of people aged 18 and over who exceeded lifetime risk guidelines for alcohol, by sex, 2001 to 2014–2015**



Sources: Unpublished data from the ABS National Health Survey: 2001 to 2011–12 (customised report); AIHW analysis of ABS 2015e.

- In 2014–15, 17% of adults consumed more than 2 standard drinks per day on average, exceeding the lifetime risk guideline.
- Rates of risky alcohol consumption for adults have fluctuated over time, peaking in 2004–05 and declining by 21% since then.
- Men were almost 3 times as likely as women to consume alcohol at risky levels—26% for men compared with 9% for women—but the proportion of men who consumed alcohol at risky levels in 2014–15 was lower than the proportion in 2001 (29%). The proportion of women was the same at both times.

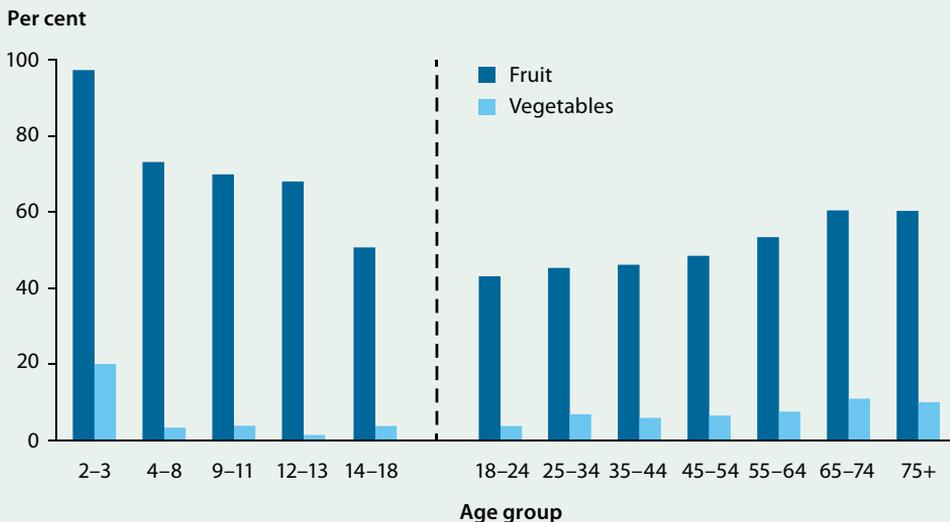
## Fruit and vegetable intake

**Definition:** The proportion of people eating sufficient serves of fruit and vegetables each day to obtain a health benefit.

Calculation of this indicator is based on relevant dietary guidelines published by the NHMRC. Revised dietary guidelines for Australia were published in 2013 (NHMRC 2013). Calculation of this indicator is now based on these new guidelines and therefore may not be directly comparable with data presented in previous editions of *Australia's health*.

In the latest NHMRC guidelines (NHMRC 2013), the minimum recommended number of serves of fruit per day is 1 for children aged 2–3 years, 1½ for children aged 4–8, and 2 for people aged 9 and over. The minimum recommended number of serves of vegetables per day is 2½ for children aged 2–3; 4½ for children aged 4–8; 5 for children aged 9–11, females aged 12 and over and males aged 70 and over; 5½ for males aged 12–18 and 51–70; and 6 for males aged 19–50.

**Figure 7.1.19: People aged 2 and over who ate the recommended daily intake of fruit and vegetables, by age, 2014–15**



*Note:* NHMRC guidelines define children as aged 2 to 18 and adults as aged 19 and above. ABS data are presented for children aged 2 to 18 as per NHMRC guidelines and adults aged 18 and over as per the standard definition for adulthood. Hence, 18-year-old people are included in 2 age groups and data should be considered separately for children and adults.

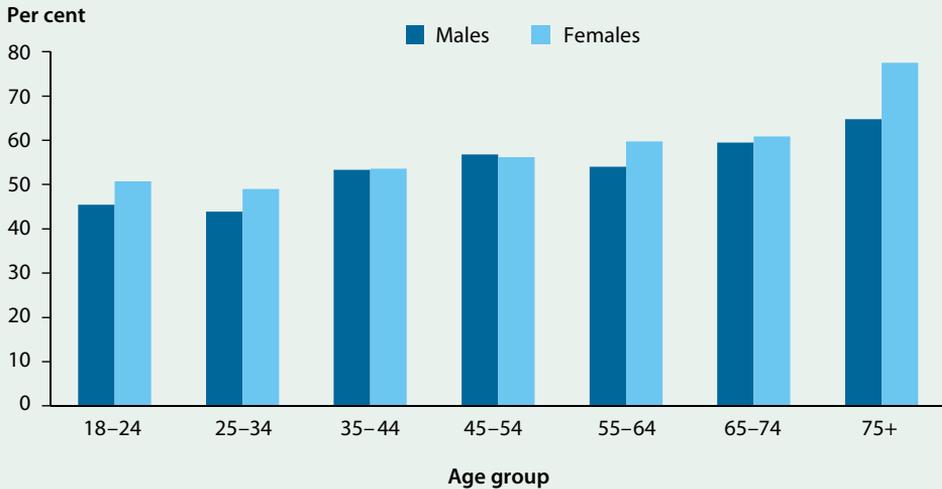
*Source:* ABS 2015e.

- In 2014–15, 50% of adults and 68% of children ate sufficient serves of fruit, and 7% of adults and 5% of children ate sufficient serves of vegetables, based on the 2013 NHMRC guidelines.
- For adults, sufficient fruit intake and sufficient vegetable intake were highest in the 65–74 age group. For children, sufficient fruit intake and sufficient vegetable intake were highest in the 2–3 year age group.
- Overall, 5% of adults had a sufficient intake of both fruit and vegetables. Females were more likely to eat sufficient fruit and vegetables than males (8% compared with 3%).

## Physical inactivity

**Definition:** The proportion of adults who did not participate in sufficient regular physical activity to gain a health benefit. The recommended minimum level of activity is 150 minutes per week of walking or other moderate or vigorous activity, over at least 5 sessions (DHAC 1999).

**Figure 7.1.20: Adults who did not participate in sufficient physical activity, by age and sex, 2014–15**



Source: ABS 2015e.

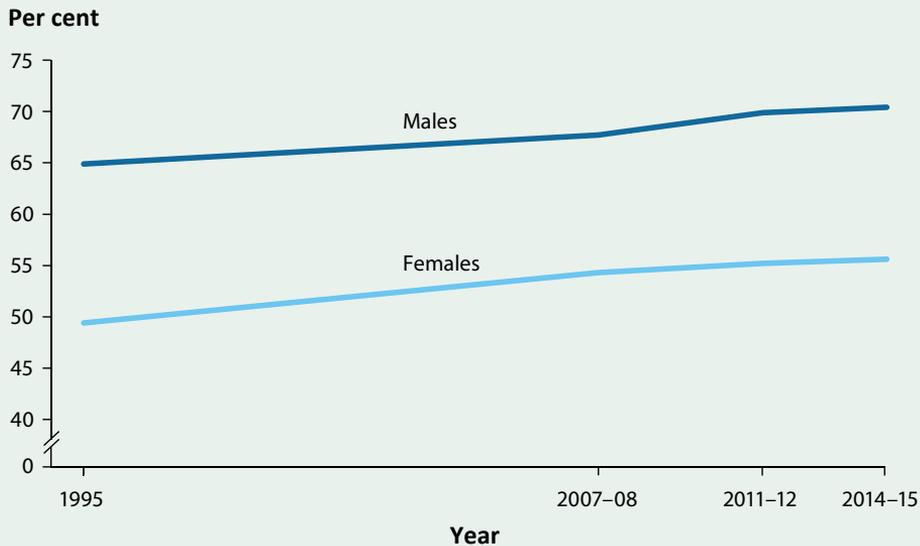
- In 2014–15, 54% of adults were not sufficiently active to meet the recommended minimum level of activity (ABS 2015e). This is a decrease from 62% of adults in 2007–08 and 56% of adults in 2011–12 (ABS 2011b, 2013b).
- Insufficient activity levels increased with age, with 72% of people aged 75 and over insufficiently active compared with 48% of those aged 18–24.
- Overall, the proportion of females who were insufficiently active was greater than the proportion of males (56% compared with 53%).

## Proportion of people obese and overweight

**Definition:** Proportion of people who are overweight or obese. Body mass index (BMI) is a measure that classifies a person as underweight, normal weight, overweight or obese. It is calculated as the person's weight in kilograms divided by their height in metres squared. 'Overweight' is defined as a BMI of 25 or over and 'obesity' is defined as a BMI of 30 or more.

**More information available on this topic:** 'Chapter 4.4 Overweight and obesity'.

**Figure 7.1.21: Age-standardised rate of overweight or obesity, people aged 18 and over, by sex, 1995 to 2014–2015**



Sources: Unpublished data from the ABS National Health Survey: 2001 and 2007–08 (customised report); ABS 2013c; AIHW analysis of ABS 2015e.

- In 2014–15, the majority of Australian adults (63%) were either overweight or obese.
- Among adults, rates of overweight and obesity were highest in the 55–64 age group (75%) and lowest in the 18–24 age group (39%).
- After adjusting for differences in the age structure, rates of overweight and obesity rose from 57% in 1995 to 61% in 2007–08, and to 63% in 2011–12. Rates were stable between 2011–12 and 2014–15 (also 63%).
- Changes in rates for males showed a similar pattern. The age-standardised rate for males rose from 65% in 1995 to 68% in 2007–08, and to 70% in 2011–12. Rates for males were stable between 2011–12 and 2014–15 (also 70%). Rates for females also rose between 1995 and 2007–08 (from 49% to 54%), but have since remained more stable (55% in 2011–12 and 56% in 2014–15).
- The proportions of children aged 5–17 who were overweight or obese were similar in 2014–15 (27%), 2011–12 (26%) and 2007–08 (25%) and an increase over the 21% in 1995 (ABS 2009b, 2013c, 2015e).

## Indicators: health system performance

In the NHPF, health system performance is assessed by considering aspects of the effectiveness of health systems (which incorporates aspects of quality); the safety of hospital care; continuity of care; the accessibility of selected health services; and growth in the numbers of key health and medical workforce personnel.

Most measures of health system performance (where the trend could be assessed) show either that there has been no meaningful change to the indicator in the last 10 years for which data are available or show favourable trends (overall) for this period. None of the indicators in this domain showed an unfavourable trend in this period.

For the 'effectiveness' dimension, favourable trends are seen for: immunisation rates for 5 year olds for vaccines in the national schedule, survival of people diagnosed with cancer (5-year relative rates, trends for which have been assessed over a longer time period due to the nature of this indicator) and potentially avoidable deaths. Within the 'continuity of care' dimension, the proportion of people with asthma with a written asthma action plan and the proportion of people with mental illness with a general practitioner (GP) care plan both have favourable trends. Bulk-billing for non-referred (GP) attendances and waiting time for emergency department care have favourable trends in the 'accessibility' dimension, as does net growth in health workforce (for both medical practitioners and nurses/midwives) in the 'efficiency and sustainability' dimension.

The dimension of 'safety' was the one area where no indicators were assessed as having a favourable trend. Both of the indicators included in this dimension (adverse events treated in hospitals, and falls resulting in patient harm in hospitals) showed increased rates over the relevant period for assessment, but were assessed as showing no meaningful change. This assessment was made based on the need to be cautious in interpreting changes in the data which could also reflect improved reporting of patient safety events within hospitals.

The indicators that are reported for health system performance are presented in this section and are summarised in Table 7.1.4.

Table 7.1.4: Indicators of NHPF domain—health system performance

| NHPF dimension/Indicator  | New data available | 10-year trend assessment |
|---|--------------------|--------------------------|
| <b>Effectiveness</b>  |                    |                          |
| Unsafe sharing of needles   | Yes                | ~                        |
| Immunisation rates for vaccines in the national schedule                      |                    |                          |
| 1 year  | Yes                | ~                        |
| 2 years   | Yes                | ~                        |
| 5 years   | Yes                | ✓                        |
| adults  | No                 | ..                       |
| Selected potentially preventable hospitalisations                             | Yes                | ~                        |
| Survival following acute coronary heart disease event                         | No                 | ..                       |
| Survival of people diagnosed with cancer (5-year relative rates)              | Yes                | ✓ <sup>(a)</sup>         |
| Potentially avoidable deaths  | Yes                | ✓                        |
| <b>Safety</b>   |                    |                          |
| Adverse events treated in hospitals   | Yes                | ~                        |
| Falls resulting in patient harm in hospitals                                  | Yes                | ~                        |
| <b>Continuity of care</b>   |                    |                          |
| Proportion of people with diabetes with a GP annual cycle of care             | No                 | ..                       |
| Proportion of people with asthma with a written asthma action plan            | Yes                | ✓                        |
| Proportion of people with mental illness with a GP care plan                  | No                 | ✓                        |
| <b>Accessibility</b>  |                    |                          |
| Bulk-billing for non-referred (GP) attendances                                | Yes                | ✓                        |
| Selected potentially avoidable GP-type presentations to emergency departments | No                 | ..                       |
| Waiting time for elective surgery   | Yes                | ~                        |
| Waiting time for emergency department care                                    | Yes                | ✓                        |
| Cancer screening rates  |                    |                          |
| breast  | Yes                | ~                        |
| cervical  | Yes                | ~                        |
| bowel   | Yes                | ..                       |
| Differential access to hospital procedures                                    | Yes                | ..                       |
| Proportion of pregnancies with an antenatal visit in the first trimester      | Yes                | ~                        |
| <b>Responsiveness</b>   |                    |                          |
| <i>No indicators for this dimension</i>                                       |                    |                          |
| <b>Efficiency &amp; sustainability</b>  |                    |                          |
| Net growth in health workforce  |                    |                          |
| medical practitioners   | Yes                | ✓                        |
| nurses and midwives   | Yes                | ✓                        |
| Cost per case mix-adjusted separation for acute and non-acute care episodes   | No                 | ..                       |

- ✓ Favourable
- ✗ Unfavourable
- ~ No change
- .. No data/insufficient data

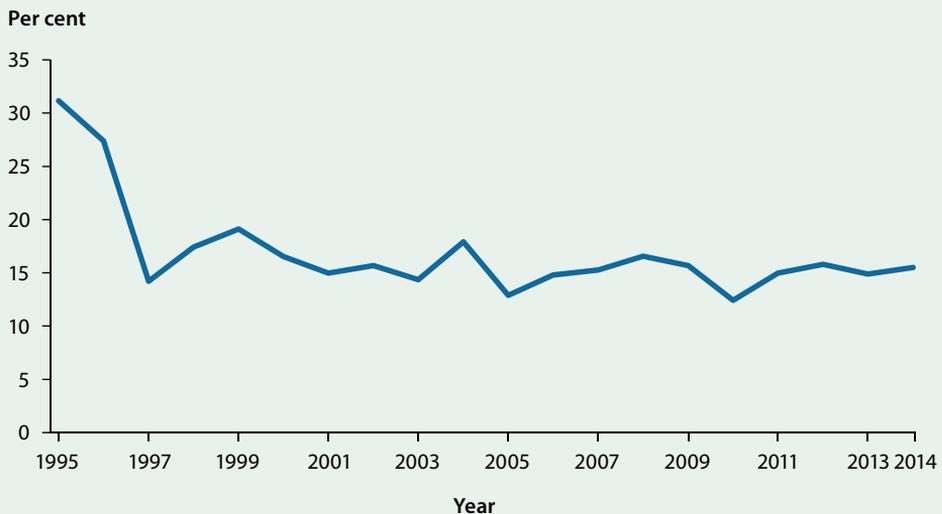
(a) Because relative survival is measured for 5-year periods for people with cancer, the trend assessment for this indicator is based on 30 years of data (rather than 10).

## Unsafe sharing of needles

**Definition:** The percentage of injecting drug users participating in surveys carried out at needle and syringe programs, who report re-using someone else's needles and syringes in the last month.

**More information available on this topic:** 'Chapter 6.15 Specialised alcohol and other drug treatment services'

**Figure 7.1.22: Injecting drug users who report using needles and syringes after someone else in the last month, 1995 to 2014**



Source: Kirby Institute 2015a.

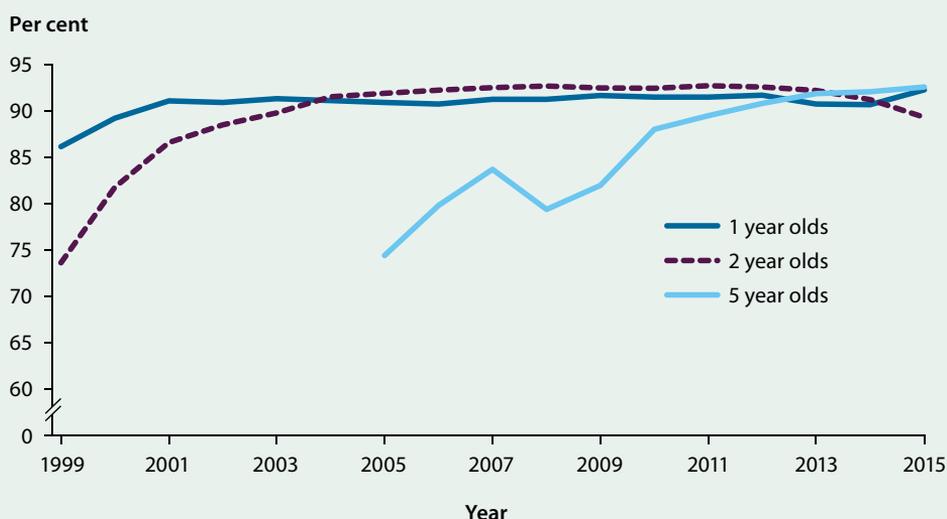
- In 2014, 16% of injecting drug users participating in the Australian Needle and Syringe Program Survey reported using needles and syringes after someone else in the month before the survey.
- This proportion dropped markedly from 1995 (31%) to 1997 (14%) and has fluctuated since then.

## Immunisation rates for vaccines in the national schedule (children)

**Definition:** The proportion of 1, 2 and 5 year olds who have been assessed as fully immunised according to the Australian Childhood Immunisation Register.

**More information available on this topic:** 'Chapter 5.3 How healthy are Australia's children?'

**Figure 7.1.23: Immunisation rates for vaccines in the national schedule, children aged 1, 2 and 5, 1999 to 2015**



Source: Australian Childhood Immunisation Register.

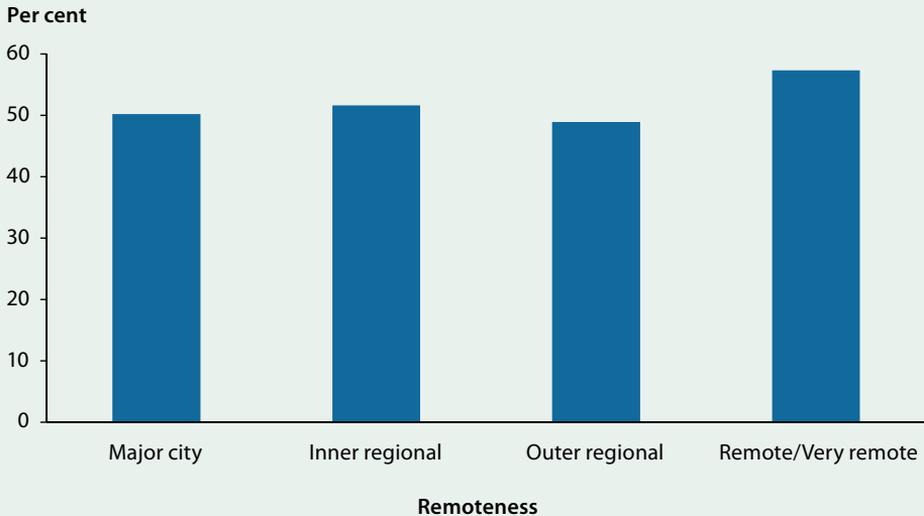
- The immunisation rate for 1 year olds increased from 1999 to 2001 and remained relatively stable from then to 2012. The slight fall in the rate for 2013 and 2014 may have been due to a change in the definition of 'fully immunised' in 2013. The rate was 92% in 2015.
- For 2 year olds, the immunisation rate increased markedly from 1999 to 2004, and remained relatively stable at 92% to 93% until 2013. The rate has fallen to 89% in 2015. Changes in the definition of 'fully immunised', implemented in 2014, may have contributed to this drop.
- The immunisation rate for 5 year olds has continued to increase, from 74% in 2005 to 93% in 2015. Children who have had catch-up immunisations are included as 'fully immunised' even if they were not fully immunised when they were 1 or 2 years old.
- For Indigenous children in 2015, the immunisation rate for 1 and 2 year olds was lower than the rate for all children (89% compared with 92% for 1 year olds and 86% compared with 89% for 2 year olds); but the immunisation rate for Indigenous 5 year olds was higher than the rate for all children (94% compared with 93%).

## Immunisation rates for vaccines in the national schedule (older people)

**Definition:** Proportion of people aged 65 and over who have been vaccinated for influenza and pneumococcal disease.

**More information available on this topic:** 'Chapter 3.17 Vaccine preventable diseases'

**Figure 7.1.24: Adults aged 65 and over vaccinated against influenza and pneumococcal disease, by remoteness area, 2009**



Source: AIHW 2009 Adult Vaccination Survey.

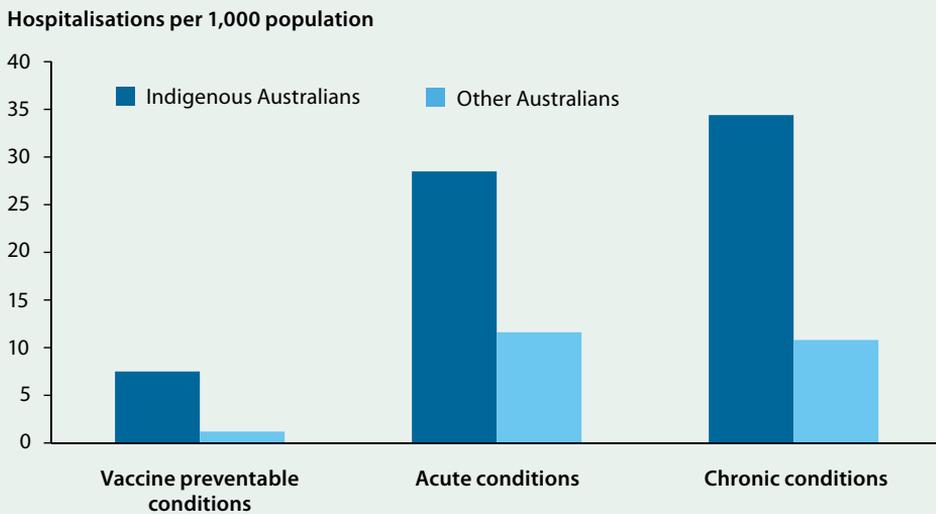
- In 2009, 51% of Australian adults aged 65 and over reported they were immunised against pneumococcal disease and influenza.
- Vaccination rates for influenza and pneumococcal disease were highest in *Remote* and *Very remote* areas (57%) but generally similar for *Major cities* (50%), *Inner regional* (52%) and *Outer regional* areas (49%).
- Between 2006 and 2009, vaccination rates for influenza and pneumococcal disease fell among those aged 65 and over, from 59% to 51%.

## Selected potentially preventable hospitalisations

**Definition:** Hospitalisations thought to have been avoidable if timely and adequate non-hospital care had been provided, either to prevent the condition occurring, or to prevent the hospitalisation for the condition. They are categorised as *Vaccine preventable* conditions (for example, measles); *Acute* conditions (for example, ear, nose and throat infections); and *Chronic* conditions (such as diabetes complications).

Note that there have been recent changes to this indicator specification, meaning data presented here are not directly comparable with data reported in previous editions of *Australia's health*.

**Figure 7.1.25: Age-standardised rates of selected potentially preventable hospitalisations, by Indigenous status, 2013–14**



Source: AIHW National Hospital Morbidity Database.

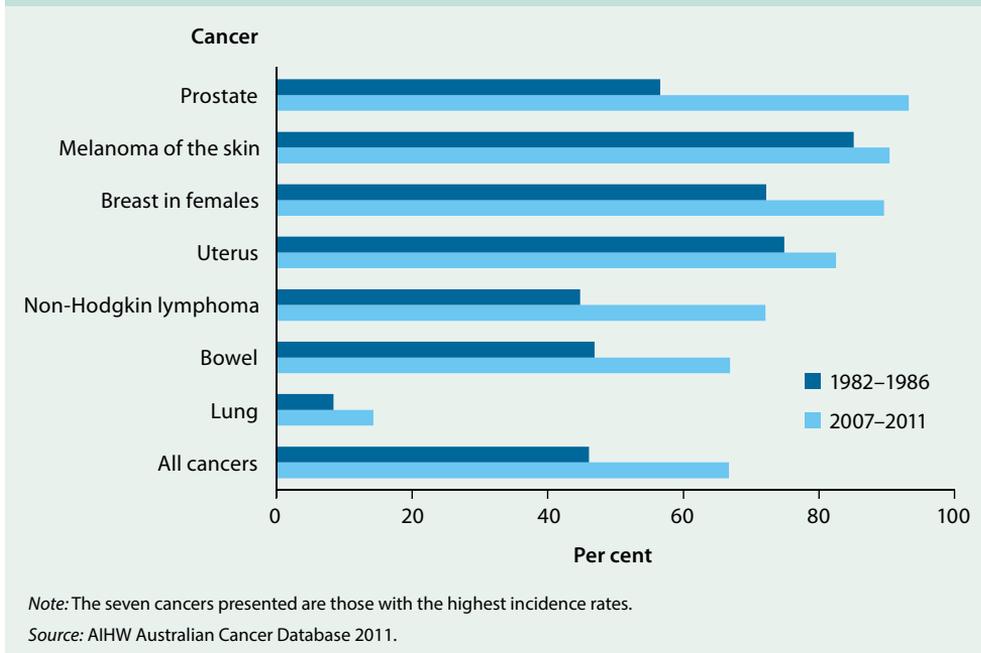
- In 2013–14 there were an estimated 24 potentially preventable hospitalisations per 1,000 population. This rate has decreased slightly since 2007–08 (from 26 hospitalisations per 1,000 population); however, the data may have been affected by changes in classification and reporting over time.
- Potentially preventable hospitalisations accounted for 6.2% of all hospitalisations (8.1% of hospitalisations in public hospitals and 3.4% of hospitalisations in private hospitals).
- The rate of potentially preventable hospitalisations for Indigenous Australians was almost 3 times the rate for other Australians.
- *Acute* and *Chronic* conditions were the most common reasons for potentially preventable hospitalisations, at 12 and 11 hospitalisations per 1,000 population respectively. *Vaccine preventable* conditions occurred at a rate of 1.3 per 1,000 population.
- *Urinary tract infections* (24%) and *Dental conditions* (22%) accounted for almost half of the *Acute* conditions that were considered potentially preventable, while *Chronic obstructive pulmonary disease* (22%) and *Congestive cardiac failure* (19%) were the most common *Chronic* conditions. *Pneumonia and vaccine-preventable influenza* accounted for 38% of *Vaccine preventable* conditions.

## Survival of people diagnosed with cancer (5-year relative rates)

**Definition:** The percentage of people diagnosed with cancer who survived for at least 5 years after diagnosis, relative to people of the same age and sex in the general population.

**More information available on this topic:** 'Chapter 3.4 Cancer'.

**Figure 7.1.26: Five-year relative survival for selected cancers, 1982–1986 and 2007–2011**



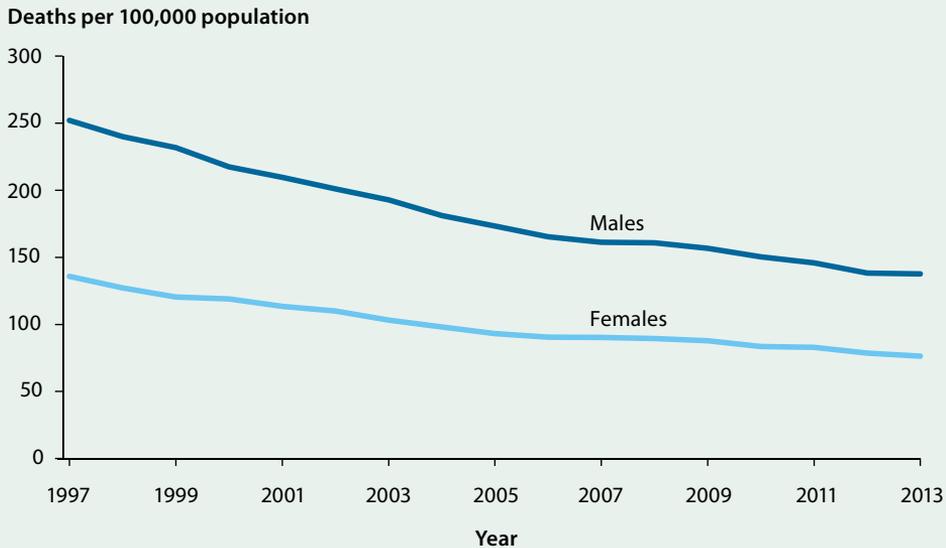
- The 5-year relative survival for all cancers combined for 2007–2011 was 67%. This is an increase from 46% for 1982–1986.
- The 5-year relative survival for females (68%) is higher than that for males (66%)—a difference of 2 percentage points. The difference between relative survival for males and females has become smaller over the last 30 years: in 1982–1986, the 5-year relative survival for females was 52%, while that for males was 40%, a difference of 12 percentage points.
- People aged 15 to 24 have the highest 5-year relative survival (87%), while people aged 75 and over have the lowest (48%).

## Potentially avoidable deaths

**Definition:** The number of deaths each year of people aged under 75 from conditions that are potentially preventable through individualised care and/or treatable through existing primary or hospital care.

Note that there have been recent changes to this indicator specification, meaning data presented here are not directly comparable with data reported in previous editions of *Australia's health*.

**Figure 7.1.27: Age-standardised death rates for potentially avoidable deaths, by sex, 1997 to 2013**



Source: AIHW National Mortality Database.

- In 2013, there were around 25,400 potentially avoidable deaths in Australia—an age-standardised rate of 107 deaths per 100,000 population. This is a decrease of 45% from the rate of 193 deaths per 100,000 population in 1997.
- The age-standardised rate for males in 2013 was almost twice the rate for females—138 deaths per 100,000 males compared with 76 deaths per females.
- The 5-year aggregate rate for 2009–2013 for Indigenous people (based on data from New South Wales, Queensland, Western Australia, South Australia and the Northern Territory) was 351 potentially avoidable deaths per 100,000 population, which is more than 3 times the rate for non-Indigenous people (110 deaths per 100,000 population).

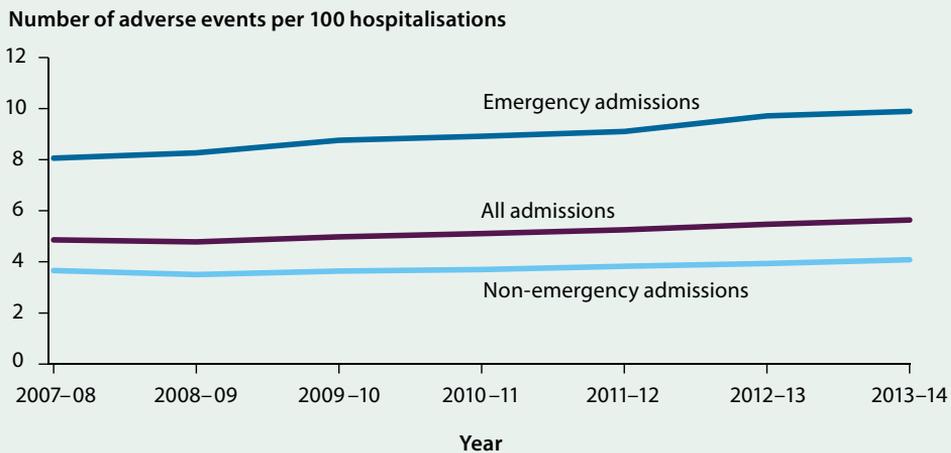
## Adverse events treated in hospitals

**Definition:** The number of hospitalisations involving an adverse event. This is presented as a number per 100 hospitalisations.

Adverse events are defined as incidents in which harm resulted to a person receiving health care. They include infections, falls resulting in injuries, and problems with medication and medical devices. Some adverse events may be preventable. For further information, see AIHW 2015a.

**More information available on this topic:** 'Chapter 6.14 Safety and quality in Australian hospitals'

**Figure 7.1.28: Hospitalisations involving an adverse event per 100 hospitalisations, all hospitals, 2007–08 to 2013–14**



*Note:* The data in the National Hospital Morbidity Database are collected primarily for the purposes of recording care provided to admitted patients, and their use for purposes such as reporting adverse events has not been validated for accuracy in Australia. The results should therefore be treated with caution.

*Sources:* AIHW 2009, 2010, 2011, 2012a, 2013, 2014a, 2015a; National Hospital Morbidity Database.

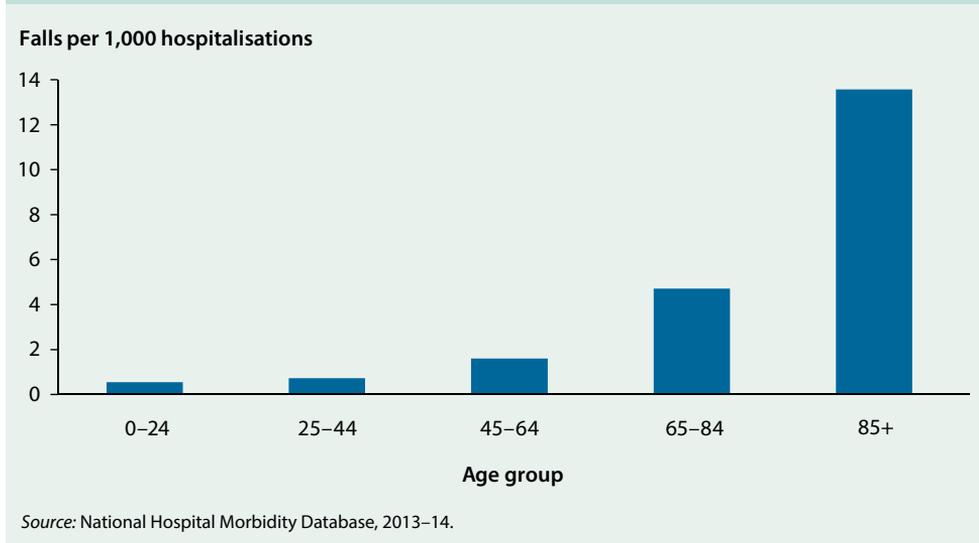
- From 2007–08 to 2013–14, hospitalisations with adverse events increased from 4.8 to 5.6 per 100 hospitalisations. This may reflect an increase in adverse event rates, but may also reflect changing patient profiles and/or an increasing focus on the safety and quality of hospital care and good reporting of relevant data.
- In 2013–14, adverse events were more likely to be reported for overnight hospitalisations than for same-day hospitalisations (11.2 and 1.7 per 100 hospitalisations, respectively); subacute and non-acute care hospitalisations than for acute care hospitalisations (10.5 and 5.4 per 100 hospitalisations, respectively); and emergency admissions than for non-emergency admissions (9.9 and 4.1 per 100 hospitalisations, respectively).

## Falls resulting in patient harm in hospitals

**Definition:** The number of hospitalisations in which a patient was treated for a fall that occurred in hospital. This is presented as a number, and a number per 1,000 hospitalisations.

**More information available on this topic:** 'Chapter 6.14 Safety and quality of hospital care.'

**Figure 7.1.29: Falls that occurred in a hospital and that resulted in patient harm, by age, 2013–14**



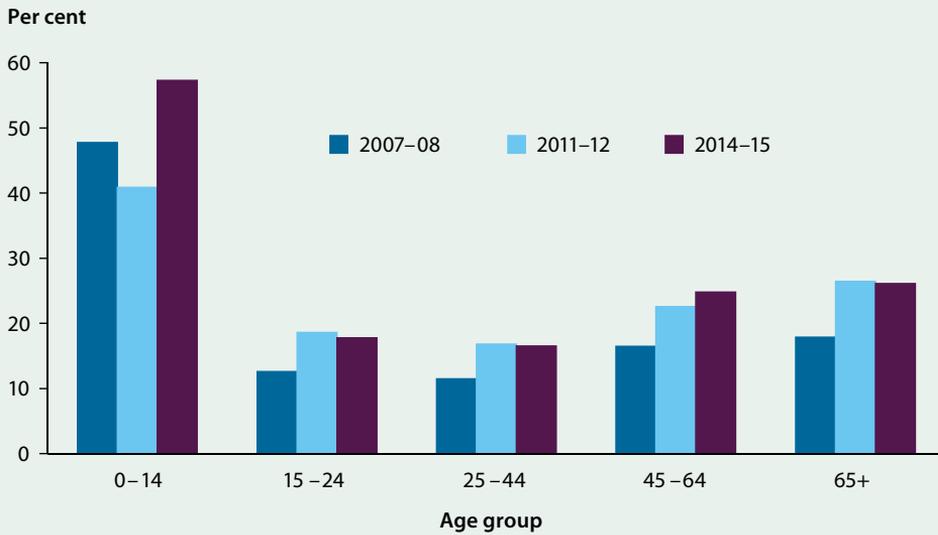
- In 2013–14, there were more than 30,000 hospitalisations in which a patient was treated for injuries sustained in a fall in hospital—an overall rate of 3.1 per 1,000 hospitalisations.
- The rate of falls increased with age, with 0.6 falls per 1,000 hospitalisations for children and young people under 24, and 13.6 falls per 1,000 hospitalisations for patients aged 85 and over.
- The rate of falls has increased in recent years, up from 2.4 in 2009–10 and 3.0 in 2012–13. However, the increase in reported rates over recent years may reflect changing patient profiles and/or an increasing focus on the safety and quality of hospital care and improved reporting of relevant data rather than an increase in falls in hospitals among admitted patients. Note also that the place of occurrence was not specified for all fall-related hospitalisations (26% in 2013–14, for example), so the rates may be underestimated. Rates may also be overestimated, as some falls that occurred in health care settings other than a hospital may be included.

## Proportion of people with asthma with a written asthma action plan

**Definition:** The proportion of people who self-report having asthma, who said they had a written asthma action plan. An asthma plan is generally prepared for patients with asthma by a health care professional and provides written instructions on how to recognise and respond to worsening asthma.

**More information available on this topic:** 'Chapter 3.10 Chronic respiratory conditions'

**Figure 7.1.30: People with asthma who have a written asthma action plan, by age, 2007–08 to 2014–15**



Sources: ABS 2009b, 2013a; ABS National Health Survey 2014–15 (unpublished).

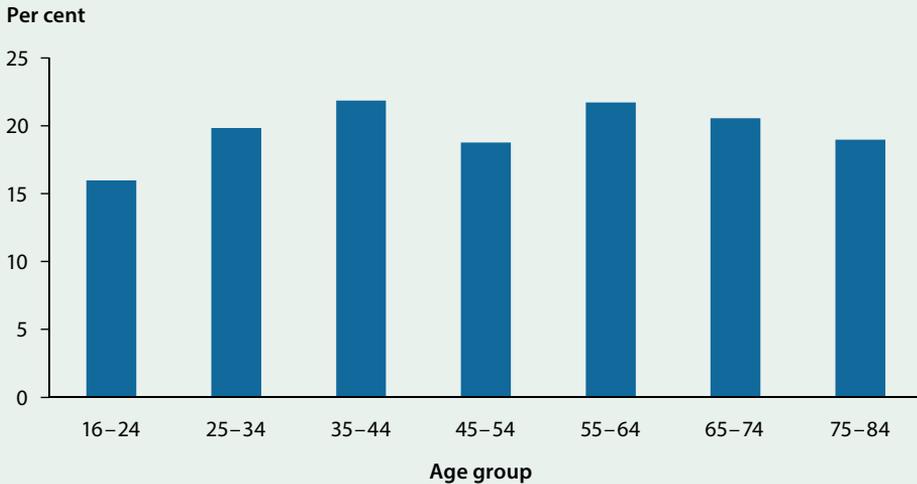
- In 2014–15, an estimated 2,485,300 people (10.8%) reported having asthma as a long-term health condition (ABS 2015e). Of the people who reported asthma as a long-term condition, 28% also reported having a written asthma action plan. This is an increase from 2007–08, when the rate was 21%.
- Among people with asthma, children aged 0–14 were the most likely to have a written asthma action plan (57%) and adults aged 25–44 were the least likely to have a written plan (17%).

## Proportion of people with mental illness with a GP care plan

**Definition:** The number of people aged 16–84 with a GP mental health treatment plan, as a percentage of the estimated number of people aged 16–84 with mental illness.

**More information available on this topic:** 'Chapter 6.16 Mental health services'.

**Figure 7.1.31: People with mental illness who have a GP treatment plan, 2010–11**



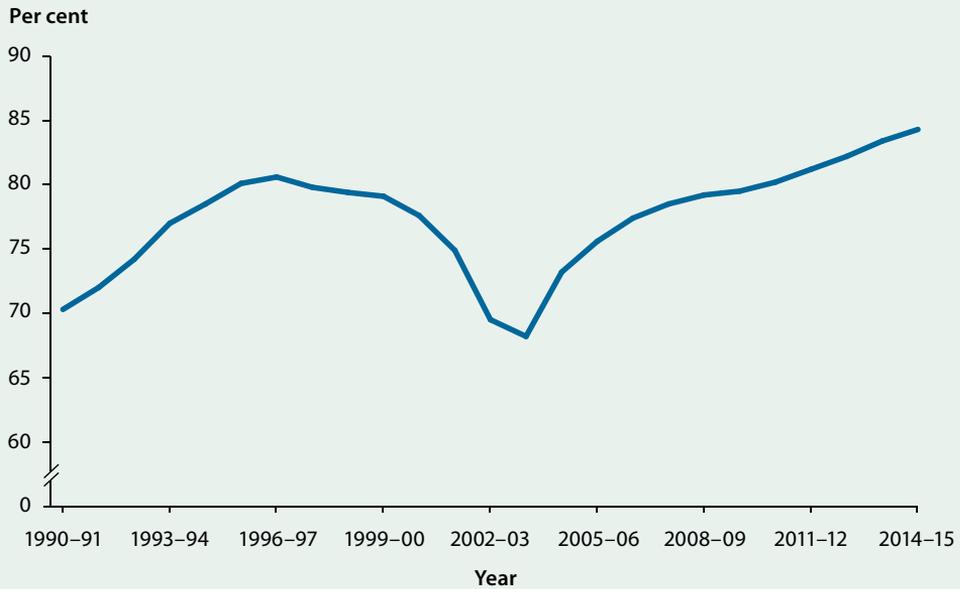
Sources: Department of Health (unpublished); Department of Veterans' Affairs (unpublished).

- In 2010–11, 1 in 5 people (20%) with mental illness had a GP mental health treatment plan.
- People with mental illness living in *Very remote* areas were the least likely to have a GP mental health treatment plan (5%) and people in *Inner regional* areas were the most likely (21%).
- The proportion of people with mental illness who had a GP mental health treatment plan increased from 17% in 2008–09 to 20% in 2010–11.

## Bulk billing for non-referred (GP) attendances

**Definition:** Proportion of non-referred attendances that were bulk-billed based on Medicare Benefits Scheme services. This includes GP, vocationally registered GP, enhanced primary care and other non-referred services. Presented as a percentage of total annual GP attendances per financial year.

**Figure 7.1.32: Bulk-billing rate for non-referred (GP) attendances, 1990–91 to 2014–15**



Source: Department of Health 2015.

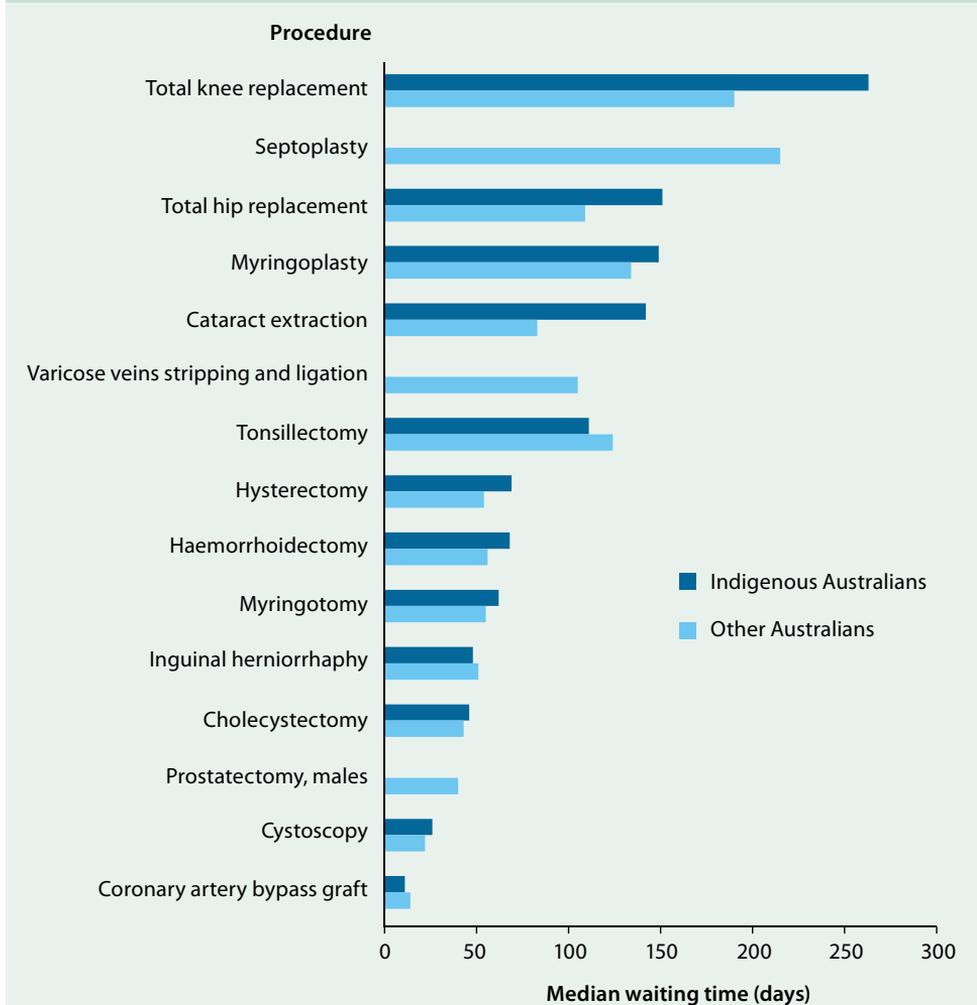
- More than 139 million non-referred (GP) attendances were claimed through Medicare in 2014–15 and just under 117.5 million (84%) of these services were bulk-billed.
- Bulk-billing rates for non-referred (GP) attendances have changed over time, decreasing from 1996–97 to 2003–04, and increasing each year from 2003–04 to the 2014–15 high of 84%.
- Since 1990–91, the lowest bulk-billing rate was recorded in 2003–04 (68%).

## Waiting time for elective surgery

**Definition:** The median waiting times for elective surgery in public hospitals. Data are presented as number of days.

**More information available on this topic:** 'Chapter 6.10 Elective surgery'

**Figure 7.1.33: Median waiting time to admission for selected elective surgery procedures, by procedure and Indigenous status, 2014–15**



**Notes**

1. Median waiting times for Indigenous Australians have not been published for *Septoplasty*, *Varicose veins stripping and ligation*, and *Prostatectomy*, due to small numbers.
2. Based on data from the National Elective Surgery Waiting Times Data Collection, which covered an estimated 91% of public hospital elective surgery in 2014–15.

Source: AIHW 2015c.

- The median waiting time for elective surgery in 2014–15 was 35 days. This was a decrease since 2013–14 (36 days), but an overall increase since 2008–09 (33 days).
- In 2014–15, *Coronary artery bypass graft* was the procedure with the shortest median waiting time at 14 days, while the longest was for *Septoplasty* (surgery to straighten the cartilage and bone between the nostrils) at 214 days.
- The median waiting time in 2014–15 for Indigenous Australians (42 days) was higher than for other Australians (35 days).

## Waiting time for emergency department care

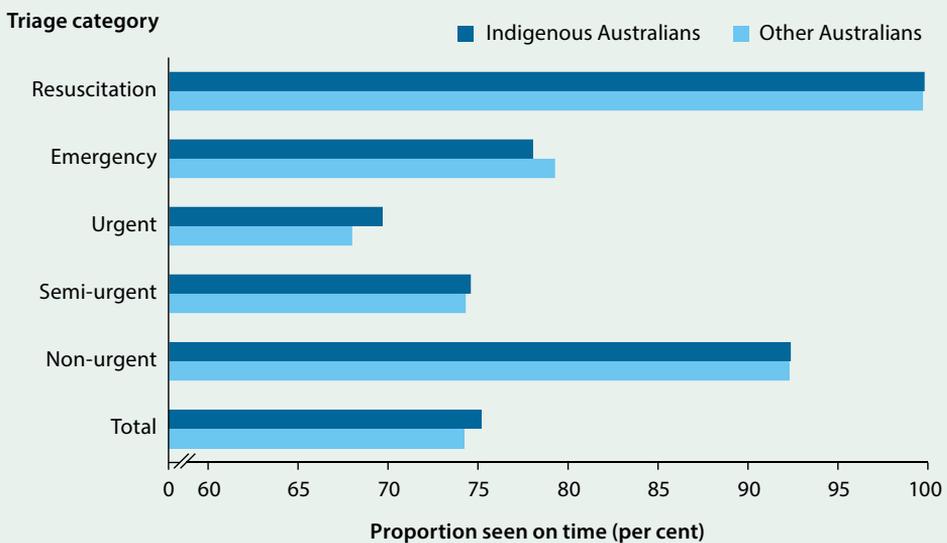
**Definition:** Percentage of patients who were treated within national benchmarks for waiting times for each triage category in public hospital emergency departments.

The national benchmarks are:

- *Resuscitation*: immediate (within seconds)
- *Emergency*: within 10 minutes
- *Urgent*: within 30 minutes
- *Semi-urgent*: within 60 minutes
- *Non-urgent*: within 120 minutes.

**More information available on this topic:** 'Chapter 6.11 Emergency department care.'

**Figure 7.1.34: Presentations seen on time, by triage category and Indigenous status, 2014–15**



Source: AIHW National Non-admitted Patient Emergency Department Care Database.

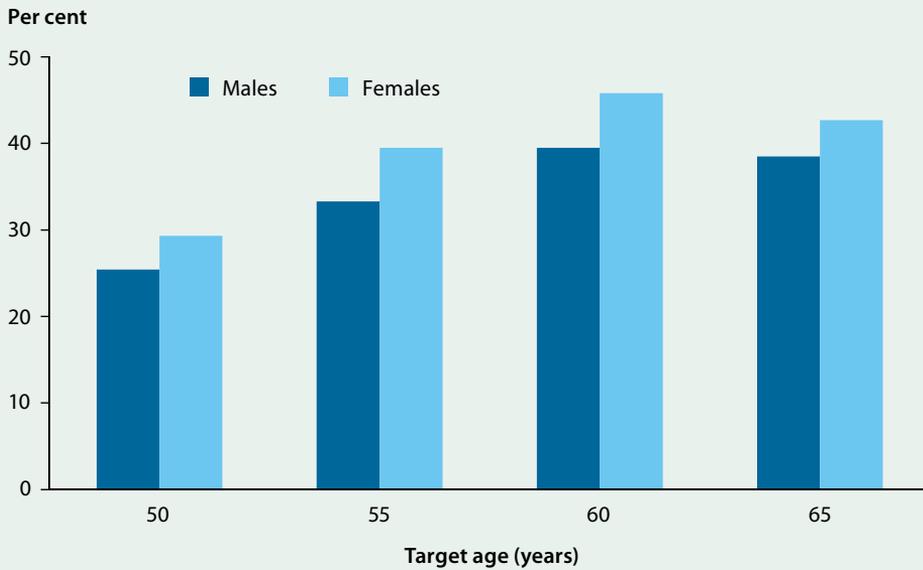
- In 2014–15, patients in 74% of presentations were seen within the recommended time for their triage category. Despite falling slightly from the previous year (75% in 2013–14), this proportion has increased over time from 68% in 2003–04.
- The proportion of patients seen on time was similar for Indigenous Australians (75%) and other Australians (74%).
- Almost 100% of *Resuscitation* patients (those requiring immediate treatment) were seen within the recommended waiting time.
- The proportion of patients seen on time was highest for those living in *Outer regional* and *Remote* areas (80%), and lowest for those in *Major cities* (72%).

## Cancer screening rates

**Definition:** The proportions of the target populations that participated in each of the three national cancer screening programs.

**More information available on this topic:** 'Chapter 6.2 Cancer screening'.

**Figure 7.1.35: Participation in the National Bowel Cancer Screening Program, by age and sex, 2013–14**



Source: National Bowel Cancer Screening Program Register as at 31 December 2014.

- In 2013–14, 36% of National Bowel Cancer Screening Program invitees aged 50, 55, 60 and 65 participated in the program. The highest rate of participation was for people aged 60 (40% of males and 46% of females), while the lowest was for people aged 50 (25% of males and 29% of females).
- The rate of women aged 50–69 participating in BreastScreen Australia for 2013 and 2014 combined was 54%—a similar rate to previous years.
- In 2013 and 2014 combined, 58% of women aged 20–69 participated in the National Cervical Screening Program. This rate has decreased since the late 1990s, but has remained relatively stable in recent years. Participation was highest for the 45–49 age group (64%) and lowest for the 20–24 age group (42%).

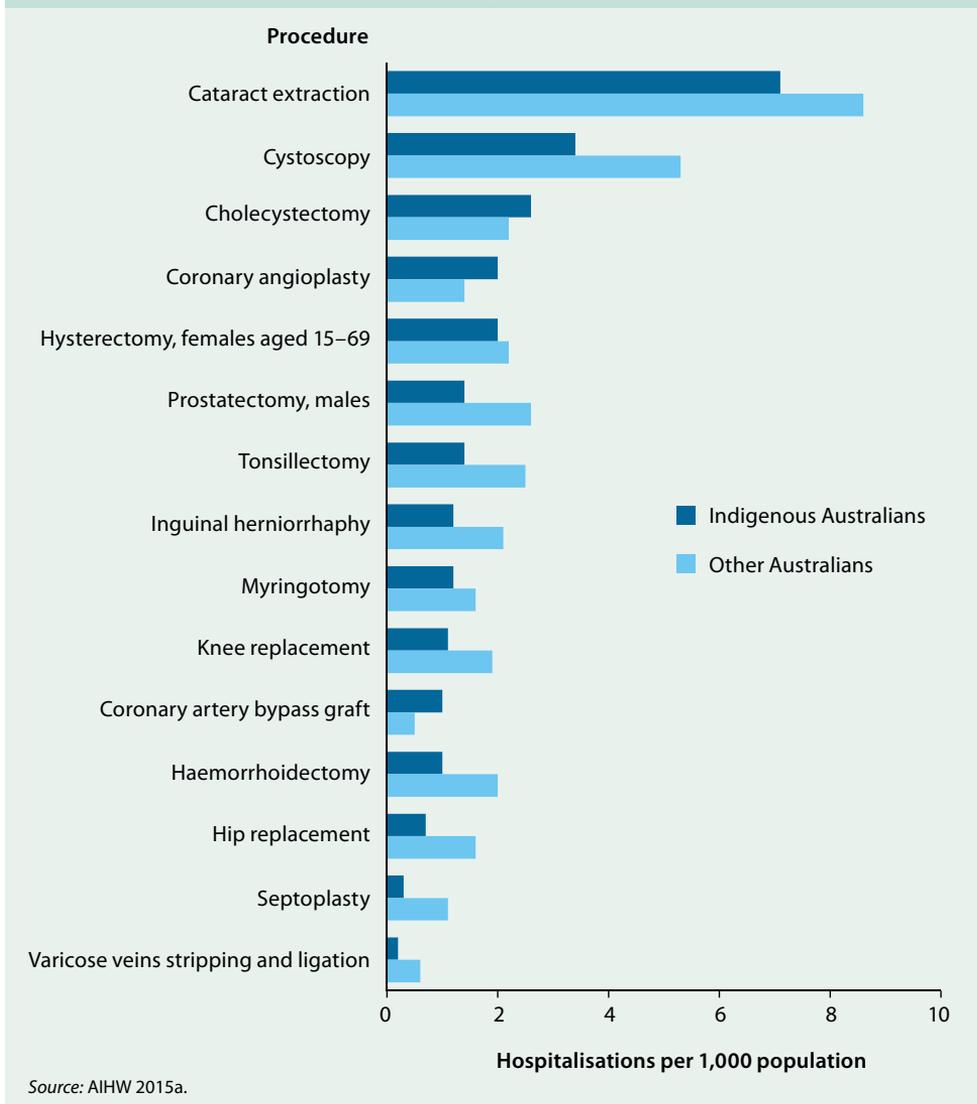
## Differential access to hospital procedures

**Definition:** The number of hospitalisations involving selected procedures per 1,000 population for selected population groups. Data are presented as a number per 1,000 population (age-standardised).

The rates for the selected hospital procedures are presented as an indicator of accessibility, with an emphasis on exploring differential rates of access. In this case, rates for hospital procedures for Indigenous Australians are compared with other Australians. Similar data (for the population overall, and by a range of other variables) are routinely reported in the AIHW's *Admitted patient care* report series (for example, AIHW 2016). In both cases, the procedures were selected for a variety of reasons including the high frequency with which they are undertaken, because they are often elective and discretionary, and because alternative treatments are sometimes available.

**More information available on this topic:** 'Chapter 6.9 Changes in the provision of hospital care'.

**Figure 7.1.36: Age-standardised hospitalisation rate for selected procedures, by procedure and Indigenous status, 2013–14**



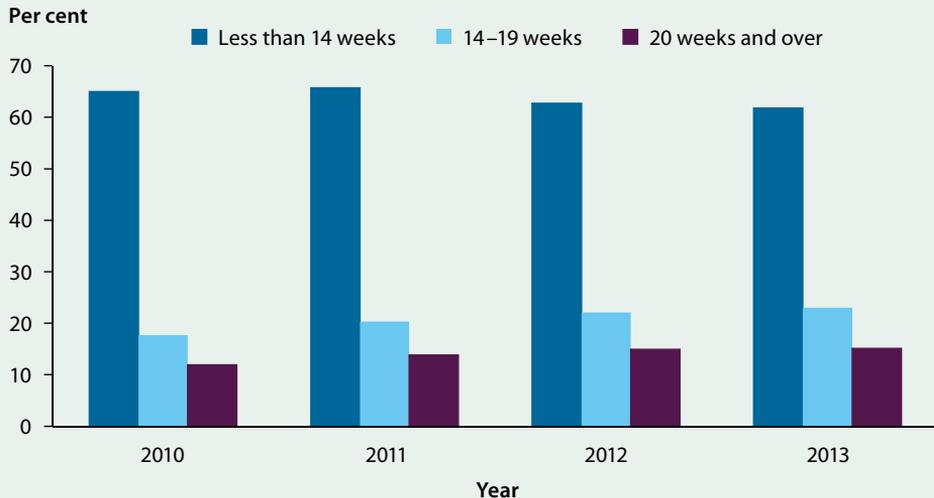
- Indigenous Australians were more likely than other Australians to undergo *Cholecystectomy*, *Coronary angioplasty*, and *Coronary artery bypass graft*; other Australians were more likely to undergo all of the other selected procedures.
- The largest differences in rates for procedures occurred for *Cystoscopy* (where the rates for Indigenous and other Australians were 3.4 and 5.3 per 1,000 population respectively) and *Cataract extraction* (7.1 and 8.6 per 1,000 population respectively). These were also the most common procedures performed for both Indigenous and other Australians.
- These rates do not take account of differences between Indigenous and other Australians in the need for procedures and do not provide information on people who may require a selected procedure, but do not have the procedure.

## Proportion of pregnancies with an antenatal visit in the first trimester

**Definition:** The proportion of pregnant females who have a birth who had at least one antenatal visit in the first 13 weeks of pregnancy. Presented as a percentage of all females who gave birth.

**More information available on this topic:** 'Chapter 5.2 Trends and patterns in maternal and perinatal health'.

**Figure 7.1.37: Women who gave birth, by duration of pregnancy at first antenatal visit (weeks gestation), 2010 to 2013**



Sources: AIHW 2015b; Hilder et al. 2014; Li et al. 2012, 2013.

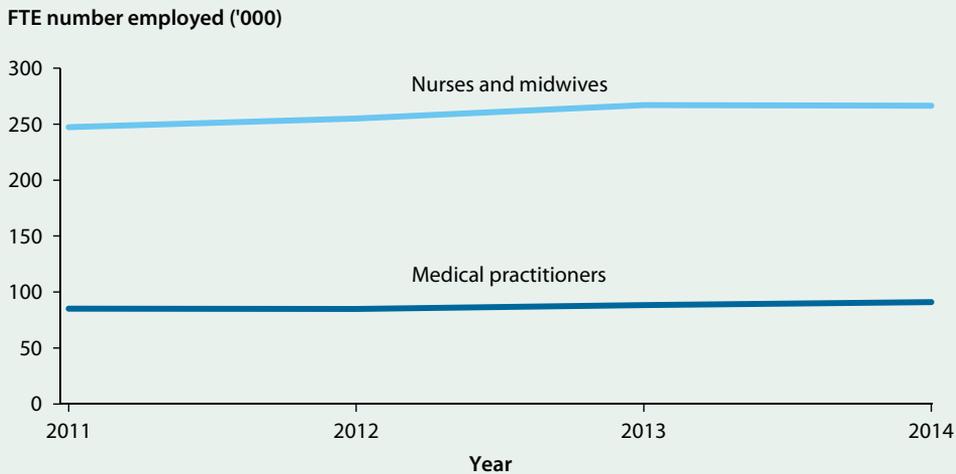
- Of women who gave birth in 2013, 62% attended at least one antenatal visit in the first trimester (before 14 weeks gestation). This is slightly lower than the 65% of women who attended at least one antenatal visit in the first trimester in 2010.
- For 2013, the number of women who attended their first antenatal visit at 14–19 weeks gestation and 20-and-over weeks gestation was 23% and 15%, respectively. This is a slight increase over the equivalent figures for 2010 (18% and 12% respectively).

## Net growth in health workforce

**Definition:** The change over time in the full-time equivalent (FTE) number of people employed in selected health workforce professions.

**More information available on this topic:** 'Chapter 2.3 Who is in the health workforce?'

**Figure 7.1.38: Full-time equivalent number of selected health practitioners employed, 2011 to 2014**



Source: AIHW National Health Workforce Data Set.

- The number of full-time equivalent medical practitioners employed rose by 6.7% from 85,200 in 2011 to 90,900 in 2014. The rate of full-time equivalent medical practitioners per population also increased, by 1.5%, from 382 to 387 per 100,000 population, during the same period.
- Also during this period, the number of full-time equivalent nurses and midwives increased by 7.7% (from 247,300 to 266,400), and the full-time rate per population by 2.4% (from 1,107 to 1,134 per 100,000 population).

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# Methods and conventions

## Age-standardisation

This is a method of removing the influence of age when comparing populations with different age structures—either different populations at the same time or the same population at different times. For this report, the Australian estimated resident population as at 30 June 2001 has been used as the standard population. The same population was used for males and females to allow valid comparison of age-standardised rates between the sexes (see Table A1).

Two different methods of age-standardisation can be used: direct and indirect. Direct age-standardisation has been used in this report.

### Direct age-standardisation

This is the most common method of age-standardisation, and is used in this report for prevalence, hospitalisations and most deaths data. This method is generally used when the populations under study are large and the age-specific rates are reliable.

The calculation of direct age-standardised rates has 3 steps:

Step 1: Calculate the age-specific rate for each age group.

Step 2: Calculate the expected number of cases in each age group by multiplying the age-specific rate by the corresponding standard population for each age group.

Step 3: Sum the expected number of cases in each age group and divide this sum by the total of the standard population to give the age-standardised rate.

**Table A1: Age composition of the Australian population at 30 June 2001**

| Age group (years) | Australia, 30 June 2001 |
|-------------------|-------------------------|
| 0                 | 253,031                 |
| 1–4               | 1,029,326               |
| 5–9               | 1,351,664               |
| 10–14             | 1,353,177               |
| 15–19             | 1,352,745               |
| 20–24             | 1,302,412               |
| 25–29             | 1,407,081               |
| 30–34             | 1,466,615               |
| 35–39             | 1,492,204               |
| 40–44             | 1,479,257               |
| 45–49             | 1,358,594               |
| 50–54             | 1,300,777               |
| 55–59             | 1,008,799               |
| 60–64             | 822,024                 |
| 65–69             | 682,513                 |
| 70–74             | 638,380                 |
| 75–79             | 519,356                 |
| 80–84             | 330,050                 |
| 85 and over       | 265,235                 |
| <b>Total</b>      | <b>19,413,240</b>       |

Source: ABS 2003.

## Average annual rates of change

Average annual rates of change or growth rates have been calculated as geometric rates:

$$\text{Average rate of change} = \left( \left( \frac{P_n}{P_o} \right)^{\frac{1}{N}} - 1 \right) \times 100$$

where  $P_n$  = value in later time period

$P_o$  = value in earlier time period

$N$  = number of years between the two time periods.

## Classification of diseases

The classification of deaths follows the 10th revision of the International Classification of Diseases (WHO 1992). Diseases treated in hospitals are classified using the International statistical classification of diseases and related health problems, 10th revision, Australian Modification (ICD-10-AM). The procedures performed during a hospital stay are classified using the Australian Classification of Health Interventions.

## Data subject to revision

This report draws data from a range of administrative and survey data sets, all of which are subject to change. Such changes may arise from the:

- nature of the data collection—for example, notifiable diseases are based on a ‘real-time’ collection of reported cases, and the counts and rates could change daily
- data being updated on a regular cycle—for example, childhood immunisation rates are calculated each quarter
- data being revised as part of a program of maintenance and updates—for example, for 2007 data onwards the Australian Bureau of Statistics (ABS) revises cause-of-death data using information pertaining to coroners’ cases that was not available at the time of original processing
- data being revised because of discovered errors or anomalies.

Wherever possible, the latest version of a data set has been used; in cases where the data change frequently, the date of the release is noted in the text or table.

Note: Cause of Death Unit Record File data are provided to the AIHW by the Registries of Births, Deaths and Marriages and the National Coronial Information System (managed by the Victorian Department of Justice) and include cause of death coded by the ABS. The data are maintained by the AIHW in the National Mortality Database.

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# Symbols

|        |   |
|--------|---|
| \$     | Australian dollars, unless otherwise specified  |
| %      | per cent  |
| g      | gram  |
| kg     | kilogram  |
| '000   | thousands   |
| mm Hg  | millimetres of mercury  |
| mmol/L | millimoles per litre  |
| n.a.   | not available   |
| n.p.   | not published by the data source  |
| ..     | no data/insufficient data   |
| <      | less than   |
| >      | more than   |
| ≥      | more than or equal to   |
| *      | estimate has a relative standard error of 25% to 50% and should be used with caution. |

# Acronyms and abbreviations

|            |   |
|------------|---|
| AATSIHS    | Australian Aboriginal and Torres Strait Islander Health Survey        |
| ABDS       | Australian Burden of Disease Study                                    |
| ABS        | Australian Bureau of Statistics                                       |
| ACIR       | Australian Childhood Immunisation Register                            |
| ACD        | Advanced Care Directive   |
| ACP        | Advanced Care Plan  |
| ACSQHC     | Australian Commission on Safety and Quality in Health Care            |
| ADHD       | attention deficit hyperactivity disorder                              |
| AHS        | Australian Health Survey  |
| AIHW       | Australian Institute of Health and Welfare                            |
| AIR        | Australian Immunisation Register                                      |
| AHMAC      | Australian Health Ministers' Advisory Council                         |
| AKI        | acute kidney injury   |
| ANZDATA    | Australian and New Zealand Dialysis and Transplant (ANZDATA) Registry |
| AOD        | alcohol and other drug  |
| AODR       | Australian Organ Donor Register                                       |
| AODTS      | alcohol and other drug treatment services                             |
| AODTS NMDS | Alcohol and Other Drug Treatment Services National Minimum Data Set   |
| AOTDTA     | Australian Organ and Tissue Donation and Transplantation Authority    |
| ASGS       | Australian Statistical Geography Standard                             |
| ATS        | amphetamine-type stimulants   |
| bDMARDs    | biologic disease-modifying anti-rheumatic drugs                       |
| BCC        | basal cell carcinoma  |
| BEACH      | Bettering the Evaluation of Care and Health                           |
| BMI        | body mass index   |
| CHD        | coronary heart disease  |
| CKD        | chronic kidney disease  |
| COAG       | Council of Australian Governments                                     |
| COPD       | chronic obstructive pulmonary disease                                 |
| CQI        | continuous quality improvement  |
| CVD        | cardiovascular disease  |
| DALY       | disability-adjusted life years  |
| ED         | emergency department  |
| ESKD       | end-stage kidney disease  |

|          |   |
|----------|---|
| FASD     | Fetal Alcohol Spectrum Disorder                                       |
| FOBT     | faecal occult blood test  |
| FTE      | full-time equivalent  |
| GBD      | Global Burden of Disease  |
| GDP      | gross domestic product  |
| GHB      | gamma hydroxybutyrate   |
| GP       | general practitioner  |
| GRIM     | General Record of Incidence of Mortality (GRIM) book                  |
| HCQI     | Health Care Quality Indicators  |
| HCS      | Hospice Care Services   |
| HDL      | high density lipoprotein  |
| HfL      | Healthy for Life  |
| HILDA    | Household Income and Labour Dynamics in Australia                     |
| HIV      | human immunodeficiency virus  |
| HPV      | human papillomavirus  |
| ICU      | intensive care unit   |
| IDDR     | Illicit Drug Data Report  |
| IDRS     | Illicit Drug Reporting System   |
| IFG      | impaired fasting glucose  |
| IGT      | impaired glucose tolerance  |
| IR       | <i>Inner regional</i>   |
| IRSD     | Index of Relative Socio-Economic Disadvantage                         |
| ISPHCS   | Indigenous-specific primary health care services                      |
| K10      | Kessler Psychological Distress Scale—10 items                         |
| LDL      | low density lipoprotein   |
| LHN      | Local Hospital Network  |
| MBS      | Medicare Benefits Schedule  |
| MC       | <i>Major cities</i>   |
| MMR      | maternal mortality ratio  |
| MRSA     | methicillin-resistant <i>Staphylococcus aureus</i>                    |
| MSSA     | methicillin-sensitive <i>Staphylococcus aureus</i>                    |
| NATSIHS  | National Aboriginal and Torres Strait Islander Health Survey          |
| NATSIHMS | National Aboriginal and Torres Strait Islander Health Measures Survey |
| NBCSP    | National Bowel Cancer Screening Program                               |
| NCMHCD   | National Community Mental Health Care Database                        |
| NCSP     | National Cervical Screening Program                                   |
| NDS      | National Drug Strategy  |

|          |   |
|----------|---|
| NDSHS    | National Drug Strategy Household Survey                         |
| NHA      | National Healthcare Agreement                                   |
| NHMD     | National Hospital Morbidity Database                            |
| NHMRC    | National Health and Medical Research Council                    |
| NHPF     | National Health Performance Framework                           |
| NHS      | National Health Survey  |
| nKPIs    | national Key Performance Indicators                             |
| NMD      | National Mortality Database                                     |
| NMDS     | National Minimum Data Set                                       |
| NNAPEDCD | National Non-Admitted Emergency Department Care Database        |
| NNDSS    | National Notifiable Disease Surveillance System                 |
| NOPSAD   | National Opioid Pharmacotherapy Statistics Annual Data          |
| NPHDC    | National Prisoner Health Data Collection                        |
| NRAS     | National Registration and Accreditation Scheme                  |
| NRMHCD   | National Residential Mental Health Care Database                |
| NSQHS    | National Safety and Quality Health Service                      |
| NSW      | New South Wales   |
| NT       | Northern Territory  |
| NTAHKPIs | Northern Territory Aboriginal Health Key Performance Indicators |
| OECD     | Organisation for Economic Co-operation and Development          |
| OR/R     | <i>Outer regional and Remote</i>                                |
| OSR      | Online Services Report  |
| PAF      | Performance and Accountability Framework                        |
| PBS      | Pharmaceutical Benefits Scheme                                  |
| PCOC     | Palliative Care Outcomes Collaboration                          |
| PHN      | Primary Health Network  |
| PYLL     | potential years of life lost                                    |
| Qld      | Queensland  |
| RFDS     | Royal Flying Doctor Service                                     |
| RoGS     | <i>Report on government services</i>                            |
| RPBS     | Repatriation Pharmaceutical Benefits Scheme                     |
| SA       | South Australia   |
| SAB      | <i>Staphylococcus aureus</i> bacteraemia                        |
| SA1      | Statistical Area Level 1  |
| SA2      | Statistical Area Level 2  |
| SCC      | squamous cell carcinoma   |
| SDAC     | Survey of Disability, Ageing and Carers                         |
| SEIFA    | Socio-Economic Index for Areas                                  |
| SIDS     | sudden infant death syndrome                                    |

|     |                             |
|-----|-----------------------------|
| Tas | Tasmania                    |
| Vic | Victoria                    |
| VPD | vaccine preventable disease |
| WA  | Western Australia           |
| WHO | World Health Organization   |
| YLD | years lived with disability |
| YLL | years of life lost          |

# Glossary

**abstainer (alcohol):** Never consumed a full serve of alcohol.

**Aboriginal or Torres Strait Islander:** A person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander. See also **Indigenous**.

**Accessibility/Remoteness Index of Australia (ARIA+):** The ARIA+ provides classification of the level of accessibility to goods and services (such as general practitioners, hospitals and specialist care) based on the proximity to these services (measured by road distance).

**acute:** Coming on sharply and often brief, intense and severe.

**acute coronary syndrome:** Describes an **acute myocardial infarction** (heart attack) and unstable angina when they first present as clinical emergencies with chest pain or other features.

**acute care:** For patients admitted to hospital and intended to cure illness, alleviate symptoms of illness or manage childbirth.

**acute myocardial infarction (AMI):** Term still commonly used to mean a heart attack but more correctly refers only to those heart attacks that have caused some death of heart muscle.

**additional diagnosis:** Conditions or complaints, either coexisting with the principal diagnosis or arising during the episode of admitted patient care (hospitalisation), episode of residential care or attendance at a health-care establishment that require the provision of care. Multiple diagnoses may be recorded.

**administrative data collection:** A data set that results from the information collected for the purposes of delivering a service or paying the provider of the service. This type of collection is usually complete (that is, all in-scope events are collected), but it may not be fully suitable for population-level analysis because the data are collected primarily for an administrative purpose. An example is the Alcohol and Other Drug Treatment Services National Minimum Data Set.

**admission:** An admission to hospital. In this report, the term **hospitalisation** is used to describe an episode of hospital care that starts with the formal admission process and ends with the formal **separation** process. The number of separations has been taken as the number of admissions; hence, admission rate is the same as separation rate.

**admitted patient:** A patient who undergoes a hospital's formal admission process.

**adverse event:** An incident involving harm to a person receiving health care. It includes infections, falls and other injuries, and reactions or complications due to surgery and other procedures, medical devices or medication, some of which may be preventable. Adverse events in health care can occur inside or outside hospitals and can be the cause of hospitalisation as well. The rate of adverse events treated in hospital is used as an indicator of safety in Australia's health system.

**age-standardisation:** A method of removing the influence of age when comparing populations with different **age structures**. This is usually necessary because the rates of many diseases vary strongly (usually increasing) with age. The **age structures** of the different populations are converted to the same 'standard' structure, and then the disease rates that would have occurred with that structure are calculated and compared.

**age structure:** The relative number of people in each age group in a population.

**aids and appliances:** Durable medical goods dispensed to ambulatory patients that are used more than once for therapeutic purposes, such as glasses, hearing aids, wheelchairs, and orthopaedic appliances and prosthetics that are not implanted surgically but are external to the user of the appliance. Excludes prostheses fitted as part of admitted patient care in a hospital.

**allergic rhinitis (also known as 'hay fever'):** Is triggered by an allergic reaction. The symptoms may include a runny or blocked nose and/or sneezing and watery eyes.

**allied health professionals:** For the purpose of this report, allied health professionals are those registered under the National Registration Accreditation Scheme. They include professionals working in psychology, pharmacy, physiotherapy, occupational therapy, radiography, optometry, chiropractic, Chinese medicine, podiatry and osteopathy, as well as Aboriginal and Torres Strait Islander health practitioners.

**Alzheimer disease:** Condition marked by progressive loss of brain power shown by worsening short-term memory, confusion and disorientation. A form of **dementia**.

**angina:** Temporary chest pain or discomfort when the heart's own blood supply is inadequate to meet extra needs, as in exercise. See also **unstable angina** and **cardiovascular disease**.

**antenatal:** The period covering conception up to the time of birth. Synonymous with prenatal.

**anxiety disorders:** A group of mental disorders marked by excessive feelings of apprehension, worry, nervousness and stress. Includes panic disorder, various phobias, generalised anxiety disorder, obsessive-compulsive disorder and post-traumatic stress disorder.

**arrest:** Incorporates recorded law enforcement action against a person for suspected unlawful involvement in illicit drugs. It incorporates enforcement action by way of arrest, summons, diversion program, cannabis expiation notice (South Australia), cannabis intervention requirement (Western Australia), simple cannabis offence notice (Australian Capital Territory), drug infringement notice (Northern Territory), and notice to appear (Queensland). Some charges may have been subsequently dropped or the defendant may have been found guilty.

**arthritis:** A group of disorders in which there is **inflammation** of the joints, which can become stiff, painful, swollen or deformed. The two main types of arthritis are **osteoarthritis** and **rheumatoid arthritis**.

**associated cause(s) of death:** All causes listed on the death certificate, other than the **underlying cause of death**. They include the immediate cause, any intervening causes, and conditions which contributed to the death but were not related to the disease or condition causing the death. See also **cause of death**.

**asthma:** A common, chronic inflammatory disease of the air passages that presents as episodes of wheezing, breathlessness and chest tightness due to widespread narrowing of the airways and obstruction of airflow.

**attributable burden:** The amount of burden that could be avoided if the risk factor were removed.

**Australian Government health expenditure:** The sum of Australian Government expenditure and Section 96 grants to states and territories. This also includes the 30–40% private health insurance premium rebates.

**Australian Standard Geographical Classification (ASGC):** Common framework defined by the Australian Bureau of Statistics for collection and dissemination of geographically classified statistics. The ASGC was implemented in 1984 and the final release was in 2011. It has been replaced by the **Australian Statistical Geography Standard (ASGS)**.

**Australian Statistical Geography Standard (ASGS):** Common framework defined by the Australian Bureau of Statistics for collection and dissemination of geographically classified statistics. The ASGS replaced the **Australian Standard Geographical Classification (ASGC)** in July 2011.

**average length of stay:** The average number of patient days for admitted patient episodes. Patients admitted and separated on the same date are allocated a length of stay of 1 day.

**avoidable deaths:** See **potentially avoidable deaths**.

**back pain and problems:** A range of conditions related to the bones, joints, connective tissue, muscles and nerves of the back. Back problems are a significant cause of disability and lost productivity.

**benchmark:** A standard or point of reference for measuring quality or performance.

**blindness:** There is no set definition for blindness. Usually, it is either a total loss of vision, or when there is no possibility of correcting vision through medical intervention. In Australia, legal blindness is defined as best corrected visual acuity of 6/60 or below in the better eye.

**blood cholesterol:** Fatty substance produced by the liver and carried by the blood to supply the rest of the body. Its natural function is to supply material for cell walls and for steroid hormones, but if levels in the blood become too high this can lead to atherosclerosis and heart disease.

**blood pressure:** The force exerted by the blood on the walls of the arteries as it is pumped around the body by the heart. It is written, for example, as 134/70 mmHg, where the upper number is the systolic pressure (the maximum force against the arteries as the heart muscle contracts to pump the blood out) and the lower number is the diastolic pressure (the minimum force against the arteries as the heart relaxes and fills again with blood). Levels of blood pressure can vary greatly from person to person and from moment to moment in the same person. See also **high blood pressure/hypertension**.

**body mass index (BMI):** The most commonly used method of assessing whether a person is normal weight, **underweight**, **overweight** or obese (see **obesity**). It is calculated by dividing the person's weight (in kilograms) by their height (in metres) squared; that is,  $\text{kg} \div \text{m}^2$ . For both men and women, underweight is a BMI below 18.5, acceptable weight is from 18.5 to less than 25, overweight is from 25 to less than 30, and obese is 30 and over. Sometimes overweight and obese is combined, and is defined as a BMI of 25 and over.

**bronchiectasis:** An abnormal widening of the lungs' air passages (bronchi). This allows infections to start, and leads to coughing with pus and sometimes blood. It has a number of causes, including **cystic fibrosis**, reduced immune functioning and infections, such as tuberculosis, **whooping cough (pertussis)** and **measles**.

**bronchitis:** Inflammation of the main air passages (bronchi). May be **acute** or **chronic**.

**bulk-billing:** The process by which a medical practitioner or optometrist sends the bill for services direct to Medicare, so the patients concerned pay nothing. Also known as direct billing.

**burden of disease and injury:** Term referring to the quantified impact of a disease or injury on an individual or population, using the **disability-adjusted life year (DALY)** measure.

**caesarean birth (also caesarean section or c-section):** A method of birth in which a surgical incision is made into the mother's womb via the abdomen to directly remove the baby.

**cancer:** Cancer, also called malignancy, is a term for diseases in which abnormal cells divide without control and can invade nearby tissues. Cancer cells can also spread to other parts of the body through the blood and lymph systems.

**capital expenditure:** Is spending on large-scale fixed assets (for example, new buildings and equipment) with a useful life extending over a number of years.

**cardiomyopathy:** A condition in which there is direct and widespread damage to the heart muscle, weakening it. The condition can be due to various causes such as viral infections and severe alcohol abuse, and can lead to an enlarged, thickened and dilated heart, as well as **heart failure**.

**cardiovascular disease/conditions:** Any disease of the circulatory system, namely the heart (cardio) or blood vessels (vascular). Includes **heart attack**, **angina**, **stroke** and peripheral vascular disease. Also known as **circulatory disease**.

**cared-accommodation:** This is a collection component of the Australian Bureau of Statistics Survey of Disability, Ageing and Carers. It refers to hospitals, aged care facilities (for example, nursing homes and aged care hostels), cared components of retirement villages, and other 'homes' such as group homes for people with disability. The accommodation must include all meals for its occupants and provide 24-hour access to assistance for personal and/or medical needs. To be included in this survey component, a person must have been or expect to be a resident of the cared-accommodation establishment for 3 months or more. Note: this definition applies to this survey and may differ somewhat from other collections' definitions.

**care type:** The care type defines the overall nature of a clinical service provided to an admitted patient during an episode of care (admitted care), or the type of service provided by the hospital for boarders or posthumous organ procurement (other care). Admitted patient care consists of the following categories:

- acute care
- rehabilitation care
- palliative care
- geriatric evaluation and management
- psychogeriatric care
- maintenance care
- newborn care
- other admitted care—that is, where the principal clinical intent does not meet the criteria for any of the above.

Other services include:

- posthumous organ procurement
- hospital boarder.

**cataract:** A mostly degenerative condition in which the lens of the eye clouds over, obstructing the passage of light to cause vision loss and, potentially, blindness. Cataract surgery involves the removal of the lens, replacing it with a plastic one.

**cause of death:** The causes of death entered on the Medical Certificate of Cause of Death are all diseases, morbid conditions or injuries that either resulted in or contributed to death, and the circumstances of the accident or violence that produced any such injuries. Causes of death are commonly reported by the **underlying cause of death**. See also **associated cause(s) of death** and **multiple causes of death**.

**cerebrovascular disease:** Any disorder of the blood vessels supplying the brain or its covering membranes. A notable and major form of cerebrovascular disease is **stroke**.

**child:** A person aged under 15.

**child mortality rate:** The number of deaths in a given period among children aged 1–14 per 100,000 children of the same age.

**chlamydia:** The most common sexually transmissible infection in Australia, caused by the bacterium *Chlamydia trachomatis*.

**cholesterol:** See **blood cholesterol**.

**chronic:** Persistent and long-lasting.

**chronic diseases:** Term applied to a diverse group of diseases, such as heart disease, cancer and arthritis, which tend to be long-lasting and persistent in their symptoms or development. Although these features also apply to some **communicable diseases (infectious diseases)**, the term is usually confined to non-communicable diseases.

**chronic kidney disease (CKD):** Refers to all conditions of the kidney, lasting at least 3 months, where a person has had evidence of kidney damage and/or reduced kidney function, regardless of the specific cause.

**chronic obstructive pulmonary disease (COPD):** Serious, progressive and disabling long-term lung disease where damage to the lungs, usually because of both **emphysema** and chronic **bronchitis**, obstructs oxygen intake and causes increasing shortness of breath. By far the greatest cause is cigarette smoking.

**chronic sinusitis:** The inflammation of the lining of one or more sinuses (large air cavities inside the face bones). It occurs when normal draining of the sinuses is obstructed by swelling, excessive mucus, or an abnormality in the structure of the sinuses.

**circulatory disease:** Alternative name for **cardiovascular disease**.

**colonoscopy:** A procedure where the inside of the large bowel (colon) is viewed using a long flexible tube (colonoscope) inserted through the anus.

**communicable diseases (infectious diseases):** Diseases or illnesses due to infectious organisms or their toxic products. Communication may occur directly or indirectly through contact with other humans, animals or other environments that harbour the organism.

**community health services:** Non-residential health services offered to patients/clients in an integrated and coordinated manner in a community setting, or the coordination of health services elsewhere in the community. Such services are provided by, or on behalf of, state and territory governments.

**comorbidity:** When a person has two or more health problems at the same time.

**condition (health condition):** A broad term that can be applied to any health problem, including symptoms, diseases, and various risk factors, such as high blood cholesterol and obesity. Often used synonymously with **disorder**.

**constant prices:** Dollar amounts for different years that are adjusted to reflect the prices in a chosen reference year. This provides a way of comparing spending over time on an equal dollar-for-dollar basis without the distorting effects of inflation. The comparison will reflect only the changes in the amount of goods and services purchased—changes in the 'buying power'—not the changes in prices of these goods and services caused by inflation.

**core activity limitation:** Needing assistance, having difficulties or using aids or equipment to help with self-care, mobility and/or communication. See also **disability, severe or profound core activity limitation**.

**coronary artery bypass graft (CABG):** Surgical procedure using blood vessel grafts to bypass blockages in the coronary arteries and restore adequate blood flow to the heart muscle.

**coronary artery disease:** Describes disease of the coronary arteries, typically meaning atherosclerosis. When this leads to symptoms such as chest pain the result is known as **coronary heart disease**.

**coronary heart disease:** Is disease due to blockages in the heart's own (coronary) arteries, expressed as **angina** or a **heart attack**. Also known as **ischaemic heart disease**.

**course of radiotherapy:** A course of radiotherapy is a series of one or more external beam radiotherapy treatments prescribed by a radiation oncologist. A patient can receive more than one course of radiotherapy at the same time (courses that are simultaneous or overlap). One course of radiotherapy may cover multiple phases and multiple treatment plans.

**cystic fibrosis:** A serious hereditary disease in which mucus from glands is too thick and sticky, affecting the lungs and other organs. The person is prone to frequent chest infections, with related problems such as severe **bronchiectasis**, and a much shortened life expectancy.

**curative treatment:** Curative treatment describes when treatment is given with the intention of curing disease.

**DALY:** See **disability-adjusted life year**.

**data linkage:** The bringing together (linking) of information from two or more different data sources that are believed to relate to the same entity, for example, the same individual or the same institution. This can provide more information about the entity and in certain cases provide a time sequence, helping to 'tell a story', show 'pathways' and perhaps unravel cause and effect. The term is used synonymously with 'record linkage' and 'data integration'.

**dementia:** A general term for disorders that are characterised by worsening mental processes (such as Alzheimer disease or vascular dementia). Symptoms include impaired memory, understanding, reasoning and physical functioning.

**depression:** A mood disorder with prolonged feelings of being sad, hopeless, low and inadequate, with a loss of interest or pleasure in activities and often with suicidal thoughts or self-blame.

**detection (illicit drugs):** Refers to the detection of a quantity of an illicit drug or a regulated drug at the Australian border by the Australian Customs and Border Protection Service. This can be through air or sea cargo, air or sea passengers/crew, or through the postal system.

**determinant:** Any factor that can increase the chances of ill health (risk factors) or good health (protective factors) in a population or individual. By convention, services or other programs that aim to improve health are usually not included in this definition.

**diabetes (diabetes mellitus):** A chronic condition in which the body cannot properly use its main energy source, the sugar glucose. This is due to a relative or absolute deficiency in insulin, a hormone that is produced by the pancreas and helps glucose enter the body's cells from the bloodstream and then be processed by them. Diabetes is marked by an abnormal build-up of glucose in the blood, and it can have serious short- and long-term effects. For the three main types of diabetes see **type 1 diabetes**, **type 2 diabetes** and **gestational diabetes**.

**dialysis:** An artificial method of removing waste substances from the blood and regulating levels of circulating chemicals—functions usually performed by the kidneys. See **peritoneal dialysis**.

**disability:** An umbrella term for any or all of: an impairment of body structure or function, a limitation in activities, or a restriction in participation. Disability is a multidimensional concept, and is considered as an interaction between health conditions and personal and environmental factors. See also **core activity limitation** and **severe or profound core activity limitation**.

**disability-adjusted life year (DALY):** A year of healthy life lost, either through premature death or equivalently through living with disability due to illness or injury. It is the basic unit used in burden of disease and injury estimates.

**disease:** A physical or mental disturbance involving symptoms (such as pain or feeling unwell), dysfunction or tissue damage, especially if these symptoms and signs form a recognisable clinical pattern.

**discretionary foods:** Foods and drinks not necessary to provide the nutrients the body needs, but that may add variety. Many of these are high in saturated fats, sugars, salt and/or alcohol, and are energy dense.

**disorder (health disorder):** Used synonymously with **condition**.

**ductal carcinoma in situ:** A non-invasive tumour of the mammary gland (breast) arising from cells lining the ducts.

**dyslipidaemia:** abnormal levels of fats, such as **cholesterol** or **triglycerides**, in the blood.

**elective surgery:** Elective care in which the procedures required by patients are listed in the surgical operations section of the Medicare Benefits Schedule, with the exclusion of specific procedures frequently done by non-surgical clinicians.

**emergency status (radiotherapy):** An indicator of whether the treatment required for the patient is clinically assessed as an emergency. An emergency is where the treating clinician has assessed the waiting time for treatment cannot exceed 24 hours.

**emphysema:** A chronic lung disease where over-expansion or destruction of the lung tissue blocks oxygen intake, leading to shortness of breath and other problems.

**end-stage kidney disease (ESKD):** The most severe form of **chronic kidney disease (CKD)**, also known as Stage 5 CKD or kidney failure.

**estimated resident population (ERP):** The official Australian Bureau of Statistics estimate of the Australian population. The ERP is derived from the 5-yearly Census counts, and is updated quarterly between censuses. It is based on the usual residence of the person. Rates are calculated per 1,000 or 100,000 mid-year (30 June) ERP.

**ex-smoker:** A person who has smoked at least 100 cigarettes or equivalent tobacco in his or her lifetime, but does not smoke at all now.

**faecal occult blood test (FOBT):** A test used to detect tiny traces of blood in a person's faeces that may be a sign of bowel cancer. The test is a core component of Australia's National Bowel Screening Program.

**fatal burden:** Quantified impact on a population of premature death due to disease or injury. Measured as **years of life lost (YLL)**.

**fertility rate:** Number of live births per 1,000 females aged 15–49.

**FOBT:** See **faecal occult blood test**.

**forceps:** Handheld, hinged obstetric instrument applied to fetal head to assist birth.

**fourth degree perineal laceration:** Perineal laceration, rupture or tear, as in third degree laceration, occurring during delivery and also involving anal mucosa or rectal mucosa.

**full-time equivalent (FTE) workforce or workload:** A standard measure of the size of a workforce that takes into account both the number of workers and the hours that each works. For example, if a workforce comprises 2 people working full time 38 hours a week and 2 working half time, this is the same as 3 working full time—an FTE of 3.

**general practitioner (GP):** A medical practitioner who provides primary comprehensive and continuing care to patients and their families within the community.

**gestational diabetes:** A form of **diabetes** that is first diagnosed during pregnancy (gestation). It may disappear after pregnancy but signals a high risk of diabetes occurring later on.

**gonococcal infection:** A common sexually transmissible infection caused by the bacterium *Neisseria gonorrhoeae*.

**gross domestic product (GDP):** A statistic commonly used to indicate national wealth. It is the total market value of goods and services produced within a given period after deducting the cost of goods and services used up in the process of production but before deducting allowances for the consumption of fixed capital.

**haemorrhagic stroke:** A type of **stroke** caused by the rupturing and subsequent bleeding of an artery in the brain or its surroundings.

**HDL cholesterol:** Cholesterol packaged in high-density lipoprotein particles. The HDLs are good acceptors of membrane-free cholesterol and transport it back from tissues to the liver.

**health:** Term relating to whether the body (which includes the mind) is in a well or ill state. With good health the state of the body and mind are such that a person feels and functions well, and can continue to do so for as long as possible.

**health indicator:** See indicator.

**health outcome:** A change in the health of an individual or population due wholly or partly to a preventive or clinical intervention.

**health promotion:** Activities to improve health and prevent disease, often described as the process that helps individuals and communities to increase control over the **determinants** of health.

**health status:** An individual's or population's overall level of health, taking into account various aspects, such as **life expectancy**, level of **disability**, levels of disease **risk factors** and so on.

**heart attack:** Life-threatening emergency that occurs when a vessel supplying blood to the heart muscle is suddenly blocked completely by a blood clot. The medical term commonly used for a heart attack is **myocardial infarction**. See also **cardiovascular disease**.

**heart failure:** When the heart functions less effectively in pumping blood around the body. It can result from a wide variety of diseases and conditions that can impair or overload the heart, such as heart attack, other conditions that damage the heart muscle directly (see **cardiomyopathy**), **high blood pressure**, or a damaged heart valve.

**hepatitis:** Inflammation of the liver, which can be due to certain viral infections, alcohol excess or a range of other causes.

**Haemophilus influenzae type b infection:** A bacterial infection of infants and children that can cause meningitis, **pneumonia** and other serious effects. It is preventable by **vaccination**.

**high blood cholesterol:** Total cholesterol levels above 5.5 mmol/L.

**high blood pressure/hypertension:** The definition of high blood pressure (also known as hypertension) can vary but a well-accepted one is from the World Health Organization: a systolic blood pressure of 140 mmHg or more or a diastolic blood pressure of 90 mmHg or more, or [the person is] receiving medication for high blood pressure. Also see **blood pressure**.

**HIV:** Human immunodeficiency virus.

**hospitalisation:** Synonymous with **admission** and **separation**; that is, an episode of hospital care that starts with the formal admission process and ends with the formal separation process. An episode of care can be completed by the patients being discharged, transferred to another hospital or care facility, or dying, or by a portion of a hospital stay beginning or ending in a change of type of care (for example, from acute to rehabilitation).

**household:** A group of two or more related or unrelated people who usually reside in the same dwelling, and who make common provision for food or other essentials for living. Or a single person living in a dwelling who makes provision for his or her own food and other essentials for living, without combining with any other person.

**HPV:** See **human papillomavirus**.

**human papillomavirus:** The virus that causes genital warts and which is linked in some cases to the development of more serious cervical cell abnormalities.

**hypertension:** See **high blood pressure**.

**hypertensive disease:** Occurs when **high blood pressure (hypertension)** is severe or prolonged enough to cause damage to the heart, brain or kidneys.

**hypertensive disorders of pregnancy:** Defined as systolic blood pressure greater than or equal to 140 mmHg and/or diastolic blood pressure greater than or equal to 90 mmHg. Severe hypertension requiring urgent treatment is defined as a systolic blood pressure greater than or equal to 170 mmHg with or without diastolic blood pressure greater than or equal to 110 mmHg.

**illness:** A state of feeling unwell, although the term is also often used synonymously with disease.

**immunisation:** Inducing immunity against infection by the use of an antigen to stimulate the body to produce its own antibodies. See **vaccination**.

**impaired fasting glucose:** Blood glucose levels of 6.1 to 6.9 mmol/L, which is above normal but less than diabetes levels.

**impaired glucose tolerance:** Condition in which blood glucose levels are higher than normal but less than required for a diagnosis of diabetes, and which signals an increased risk of developing **type 2 diabetes**.

**impairment:** Any loss or abnormality of psychological, physiological or anatomical structure or function.

**incidence:** The number of new cases (of an illness or event, and so on) occurring during a given period. Compare with **prevalence**.

**Index of Relative Socio-Economic Disadvantage (IRSD):** One of the set of **Socio-Economic Indexes for Areas** for ranking the average socioeconomic conditions of the population in an area. It summarises attributes of the population such as low income, low educational attainment, high unemployment and jobs in relatively unskilled occupations.

**indicator:** A key statistical measure selected to help describe (indicate) a situation concisely, to track change, progress and performance, and to act as a guide to decision making. It may have an indirect meaning as well as a direct one; for example, Australia's overall death rate is a direct measure of mortality but is often used as a major indicator of population health. Taking this point further, time spent watching TV may be used as one indicator of physical inactivity.

**Indigenous:** A person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander. See also **Aboriginal or Torres Strait Islander**.

**infant:** A child aged under 1 year.

**infant mortality rate:** The number of deaths among children aged under 1 year in a given period, per 1,000 live births in the same period.

**inflammation:** Local response to injury or infection, marked by local redness, heat, swelling and pain. Can also occur when there is no clear external cause and the body reacts against itself, as in auto-immune diseases.

**influenza (flu):** An acute contagious viral respiratory infection marked by fevers, muscle aches, headache, cough and sore throat.

**informal carer:** A person of any age who provides any informal assistance, in terms of help or supervision, to people with disabilities or long-term conditions, or people who are aged 65 and over. This assistance must be ongoing, or likely to be ongoing, for at least 6 months. Note: this definition applies to the Australian Bureau of Statistics Survey of Disability, Ageing and Carers and may differ somewhat from other collections' definitions. See also **primary carer**.

**injury cases:** The number of **injury separations**, less those patients where the mechanism by which a person begins an episode of hospital **admission** was an inward transfer from another acute care hospital. Admissions of this type (inward transfer) are likely to have been preceded by another admission that also met the criteria for an injury case, so are omitted to reduce over-counting.

**Injury separations:** A **hospitalisation** where the main reason for the hospital **admission** was an injury or poisoning. This includes patients with an injury such as a fracture, laceration or burn to any part of the body, or poisoning. It also includes a small number of admissions mainly due to complications of surgical and medical care.

**Instrumental delivery:** Vaginal delivery using **forceps** or **vacuum extraction**.

**insulin:** Hormone that is produced by the pancreas and regulates the body's energy sources, most notably the sugar glucose.

**intention of treatment (radiotherapy):** The intention of treatment is the reason treatment is provided to a patient, as follows:

- prophylactic
- curative
- palliative.

**International Classification of Diseases (ICD):** The World Health Organization's internationally accepted classification of death and disease. The 10th revision (ICD-10) is currently in use. The Australian modification of the ICD-10 (ICD-10-AM) is used for diagnoses and procedures recorded for patients admitted to hospitals.

**intervention (for health):** Any action taken by society or an individual which 'steps in' (intervenes) to improve health, such as medical treatment and preventive campaigns.

**ischaemia:** Reduced or blocked blood supply. See also **ischaemic heart disease**.

**ischaemic heart disease:** Also **heart attack** and **angina** (chest pain). Also known as **coronary heart disease**. See also **ischaemia**.

**Ischaemic stroke:** A type of **stroke** due to a reduced or blocked supply of blood in the brain. Also known as cerebral infarction.

**Juvenile arthritis (also known as juvenile idiopathic arthritis):** Inflammatory arthritis in children that begins before the 16th birthday and lasts at least 6 weeks.

**Kessler Psychological Distress Scale—10 items (Kessler-10; K10):** A survey device that is used to measure non-specific psychological distress in people. It uses 10 questions about negative emotional states that survey participants may have had in the 4 weeks leading up to their interview. The designers recommend only using for people aged 18 and over.

**kidney replacement therapy:** Having a functional **kidney transplant** or receiving regular **dialysis**.

**kidney transplant:** A healthy kidney is taken from one person and surgically placed into someone with ESKD. The kidney can come from a live or deceased donor.

**length of stay:** Duration of hospital stay, calculated by subtracting the date the patient is admitted from the day of separation. All leave days, including the day the patient went on leave, are excluded. A same-day patient is allocated a length of stay of 1 day.

**life course:** The life course is a series of life stages that people are normally expected to pass through as they progress from birth to death. For this publication, the life course stages are: birth and infancy, childhood, youth, working age, and older age.

**life expectancy:** An indication of how long a person can expect to live, depending on the age they have already reached. Technically, it is the number of years of life remaining to a person at a particular age if death rates do not change. The most commonly used measure is life expectancy at birth.

**lifetime risk (alcohol):** The accumulated risk from drinking either on many drinking occasions, or on a regular (for example, daily) basis over a lifetime. The lifetime risk of harm from alcohol-related disease or injury increases with the amount consumed. For healthy men and women, drinking no more than 2 standard drinks on any day reduces the lifetime risk of harm from alcohol-related disease or injury.

**lipids:** Fatty substances, including cholesterol and triglycerides, that are in blood and body tissues.

**long-term condition:** A term used in the Australian Bureau of Statistics National Health Surveys to describe a health condition that has lasted, or is expected to last, at least 6 months. See also **chronic diseases**.

**low birthweight:** Weight of a baby at birth that is less than 2,500 grams.

**macular degeneration:** A progressive deterioration of the macula of the retina (the central inner-lining of the eye). It is often positively related to old age (usually referred to as 'age-related macular degeneration'), and results in a loss of central vision.

**main English-speaking countries:** In the context of people born outside Australia, it includes the United Kingdom, Ireland, New Zealand, Canada, the United States of America and South Africa. A person born in a main English-speaking country is not necessarily fluent in English.

**mammogram:** X-ray of the breast. It may be used to assess a breast lump or as a screening test in women with no evidence of cancer.

**measles:** A highly contagious infection, usually of children, that causes flu-like symptoms, fever, a typical rash and sometimes serious secondary problems such as brain damage. It is preventable by **vaccination**.

**median:** The midpoint of a list of observations that have been ranked from the smallest to the largest.

**Medicare:** A national, government-funded scheme that subsidises the cost of personal medical services for all Australians and aims to help them afford medical care. The Medicare Benefits Schedule (MBS) is the listing of the Medicare services subsidised by the Australian Government. The schedule is part of the wider Medicare Benefits Scheme (Medicare).

**mental illness (or mental health condition):** Disturbances of mood or thought that can affect behaviour and distress the person or those around them, so the person has trouble functioning normally. They include **anxiety disorders**, **depression** and schizophrenia.

**monitoring (of health):** Monitoring refers to a process of keeping a continuous and close watch over important aspects of the public's health and health services through various measurements, and then regularly reporting on the situation, so the health system and society more generally can plan and respond accordingly. The term is often used interchangeably with surveillance, although surveillance may imply more urgent watching and reporting, such as the surveillance of infectious diseases and their epidemics. Monitoring can also be applied to individuals, such as hospital care where a person's condition is closely assessed over time.

**morbidity:** Refers to ill health in an individual and to levels of ill health in a population or group.

**mortality:** Death.

**multiple causes of death:** All causes listed on the death certificate. This includes the **underlying cause of death** and all **associated cause(s) of death**. See also **cause of death**.

**musculoskeletal:** Relating to the muscles, joints and bones.

**myocardial infarction:** See **acute myocardial infarction**.

**non-admitted patient:** A patient who receives care from a recognised non-admitted patient service/clinic of a hospital, including emergency departments and outpatient clinics.

**non-fatal burden:** Quantified impact on a population of ill health due to disease or injury. Measured as **years lived with disability (YLD)**, which is also sometimes referred to as **years of healthy life lost due to disability (YLD)**.

**non-Indigenous:** People who have declared they are not of Aboriginal or Torres Strait Islander descent. Compare with **Other Australians**.

**non-instrumental delivery:** Vaginal delivery without instrumental assistance.

**non-school qualification:** An educational qualification other than that of pre-primary, primary or secondary education. Non-school qualifications include postgraduate degrees, master degrees, graduate diplomas, graduate certificates, bachelor degrees, advanced diplomas, diplomas, and certificates I, II, III and IV (trade certificates).

**nursing homes:** See **residential aged care facilities**.

**nutrition:** The intake of food, considered in relation to the body's dietary needs.

**obesity:** Marked degree of overweight, defined for population studies as a **body mass index** of 30 or over. See also **overweight**.

**obstetric haemorrhage (bleeding):** Bleeding from the genital tract with an estimated blood loss of >500 mL, with blood loss of >1,000 mL or a blood loss that causes clinical signs of shock. This encompasses both antepartum and postpartum bleeding.

**occupational lung diseases:** These diseases result from breathing in harmful dusts or fumes, such as silica, asbestos and coal dust. This exposure typically occurs in the workplace. Pneumoconiosis, or scarring of the lung tissue caused by inhaled dust, is one of the most common forms of occupational lung disease.

**ophthalmology:** The branch of medicine concerned with the study of the eye and the diagnosis and treatment of disorders of the eye.

**optometry:** The practice of primary eye care, including testing for visual acuity and prescribing treatments for eye disorders.

**Organisation for Economic Co-operation and Development (OECD):** An organisation of 34 countries including Australia, mostly developed and some emerging (such as Mexico, Chile and Turkey); the organisation's aim is to promote policies that will improve the economic and social wellbeing of people around the world.

**osteoarthritis:** A chronic and common form of **arthritis**, affecting mostly the spine, hips, knees and hands. It first appears from the age of about 30 and is more common and severe with increasing age.

**osteoporosis:** A condition that causes bones to become thin, weak and fragile, such that even a minor bump or accident can cause a broken bone.

**osteopenia:** A condition when bone mineral density is lower than normal but not low enough to be classified as osteoporosis.

**Other Australians:** People who have declared they are not of Aboriginal or Torres Strait Islander descent, and those for whom their Indigenous status is unknown. Compare with **non-Indigenous**.

**outcome (health outcome):** A health-related change due to a preventive or clinical intervention or service. (The intervention may be single or multiple, and the outcome may relate to a person, group or population, or be partly or wholly due to the intervention.)

**out-of-pocket costs:** The total costs incurred by individuals for health-care services over and above any refunds from Medicare and private health insurance funds.

**overnight-stay patient:** An admitted patient who receives hospital treatment for a minimum of 1 night (that is, admitted to, and separates from, hospital on different dates).

**overweight:** Defined for the purpose of population studies as a **body mass index** of 25 or over. See also obesity.

**palliative treatment:** Treatment given primarily for the purpose of pain or other symptom control. Consequent benefits of the treatment are considered secondary contributions to quality of life.

**Papanicolaou smear:** A procedure to detect cancer and pre-cancerous conditions of the female genital tract. This procedure, also called a **Pap test** or **Pap smear** is central to Australia's National Cervical Screening Program.

**Pap test/Pap smear:** See **Papanicolaou smear**.

**patient days:** The number of full or partial days of stay for patients who were admitted for an episode of care and who underwent separation during the reporting period. A patient who is admitted and separated on the same day is allocated 1 patient day.

**performance indicators (of the health system):** Measures (**indicators**) that can relate to the health system as a whole or to parts of it such as hospitals, health centres and so forth. The measures include accessibility, effectiveness, efficiency and sustainability, responsiveness, continuity of care and safety.

**perinatal:** Pertaining to, or occurring in, the period shortly before or after birth (usually up to 28 days after).

**peritoneal dialysis:** A form of **dialysis** where a solution is pumped into the abdominal cavity where the body's own peritoneum—the lining of that cavity—acts as a dialysis filter to remove waste products and water.

**pertussis (whooping cough):** A highly infectious bacterial disease of the air passages marked by explosive fits of coughing and often a whooping sound on breathing in. It is preventable by **vaccination**.

**Pharmaceutical Benefits Scheme (PBS):** A national, government-funded scheme that subsidises the cost of a wide range of pharmaceutical drugs for all Australians to help them afford standard medications. The Pharmaceutical Benefits Schedule (schedule) lists all the medicinal products available under the PBS and explains the uses for which they can be subsidised.

**pneumonia:** Inflammation of the lungs as a response to infection by bacteria or viruses. The air sacs become flooded with fluid, and inflammatory cells and affected areas of the lung become solid. Pneumonia is often quite rapid in onset and marked by a high fever, headache, cough, chest pain and shortness of breath.

**population estimates:** Official population numbers compiled by the Australian Bureau of Statistics at both state and territory and statistical local area levels by age and sex, at 30 June each year. These estimates allow comparisons to be made between geographical areas of differing population sizes and **age structures**.

**population health:** Typically described as the organised response by society to protect and promote health, and to prevent illness, injury and disability. Population health activities generally focus on:

- prevention, promotion and protection rather than on treatment
- populations rather than on individuals
- the factors and behaviours that cause illness.

In this sense, often used synonymously with **public health**. Can also refer to the health of particular subpopulations, and comparisons of the health of different populations.

**population health survey:** A survey of a sample the population on aspects of health, typically using a questionnaire. The questionnaire may be completed on a computer (either by the respondent or by the interviewer), on paper, or over the telephone. Other information may be collected by taking measurements, and in some cases specimens of blood, urine or saliva are taken for analysis in a pathology laboratory.

**potential years of life lost (PYLL):** Number of potential years of life lost in a population as a result of premature death. For example, if dying before the age of 75 is considered premature, then a person dying at age 40 would have lost 35 potential years of life.

**potentially avoidable deaths:** Deaths among people younger than 75 that are avoidable in the context of the present health care system. They include deaths from conditions that are potentially preventable through individualised care and/or treatable through existing primary or hospital care. They are a subset of the **premature deaths**. The rate of potentially avoidable deaths in Australia is used as an indicator of the health system's effectiveness. Potentially avoidable deaths are classified using nationally agreed definitions. (A revised definition was adopted in the National Healthcare Agreement 2015 leading to differences in the counts and rates of potentially avoidable deaths published previously.)

**potentially preventable hospitalisations (PPHs):** Hospital separations from a specified range of conditions where hospitalisation is considered to be largely preventable if timely and adequate care were provided through population health services, primary care and outpatient services. The PPH conditions are classified as vaccine-preventable, chronic and acute. Respective examples include **influenza and pneumonia, diabetes complications and COPD**, and dental and kidney conditions. The rate of PPHs is currently being used as an indicator of the effectiveness of a large part of the health system, other than hospital inpatient treatment.

**prescription drugs:** Pharmaceutical drugs available only on the prescription of a registered medical or dental practitioner and available only from pharmacies.

**premature deaths (or premature mortality):** Deaths that occur at a younger age than a selected cut-off. The age below which deaths are considered premature can vary depending on the purpose of the analysis and the population under investigation. In this report, deaths among people aged under 75 are considered premature.

**prevalence:** The number or proportion (of cases, instances, and so forth) in a population at a given time. In relation to cancer, refers to the number of people alive who had been diagnosed with cancer in a prescribed period (usually 1, 5, 10 or 26 years). Compare with **incidence**.

**prevention (of ill health or injury):** Action to reduce or eliminate the onset, causes, complications or recurrence of ill health or injury.

**primary carer:** A person who provides most of the informal assistance, in terms of help or supervision, to a person with 1 or more disabilities, with one or more of the core activities of communication, mobility or self-care. In the 2012 Survey of Disability, Ageing and Carers, primary carers only included persons aged 15 and over. Note: this definition applies to this Australian Bureau of Statistics survey and may differ somewhat from other collections' definitions. See also **informal carer**.

**principal diagnosis:** The diagnosis established after study to be chiefly responsible for occasioning an episode of patient care (**hospitalisation**), an episode of residential care or an attendance at the health care establishment.

**principal referral hospitals:** Provide a broad range of services and have very large patient volumes. Most include an intensive care unit, a cardiac surgery unit, a neurosurgery unit, an infectious diseases unit and a 24-hour emergency department.

**private hospital:** A privately owned and operated institution, catering for patients who are treated by a doctor of their own choice. Patients are charged fees for accommodation and other services provided by the hospital and relevant medical and allied health practitioners. The term includes **acute care** and psychiatric hospitals as well as private free-standing day hospital facilities.

**procedure:** A clinical intervention that is surgical in nature, carries a procedural risk, carries an anaesthetic risk, and requires specialist training and/or special facilities or equipment available only in the acute-care setting.

**projection:** Is not a forecast but simply illustrates changes that would occur if the stated assumptions were to apply over the period in question.

**prophylactic treatment:** Treatment given to prevent the occurrence of disease at a site that exhibits no sign of active disease but is considered to be at risk.

**psychosocial morbidity:** Describes deaths in which a psychiatric condition contributed to the cause of death.

**public health:** Activities aimed at benefiting a population, with an emphasis on prevention, protection and health promotion as distinct from treatment tailored to individuals with symptoms. Examples include conduct of anti-smoking education campaigns, and screening for diseases such as cancer of the breast and cervix. See also **population health**.

**public hospital:** A hospital controlled by a state or territory health authority. In Australia public hospitals offer free diagnostic services, treatment, care and accommodation to all eligible patients.

**quintile:** A group derived by ranking the population or area according to specified criteria and dividing it into five equal parts. The term can also mean the cut-points that make these divisions—that is, the 20th, 40th, 60th and 80th percentiles—but the first use is the more common one. Commonly used to describe socioeconomic groups based on **socioeconomic position**.

**rate:** A rate is one number (the numerator) divided by another number (the denominator). The numerator is commonly the number of events in a specified time. The denominator is the population 'at risk' of the event. Rates (crude, age-specific and age-standardised) are generally multiplied by a number such as 100,000 to create whole numbers.

**ready-for-care (radiotherapy):** The date, in the opinion of the treating clinician, on which a patient is ready to commence treatment. It takes into account things such as the need for prior treatment or post-operative healing and when the patient states they are ready.

**recent user (alcohol and other drugs):** Used in the last 12 months.

**record linkage:** See **data linkage**.

**recurrent expenditure:** Is spending (expenditure) on goods and services that are used during the year, for example, salaries. It may be contrasted with **capital expenditure**.

**relative survival:** A measure of the average survival experience of a population of people diagnosed with cancer, relative to the 'average' Australian of the same sex and age, at a specified interval after diagnosis (usually 5 or 10 years).

**remoteness classification:** Each state and territory is divided into several regions based on their relative accessibility to goods and services (such as general practitioners, hospitals and specialist care) as measured by road distance. These regions are based on the **Accessibility/Remoteness Index of Australia (ARIA+)** and defined as Remoteness Areas by either the **Australian Standard Geographical Classification (ASGC)** (before 2011) or the **Australian Statistical Geographical Standard (ASGS)** (from 2011 onwards) in each Census year. The five Remoteness Areas are *Major cities, Inner regional, Outer regional, Remote* and *Very remote*. See also **rural**.

**residential aged care facilities:** Establishments which provide long-term care involving regular basic nursing care to chronically ill, frail, disabled or convalescent people, or senile inpatients. Also known as nursing homes.

**rheumatoid arthritis:** A chronic, multisystem disease whose most prominent feature is joint **inflammation** and resulting damage, most often affecting the hand joints in symmetrical fashion. Can occur in all age groups but most commonly appears between ages 20 and 40. Its causes are not certain but involve auto-immune processes.

**risk:** The probability of an event occurring during a specified period of time.

**risk factor:** Any factor that represents a greater risk of a health disorder or other unwanted condition or event. Some risk factors are regarded as causes of disease, others are not necessarily so. Along with their opposites, protective factors, risk factors are known as **determinants**.

**rural:** Geographic areas outside urban areas such as towns and cities. In this report, rural and remote encompasses all areas outside Australia's *Major cities* according to **remoteness classification**. In many instances, the term 'rural and remote' is used interchangeably with the classification terms 'regional and remote'.

**screening (for health):** A systematic method of detecting **risk factors** or suspicious abnormalities among people who are symptom-free, so that health problems can be either prevented or followed up, diagnosed and treated as early as possible.

Screening is usually done through special programs aimed at higher risk groups in the population. A variant of screening, often known as case-finding, is where clinicians opportunistically look for risk factors or abnormalities in people seeing them for other reasons, for example, when many doctors routinely measure blood pressure in all patients consulting them.

**seizure (illicit drugs):** Is the confiscation by a law enforcement agency of a quantity of an illicit drug or a regulated drug being used or possessed unlawfully, whether or not an arrest is made in conjunction with that confiscation. The amount of drug seized may be recorded by weight, volume or as a unit count—for example, number of tablets, plants or bags. The method of estimating the amount of drug seized varies between and within jurisdictions. For example, seizures of amphetamine in tablet form may be weighed or counted.

**separation:** The formal process where a hospital records the completion of an episode of treatment and/or care for an admitted patient. In this report, described by the term **hospitalisation**.

**sepsis:** A bacterial infection in the bloodstream or body tissues. This is a very broad term covering the presence of many types of microscopic disease-causing organisms.

**severe or profound core activity limitation:** A person who needs help or supervision always (profound) or sometimes (severe) to perform activities that most people undertake at least daily—that is, the core activities of self-care, mobility and/or communication. See also **core activity limitation and disability**.

**sexually transmissible infection:** An infectious disease that can be passed to another person by sexual contact. Notable examples include chlamydia and gonococcal disease.

**single occasion risk (alcohol):** A single occasion is defined as a sequence of drinks taken without the blood alcohol concentration reaching zero in between. The risk of an alcohol-related injury arising from a single occasion of drinking, increases with the amount consumed. For healthy men and women, drinking no more than four standard drinks on a single occasion reduces the risk of alcohol-related injury arising from that occasion.

**sleep apnoea:** When a person repeatedly stops breathing during sleep. It has the same cause as snoring—reduced airflow at the back of the mouth—but is more extreme. More common in males and the obese, it leads to poorer mental functioning during the day and a greater risk of accidents.

**social determinants of health:** The circumstances in which people are born, grow up, live, work and age, and the systems put in place to deal with illness. These circumstances are in turn shaped by a wider set of forces: economics, social policies and politics.

**socioeconomic position:** An indication of how 'well off' a person or group is. In this report, socioeconomic groups are mostly reported using the **Socio-Economic Indexes for Areas**, typically for five groups (quintiles), from the most disadvantaged (worst off or lowest socioeconomic group) to the least disadvantaged (best off or highest socioeconomic group).

**Socio-Economic Indexes for Areas (SEIFA):** A set of indexes, created from Census data, that aim to represent the **socioeconomic position** of Australian communities and identify areas of advantage and disadvantage. The index value reflects the overall or average level of disadvantage of the population of an area; it does not show how individuals living in the same area differ from each other in their socioeconomic group. This report uses the **Index of Relative Socio-Economic Disadvantage**.

**standard drink (alcohol):** Containing 10 grams of alcohol (equivalent to 12.5 millilitres of alcohol). Also referred to as a full serve.

**Staphylococcus aureus bacteraemia (SAB):** Is an infection of the bloodstream. When associated with health care procedures these infections are considered to be potentially preventable.

**statins:** A class of drugs that are commonly used to lower blood cholesterol.

**statistical significance:** An indication from a statistical test that an observed difference or association may be significant or 'real' because it is unlikely to be due just to chance. A statistical result is usually said to be 'significant' if it would occur by chance less than once in 20 times.

**STI:** See **sexually transmissible infection**.

**stroke:** When an artery supplying blood to the brain suddenly becomes blocked or bleeds. Often causes paralysis of parts of the body normally controlled by that area of the brain, or speech problems and other symptoms.

**suicidal ideation:** Serious thoughts about ending one's own life.

**suicidality:** The collective term for suicidal ideation, suicide plans and suicide attempts.

**suicide:** Deliberately ending one's own life.

**third degree laceration:** Perineal laceration, rupture or tear, as in second degree laceration, occurring during delivery and also involving anal floor, rectovaginal septum or sphincter not otherwise specified.

**thromboembolism:** The obstruction of a blood vessel, usually a large vein, with thrombotic material carried in the blood from its site of origin to block another vessel.

**trachoma:** An infectious disease of the eye caused by *Chlamydia trachomatis*. If left untreated, follicles form on the upper eyelids and grow larger until the granulations invade the cornea, eventually causing blindness.

**triage category:** Used in the emergency departments of hospitals to indicate the urgency of the patient's need for medical and nursing care. Patients are triaged into 1 of 5 categories on the Australasian Triage Scale. The triage category is allocated by an experienced registered nurse or medical practitioner.

**triglyceride:** A compound made up of a single molecule of glycerol and three molecules of fatty acid. Triglycerides are the main constituents of natural fats and oils.

**type 1 diabetes:** A form of **diabetes** mostly arising among children or younger adults, marked by a complete lack of insulin and needing insulin replacement for survival.

**type 2 diabetes:** The most common form of **diabetes**, occurring mostly in people aged 40 or over, and marked by reduced or less effective insulin.

**underlying cause of death:** The disease or injury that initiated the train of events leading directly to death, or the circumstances of the accident or violence that produced the fatal injury. See also **cause of death** and **associated cause(s) of death**.

**underweight:** Defined for population studies as a **body mass index** less than 18.5.

**unstable angina:** A form of **angina** that is more dangerous than normal angina but less so than a **heart attack**. It can feature chest pain that occurs at rest; and in someone who already has angina it can be marked by new patterns of onset with exertion or by pain that comes on more easily, more often or for longer than previously.

**vaccination:** The process of administering a vaccine to a person to produce immunity against infection. See **immunisation**.

**vacuum extraction:** Assisted birth using traction or rotation on a suction cap applied to the baby's head.

**wellbeing:** A state of health, happiness, and contentment. It can also be described as judging life positively and feeling good. For public health purposes, physical wellbeing (for example, feeling very healthy and full of energy) is also viewed as critical to overall wellbeing. Because wellbeing is subjective, it is typically measured with self-reports, but objective indicators (such as household income, unemployment levels and neighborhood crime) can also be used.

**workforce:** People who are employed or unemployed (not employed but actively looking for work). Also known as the labour force.

**whooping cough:** See **pertussis**.

**years lived with disability (YLD):** YLD is calculated as the prevalence of a condition multiplied by a disability weight for that condition. This is also sometimes referred to as **years of healthy life lost due to disability (YLD)**.

**years of healthy life lost due to disability:** See **years lived with disability (YLD)**.

**years of life lost (YLL):** For each new case, YLL equals the number of years between premature death and the standard life expectancy for the individual.

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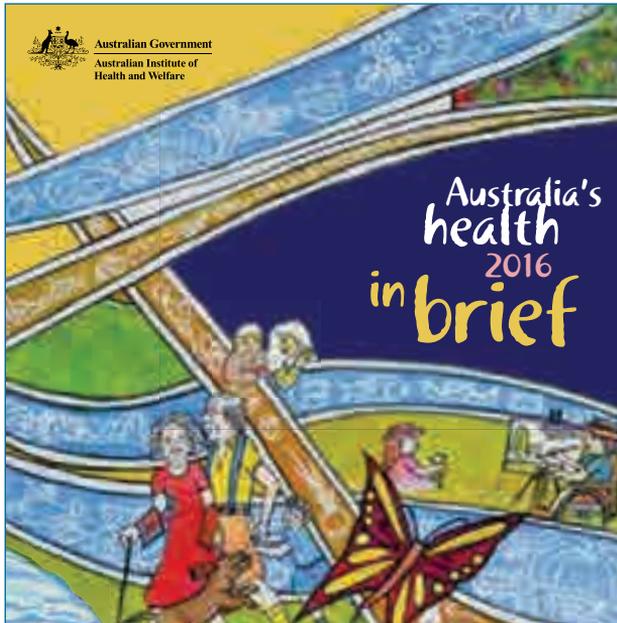
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# Australia's health 2016—in brief

This edition of *Australia's health* is accompanied by a mini companion report, *Australia's health 2016—in brief*, that summarises key statistics and concepts from the main report.





*Australia's health 2016* is the 15th biennial health report of the Australian Institute of Health and Welfare.

This edition profiles current health issues in a collection of feature articles and statistical snapshots that cover a range of areas, including:

- The health status of Australians
- Health expenditure
- The major causes of ill health
- Determinants of health
- Health through the life course
- Health of Indigenous Australians
- Preventing and treating ill health
- Health system performance.

