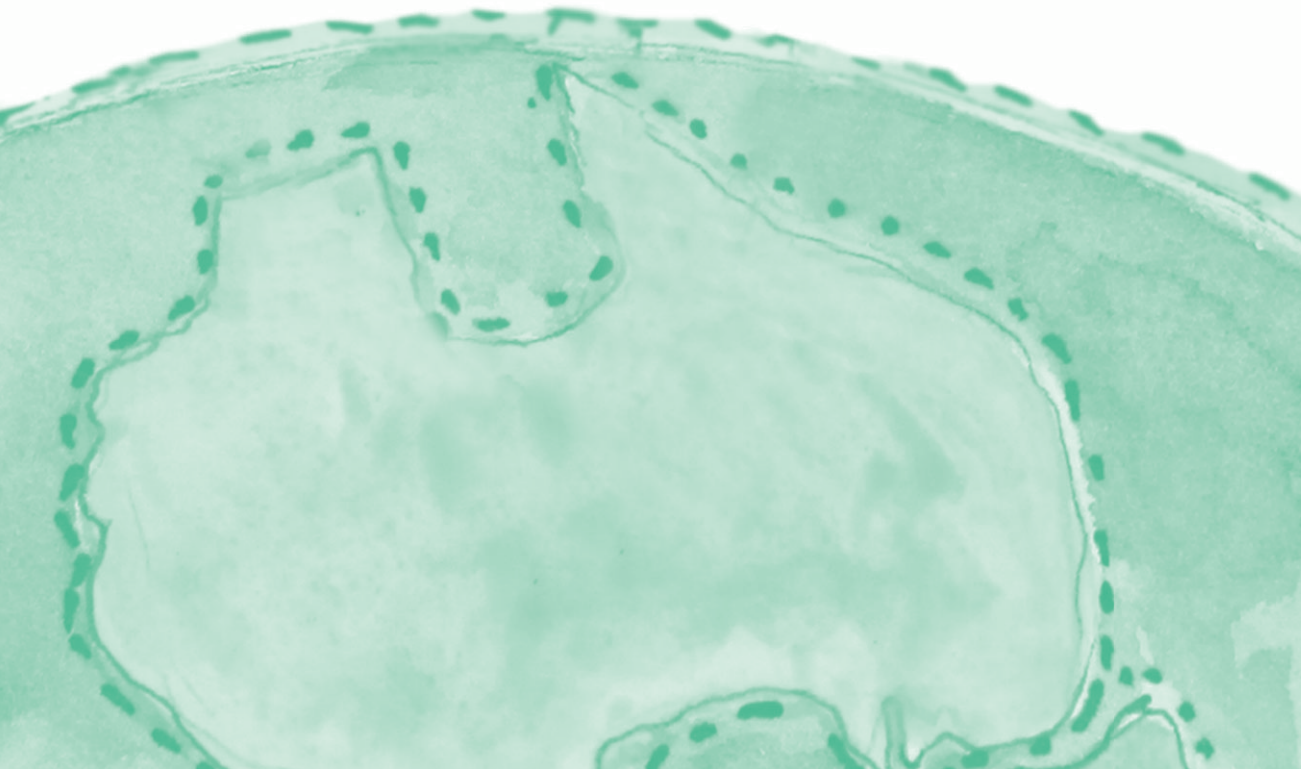
Australian Government
Australian Institute of Health and Welfare

Australia's health 2014

Australia's health 2014

The 14th biennial health report of the
Australian Institute of Health and Welfare



The Australian Institute of Health and Welfare (AIHW) is a major national agency which provides reliable, regular and relevant information and statistics on Australia's health and welfare. The Institute's mission is

authoritative information and statistics to promote better health and wellbeing.

© Australian Institute of Health and Welfare 2014

This product, excluding the AIHW logo, Commonwealth Coat of Arms and any material owned by a third party or protected by a trademark, has been released under a Creative Commons BY 3.0 (CC BY 3.0) licence. Excluded material owned by third parties may include, for example, design and layout, images obtained under licence from third parties and signatures. We have made all reasonable efforts to identify and label material owned by third parties.

You may distribute, remix and build upon this work. However, you must attribute the AIHW as the copyright holder of the work in compliance with our attribution policy available at <www.aihw.gov.au/copyright/>. The full terms and conditions of this licence are available at <http://creativecommons.org/licenses/by/3.0/au/>.

Enquiries relating to copyright should be addressed to the Head of the Media and Strategic Engagement Unit, Australian Institute of Health and Welfare, GPO Box 570, Canberra ACT 2601.

This publication is part of the Australian Institute of Health and Welfare's *Australia's health* series. A complete list of the Institute's publications is available from the Institute's website <www.aihw.gov.au>.

ISSN 1032-6138

ISBN 978-1-74249-544-6

Suggested citation

Australian Institute of Health and Welfare 2014. Australia's health 2014. Australia's health series no. 14. Cat. no. AUS 178. Canberra: AIHW.

Australian Institute of Health and Welfare

Board Chair
Dr Andrew Refshauge

Director
David Kalisch

Any enquiries about or comments on this publication should be directed to:

Media and Strategic Engagement Unit
Australian Institute of Health and Welfare
GPO Box 570
Canberra ACT 2601

Tel: (02) 6244 1032
Email: info@aihw.gov.au

Published by the Australian Institute of Health and Welfare

Designed using artwork by Kathryn Jean Harrison

Please note that there is the potential for minor revisions of data in this report. Please check the online version at <www.aihw.gov.au> for any amendments.

Australian Government
Australian Institute of Health and Welfare

Authoritative information and statistics to promote better health and wellbeing

The Hon Peter Dutton MP
Minister for Health and 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 2014*, as required under Subsection 31(1) of the *Australian Institute of Health and Welfare Act 1987*.

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

Yours sincerely

Dr Andrew Refshauge
Board Chair

22 May 2014

Thynne Street, Fern Hill Park, Bruce ACT 2617 • GPO Box 570, Canberra ACT 2601 • TEL 02 6244 1000 • FAX 02 6244 1299 • www.aihw.gov.au

Contents

Preface viii

Acknowledgments ix

Chapter 1 – Understanding health and illness **1**

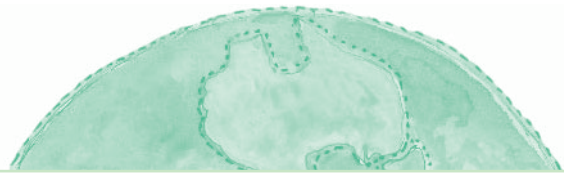
1.0 Introduction 2
1.1 Health and illness 3
1.2 Who we are 10

Chapter 2 – Australia's health system **31**

2.0 Introduction 32
2.1 Australia's health system 33
2.2 How much does Australia spend on health care? 47
2.3 Who is in the health workforce? 60

Chapter 3 – How healthy are we? **65**

3.0 Introduction 66
3.1 Life expectancy 67
3.2 Leading causes of death in Australia 70
3.3 Multiple causes of death in Australia 75
3.4 Are we getting healthier? 78



Chapter 4 – Leading types of ill health 89

4.0 Introduction 90
4.1 Burden of disease 91
4.2 Chronic disease—Australia's biggest health challenge 94
4.3 Cancer in Australia 105
4.4 The changing cancer landscape 108
4.5 Arthritis and other musculoskeletal conditions 122
4.6 Coronary heart disease 125
4.7 Stroke 128
4.8 Mental health in Australia 131
4.9 Chronic respiratory conditions 138
4.10 Diabetes 141
4.11 Chronic kidney disease 144
4.12 Injuries 148
4.13 Oral health 151
4.14 Immunisation and vaccine preventable disease 154

Chapter 5 – Health behaviours and other risks to health 159

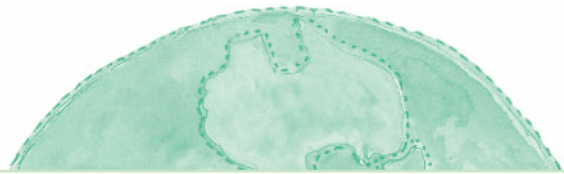
5.0 Introduction 160
5.1 Biomedical risk factors 161
5.2 Behavioural risk factors 164
5.3 Alcohol risk and harm 167
5.4 Tobacco smoking 170
5.5 Illicit drug use—current and future issues 173
5.6 Health in regional and remote areas 186
5.7 The health of Australian prisoners—from incarceration to release 189

Chapter 6 – Health through your life 193

6.0 Introduction 194
6.1 The health of mothers 195
6.2 Caesarean section 198
6.3 Australia's babies 201
6.4 How healthy are Australian children? 204
6.5 Healthy child development 207
6.6 Childhood overweight and obesity 210
6.7 Youth health: the prime of life? 222
6.8 The health of our working-age population 241
6.9 Ageing and the health system: challenges, opportunities and adaptations 256
6.10 Dementia, dementia treatment and the future 271
6.11 Movement between hospitals and residential aged care 284
6.12 Incontinence 288
6.13 Palliative care in Australia 291

Chapter 7 – Indigenous health 295

7.0 Introduction 296
7.1 Profile of Indigenous Australians 297
7.2 Indigenous life expectancy and death rates 301
7.3 How healthy are Indigenous Australians? 304
7.4 Health behaviours of Indigenous Australians 307
7.5 Social determinants of Indigenous health 310
7.6 Indigenous Australians' access to health services 314
7.7 Remoteness and the health of Indigenous Australians 318
7.8 The size and causes of the Indigenous health gap 329



Chapter 8 – Preventing and treating ill health 341

8.0 Introduction 342
8.1 Prevention for a healthier future 343
8.2 Cancer screening in Australia 354
8.3 Primary health care in Australia 357
8.4 Alcohol and other drug treatment services 379
8.5 Mental health services at a glance 382
8.6 Ambulance services 387
8.7 Overview of public and private hospitals 390
8.8 Emergency departments: at the front line 394
8.9 Sub-acute and non-acute care 406
8.10 Elective surgery waiting times 409
8.11 The rise of private hospitals 413
8.12 Safety and quality of hospital care 425
8.13 Medicines in the health system 428

Chapter 9 – Indicators of Australia's health 433

9.0 Introduction 434
9.1 Indicators of Australia's health 435
9.2 International comparisons 497

Methods and conventions 504

Symbols 507

Acronyms and abbreviations 508

Glossary 512

Index 529

Preface

Every 2 years the Australian Institute of Health and Welfare is required to compile a report card on the health of Australians and their health system, and once again I am delighted to introduce our 14th report in this series, *Australia's health 2014*.

Since this biennial flagship was first published in 1988, the demand for reliable, timely and accurate health information and statistics has increased, and *Australia's health* has become an indispensable national resource.

As in past editions, *Australia's health 2014* answers key questions such as 'Are we getting healthier?' and 'Who does what in the health system?', and provides a summary of the performance of Australia's health system against agreed national indicators.

However, as part of the AIHW's commitment to widening our readership to include everyone with an interest in health—from the consumer to the policy maker—a new and innovative format has been used for this 2014 report.

Our focus is on key facts and health issues of the moment, presented through a combination of short statistical 'snapshots' and analytical feature articles, backed by online links to more detailed information available in other more specialised AIHW reports.

The feature articles cover a diverse range of topics, including an investigation of the health 'gap' between Indigenous and non-Indigenous populations, illicit drug use, private hospitals, mental health, and what the ageing of Australia's population means for us and our health system. The report also presents, for the first time, a comprehensive look at childhood obesity and youth health, and the health of the working-age population.

There are 2 important themes underlying what we have chosen to highlight in this edition: the interaction of health behaviours and risk factors on our wellbeing; and the impact of chronic disease in Australia, both individually and as a nation.

The AIHW manages many important national health information collections, and relies on the cooperation of state and territory governments, the Australian Bureau of Statistics, other independent bodies and the non-government sector to ensure the accurate and timeliness of health-related data. There have been many improvements and enhancements to national health data over recent years, but many data gaps remain. These, along with other limitations, are highlighted in 'What is missing from the picture?' sections in articles and snapshots.

As in the previous 2 editions, *Australia's health 2014* is accompanied by an *Australia's health—in brief* mini report that summarises key statistics and concepts from the main report.

David Kalisch
Director

Acknowledgments

Steering committee

Fadwa Al-Yaman, Justine Boland, Teresa Dickinson, Jenny Hargreaves, David Kalisch, Pamela Kinnear, Geoff Neideck, Lisa McGlynn

Project managers

Nigel Harding, Karen Hobson

Authoring committee

Stuart Barrow
Rebecca Bennetts
David Braddock
Jessica Cargill
Michael de Looper
Barbara Gray
Dinesh Indraharan
Amber Jefferson
Miriam Lum On
Anna O'Mahony
Ingrid Seebus
Marianna Stylianou
Tomoko Sugiura
Adrian Webster
Amy Young

AIHW authors

Amelia Armstrong
Tom Baker
Anne Bech
Karen Bishop
Michael Bourchier
Evon Bowler
Ilona Brockway
Clayton Chiu
Cathy Claydon
Mark Cooper-Stanbury
Peta Craig
Alice Crisp
Elizabeth Dernie
Aditi Dey
Mardi Ellis
Melissa Goodwin
Michelle Gourley
Graz Hamilton
Gary Hanson
Justin Harvey
Eric Henry
Charles Hudson
Brynley Hull
Helena Hurst
Linda Jensen
Ingrid Johnston
Jennifer Kerrigan
Sushma Mathur
Robert Menzies
Janice Miller
Lucas Mills
Lynelle Moon
Maddeline Mooney
Simon O'Mahony
Tracy Oliver
Deanna Pagnini
Jenna Pickles
Helen Quinn
Naila Rahman
Anna Reynolds
Nikki Schroder
Susana Senes
Jason Thomson
Lany Trinh
Jeanette Tyas
Agnes Tzimos
Genevieve Whitlam
Louise York

Many other staff from the AIHW and its collaborating units contributed time and expertise to the production of *Australia's health 2014*.

AIHW publishing and design

Tony Francis, Belinda Hellyer, Tulip Penney, Andrew Smith, Helen Tse

External referees

Louise Baur, Jim Bishop, Bill Buckingham, Tanya Chikritzhs, John Deeble, Brian Draper, Michael Farrell, David Filby, John Goss, Alan Hayes, Matthew James, Hal Kendig, Rosemary Knight, George Neale, George Patton, Chris Pearce, Jack Quinane, Alison Ritter, Michelle Scollo, Andrew Singer, Len Smith, Bernie Towler

The following Australian Government departments and agencies were involved in comprehensive external review of the material:

- Department of Health
- Department of the Prime Minister and Cabinet
- Department of Social Services
- Australian Bureau of Statistics.

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.

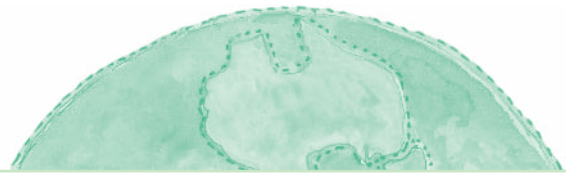
Data sources

The best available information has been used to inform the report, drawn from a range of data sources that are referenced throughout the report. The 2 main data sources are national collections managed by the AIHW and the Australian Bureau of Statistics. These main sources 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 2014, many of the statistics refer to 2012 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.

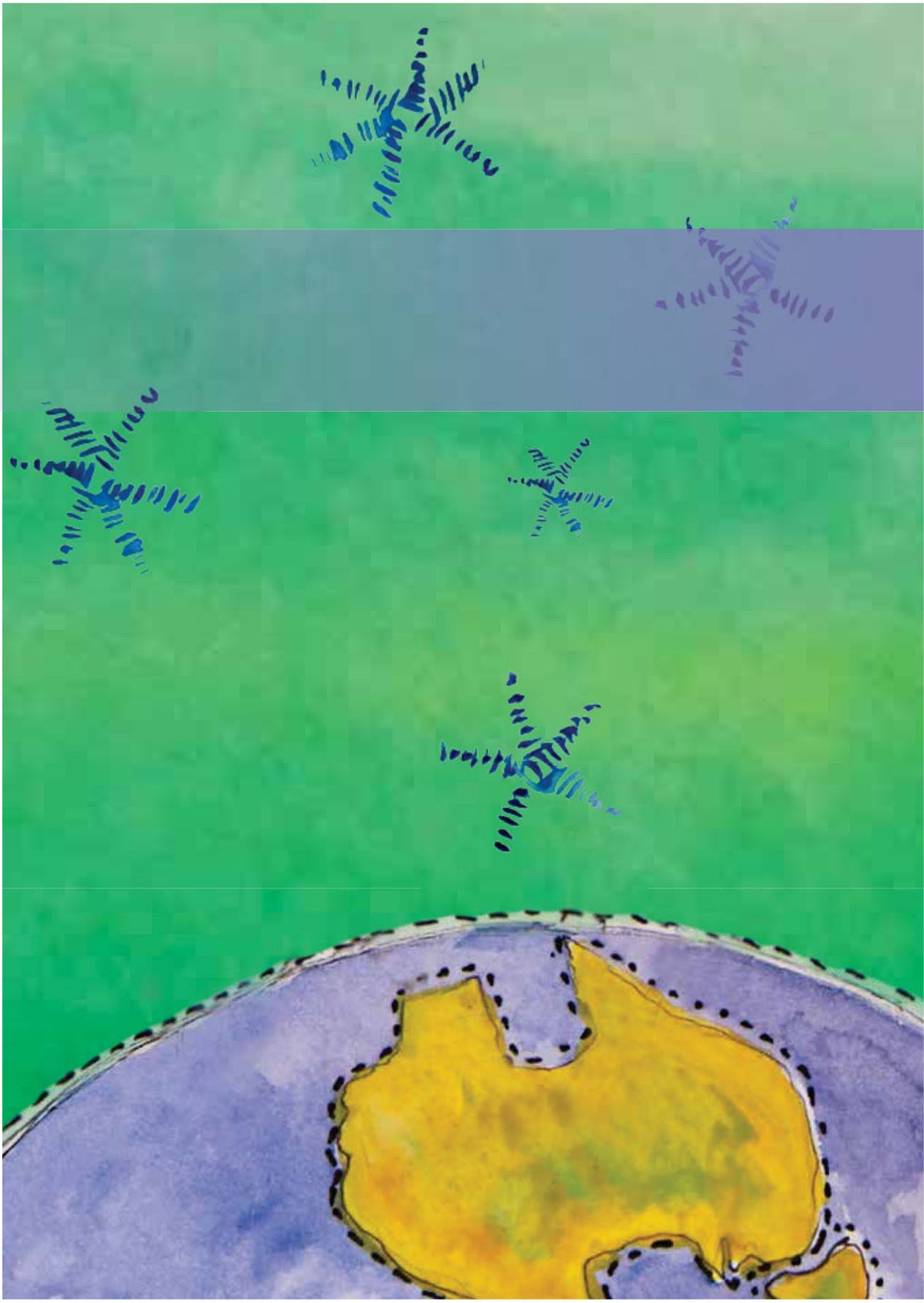


Additional material online

This edition of *Australia's health* has an expanded online presence, including live links to referenced publications and web pages. Key AIHW publications featured in *Australia's health 2014* have also been converted to HTML format, offering improved accessibility and enhanced search capabilities for readers.

Australia's health 2014 is available online in HTML format and as an ePub, in addition to the traditional PDF format. Individual PDFs are available for individual articles and snapshots, for easy downloading and printing.

Visit *Australia's health 2014* online at www.aihw.gov.au/australias-health/.



Chapter 1

Understanding health and illness

1.0 Introduction

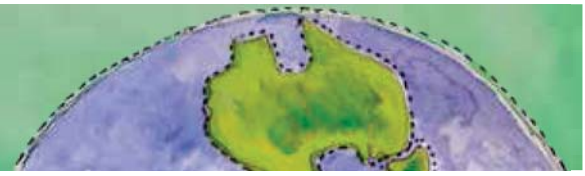
What does it mean to be healthy or sick? How good is the health of Australians generally and for different groups? And what does *Australia's health 2014*, the biennial national report card, set out to do?

Australia's health 2014, like its 13 predecessors, takes the view that health is not just the presence or absence of illness or injury, but incorporates dimensions of physical, mental and social wellbeing.

This first chapter begins by discussing what health is, and defines broad concepts such as health and illness and their associated causes, known as health determinants. The impact of these determinants—the complex mix of genetic, biomedical, behavioural, socioeconomic and environmental factors that have an influence on health—is investigated throughout *Australia's health 2014*. There is a particular focus on factors that are topical, or of high interest to policy makers, the health professions and the public.

Indeed, focusing on matters of high interest is at the core of *Australia's health 2014* as a whole. The format and organisation of the report and its supporting materials are consequently quite different to previous editions. However, within this context, there is still necessarily some bias towards aspects of health and health care where we have good supporting data. More detail on the new format is included in the 'About *Australia's health 2014*' section in this chapter.

Later in the chapter there is a profile on 'Who we are' as Australians. Firstly, the make-up of our population, where and how we live, our fertility, employment and education are discussed. This feature article then draws on material presented elsewhere in the report to summarise how long we live, what we die of, the health conditions we live with, and the leading inequalities in health in our population. It therefore provides an overview of us and our health status.



FEATURE ARTICLE

What is health?

Health, or being in good health, is important to everyone. It influences not just how we feel, but how we function and participate in the community.

The concepts of 'health' and 'ill health' reach far beyond the individual and can be difficult to define and measure. They encompass a wide range of experiences and events and their interpretation may be relative to social norms and context. As such, individuals, groups and societies may have very different interpretations of what constitutes illness and what it means to be in good health.

The most widely accepted definition of health was set out in the Preamble to the Constitution of the World Health Organization (WHO) in 1946. WHO encourages an holistic concept of health, 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 definition includes mental and social dimensions and moves the focus beyond individual physical abilities or dysfunction.

Even more broadly, Aboriginal and Torres Strait Islander people view health as 'not just the physical well-being of the individual but the social, emotional and cultural well-being of the whole community' (National Aboriginal Health Strategy Working Party 1989). An ongoing and active relationship with 'country' means that the health of community land plays an important role in determining the health of the people themselves (Green 2008). This view of health takes a whole-of-life approach and can include the cyclical concept of life–death–life.

Australia's health 2014 takes this broad view of health and functioning, incorporating both physical and mental dimensions, and genetic, cultural, socioeconomic and environmental determinants. It is based on the following concepts:

- health is an important part of wellbeing, of how people feel and function
- health contributes to social and economic wellbeing
- health is not simply the absence of disease or injury, and there are degrees of good health
- managing health includes being able to promote good health, identify and manage risks and prevent disease
- disease processes can develop over many years before they show themselves through symptoms.

A model for describing health

This report is based on the conceptual framework in Figure 1.1. The overall concept is that a person's health and wellbeing result from complex interplays among 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 to highly individual factors, such as genetic make-up. And, of course, our health is also affected by the quality of health care we receive.

Some of these effects can be direct (such as being burnt by the sun), while others are less direct (such as access to shade combined with knowledge of the health risks associated with exposure to the sun influencing health through effects on behaviour).

These influences are known as *health determinants* because they help determine how likely we are to stay healthy or become ill or injured.

Health determinants

Some health determinants are positive in their effects on health and others are negative. A high daily intake of fruit and vegetables, for example, or being vaccinated against disease, are positive influences, and often termed protective factors.

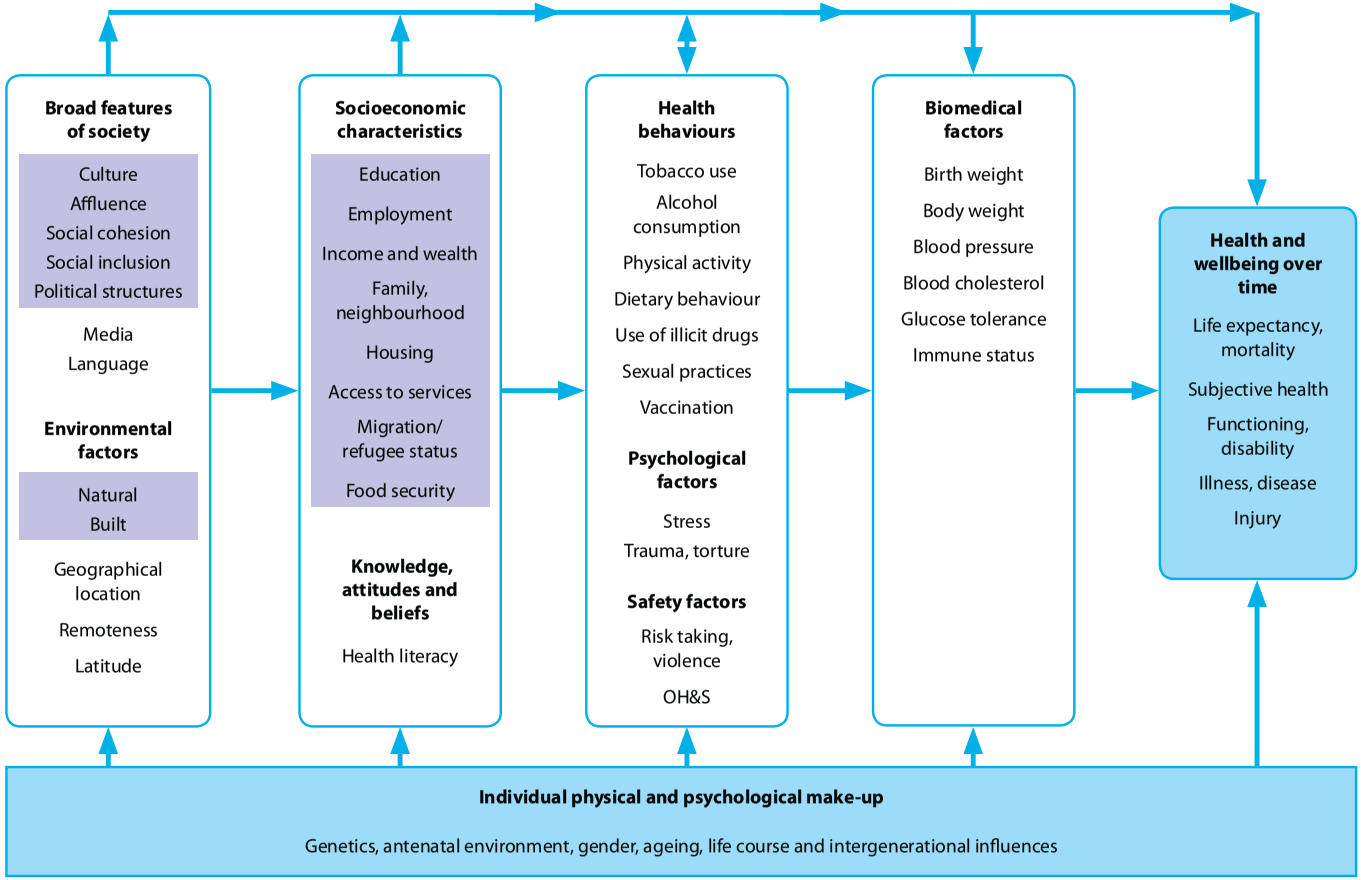
Those things that increase our likelihood of experiencing ill health are known as risk factors. Behavioural risk factors are those where lifestyle choices play a major role, for example, at-risk consumption of alcohol. Current estimates suggest that up to 80% of heart disease, stroke and type 2 diabetes and more than one-third of cancers worldwide could be prevented by eliminating shared modifiable risk factors—mainly tobacco use, unhealthy diet, physical inactivity and the harmful use of alcohol (WHO 2008) (see Chapter 8 'Prevention for a healthier future').

Biomedical risk factors represent bodily states that contribute to the development of chronic disease, for example, high blood pressure and high blood cholesterol levels (see Chapter 5 'Biomedical risk factors' and Chapter 4 'Chronic disease—Australia's biggest health challenge').

The framework in Figure 1.1 divides determinants into 4 major groups whose main direction of influence goes from left to right; that is, from the background factors (such as culture and affluence) through to more immediate influences (such as blood pressure).

The framework shows how the first main group—the broad features of society and environmental factors—can determine the nature of another main group; that is, people's socioeconomic characteristics, such as their level of education and employment. Both of these main groups also influence people's health behaviours, their psychological state and factors relating to safety. These, in turn, can influence biomedical factors, such as body weight and glucose metabolism, which may have health effects through various further pathways.

Figure 1.1



Note: Purple shading highlights selected social determinants of health.

A framework for the determinants of health

At all stages along the path, the various factors interact with an individual's genetic composition. In addition, the factors within a box often interact and are closely related to each other.

In recent years there has been an increased understanding of the importance of the social determinants of health: a term that encompasses not only social, but economic, political, cultural and environmental determinants. Essentially, these are the conditions into which people are born, grow, live, work and age (WHO 2013). According to this view, a person's occupation, education, material resources, social support networks and social status can affect their health and contribute to broader health inequalities within the population. These circumstances are in turn shaped by a wider set of forces, such as economics, social policies, and politics. Some factors can be influenced by individuals and families through their pursuit of particular outcomes, while some broader forces are beyond the control of individuals.

Social and economic conditions and their effects on people's lives can determine their risk of illness and the actions taken to prevent them becoming ill or treat illness when it occurs (WHO 2013). According to the World Health Organization (WHO), 'the social determinants of health are mostly responsible for health inequities—the unfair and avoidable differences in health status seen within and between countries' (WHO 2013).

What is disease and illness?

A disease is a physical or mental disturbance involving symptoms, dysfunction or tissue damage, while illness (or sickness) is a more subjective concept related to personal experience of a disease (AIHW 2010).

There are many diseases that can afflict the human body, ranging from common colds to cancers. The 2 main categories of disease that may lead to ill health are infectious and chronic diseases.

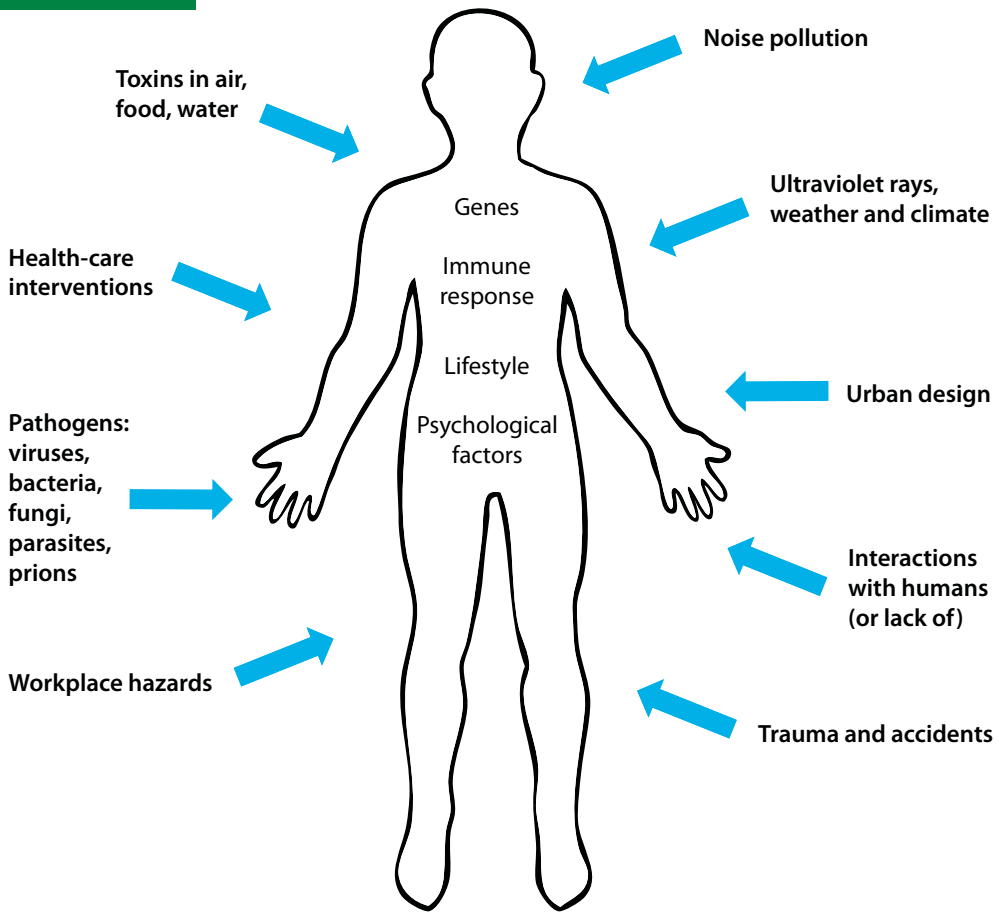
- *Infectious diseases* are caused by pathogens and can be spread from person to person by air, food, water, inanimate objects, insects or by direct or indirect contact with an infected person. Examples of infectious diseases include influenza, malaria and human immunodeficiency virus (HIV).
- *Chronic diseases* are caused by multiple factors, including a person's genetic make-up lifestyle and environment. They are long-term conditions and cannot be directly spread from one person to another. Examples of chronic diseases include diabetes, asthma and heart disease.

Some diseases can be both infectious and chronic, for example, long-term infectious skin conditions or diseases such as HIV that are currently incurable. Further, there can be common mechanisms underlying infectious and chronic diseases, for example, an injury could lead to an infection or a chronic back problem.

There are a large number of potential causes for disease and feelings of ill health in the human body (Figure 1.2). There may be a single cause (for example, a specific pathogen) or a range of causes (such as multiple lifestyle factors) that lead to a person developing a particular disease.

Other factors, such as the strength of a person's immune response, vaccination status, resilience and mental state, or their current health, many influence whether a person develops a disease, or how severely they are affected. Some population groups or age groups differ in susceptibility to certain diseases due to genetic, biological, environmental or socioeconomic characteristics. As such, a particular disease may not develop in all individuals, or with the same level of severity. Further, people may be able to successfully manage many chronic conditions with the assistance of lifestyle changes, pharmaceuticals, and other forms of support.

Figure 1.2



Note: A disease may not occur in all circumstances. An individual's immune and homeostatic responses, vaccination status, previous history of disease, psychological coping strategies or ability to access health services (among other factors) may play a role in mediating disease.

Examples of internal and external causes of disease and ill health

About *Australia's health 2014*

The Australian Institute of Health and Welfare (AIHW) is required to report every 2 years on the state of health of Australians and on the Australian health system. The report generally follows the framework depicted in Figure 1.1, and treats health as a multi-faceted concept that is affected by—and has an effect on—many aspects of a person's life.

As in past editions, *Australia's health 2014* answers key questions such as 'Who does what in the health system?' and 'Are we getting healthier?', and provides a summary of the performance of Australia's health system against agreed national indicators.

But *Australia's health 2014* has a different format to previous editions in that it combines analytical feature articles on highly topical health issues with short statistical 'snapshots' on subjects such as types of ill health, health behaviours and risks, mental health, elective surgery and how we treat ill health.

Because articles and snapshots are designed to be self-contained, there is inevitable overlap and re-stating of some concepts throughout the book. We have cross-referenced between and among articles and snapshots wherever we felt this would be useful for readers.

The feature articles cover a diverse range of topics, such as chronic diseases, illicit drug use, private hospitals, dementia and what the ageing of Australia's population means for our future. Each article presents an in-depth analysis of the issues associated with each topic together with implications for individuals and the nation as a whole.

The report also presents a picture of health through life, with feature articles and snapshots on all life stages including, for the first time, a comprehensive look at childhood obesity and youth health, and the health of the working age population.

Australia's health 2014 examines the health of Aboriginal and Torres Strait Islander people in a series of feature articles and snapshots that include an investigation of the gap between Indigenous and non-Indigenous populations as well as the effect that remoteness has on health.

'What is missing from the picture?' sections

The AIHW manages many important national health information collections, and relies on the cooperation of state and territory governments, the Australian Bureau of Statistics, other independent bodies and the non-government sector to ensure the accurate and timeliness of health-related data.

Despite improvements and enhancements to national health data over recent years, many data gaps remain, and these, along with other limitations, are listed under a series of 'What is missing from the picture?' headings in articles and snapshots.

'Where can I go for more information?' sections

Readers wanting more detail on a particular topic will find it in the 'Where can I go for more information?' sections throughout the report.

More paths to information online

This edition of *Australia's health* has an expanded online presence at <www.aihw.gov.au>, including live links where possible to referenced publications and web pages. Key AIHW publications featured in *Australia's health 2014* have been converted to HTML format, offering improved accessibility and enhanced search capabilities for readers.

Australia's health 2014 itself is available in HTML format and as an ePub, in addition to the traditional PDF format. Individual PDFs are available online for individual articles and snapshots, for easy downloading and printing.

References

AIHW (Australian Institute of Health and Welfare) 2010. Australia's health 2010. Cat no. AUS 122. Canberra: AIHW.

Green D 2008. Climate impacts on the health of remote northern Australian Indigenous communities. In: Garnaut climate change review. Canberra: Australian Government Department of Climate Change.

National Aboriginal Health Strategy Working Party 1989. A National Aboriginal Health Strategy. Canberra: Department of Aboriginal Affairs.

WHO (World Health Organization) 1946. Preamble to the Constitution of the World Health Organization as adopted by the International Health conference, New York, 19–22 June, 1946. New York: WHO.

WHO 2008. 2008–2013 action plan for the global strategy for the prevention and control of noncommunicable diseases. Geneva: WHO.

WHO 2013. What are social determinants of health? Geneva: WHO. Viewed 6 December 2013, <http://www.who.int/social_determinants/sdh_definition/en/index.html>.

1.2 Who we are

FEATURE ARTICLE

Many health experts agree that health is heavily influenced by the circumstances in which people are born, grow, live, work and age including political, social and economic factors that go beyond the immediate causes of disease (Commission on Social Determinants of Health 2007).

Broadly speaking these factors comprise what are known as the social determinants of health, which in recent years have been of increasing interest to governments, researchers and health practitioners.

In this article we therefore take a brief look at Australians—how many of us there are, and how and where we live, before describing how long we live, what we die of, what health conditions we live with and the health disadvantages experienced by some groups within the Australian population.

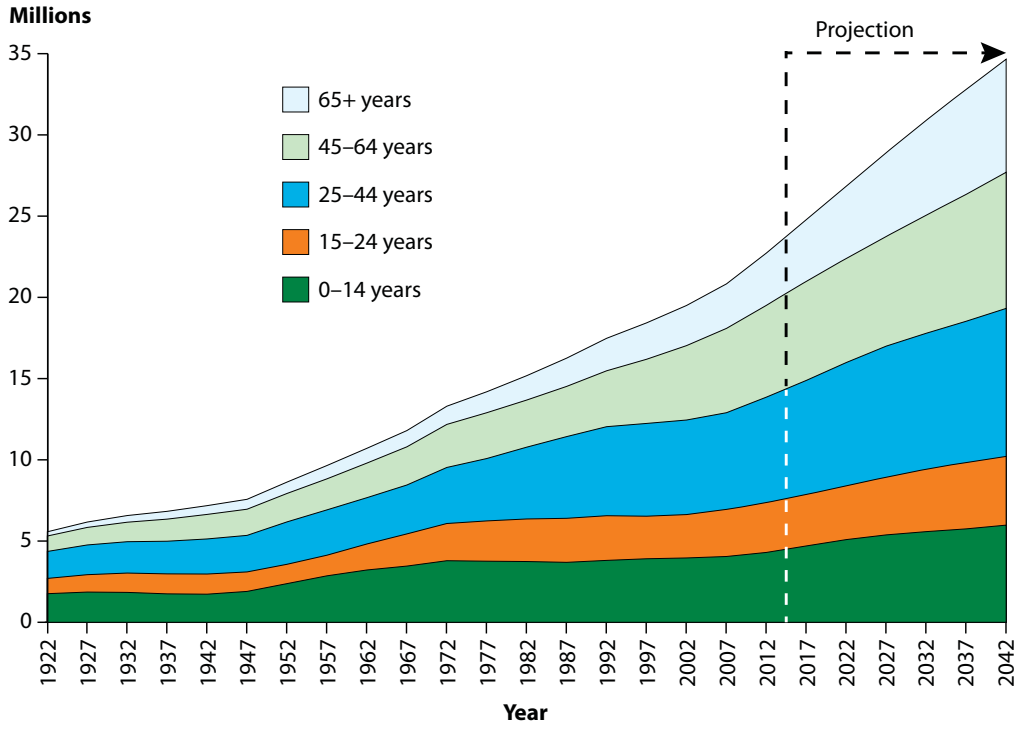
Population

Australia is a vast country with a relatively small but growing population of more than 23 million people at June 2013 (ABS 2013c). Around 27% of the population in 2011 were born overseas, and 3% were Indigenous Australians (about 670,000 people in 2013).

The population continues to grow mainly because of natural increase (there are more births than deaths) and migration. Natural increase contributed 40% to population growth in 2013 while net overseas migration added 60%. An estimated 162,700 people were added through natural increase in the year to June 2013 and 244,400 people were added through migration in the same period (ABS 2013c). Our birth rate is 1.9 births per woman, less than the replacement rate of 2.1, but higher than our lowest rate of 1.7 in 2001.

According to the Australian Bureau of Statistics (ABS), the Australian population is projected to be increasing at the rate of 1 person every 1 minute and 18 seconds (ABS 2013o). Although the population is increasing, the growth has not been consistent across all age groups (Figure 1.3).

Figure 1.3



Notes

1. Data are as at 30 June of each year. Projected population is shown from 2014 onwards.
2. 'Projection' section of graph shows expected rises in the population based on ABS medium-level growth assumptions.

Sources: AIHW analysis of ABS 2008a, 2008c (Series 29), 2013c, 2013l.

Historical and projected Australian population, by age, 1922 to 2032

Over recent decades population growth has been stronger among older age groups compared with younger age groups. For example, between 1973 and 2013, the number of people aged 65 and over tripled, from 1.1 million to 3.3 million. There was a sixfold increase in the number of people aged 85 and over, from 73,100 to 439,600. Over the same period, the number of children and young people (aged under 25) rose by just 22% from 6.1 million to 7.5 million people.

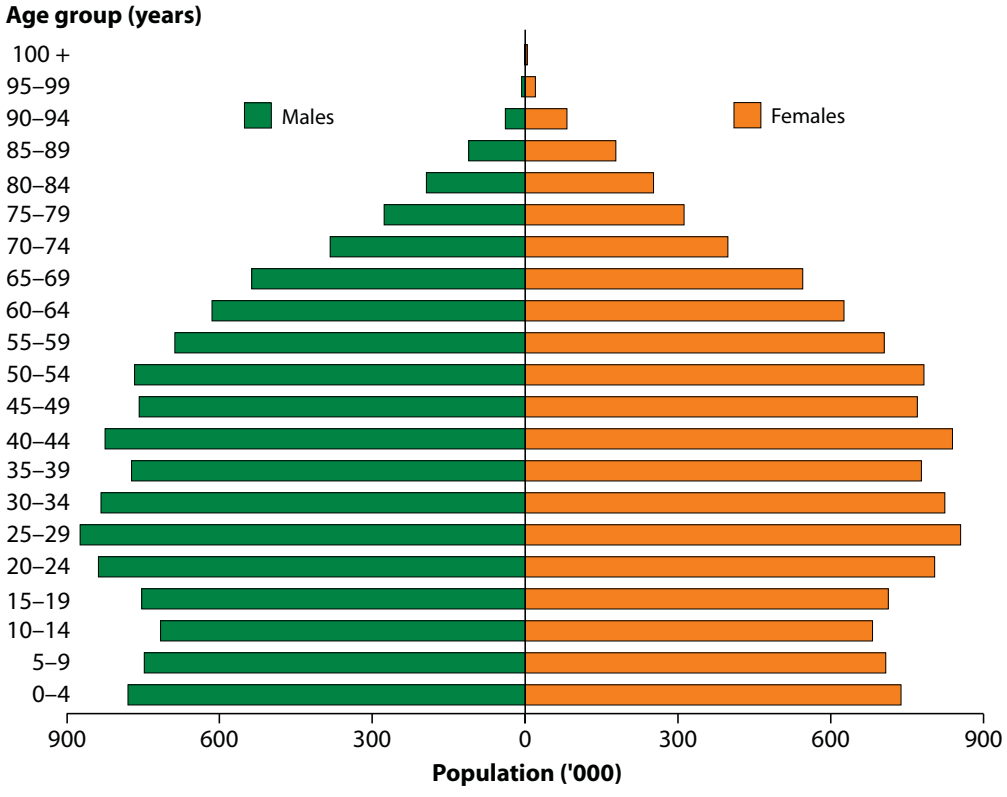
To look at this in another way, in 2013, people aged 65 and over comprised 14% of the population compared with 9% in 1973. People aged under 25 comprised one-third (32%) of the population in 2013 compared with almost half (45%) 40 years earlier (ABS 2013c).

In 2013 there were slightly more males than females at all ages up to and including the 30–34 age group, but fewer males than females for all subsequent age groups. The difference is especially marked at more advanced ages—47% males to 53% females at ages 75–79, and 36% males to 64% females for people aged 85 and over (see Figure 1 .4) (ABS 2013c).

The age profile of the Indigenous population is considerably younger than for the non-Indigenous population (see Figure 1.5).

Data for June 2011 (ABS 2013j) show that half of the Indigenous population was aged 22 or under (compared with 38 or under for the non-Indigenous population) and just 3.4% were aged 65 and over (compared with 14% of the non-Indigenous population). As with the Australian population as a whole, Indigenous women outnumbered Indigenous men at older ages. Women accounted for 52% of Indigenous people aged 50–74 and 61% of those aged 75 and over.

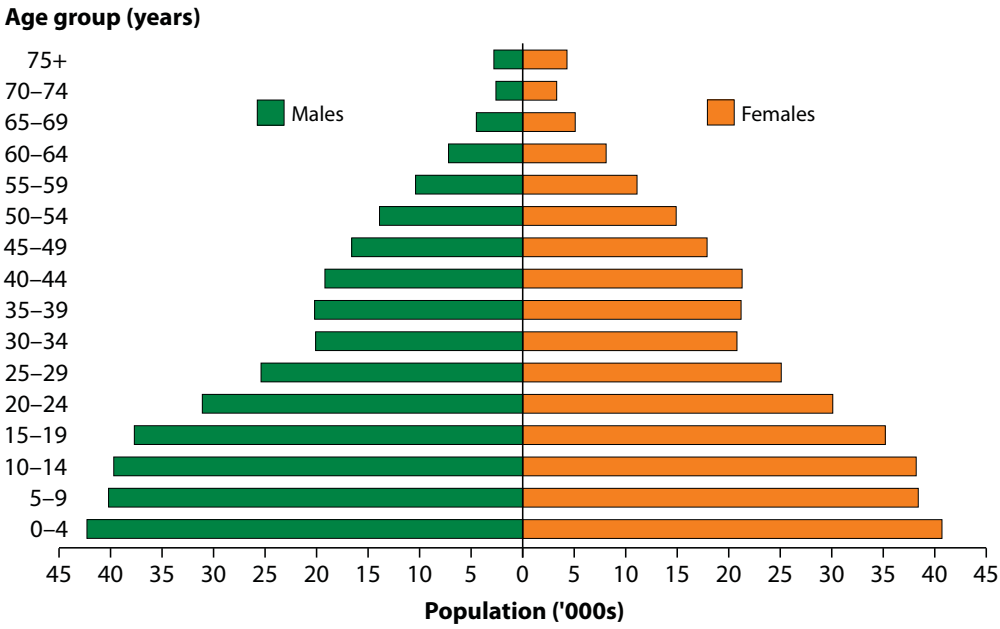
Figure 1.4



Source: ABS 2013c.

Australian population, by age and sex, June 2013

Figure 1.5



Source: ABS 2012a.

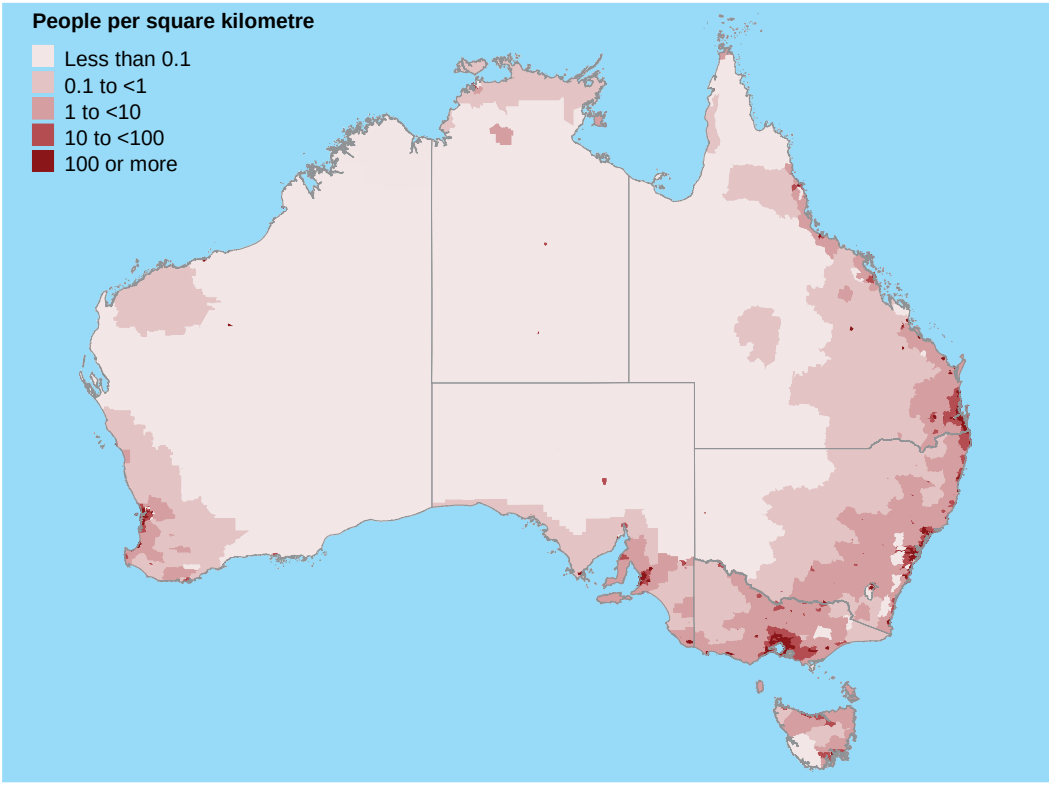
Aboriginal and Torres Strait Islander population, by age and sex, June 2011

Where we live

Australia's population is mostly concentrated in the east and south-east of the country, as shown in Figure 1.6. In 2012, about 1 in 3 people (32%) lived in New South Wales, 1 in 4 (25%) in Victoria, 1 in 5 (20%) in Queensland, 11% in Western Australia, 7.3% in South Australia, 2.3% in Tasmania, 1.7% in the Australian Capital Territory and 1.0% in the Northern Territory (ABS 2013m; AIHW 2013a).

At June 2012, most Australians lived in *Major cities* (70%), while 18% lived in *Inner regional* areas, 9% in *Outer regional* areas, and 1% in both *Remote* and *Very remote* areas. (ABS 2013m; AIHW 2013a; see Box 1.1 for information about the classification of geographical areas in Australia).

Figure 1.6



Note: figure shows population density by Statistical Area Level 2 based on the ASGS (see Box 1.1).

Sources: AIHW analysis of ABS 2010a, 2013m.

Population density, 30 June 2012

Population densities were highest in inner Sydney suburbs, with between 13,100 and 13,900 people per square kilometre compared with the lowest densities of less than 1 person per square kilometre throughout most of central and northern Australia.

Remote areas of Australia are disproportionately populated by Indigenous Australians, with 2011 Census data showing that almost half (45%) of all people in *Very remote* areas and 16% in *Remote* areas were Indigenous compared with a 3% Indigenous representation in the total population (ABS 2013j).

Box 1.1

Classification of remoteness areas in Australia

The ABS Australian Standard Geographical Classification (ASGC) Remoteness Structure allocates areas to 1 of 5 remoteness categories depending on their distance from urban centres, where the population size of the urban centre is considered to govern the range and types of services available.

Remoteness Areas are classified into 5 categories: *Major cities*, *Inner regional*, *Outer regional*, *Remote* and *Very remote*.

The category *Major cities* includes Australia's capital cities, with the exceptions of Hobart and Darwin, which are classified as *Inner regional* and *Outer regional* respectively.

In July 2011, the ABS adopted a new geographical framework—the Australian Statistical Geography Standard (ASGS). This standard brings all the geographic disaggregations for which the ABS publishes statistics into a single framework.

One component of the ASGS is the remoteness structure, which is built using the same principles as the earlier remoteness structure. Although the ASGS Remoteness Areas have been defined using a different base unit, the ABS has indicated that the remoteness areas from the ASGC and the ASGS are generally comparable (ABS 2013g).

More information is available on the ABS website at <www.abs.gov.au>.

Nevertheless, Indigenous Australians were still more likely to live in urban rather than remote areas. More than one-third (35%) lived in *Major cities*, 22% in each of *Inner regional* and *Outer regional* areas, and the remaining 21% in either *Remote* or *Very remote* areas (ABS 2013j).

New South Wales was home to more Indigenous people in Australia than any other state or territory in 2011 (31% of all Indigenous Australians). This was similar to the proportion of all Australians who live in New South Wales (32%).

Within each state and territory, the proportion of Indigenous people was highest in the Northern Territory (30%); the lowest was 1% in Victoria, and for all other states and territories the proportion was between 2% and 5%. (More information on the Indigenous population is in Chapter 7.)

How we live

Families

According to the 2011 Census, 72% or 5.7 million of Australia's 7.8 million households were family households (with or without children), while 24% were lone-person households and the remaining 4% were group households (AIHW 2013a).

Of the 5.7 million families, 37% were couples with dependent children (with or without additional non-dependent children), 8% were couples with non-dependent children only, 38% were couple families without children, 11% were one-parent families with dependent children, and 5% were one-parent families with non-dependent children only. A very small proportion (2%) were some other type of family such as adult siblings living together (ABS 2012d; AIHW 2013a).

Due to the ageing of our population, couple families without children living in the household are projected to outnumber couple families with children in 2014. Further, lone-person households are expected to be the fastest-growing household type in coming decades ABS 2010b; AIHW 2013a).

Of all families with children, 26% were one-parent families, and the majority of lone parents were female (82%) (ABS 2012b).

Another notable trend is that non-dependent children are increasingly remaining in the family home—between 1997 and 2009–10 the proportion of adult children living at home rose from 20% to 23% (ABS 2011).

Indigenous Australians (14%) are much less likely to live alone than non-Indigenous Australians (25%). Among one-family households, Indigenous households were more than 3 times as likely to be one-parent families with dependent children (29% compared with 9%) (ABS 2012c).

Mothers and babies

The average Australians mother will most likely have 2 children, who are slightly more likely to be boys than girls—51.4% of the live births in Australia in 2011 were boys (Li et al. 2013).

The average age of mothers who gave birth to a child in 2010 was 30 and the average age of first-time mothers was 28. The proportion of Australian women giving birth to their first child later in life (aged 35 or older) has increased—from 11.2% in 2002 to 14.2% in 2011 (Li et al. 2013) (see Chapter 6 'The health of mothers' and 'Australia's babies').

Dwellings

The average size of dwellings in Australia is growing, with the proportion of homes having 4 or more bedrooms doubling between 1986 and 2011, from 15% to 30% (AIHW 2013a).

Most people in Australia (69% of households in 2009–10) own their own homes, either with a mortgage (36%) or without (33%). Around 24% of households are renting from a private landlord, and about 4% are renting from a state or territory housing authority (AIHW 2013a).

Education

Australians have high levels of education by world standards—in 2010 Australia ranked equal 7th among Organisation for Economic Co-operation and Development (OECD) countries for people aged 25–64 who had a tertiary qualification (38% compared with the OECD average of 31%).

Australians are also better educated than a decade ago: 67% of people aged 25–64 held a non-school qualification such as a degree, certificate or diploma in 2012 compared with 54% in 2002. In 2011, among young people aged 15–24 who had left school, 74% had completed Year 12—an increase from 70% in 2002 (ABS 2003, 2008d, 2012f; AIHW 2013a).

There is some evidence, however, that our students could be doing better at school—for example, for Year 4 students in 2012, in various comparable international studies, Australia ranked 20th out of 25 OECD countries for reading, 13th out of 26 countries for maths and 18th out of 26 countries for science (AIHW 2013a).

Despite some improvements, Indigenous Australians continue to have lower levels of education than other Australians. In 2011, 26% of Indigenous Australians aged 15 and over had completed a non-school qualification compared with 49% of non-Indigenous Australians. In 2011, around 3% of Indigenous Australians had a Bachelor degree compared with 14% of non-Indigenous Australians (ABS 2012c; AIHW 2013b).

Employment

Most people of traditional working age in Australia (15–64) are in the labour force, that is, they are either employed or studying, or a combination of both, or are actively looking for work, and available to start work. For males the proportion was 83% in 2012 (down from 86% in 1982) but still above the OECD average of 80%. For females the proportion was 70% in 2012, a sharp rise on the 1982 figure of 52% and above the OECD average of 62% (OECD 2014). For Australians aged 25 to 54 (the prime working age), the labour force participation rate for men (90%) was slightly lower than the OECD average of 91%, while the rate for women (76%) was higher than the OECD average of 72%. The overall rate for Australians of prime working age (83%) was higher than the OECD average of 82% (OECD 2014).

Increasingly, families in Australia with young children have both parents working. Between 1999 and 2011, the proportion of couple families with children under 15 in which both parents were employed rose from 55% to 63%. However, there are some 'jobless' families in Australia, where no one in the family aged 15 and over is employed, including dependants. According to the ABS, in June 2012 there were 1.3 million jobless families—19% of all families. Of these, 932,000 were jobless couple families—about 1 in every 6 couple families—and 299,000 jobless one-parent families—almost 1 in every 3 one-parent families (ABS 2012e).

People are increasingly working past the age of 65—between 2002 and 2012 the labour force participation rate for men aged 60–64 rose from 48% to 63%, and for men aged 65–69 the rise was from 20% to 34% (AIHW 2013a).

Among women, the corresponding rise for those aged 60–64 was from 25% to 44%, and for those aged 65–69 it was from 9% to 20% (AIHW 2013a).

Part-time work is also an increasing feature of employment patterns in Australia, with almost 1 in 3 employed people (30%) in 2012 working part-time hours (less than 35 hours a week). This was almost double the proportion of 30 years earlier of 17% (AIHW analysis of ABS 2013n; AIHW 2013a).

In 2011, 42% of Indigenous Australians aged 15 and over were employed, compared with 61% of non-Indigenous people. Unemployment rates were 17% for Indigenous Australians and 5% for non-Indigenous Australians (AIHW 2013a).

How long do we live?

Adults

Most Australians can expect to have a relatively long life—one of the highest life expectancies in the world and 25 years longer than a century ago. A baby boy born between 2010 and 2012 can expect to live to 79.9 years and a baby girl to 84.3 years (ABS 2013h).

There has been a long and continuing decline in death rates in Australia over the past 100 years—from 2,043 to 550 deaths per 100,000 population between 1911 and 2012 (ABS 2013h; AIHW 2013d).

While life expectancy for Indigenous Australians is improving, it is still lower than for other Australians: about 10.6 years lower for Indigenous baby boys and 9.5 years lower for girls (ABS 2013k) (see Chapter 3 'Life expectancy').

What do we die of?

Australian population—leading underlying causes of death

Coronary heart disease

Coronary heart disease (CHD) (also known as ischaemic heart disease) was the leading underlying cause of death for both males and females in Australia in 2011, accounting for 15% of all deaths. Three-quarters of these were deaths in people aged 75 and over, and just 5% were deaths of people under the age of 55.

CHD deaths (principally heart attacks and angina) have been trending downwards since the late 1960s, but for the 35–54 age group the falls decelerated from 6% a year between 1987 and 1998 to 3% a year between 1999 and 2011. For older age groups the falls accelerated in the second period compared with the first.

Stroke

Cerebrovascular disease (notably stroke) is the second most common underlying cause of death in Australia, accounting for 8% of all deaths in 2011. It is the third most common underlying cause of death for men and the second most common cause for women. It is also the second most common cause of cardiovascular disease death, after CHD.

Stroke deaths increase greatly with age, with 82% of deaths occurring in people aged 75 or over in 2011.

Stroke deaths have been falling for decades, with the stroke death rate falling by 67% between 1981 and 2011.

Cardiovascular disease (which includes heart attack, angina, stroke and peripheral vascular disease) is the single most common group of diseases causing death in Australia (see Chapters 3 and 4).

Dementia (including Alzheimer disease)

In 2011, dementia was the third most common underlying cause of death overall at 7% of all deaths. Twice as many women as men died from dementia.

(See Chapter 6 'Dementia, dementia treatment and the future'.)

Lung cancer

Lung cancer (trachea, bronchus and lung cancer), the fourth most common underlying cause of death (6% of all deaths), is easily the most common cause of cancer death (see Figure 1.7).

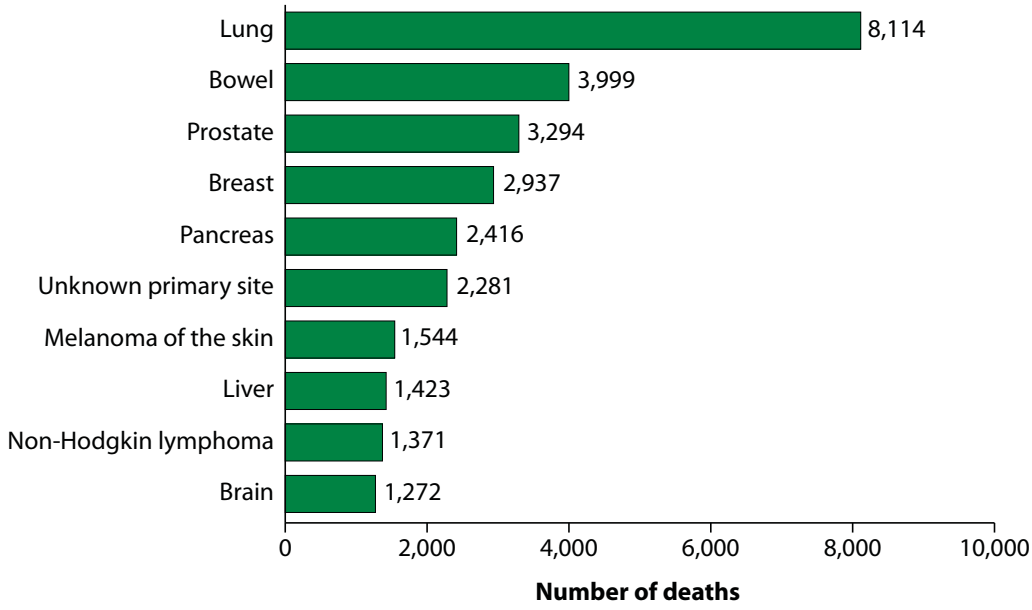
Despite a decline in cancer deaths overall and an increase in survival over time, cancer, as a group of diseases, is still the second most common cause of death overall in Australia—after cardiovascular disease (see Chapter 3 'Leading causes of death in Australians').

The risk of dying from cancer is 1 in 4 for males and 1 in 6 for females (AIHW & AACR 2012).
(See Chapter 4 'Cancer in Australia', 'The changing cancer landscape'.)

Other leading causes of death

Other leading causes of death in Australia include chronic obstructive pulmonary disease (principally emphysema and chronic bronchitis), breast cancer in women, prostate cancer in men, diabetes, and colorectal cancer (see Chapter 3 'Leading causes of death in Australia').

Figure 1.7



Note: Deaths registered in 2011 are based on the preliminary version of cause of death data and are subject to further revision by the ABS.

Source: AIHW National Mortality Database.

The 10 most common causes of death from cancer, Australia, 2011

Indigenous Australians

The leading causes of death for Indigenous Australians are cardiovascular diseases, cancer, injury, diabetes and respiratory diseases (see Chapter 7 'How healthy are Indigenous Australians?').

International comparisons

In 2009, the overall mortality rate in Australia was among the lowest of all OECD countries at 687 deaths per 100,000 population, second only to Japan (613).

In the 2 decades since 1990, Australia has seen its ranking among OECD countries improve greatly for colon cancer deaths (from 23rd to 7th) and chronic obstructive pulmonary disease deaths (from 27th to 16th).

Australia's change in ranking from 1990 to 2009 also improved for deaths due to lung cancer (16th to 10th), coronary heart disease (23rd to 18th), stroke (13th to 8th), breast cancer (15th to 12th) and suicide (14th to 11th).

Unlike the other mortality indicators, the rate of deaths due to diabetes in Australia increased slightly between 1990 and 2009 (18.7 to 20.6 deaths per 100,000 population). This resulted in Australia's ranking for this indicator dropping below half of the OECD countries in 2009 (from 15th to 20th).

Australia's ranking since 1990 also worsened for deaths due to accidental falls (10th to 13th) and deaths due to transport accidents (15th to 17th) (see Chapter 9 'International comparisons').

Infant deaths

Infant mortality (death under the age of 1 year) is a widely accepted indicator of population health and the effectiveness of the health system. While Australia's infant mortality rate has fallen sharply in the past 80 years—from 65.7 to 4.3 deaths per 1,000 live births between 1927 and 2009—Australia still ranked among the worst one-third of all 34 OECD countries in 2009. Iceland had the lowest infant mortality rate in 2009, at 1.8 deaths per 1,000 live births (OECD 2013). The latest information available (ABS 2013h; AIHW National Mortality Database, SCRGSP forthcoming) suggests that Australia's infant mortality rate fell further to 3.3 deaths per 1,000 live births in 2012.

Infant mortality rates in the Indigenous population are higher than the equivalent rates in the non-Indigenous population, although there has been a significant closing of this gap in recent years.

Based on data for 5 jurisdictions with adequate identification of deaths of Indigenous infants, the infant mortality rate declined by 62% between 2001 and 2012—from 11.2 to 5.0 deaths per 1,000 live births compared with the rate of 3.3 for non-Indigenous infants in 2012 (ABS 2013h; AIHW National Mortality Database; SCRGSP forthcoming).

Children, teenagers and young adults

The leading causes of death for Australian children are injury (34%) and cancer (17%) (AIHW 2012a)—but young children are now less likely to be hospitalised for drowning and near-drowning than a decade ago. Drowning and near-drowning rates fell by 3% per year for children aged 0–4 from 1999–00 to 2010–11 (AIHW: Pointer 2013).

Teenagers and young adults are more likely to be involved in transport accidents than older Australians. One-quarter of transport injuries occurred at ages 15–24 and this age group also had the highest hospitalisation rate for transport injuries out of all age groups (AIHW: Pointer). (See Chapter 6 for more on children and young Australians.)

What health conditions do we live with?

As outlined in more detail in Chapter 3, Australians are increasingly living with lifestyle-related chronic (ongoing) diseases, health conditions, health risks and disability, which, in terms of health burden, have largely replaced the infectious diseases of 50–100 years ago such as pneumonia and tuberculosis.

Smoking, diet, exercise, alcohol

In 2011–12, around 92% of adults were not eating enough vegetables, and only 49% were eating enough fruit for optimum nutrition, compared to the NHMRC Nutrition Guidelines (ABS 2013e).

According to results from the ABS 2011–13 Australian Health Survey (AHS), in 2011–12 just over 2 in 5 adults (43%) were sufficiently active to meet the recommended minimum level (DoHA 1999) of 150 minutes per week of moderate or vigorous activity.

Daily smoking rates among adults are low by international standards at 16% overall. But rates are higher in the *Outer regional* and *Remote* parts of Australia (22%) than in *Major cities* (15%). Also, people living in more disadvantaged areas are more likely to be daily smokers than those living in areas of least disadvantage (23% compared with 10% respectively) (ABS 2013e, 2013f). In 2012–13, 41% of Indigenous Australians aged 15 years and over smoked, 2.6 times the non-Indigenous rate after adjusting for differences in age structure. The Indigenous rate has fallen by 10 percentage points in the last decade (ABS 2013a). The daily smoking rate among prisoners (84%) is 5 times that of the general population (AIHW 2013f).

In 2011–12, around 1 in 5 Australian adults consumed alcohol at levels that placed them at risk of lifetime harm. This rate is unchanged from 2001 (see Chapter 5 'Alcohol risk and harm').

Diabetes

About 1 million Australians had diabetes in 2011–12 (ABS 2013e). About 85% had type 2 (AIHW 2013c).

After adjusting for differences in age structure, the rate of diabetes/high sugar levels among Indigenous Australians is 3.3 times the rate for non-Indigenous Australians.

Diabetes is becoming more common in Australia (see Chapter 4 'Diabetes'). Several factors may have contributed to this, such as changed criteria for diagnosis, increased public awareness, and a rise in the number of Australians who are sedentary and/or obese.

Weight and obesity

If you are an Australian adult, the chances are you are overweight or obese. According to the ABS 2011–13 Australian Health Survey, nearly two-thirds of Australians aged 18 or over are now overweight or obese (63%—comprised of 35% overweight and 28% obese), compared with about 56% in 1995. Only about one-third (35%) of Australians adults are of normal weight (ABS 2013e), with less than 2% being underweight.

The survey also found that 25% of Australian children aged 2–17 were overweight or obese (18% and 7% respectively), with 5% being underweight. This is the subject of a feature article in Chapter 6, 'Childhood overweight and obesity'.

A person's likelihood of being overweight or obese can also be affected by where they live. According to the 2011–13 Australian Health Survey, Australians living outside *Major cities* have higher rates of overweight and obesity than their city cousins. In 2011–12, men living in *Inner regional*, *Outer regional* and *Remote areas* of Australia were more likely to be overweight or obese (74%) compared with men living in *Major cities* (68%). This pattern was also consistent for women, with women living in *Inner regional*, *Outer regional* and *Remote* areas more likely to be overweight or obese (63%) than women living in *Major cities* (53%) (ABS 2013e).

For women, socioeconomic disadvantage can also affect obesity levels. Women living in areas of most disadvantage are more likely to be overweight or obese than those in areas of least disadvantage (64% and 48% respectively), but the same pattern is not evident among men (ABS 2013f).

In 2012–13, 66% of Indigenous Australians aged 15 and over were overweight or obese (ABS 2013a).

Mental health conditions

While the level of contribution of lifestyle-related factors to mental health conditions is the subject of debate, there is no doubt that there is a high prevalence of mental disorders in the Australian population (see Chapter 4 'Mental health in Australia').

At some time during their adolescence and adult life, around 7.3 million, or 45% of Australians aged 16–85 will experience a common mental health-related condition such as depression, anxiety or a substance use disorder, according to the 2007 National Survey of Mental Health and Wellbeing (ABS 2008b).

There is also a high rate of association (comorbidity) between mental and physical health conditions. Around 1 in 9 Australians aged 16–85 have a mental disorder and a physical disorder concurrently (AIHW 2012b).

Disability and health

Disability is an umbrella term for any or all of the aspects of functioning impairment, activity limitation and restriction in participation in major life areas that individuals experience.

The link between disability and health is complex. Disability does not necessarily equate to poor health or illness. For example, 2 people with the same level of disability may not have the same health condition, while others with the same health condition can have different levels of disability. Similarly, in the early stages of a disabling condition (such as paraplegia), the affected person may be considered to be in poor health and to have a greater need for medical and health care, but once their condition is stable they may enjoy good health, despite experiencing limitations to their functioning (AIHW 2004). Nevertheless, on the whole, people with disability experience significantly poorer health than those without disability (see next section, 'Health inequalities').

Detailed analysis of this population group (and their carers) is provided in the AIHW's sister biennial flagship report, *Australia's welfare*, last published in August 2013. The next edition of *Australia's welfare* will be published in 2015.

Health inequalities

Some population groups in Australia experience marked health inequalities compared with the general population.

For example: Indigenous Australians are generally less healthy than other Australians and are more likely to die at younger ages (AIHW 2013g); people living in rural and remote areas tend to have higher levels of disease risk factors and illness than those in major cities (AIHW 2013e); people from the lowest socioeconomic status groups are likely to have poorer health; and people with disability experience significantly poorer health than those without disability. These key examples are discussed in more detail below.

Indigenous Australians

Aside from the higher infant mortality rates outlined earlier in this chapter, Indigenous Australians generally have poorer health prospects and outcomes than non-Indigenous Australians. A few of many examples are:

- The life expectancy for Indigenous boys born between 2010 and 2012 was 10.6 years lower than for non-Indigenous boys. Life expectancy for Indigenous girls was 9.5 years lower than for non-Indigenous girls.
- In 2007–11, 81% of Indigenous deaths occurred before the age of 65 years compared with 35% for non-Indigenous Australians.
- In 2007–11, the Indigenous mortality rate was 5 times as high in the 35–44 year age group as the non-Indigenous rate.
- In 2006–10, avoidable mortality rates for Indigenous Australians were 3.5 times the non-Indigenous rate. Overall death rates were twice as high. Circulatory diseases accounted for the largest gap (27% of the gap), followed by diabetes (17%) and cancers (12%).
- Over the period of 2007–2010, Indigenous Australians developed end-stage kidney disease at more than 6 times the rate of non-Indigenous Australians (95 per 100,000 compared with 14 per 100,000 respectively) (AIHW 2013h).

(See Chapter 7 for more information on the health of Indigenous Australians.)

People living in rural and remote areas

People living in rural and remote areas have less access to health services, travel greater distances to seek medical attention, and generally have higher rates of ill health and mortality than people living in larger cities.

On the positive side, Australians living in rural areas generally have higher levels of social cohesiveness—for example, higher rates of participation in volunteer work and feelings of safety in their community.

The main contributors to higher death rates in regional and remote areas are coronary heart disease, other circulatory diseases, motor vehicle accidents and chronic obstructive pulmonary disease (for example, emphysema). These higher death rates may be related to differences in access to services, risk factors (for example, higher smoking rates) and the regional/remote environment (see Chapter 5 'Health in regional and remote areas').

Across all geographic areas, the health of Aboriginal and Torres Strait Islander peoples is generally worse than for non-Indigenous Australians. The higher proportion of Indigenous Australians in remote area populations contributes to, but does not completely account for, the generally poorer health of people living in remote areas.

People with disability

Just under 1 in 5 Australians (4.2 million people) reported having a disability in 2012. Of these, 1.4 million people needed help with basic daily activities of self-care, mobility and communication (ABS 2013i).

Due to a range of factors—only some of which may be directly related to a person's disability—as a group, people with disability experience significantly poorer health than those without disability. Almost half (46%) of people aged 15–64 with severe or profound disability report poor or fair health compared with 5% for those without disability (AIHW 2010). Similarly, for people aged 15–64 with a specific long-term health condition or injury, a higher proportion of those with severe or profound disability compared with those without disability had young onset of arthritis before age 25 (14% compared with 6%), osteoporosis before age 45 (43% compared with 31%) and young onset of diabetes before age 25 (23% and 7% respectively). Higher proportions of people with disability compared with those without were also overweight, smokers, and had suicidal thoughts (AIHW 2010).

Compared with people without disability, Australians aged 15–64 with severe or profound disability are extensive users of professional health services, with higher rates of consultations with general practitioners, specialists and other health professionals than people without disability (AIHW 2011). This high use is associated with their high prevalence of multiple long-term health conditions, and comorbidity of mental disorders and physical conditions. The severity of disability is also strongly associated with the use of health services, even after the higher multiple and co-morbid conditions are accounted for (AIHW 2011).

Low socioeconomic status groups

As in the rest of the world, socioeconomic factors, including associated disadvantage, are important determinants of health in Australia.

In general, the higher people's incomes and education, the healthier they are—a phenomenon often termed the 'social gradient of health'. The better off people are, the more they are able to afford better food and housing, better health care, and healthy activities and pursuits. They are also more likely to be better informed about healthy choices and behaviours.

There is considerable variability in incomes in Australia. For example, in 2009–10 the mean (average) income, after tax, of the one-fifth of households with the lowest incomes was $314 per week, compared with $1,704 per week for the one-fifth of households with the highest incomes (AIHW 2013a).

Daily smoking is a clear example of the social gradient of health. The higher the socioeconomic status group, the less likely a person is to smoke. In the lowest socioeconomic areas, daily tobacco smoking rates among people aged 14 and over were around 25% in 2010, twice the rate among people living in the highest socioeconomic areas (AIHW 2012b).

Another example is physical inactivity, with people who live in areas of most socioeconomic disadvantage being less likely to be physically active. In 2007–08, 66% of people living in areas of most disadvantage did not undertake healthy levels of physical activity compared with 54% of people living in the least disadvantaged areas (AIHW 2012c).

Other health measures and risk factors with known social gradients include life expectancy, self-assessed health status, obesity, cancer survival, oral health and end-stage kidney disease.

What is missing from the picture?

Overall, the availability of information on the demographic, social, economic and health status of Australians is very good, but there are some gaps.

High-quality 'across-the-board' health information on some important subgroups (for example, people from non-main English-speaking backgrounds, and people with a disability) appears to be insufficient to meet needs of policy makers.

And while the AIHW has developed a set of national best-practice guidelines for collecting and recording the Indigenous status of Australians in health data sets, there are continuing problems with the under-identification of Aboriginal and Torres Strait Islander people in many health-related collections. Overall under-identification, and variations in the degree of under-identification across collections, can create difficulties for measuring the gap in health outcomes between Indigenous and non-Indigenous Australians, and for monitoring progress in closing the gap.

In mental health and cancer, better information on how coordinated care approaches function, and to what extent they meet the needs of users, could drive better evaluation and targeting of programs.

A key component of the National Disability Strategy 2010–2020 was the development by the AIHW during 2012–13 of a new standardised disability flag to identify people with a disability using mainstream services. Once implemented, the flag will enable nationally consistent collection of information about a person's level of functioning and need for support in everyday activities from people receiving mainstream services, including health services.

Throughout *Australia's health 2014* a number of the 'What is missing from the picture?' sections point to the benefits of linking data sets to better understand people's 'pathways' through the health system and the relationships between conditions, service use and outcomes. Making data available for these purposes, with appropriate safeguards, is becoming a priority for governments because it enables cost-effective population health research to be undertaken that could lead to new and potentially very valuable insights.

Where do I go for more information?

The ABS collects information on Australia's population through its 5-yearly Census of Population and Housing, and through other surveys and administrative data sets. More information is available at ABS Census and the ABS Australian Health Survey.

The AIHW's series of biennial *Australia's health* and *Australia's welfare* reports include detailed analyses of Australia's population in the context of health and welfare. The reports are available for free download at Australia's health and Australia's welfare.

Extensive information on people with disability and disability services, and on the health of Australia's Aboriginal and Torres Strait Islander people is available at the AIHW website.

References

ABS (Australian Bureau of Statistics) 2003. Education and work, Australia, May 2003. ABS cat. no. 6227.0. Canberra: ABS.

ABS 2008a. Australian historical population statistics, 2008. ABS cat. no. 3105.0.65.001. Canberra: ABS.

ABS 2008b. National Survey of Mental Health and Wellbeing: summary of results, 2007, ABS cat. no. 4326.0. Canberra: ABS. Viewed on 29 January 2014, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4326.02007?OpenDocument>.

ABS 2008c. Population projections, Australia, 2006 to 2101. ABS cat. no. 3222.0. Canberra: ABS.

ABS 2008d. Education and work, Australia, May 2008. ABS cat. no. 6227.0. Canberra: ABS.

ABS 2010a Australian Statistical Geography Standard (ASGS): Volume 1—Main Structure and Greater Capital City Stastical Areas, July 2011. Online data cubes. ABS cat. no. 1270.0.55.001. Canberra: ABS.

ABS 2010b Households and family projections, Australia, 2006 to 2031. ABS cat. no. 3236.0. Canberra: ABS.

ABS 2011. Family characteristics, Australia, 2009–10. ABS cat. no. 4442.0. Canberra: ABS. Viewed 17 February 2014, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4442.0Main+Features12009-10?OpenDocument>.

ABS 2012a. Australian demographic statistics, June 2012. ABS cat. no. 3101.0. Canberra: ABS.

ABS 2012b. 2011 Census quickstats, all people—usual residents, Australia. Canberra: ABS. Viewed 17 February 2014, <http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat/0?opendocument&navpos=220>.

ABS 2012c. Census of Population and Housing: characteristics of Aboriginal and Torres Strait Islander Australians, 2011. ABS cat. no. 2076.0. Canberra: ABS.

ABS 2012d. Census community profiles, Australia: basic community profile. Canberra: ABS. Viewed 17 February 2014, <http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/communityprofile/0>.

ABS 2012e. Labour force, Australia: labour force status and other characteristics of families, June 2012. ABS cat. no. 6224.0.55.001. Canberra: ABS. Viewed on 18 February 2014, < http://www.abs.gov.au/ausstats/abs@.nsf/Products/6224.0.55.001~Jun%202012~Chapter~Jobless%20Families>.

ABS 2012f. Education and work, Australia, May 2012. ABS cat. no. 6227.0. Canberra: ABS.

ABS 2013a. Australian Aboriginal and Torres Strait Islander Health Survey: first results, Australia, 2012–13, November 2013. ABS cat. no. 4727.0.55.001. Canberra: ABS. Viewed on 28 January 2013, <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/A07BD8674C37D838CA257C2F001459FA?opendocument>.

ABS 2013b. Australian demographic statistics, December 2012. ABS cat. no. 3101.0. Canberra: ABS. Viewed 5 November 2013, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3101.0Dec%202012>.

ABS 2013c Australian demographic statistics, June 2013. ABS cat. no. 3101.0. Canberra: ABS.

ABS 2013d. Australian demographic statistics, September 2012: media release. ABS cat. no. 311.0. Canberra: ABS.

ABS 2013e. Australian Health Survey: updated results, 2011–2012 Canberra: ABS. Viewed 23 October 2013, <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/33C64022ABB5ECD5CA257B8200179437?opendocument#>.

ABS 2013f. Australian Health Survey: updated results 2011–2012, media release. Canberra: ABS. Viewed 23 October 2013, <http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/4364.0.55.003Media%20Release12011-2012?opendocument&tabname=Summary&prodno=4364.0.55.003&issue=2011-2012&num=&view=#>.

ABS 2013g. Australian Statistical Geography Standard (ASGS): Volume 5—Remoteness Structure, July 2011. ABS cat. no. 1270.0.55.005. Canberra: ABS.

ABS 2013h. Deaths, Australia, 2012. ABS cat. no. 3302.0. Canberra: ABS.

ABS 2013i. Disability, Ageing and Carers, Australia: summary of findings, 2012. ABS Cat. no. 4430.0 Canberra: ABS. Viewed 15 November 2013, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4430.02012?OpenDocument>.

ABS 2013j. Estimates of Aboriginal and Torres Strait Islander Australians, June 2011. ABS cat. no. 3238.0.55.001. Canberra: ABS. Viewed 30 January 2014, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3238.0.55.001Main+Features1June%202011?OpenDocument>.

ABS 2013k. Life Tables for Aboriginal and Torres Strait Islander Australians, November 2013: media release. Canberra: ABS. Viewed 23 January 2014, <http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/3302.0.55.003Media%20Release12010-2012?opendocument&tabname=Summary&prodno=3302.0.55.003&issue=2010-2012&num=&view=>.

ABS 2013l. Population projections, Australia 2012 (base) to 2101. ABS cat. no. 3222.0. Canberra: ABS.

ABS 2013m. Regional population growth, Australia 2011–12. ABS cat. no. 3218.0. Canberra: ABS.

ABS 2013n. Labour force, Australia, detailed—electronic delivery, December 2012. ABS cat. no. 6291.0.55.001. Canberra: ABS.

ABS 2013o. Home page. Canberra: ABS. Viewed 17 March 2014. <http://www.abs.gov.au/websitedbs/D3310114.nsf/home/home?opendocument#from-banner=GT>.

AIHW (Australian Institute of Health and Welfare) 2004. Disability and its relationship to health conditions and other factors. Cat. no. DIS 37. Canberra: AIHW.

AIHW 2010. Health of Australians with disability: health status and risk factors. Bulletin no. 83. Cat. no. AUS 132. Canberra: AIHW.

AIHW 2011. The use of health services among Australians with disability. Bulletin no. 91. Cat. no. AUS 140. Canberra: AIHW.

AIHW 2012a. A picture of Australia's children 2012. Cat. no. PHE 167. Canberra: AIHW.

AIHW 2012b. Australia's health 2012. Cat. no. AUS 156. Canberra: AIHW.

AIHW 2012c. Risk factors contributing to chronic disease. Cat. no. PHE 157. Canberra: AIHW. Viewed 18 February 2014, <http://www.aihw.gov.au/publication-detail/?id=10737421466>.

AIHW 2013a. Australia's welfare 2013. Cat. no. AUS 174. Canberra: AIHW.

AIHW 2013b. Australia's welfare 2013: in brief. Cat. no. AUS 175. Canberra: AIHW.

AIHW 2013c. Diabetes: the facts. Canberra: AIHW. Viewed 23 October 2013, <http://www.aihw.gov.au/diabetes/>.

AIHW 2013d. General Record of Incidence of Mortality (GRIM) Books 2011: all causes combined. Canberra: AIHW. Viewed 23 January 2014, < http://www.aihw.gov.au/deaths/aihw-deaths-data/#grim>.

AIHW 2013e. Rural health. Canberra: AIHW. Viewed 15 November 2013, <http://www.aihw.gov.au/rural-health/>.

AIHW 2013f. Smoking and quitting smoking among prisoners 2012. Bulletin no. 119. Cat. no. AUS 176. Canberra: AIHW.

AIHW 2013g. The health and welfare of Australia's Aboriginal and Torres Strait Islander people. Canberra: AIHW. Viewed 6 November 2013, <http://www.aihw.gov.au/indigenous-observatory-health-and-welfare/>.

AIHW 2013h. Chronic kidney disease and Aboriginal and Torres Strait Islander people. Canberra: AIHW. Viewed 19 March 2014, <http://www.aihw.gov.au/ckd/indigenous-people/>.

AIHW & AACR (Australasian Association of Cancer Registries) 2012. Cancer in Australia: an overview 2012. Cancer series no. 74. Cat. no. CAN 70. Canberra: AIHW.

AIHW: Pointer S 2013. Trends in hospitalised injury, Australia : 1999–00 to 2010–11. Injury research and statistics series no. 86. Cat. no. INJCAT 162. Canberra: AIHW.

Commission on Social Determinants of Health 2007. An overview of the current knowledge of the social determinants of Indigenous health. Geneva: World Health Organization. Viewed on 28 January 2014, <http://som.flinders.edu.au/FUSA/SACHRU/Symposium/Social%20Determinants%20of%20Indigenous%20Health.pdf>.

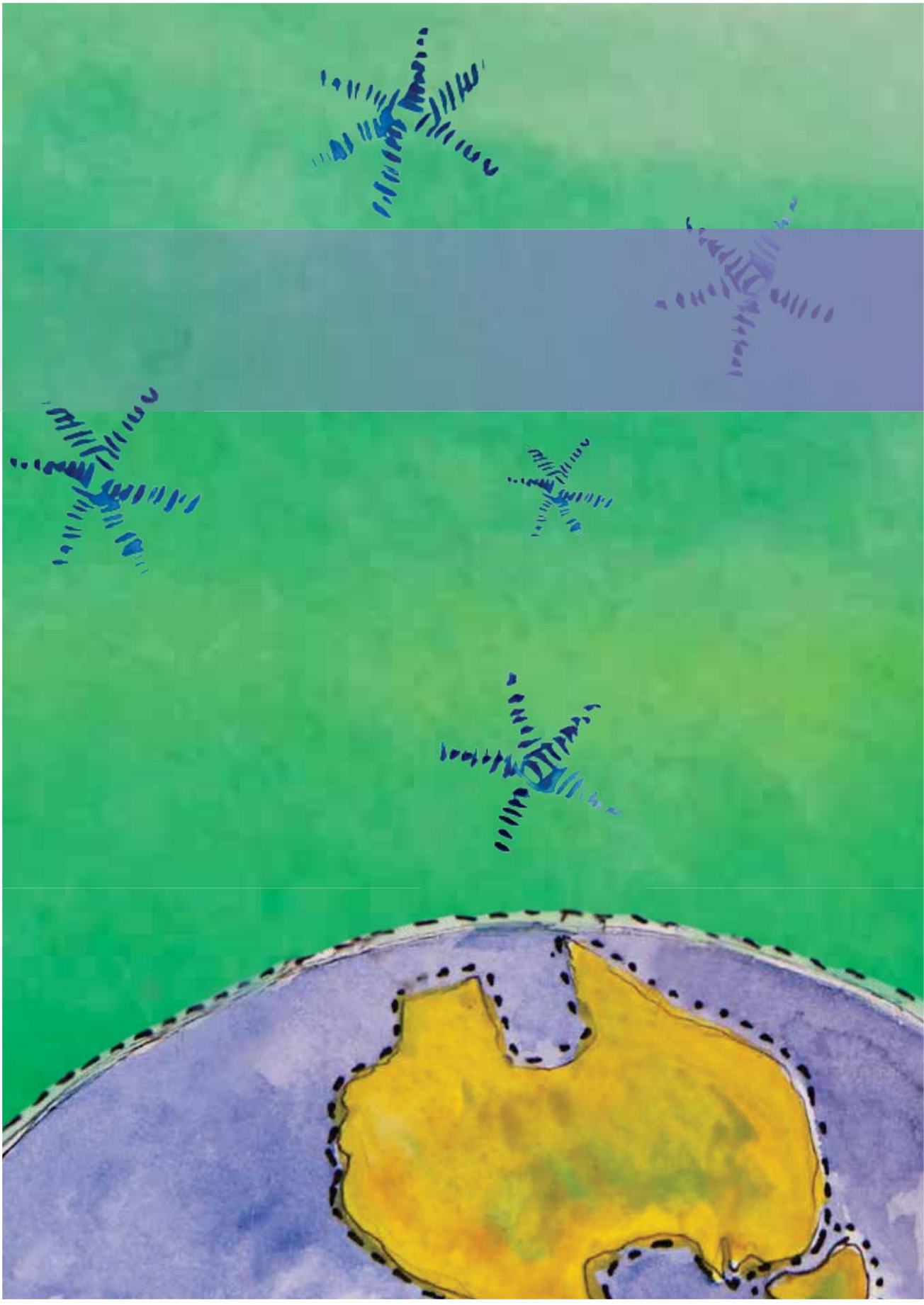
DoHA (Department of Health and Ageing) 1999. National Physical Activity Guidelines for Australians. Canberra: DoHA.

Li Z, Zeki R, Hilder L & Sullivan EA 2013. Australia's mothers and babies 2011. Perinatal statistics series no. 28. Cat. no. PER 59. Canberra: AIHW.

OECD (Organisation for Economic Co-operation and Development) 2013. Infant mortality, Health: key tables from OECD, No. 14. Paris: OECD. Viewed 6 November 2013, <http://www.oecd-ilibrary.org/social-issues-migration-health/infant-mortality_20758480-table9>.

OECD 2014. LRS by sex and age—indicators. Paris: OECD. Viewed 19 February 2014. <http://stats.oecd.org/Index.aspx?DatasetCode=LFS_SEXAGE_I_R>.

SCRGSP (Steering Committee for the Review of Government Service Provision), forthcoming. National Agreement Performance Information 2012–13: National Indigenous Reform Agreement. Canberra: Productivity Commission.



Chapter 2

Australia's health system

2.0 Introduction

Australia's health system is complex. It can perhaps be best described as a 'web': a web of services, providers, recipients and organisational structures.

This chapter looks at the many components of the Australian health system, how they are organised and funded, and how they are delivered to, and used by, Australians.

While for many Australians most of their contact with the health system involves a visit to a GP or pharmacist, these services are part of a much broader and complex network.

Complexity is unavoidable in providing a multi-faceted and inclusive approach to meeting the health system needs of Australia's many and varied residents, when those needs are shaped by many and varied factors, including gender, age, health history and behaviours, location, and socioeconomic and cultural background.

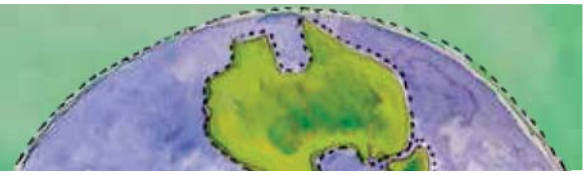
Behind the scenes of the health system is a network of governance and support mechanisms that enable the policy, legislation, coordination, regulation and funding aspects of delivering quality services. Governance, coordination and regulation of Australia's health services is a big job, and is the joint responsibility of all levels of government, with the planning and delivery of services being shared between government and non-government sectors.

As one might expect, a system of this scale and complexity costs. In 2011–12, health spending in Australia was estimated to be $140.2 billion, or 9.5% of GDP. The amount was around 1.7 times as high as in 2001–02, with health expenditure growing faster than population growth.

This growth can be attributed in part to societal changes such as population ageing, and to increased prevalence of chronic conditions, diseases and risk factors. Personal incomes, broader economic trends and new technologies also affect spending on health. In summary, our health does not exist separate to the rest of our society. Rather, the two are intertwined, and our nation's spending on health services reflects this.

Our health as a nation depends on our health as individuals—and vice versa. A 'healthy' health system, therefore, is fundamental to our national — and personal — wellbeing and prosperity.

2.1 Australia's health system



FEATURE ARTICLE

FEATURE ARTICLE

For most people their first contact with the Australian health system when they become ill is a visit to a general practitioner (GP). The GP may refer them to a specialist or a public hospital, order diagnostic testing, write them a prescription or pursue other treatment options. But patient and clinical care are just 2 components of a much broader and complex network that involves multiple providers working in numerous settings, supported by a variety of legislative, regulatory and funding arrangements.

So what is a health system? According to the World Health Organization, a health system is 'all the activities whose primary purpose is to promote, restore and/or maintain health' (WHO 2013b). Further, a good health system 'delivers quality services to all people, when and where they need them'.

While the configuration of services varies from country to country, common elements include robust funding mechanisms, a trained workforce, reliable information on which to base decisions and policies, and well-maintained facilities and logistics to deliver quality medicines and technologies (WHO 2013a).

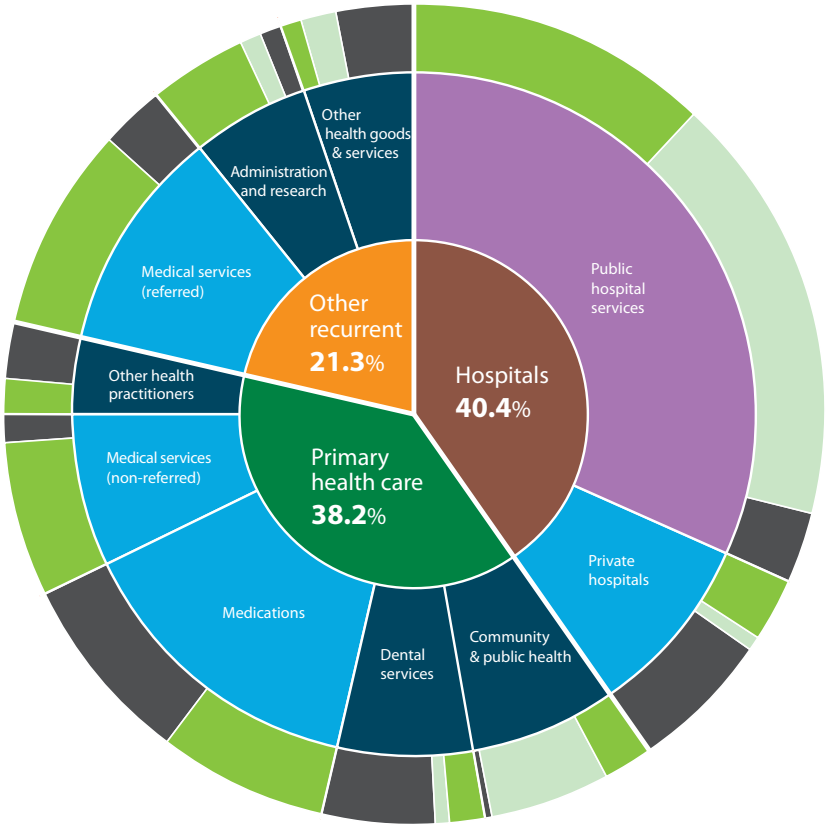
Australia's health-care system is a multi-faceted web of public and private providers, settings, participants and supporting mechanisms. Health providers include medical practitioners, nurses, allied and other health professionals, hospitals, clinics and government and non-government agencies. These providers deliver a plethora of services across many levels, from public health and preventive services in the community, to primary health care, emergency health services, hospital-based treatment, and rehabilitation and palliative care.

Public sector health services are provided by all levels of government: local, state, territory and the Australian Government. Private sector health service providers include private hospitals, medical practices and pharmacies.

Although public hospitals are funded by the state, territory and Australian governments, they are managed by state and territory governments. Private hospitals are owned and operated by the private sector. The Australian Government and state and territory governments fund and deliver a range of other health services, including population health programs, community health services, health and medical research, Aboriginal and Torres Strait Islander health services, mental health services, and health infrastructure (see Chapter 8).

Navigating your way through the 'maze' of health service providers and responsibilities can be difficult (Consumers Health Forum of Australia 2013). Figure 2.1 provides an 'at a glance' 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.

Figure 2.1



Note: The inner segments indicate the relative size of expenditure in each of the 3 main sectors of the health system ('hospitals', 'primary health care', and 'other recurrent'). The middle ring indicates 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 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.

Health services—funding and responsibility

The inner segments show the relative size of the expenditure in each of the main sectors of the health system, being hospitals, primary health care and other recurrent areas of expenditure. In the case of the hospital sector, this includes all services provided by public and private hospitals. Primary health care includes a range of front-line health services delivered in the community, such as by a GP, physiotherapy and optometry services, dental services and all community and public health initiatives. It also includes the cost of medications not provided through hospital funding. The category 'other recurrent' includes areas of recurrent spending that were not paid for by hospitals but that were not delivered through the primary health care sector, such as medical services other than those provided by general practitioners, 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 outer ring shows the funding source for the different services and the relative size of the funding.

For more detailed information about expenditure, see 'How much does Australia spend on health care?' in this chapter.

The colour coding in the figure shows whether the service is provided by the private sector, public sector, or both. Private sector providers include private hospitals, medical practices and pharmacies. Public sector provision is the responsibility of state and territory governments for public hospitals, and a mixture of Australian Government and state, territory and local governments for community and public health services.

Who uses the health system?

The health system is used to varying degrees by Australian citizens, overseas visitors, temporary and permanent visa holders and asylum-seekers (Department of Health pers. comm. 20 January 2014). Their needs and expectations are shaped by many factors, including the nature and extent of their health status, as well as factors such as age, gender, where they live and their cultural background.

Our contact with the health system almost always begins at birth and, for most of us, continues frequently throughout our lives. These interactions can range from conducting simple over-the-counter transactions at a pharmacy to seeking treatment for complex and sometimes chronic illnesses. And while some of us have more interactions with health practitioners than others, even people who rarely visit a doctor or who have never been admitted to hospital are exposed to elements of the health system almost daily, including through health promotion messages or community health campaigns in the media. (See Chapter 8 'Prevention for a healthier future'.)

Types of health care

Primary health care

In Australia, primary health care is typically a person's first point of contact with the health system and is most often provided outside the hospital system (Government of Western Australia Department of Health 2013). A person does not routinely need a referral for this level of care, which includes services provided by general medical and dental practitioners, nurses, Indigenous health workers, pharmacists and other allied health professionals such as physiotherapists, dietitians and chiropractors.

Primary health care is delivered in a variety of settings, including general practices, Aboriginal and Community Controlled Health Services, community health centres and allied health services, as well as within the community, and may incorporate activities such as public health promotion and prevention. Primary health care accounts for almost as much health spending as hospital services, accounting for 36.1% ($50.6 billion) of total health expenditure in 2011–12 compared with 38.2% ($53.5 billion) on hospital services (see Chapter 2 'How much does Australia spend on health care?'). Primary health care is covered in detail in Chapter 8 'Primary health care in Australia'.

Secondary care

The primary health-care system does not operate in isolation. It is part of a larger system involving other services and sectors, and so can be considered as the gateway to the wider health system. Through assessment and referral, individuals are directed from one primary care service to another, and from primary services into secondary and other health services, and back again (AIHW 2008).

Secondary care is medical care provided by a specialist or facility upon referral by a primary care physician (Nicholson 2012). It includes services provided by hospitals and specialist medical practices (see Chapter 8 'Primary health care in Australia).

Hospitals

In Australia, hospital services are provided by both public and private hospitals. In 2011–12, there were 1,345 hospitals in Australia (AIHW 2013a) and total hospitalisations rose by 4.6% to almost 9.3 million from 2010–11 to 2011–12 (see Chapter 8 'Overview of public and private hospitals').

Hospital emergency departments are a critical component of hospitals and the health system. They provide care for patients who have an urgent need for medical or surgical care, and in some cases also provide care for patients returning for further care, or patients waiting to be admitted. In 2012–13, more than 6.7 million emergency department presentations were reported by public hospital emergency departments—or just over 18,000 each day (see Chapter 8 'Emergency departments: at the front line').

Primary Health Networks and Local Hospital Networks

Primary Health Networks

In 2011, the Australian Government established Medicare Locals to plan and fund extra health services in communities across Australia. Medicare Locals were created as local organisations, to coordinate and deliver services to meet particular local needs (Australian Government 2013). On 13 May 2014 the Australian Government announced that the 61 Medicare Locals would be replaced with a smaller number of Primary Health Networks, to be operational from 1 July 2015. Primary Health Networks are expected to align more closely with state and territory health network arrangements, and reduce duplication of effort.

Local Hospital Networks—how hospitals are organised

Local Hospital Networks (LHNs) are being established across the country to improve delivery, coordination and access to health services. LHNs are small groups of local hospitals, or an individual hospital, linking services within a region or through specialist networks across a state or territory. Responsibility for hospital management is devolved to LHNs, to 'increase local autonomy and flexibility so that services are more responsive to local needs' (Australian Government 2010).

There are 136 LHNs in Australia, of which 123 are geographically based and 13 are state or territory-wide networks that provide specialised hospital services across jurisdictions (DoHA 2011).

Emerging models of care

The development of new models of care, such as nurse-led walk-in clinics and day surgical procedures being performed in consultants' rooms, is shifting the boundaries between what traditionally would have been hospital-based care and care delivered by other health professionals.

Innovations such as personally controlled electronic health (e-health) records and telehealth also offer the prospect of improved communication and access to services. An e-health record allows patients and their doctors, hospitals and other health-care providers to view and share the patient's health information, if the person has given prior consent. This information can include a summary of medications, hospital discharge records, allergies and immunisations (Department of Health 2013f).

Telehealth services use communication technologies, such as video-conferencing, to deliver health services and transmit health information. Telehealth technology can improve access to services for people living in regional, rural and remote areas. Patients who previously had to travel to the nearest major city to see a specialist can instead use video-conferencing, which might be offered at their local GP or another local health-care venue (DoHA 2012).

The use of e-health technologies to self-monitor health is emerging as a key dimension in contemporary health care. A United States study (Fox & Duggan 2013) found that 69% of United States adults monitored a health indicator such as weight, diet or exercise, and that 20% used technology such as mobile phone applications or websites to do so. Digital platforms such as these can incorporate functions such as sensing and geospatial tracking to provide tailored feedback and enhance the ability for accurate assessment (Norman et al. 2007).

Patients can also now use devices such as blood pressure and blood glucose monitors in their own homes to track and manage their health status and potential health risks.

How the health system is funded

Health is an expensive business: in 2011–12, health expenditure in Australia was estimated at $140.2 billion, or 9.5% of gross domestic product (GDP), compared with $82.9 billion in 2001–02 and $132.6 billion in 2010–11 (AIHW 2013b). Almost 70% of total health expenditure during 2011–12 was funded by governments, with the Australian Government contributing 42.4% and state and territory governments 27.3%. The remaining 30.3% ($42.4 billion) was paid for by patients (17%), private health insurers (8%) and accident compensation schemes (5%).

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 treatment by health professionals such as doctors, specialists and optometrists (Department of Human Services 2013b).

The Medicare system has 3 parts: hospital, medical and pharmaceutical (PHIO 2013). The major elements of Medicare include free treatment for public patients in public hospitals, the payment of benefits or rebates for professional health services listed on the Medicare Benefits Schedule, and subsidisation of the costs of a wide range of prescription medicines under the Pharmaceutical Benefits Scheme (Department of Human Services 2013b).

A person can have Medicare cover only, or a combination of Medicare and private health insurance coverage (PHIO 2013).

The government-funded schemes and arrangements aim to give all Australians access to adequate, affordable health care, irrespective of their personal circumstances. The schemes are supplemented by social welfare arrangements, such as smaller out-of-pocket costs and more generous safety nets for those who receive certain income-support payments (AIHW 2012).

Medicare and hospital treatment

Medicare offers free treatment and accommodation as a public patient in a public hospital, by a doctor appointed by the hospital (Department of Human Services 2014; PHIO 2013).

It usually covers:

- free or subsidised treatment by health professionals such as doctors, specialists, optometrists and in specific circumstances dentists and other allied health practitioners and accommodation as a public patient in a public hospital
- 75 per cent of the Medicare Schedule fee for services and procedures if you are a private patient in a public or private hospital (does not include hospital accommodation and items such as theatre fees and medicines)
- some health-care services in certain countries (Department of Human Services 2014).

A public patient cannot choose their own doctor and may not have a choice about when they are admitted to hospital for elective procedures (PHIO 2013).

Medicare benefits are based on a schedule of fees (the Medicare Benefits Schedule, or MBS), which are set by the Australian Government after discussion with the medical profession. Practitioners are not required to adhere to the schedule (except for optometry) and can charge more than the scheduled fee. In these instances the patient is required to pay the extra amount, often called a 'gap' payment (ABS 2013; Queensland Government 2013).

Medicare does not cover:

- medical and hospital services which are not clinically necessary, or surgery solely for cosmetic reasons
- ambulance services (PHIO 2013).

While Medicare benefits are generally not available for medical treatment a person receives overseas, the Australian Government has signed Reciprocal Health Care Agreements to help cover the cost of essential medical treatment (Department of Human Services 2013c) for Australians visiting certain countries.

Medicare and medical services

When a person visits a doctor outside a hospital, Medicare will reimburse 100% of the MBS fee for a general practitioner 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 (PHIO 2013). If the doctor charges more than the MBS fee, the patient has to pay the difference.

Medical costs that Medicare does not cover include:

- ambulance services
- most dental examinations and treatment
- most physiotherapy, occupational therapy, speech therapy, eye therapy, chiropractic services, podiatry and psychology services
- acupuncture (unless part of a doctor's consultation)
- glasses and contact lenses
- hearing aids and other appliances
- home nursing (PHIO 2013).

Medicare and prescription pharmaceuticals

Medicare also subsidises a wide range of prescription pharmaceuticals under the Pharmaceutical Benefits Scheme (PBS). Under the PBS, Australians pay only part of the cost of most prescription medicines bought at pharmacies. The rest of the cost is covered by the PBS. The amount paid by the patient varies, up to a maximum of $36.10 for general patients and $5.90 for those with a concession card (Department of Health 2013d).

If a medicine is not listed under the PBS schedule, the consumer has to pay the full price as a private prescription. Non-PBS medicines are not subsidised by the Australian Government (Department of Health 2013b). However, pharmaceuticals provided in public hospitals are generally provided to public patients for free, with the cost covered by state and territory governments.

A separate scheme, the Repatriation Pharmaceutical Benefits Scheme (RPBS), is administered by the Department of Veterans' Affairs (DVA) and 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 (Department of Human Services 2012; DVA 2012).

Other programs

Additional government programs are targeted at improving health services and outcomes for specific groups, such as people living in rural and remote Australia, Indigenous Australians, those with chronic illnesses and older Australians.

The Australian Government's $805 million Indigenous Chronic Disease Package, for example, aims to improve the way the health-care system prevents, treats and manages the chronic diseases that affect many Indigenous Australians. The goal is to reduce key risk factors for chronic disease in the Indigenous community (such as smoking), improve chronic disease management and follow-up, and increase the capacity of the primary care workforce to deliver effective care to Indigenous Australians with chronic diseases (Department of Health 2013a).

Other government initiatives include arrangements for Australians with chronic illnesses to receive Medicare benefits for allied health services that help manage their condition (Department of Human Services 2013a) and programs to improve health services in rural and remote communities, such at the Visiting Optometrists Scheme (Rural and Regional Health Australia 2013).

There are also special health-care arrangements for members of the Australian Defence Force and their families, and for war veterans and their dependants (AIHW 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 2013). Part of the cost of being admitted as a private patient is also covered by the Australian Government through the MBS and PBS.

Private health insurance is not compulsory, and people who opt to buy private health insurance can mix and match the levels and type of cover to suit their individual circumstances. Private insurance also offers cover for some or all of the costs of a range of other items or services not covered by Medicare, such as ambulance services, dental services, prescription glasses, and physiotherapy (Department of Health 2013e).

Private patients have more control in choosing their treating doctor in hospital and may be able to reduce their waiting time for elective surgery by having treatment in a private hospital (Private Healthcare Australia 2013).

A person can choose to be treated as a public patient in a public hospital, even if they have private health insurance.

According to the Private Health Insurance Administration Council, at June 2013, 10.8 million Australians (47% of the population) had some form of private hospital cover and 12.7 million (55%) had some form of general treatment cover (Private Health Insurance Administration Council 2013).

Who governs health services?

Overall coordination of the public health system is the responsibility of all Australian health ministers, that is, the Commonwealth and state and territory ministers. Managing the individual Commonwealth, 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 Standing Council on Health, which has a supplementary coordination role. Membership of the council also includes the Commonwealth Minister for Veterans' Affairs and the New Zealand Health Minister (AHMAC 2013).

The Standing Council comes under the auspices of the Council of Australian Governments (COAG), which is the peak intergovernmental forum in Australia (AHMAC 2013).

The Standing Council oversees the implementation of COAG's national health reforms that aim to:

- help patients receive more seamless care across sectors of the health system
- improve the quality of care patients receive through higher performance standards, unprecedented levels of transparency and improved engagement of local clinicians
- provide a secure funding base for health and hospitals into the future (AHMAC 2013).

The Standing Council's major focus is on achieving 'a better health service and a more sustainable health system for Australia', and on closing the gap between Indigenous and non-Indigenous Australians (AHMAC 2013). Its areas of responsibility cover:

- hospitals and related health services
- community health and primary health care
- population health, health promotion and prevention
- Indigenous health
- mental health
- e-health and information management
- health workforce
- aged care
- clinical, technical and medico-ethical matters
- chronic diseases, non-transmissible diseases and transmissible diseases
- rural health and access to health services
- National Drug Strategy
- health-related elements of emergency management and national security (AHMAC 2013).

The Standing Council is supported by the Australian Health Ministers' Advisory Council, which is a committee of the heads of health authorities from the Australian Government and the states and territories (AHMAC 2013).

Who regulates health services?

State and territory governments license or register private hospitals, and each state and territory has legislation relevant to the operation of public hospitals. State and territory governments are also largely responsible for health-relevant industry regulations such as for the sale and supply of alcohol and tobacco products (AIHW 2010).

The Australian Government's regulatory roles include overseeing the safety and quality of pharmaceutical and therapeutic goods and appliances, managing international quarantine arrangements, ensuring an adequate and safe supply of blood products, and regulating the private health insurance industry (AIHW 2010).

Registration of health professionals

A National Registration and Accreditation Scheme (NRAS) for health practitioners started on 1 July 2010. The NRAS has been established by state and territory governments to:

- protect the public by ensuring that only suitably trained and qualified practitioners are registered
- facilitate workforce mobility across Australia
- enable the continuous development of a flexible, responsive and sustainable Australian health workforce (Department of Health 2013c).

Professions currently regulated under the scheme are:

- Aboriginal and Torres Strait Islander health practice
- Chinese medicine
- chiropractic
- dental practice
- medicine
- medical radiation practice
- nursing and midwifery
- occupational therapy
- optometry
- osteopathy
- pharmacy
- physiotherapy
- podiatry
- psychology (Department of Health 2013c).

Other parts of the system

Health services are supported by many other agencies. For example: research and statistical bodies provide information for disease prevention, detection, diagnosis, treatment, care and associated policy; consumer and advocacy groups contribute to public discussions and policy development; and universities and hospitals train health professionals. Voluntary and community organisations and agencies also make important contributions, including raising money for research, running educational and health promotion programs, and coordinating voluntary care.

What is missing from the picture?

Due to limitations in primary health care information in Australia, there is currently insufficient information to fully describe who needs primary health care services, what care they receive (including where they receive it, for what reason and from whom), and the outcome.

The implications of these limitations, and opportunities to improve information, are covered in detail in the Chapter 8 article 'Primary health care in Australia'.

This lack of data is in contrast to the comprehensive information available on Australian hospitals, including that published in the AIHW's annual *Australian hospital statistics* group of products.

Currently it is not easy to profile 'patient journeys' as they progress through and receive services from different parts of the health system. Such information could be very useful in providing insights into the overall effectiveness and efficiency of our health system. At present, relevant data are derived from different sources—notably primary care data from the Australian Government and data on hospitalisations from the states and territories—and is not identified at the patient level in a uniform way.

Data linkage techniques, carried out under stringent conditions to protect privacy, allow data to be analysed at the person level rather than the service level. To date, there have been some useful data linkage projects that examine specific issues (for example, the movement between hospitals and residential aged care facilities described in Chapter 6). However, there is untapped capacity to use data linkage to look at complex population-level health issues by examining what happens to people as they move through the health system, as suggested above.

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 and www.aihw.gov.au/workforce respectively.

Detailed information on Australian hospitals is available at 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 website.

More information on intergovernmental arrangements and agreements is available at the COAG agreements webpage.

References

ABS (Australian Bureau of Statistics) 2013. Year Book Australia, 2012. Health care delivery and financing. Canberra: ABS. ABS cat. no. 1301.0. Viewed 24 January 2014, <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1301.0~2012~Main%20Features~Health%20care%20delivery%20and%20financing~235>.

AHMAC (Australian Health Ministers' Advisory Council) 2013. Australian Health Ministers' Advisory Council. Canberra: AHMAC. Viewed 13 August 2013, <http://www.ahmac.gov.au/site/home.aspx>.

AIHW (Australian Institute of Health and Welfare) 2008. Review and evaluation of Australian information about primary health care: a focus on general practice. Cat. no. HWI 103. Canberra: AIHW.

AIHW 2010. Australia's health 2010. Cat. no. AUS 122. Canberra: AIHW.

AIHW 2012. Australia's health 2012. Cat. no. AUS 156. Canberra: AIHW.

AIHW 2013a Australia's hospitals 2011–12: at a glance. Health services series no. 49. Cat. no. HSE 133. Canberra: AIHW.

AIHW 2013b. Health expenditure Australia 2011–12. Health and welfare expenditure series no. 50. Cat. no. HWE 59. Canberra: AIHW.

Australian Government 2010. A national health and hospitals network for Australia's future—delivering better health and better hospitals. Canberra: Commonwealth of Australia.

Australian Government 2013. What is a Medicare Local? Canberra: Australian Government. Viewed 10 October 2013, <http://www.medicarelocals.gov.au/internet/medicarelocals/publishing.nsf/Content/what-is>.

Consumers Health Forum of Australia 2014. Practice nurses and superclinics-why not both? Viewed 11 November 2013, <https://www.chf.org.au/pdfs/med/med-practice-nurses-and-superclinics.pdf>.

Department of Health 2013a. Closing the gap: tackling Indigenous chronic disease. Canberra: Department of Health. Viewed 23 January 2014, <http://www.health.gov.au/tackling-chronic-disease>.

Department of Health 2013b How much am I charged for non-PS items? Canberra: Department of Health, Viewed 28 November 2013, <http://www.pbs.gov.au/info/general/faq#HowmuchamIchargedfornonPBSitems>.

Department of Health 2013c. National Registration and Accreditation Scheme (NRAS). Canberra: Department of Health. Viewed 10 October 2013, <http://www.health.gov.au/internet/main/publishing.nsf/Content/work-nras>.

Department of Health 2013d. Patient charges. Canberra: Department of Health. Viewed 19 November 2013, <http://www.pbs.gov.au/info/healthpro/explanatory-notes/section1/Section_1_4_Explanatory_Notes>.

Department of Health 2013e. Private health insurance. Canberra: Department of Health. Viewed 28 November 2013, <http://www.health.gov.au/internet/main/publishing.nsf/Content/Frequently+Asked+Questions-1#medicare>.

Department of Health 2013f. What is a personally controlled electronic (eHealth) record? Viewed 28 November 2013. <http://www.ehealth.gov.au/internet/ehealth/publishing.nsf/Content/faqs-individuals-gen>.

Department of Human Services 2012. RPBS prescribing provision. Canberra: Department of Human Services. Viewed 5 December 2013, <http://www.medicareaustralia.gov.au/provider/pbs/education/pbs-and-you-manual/rpbs.jsp>.

Department of Human Services 2013a. Chronic disease management plan. Canberra: Department of Human Services. Viewed 23 December 2013, <http://www.humanservices.gov.au/customer/services/medicare/chronic-disease-management-plan>.

Department of Human Services 2013b. Medicare for providers. Canberra: Department of Human Services. Viewed 24 January 2013, <http://www.medicareaustralia.gov.au/provider/medicare/>.

Department of Human Services 2013c. Reciprocal Health Care Agreements. Canberra: Department of Human Services. Viewed 5 December 2013, <http://www.humanservices.gov.au/customer/services/medicare/reciprocal-health-care-agreements>.

Department of Human Services 2014. About Medicare. Canberra: Department of Human Services. Viewed 21 January 2014 http://www.humanservices.gov.au/customer/subjects/medicare-services.

DoHA (Department of Health and Ageing) 2011. Local Hospital Networks. Canberra: Department of Health and Ageing. Viewed 3 October 2013. <http://www.health.gov.au/internet/yourhealth/publishing.nsf/content/lochospnetwork>.

DoHA 2012. Telehealth. Canberra: Department of Health and Ageing. Viewed 28 November 2013, <http://www.commcarelink.health.gov.au/internet/main/publishing.nsf/Content/e-health-telehealth>.

DVA (Department of Veterans' Affairs) 2012. Repatriation Pharmaceutical Benefits Scheme. Canberra: DVA. Viewed 2 September 2013, <http://www.dva.gov.au/service_providers/doctors/Pages/rpbs.aspx>.

Fox, S and Duggan. M. 2013. Tracking for health. Washington, DC: Pew Internet & American Life Project: Viewed 4 December 2013, <http://pewinternet.org/Reports/2013/Tracking-for-Health.aspx>.

Government of Western Australia Department of Health 2013. What is primary health care? Perth: Government of Western Australia. Viewed 28 November 2013, <http://www.healthnetworks.health.wa.gov.au/docs/network/FactSheet1_2011.pdf>.

Nicholson C 2012. Development of a framework for integrated primary/secondary health care governance in Australia. Presentation at Australian Government Department of Health and Ageing, 17 July 2012, <http://files.aphcri.anu.edu.au/resources/lectures-presentations/conversations-aphcri/c_nicholson_presentation.pdf>.

Norman GH, Zabinski MF, Adams MA, Rosenberg DE, Yaroch AL & Atienza AA 2007. A review of health interventions for physical activity and dietary behaviour change. American Journal of Preventive Medicine 22(4):336–45.

PHIO (Private Health Insurance Ombudsman) 2013. What is covered. Canberra: PHIO. Viewed 19 August 2013. <http://www.privatehealth.gov.au/healthinsurance/whatiscovered/medicare.htm>.

Private Healthcare Australia 2013 About Private Health. Canberra: Private Healthcare Australia. Viewed 28 November 2013, <http://privatehealth.com.au/about-private-health/>.

Private Health Insurance Administration Council 2013. Membership & coverage June 2013. Canberra: PHIAC. Viewed 10 October 2013, <http://phiac.gov.au/wp-content/uploads/2013/05/MC-Mar13.pdf>.

Queensland Government 2012. What does Medicare cover? Brisbane: the state of Queensland. Viewed 21 January 2014, <https://www.qld.gov.au/health/costs/rebates/medicare/index.html>.

Rural and Regional Health Australia 2013. Visiting Optometrists Scheme. Canberra: Department of Health. Viewed 5 December 2013, <http://www.ruralhealthaustralia.gov.au/internet/rha/publishing.nsf/Content/Visiting_Optometrists_Scheme>.

WHO (World Health Organization) 2013a. Health systems. Geneva: WHO. Viewed 28 November 2013, <http://www.who.int/topics/health_systems/en/>.

WHO 2013b. Health systems strengthening glossary. Geneva: WHO. Viewed 28 November 2013, <http://www.who.int/healthsystems/hss_glossary/en/index5.html>.

2.2 How much does Australia spend on health care?

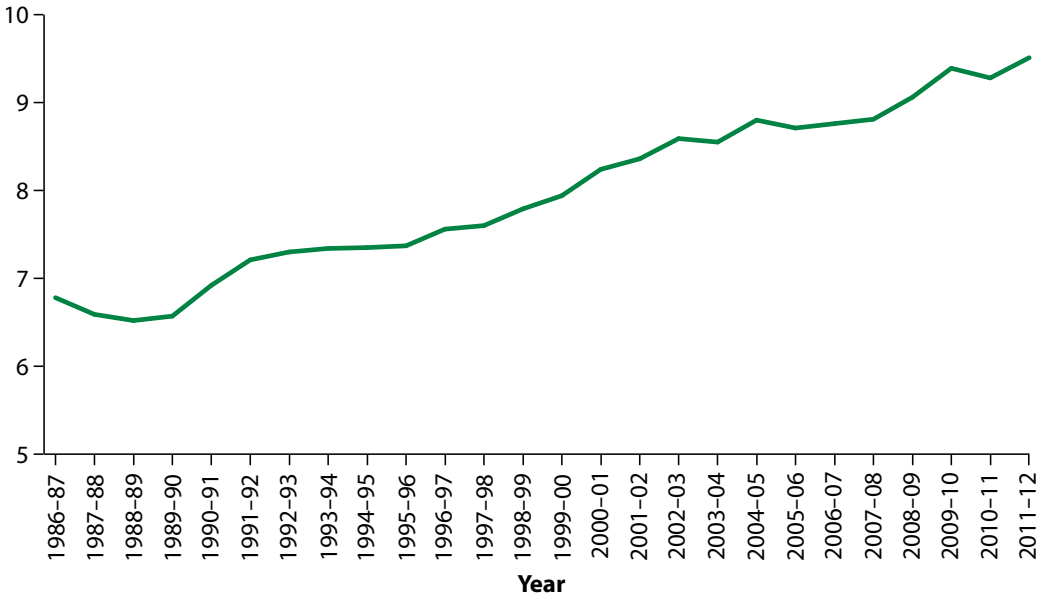
Health expenditure occurs where money is spent on health goods and services. Health expenditure data includes health expenditure by governments as well as individuals and other non-government sources such as private health insurers. The providers of health goods and services include hospitals, primary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

In 2011–12, Australia spent around $140.2 billion on health, around 1.7 times higher in real terms (after adjusting for inflation) than in 2001–02. Health expenditure has grown faster than population growth. Expenditure increased from $4,276 per person in 2001–02 to $6,230 in 2011–12.

Health expenditure has also grown faster than the broader economy. The ratio of health expenditure to gross domestic product (GDP) has increased from 6.8% in 1986–87 to 9.5% in 2011–12 (Figure 2.2). Total health expenditure has grown in real terms at an average rate of 5.4% per year over the last decade, while GDP has grown at a slower rate of 3.1% per year.

Figure 2.2

Health expenditure to GDP ratio (per cent)

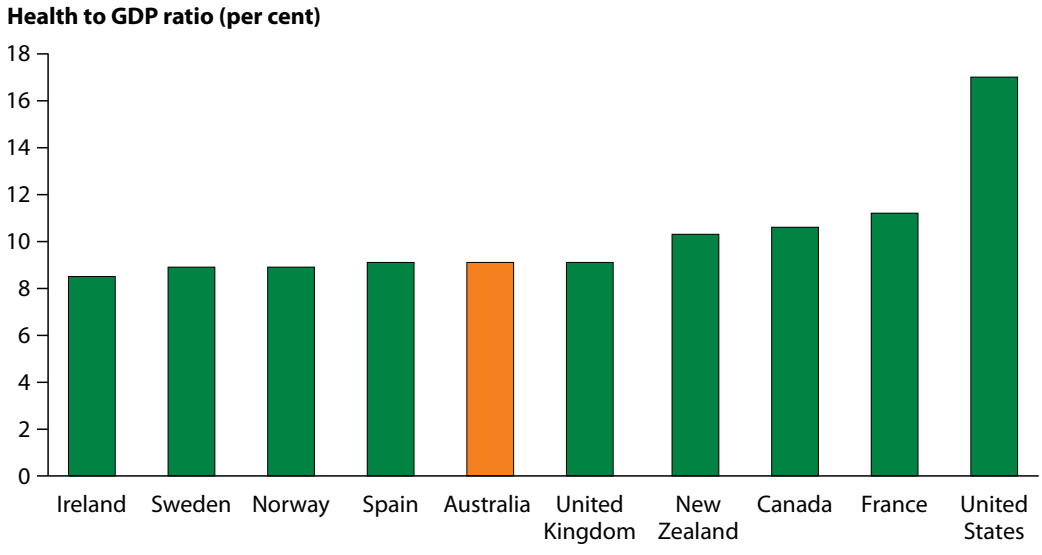


Source: AIHW health expenditure database.

Total health expenditure to GDP ratio, 1986–87 to 2011–12

Health has become a larger part of the economy, which is not unique to Australia. Using the Organisation for Economic Co-operation and Development's (OECD) methods, in 2011–12, Australia's health expenditure to GDP ratio was slightly above average compared with other OECD countries (Figure 2.3). Australia's position within the OECD has not changed significantly over recent years as the ratio for other countries has also increased.

Figure 2.3



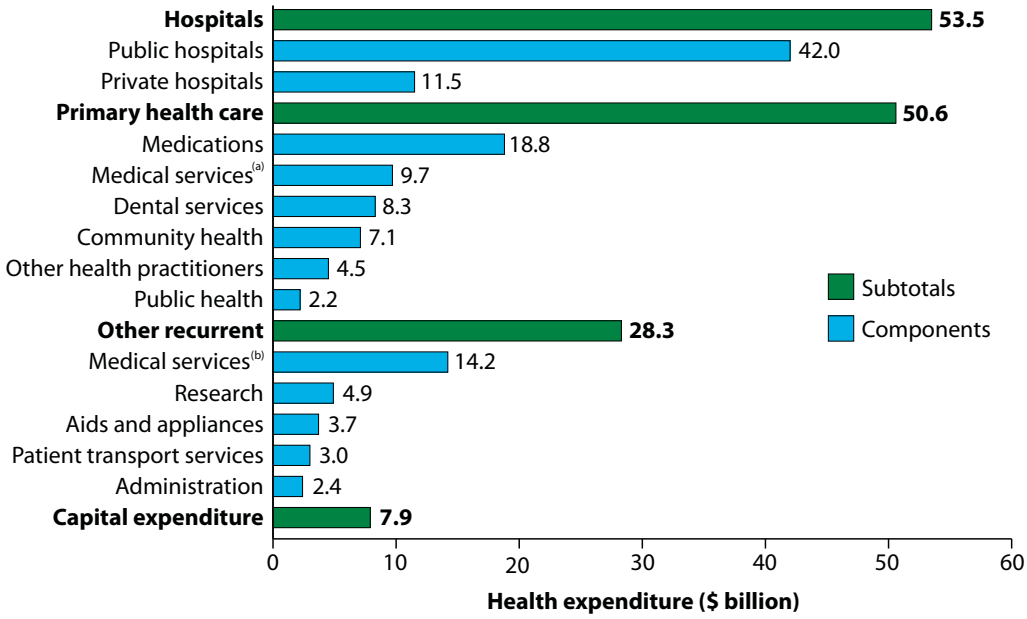
Source: AIHW 2013a.

Health expenditure as a proportion of GDP, selected OECD countries, 2011

Where does the money go?

There are 4 broad areas of health spending: hospitals, primary health care, other recurrent expenditure, and capital expenditure. In 2011–12, the largest component of health spending was for hospital services ($53.5 billion, or 38.2% of total health expenditure), delivered by both public and private providers (Figure 2.4). Hospital expenditure includes all spending incurred by hospitals and excludes expenditure on hospital-based services where the hospital did not directly incur the costs. For example, pharmaceuticals paid for by hospitals are included but pharmaceuticals purchased by patients directly from hospital-based pharmacies are excluded. Similarly, some medical services are provided by specialists in hospitals but these services are not paid for by the hospital as they may be covered by the Medicare Benefits Scheme or some other arrangement. This expenditure is also not treated as hospital expenditure.

Figure 2.4



(a) Includes general practitioner and vocational registrar services, practice nurses, enhanced primary care services and other unreferred attendances.

(b) Includes recurrent expenditure not paid for directly by hospitals but that was not delivered in the primary health care sector, such as all medical services except general practitioner and vocational registrar services, practice nurses, enhanced primary care services and other unreferred attendances.

Source: AIHW health expenditure database.

Total expenditure on health, by area of expenditure, 2011–12 ($ billion)

The second largest component of health spending was for primary health care services ($50.6 billion, or 36.1% of total health expenditure). Primary health care includes a range of front-line health services delivered in the community, such as GP services, dental services, other health practitioner services (for example, physiotherapists, optometrists), and all community and public health initiatives. It also includes the cost of medications not provided through hospital funding.

The remaining health spending was for other recurrent ($28.3 billion, or 20.2% of total health expenditure) and capital expenditure ($7.9 billion, or 5.6% of total health expenditure). The category 'other recurrent' includes areas of recurrent spending that were not paid for by hospitals but that were not delivered through the primary health care sector, such as medical services other than those provided by general practitioners, medical research, health aids and appliances, patient transport services and health administration.

The distribution of funding by the Australian Government, state and territory governments and the non-government sector varies depending on the area of health expenditure (Figure 2.5).

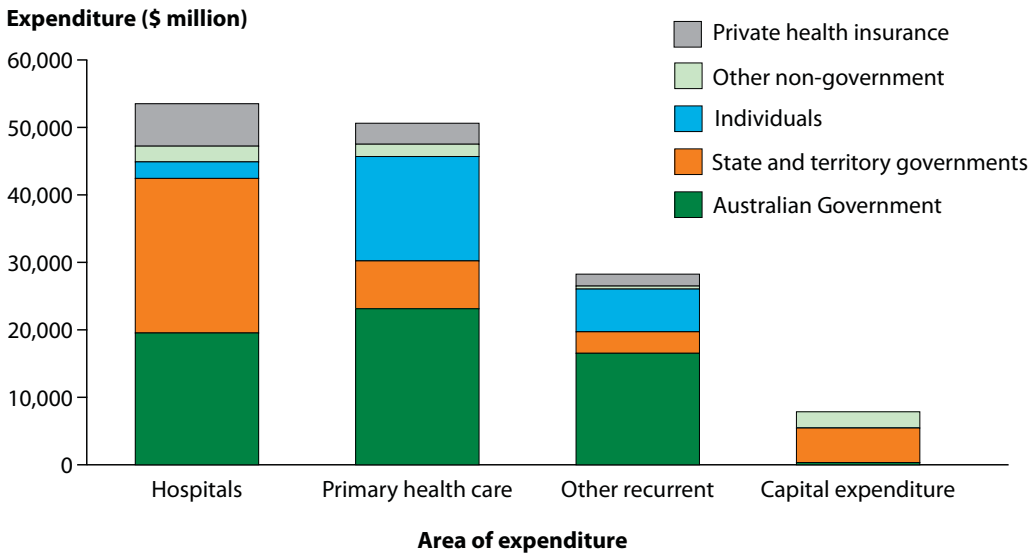
Hospital services (both public and private) received a total of $53.5 billion in 2011–12. The main funding sources were state and territory governments ($22.9 billion, or 42.8% of total hospital funding) and the Australian Government ($19.5 billion, or 36.5%). Non-government sources provided an additional $11.1 billion (20.7%).

Primary health care services received $50.6 billion in funding, slightly less than hospital services. The Australian Government was the main funder, providing $23.1 billion (45.7% of total primary health care funding), followed by the non-government sector ($20.4 billion, or 40.3%), and the state and territory governments ($7.1 billion, or 14.0%).

An additional $28.3 billion of funding was provided for **other recurrent** components of the health system while funding for health infrastructure (**capital expenditure**) was $7.9 billion. The main source of funding for other recurrent health care goods and services was the Australian Government, providing $16.5 billion or 58.5% of other recurrent health funding, while the non-government sources provided $8.5 billion (30.2%) and states and territories provided the remaining $3.2 billion (11.3%).

The state and territory governments provided close to two-thirds (65.1%) of the funding for capital expenditure.

Figure 2.5



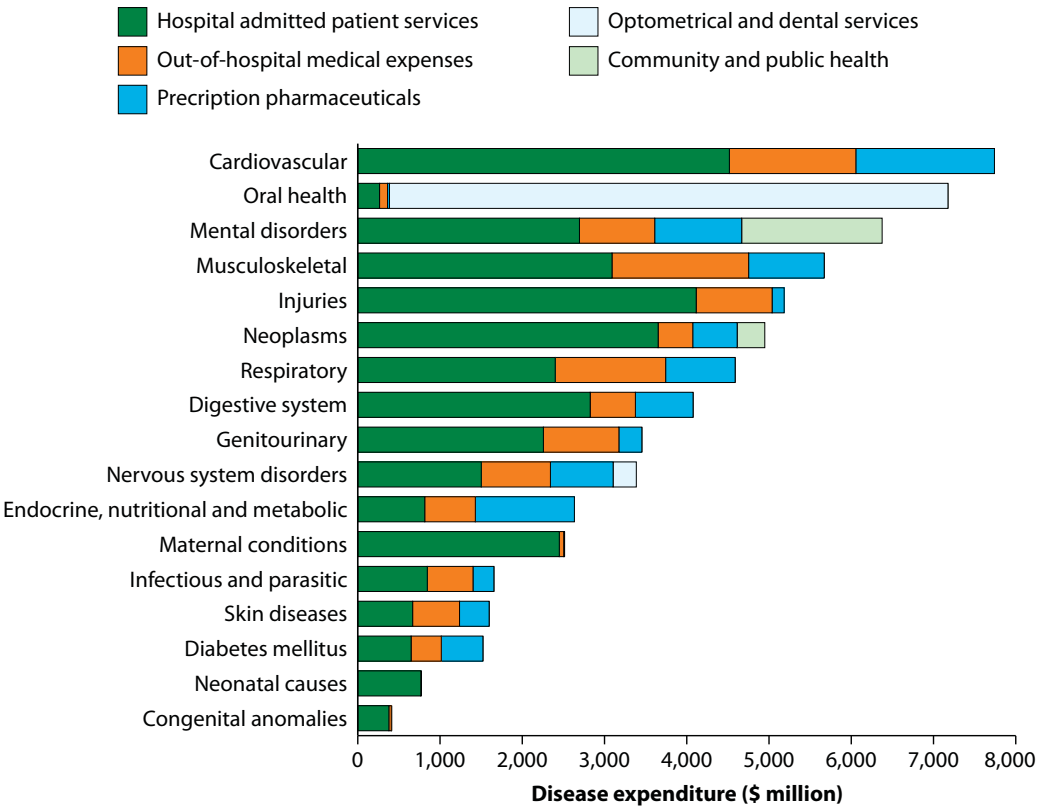
Source: AIHW health expenditure database.

Total health expenditure, by area of expenditure and source of funds, 2011–12

Which diseases attract the most expenditure?

For expenditure that can be allocated to individual disease groups, the group with the highest spending nationally in 2008–09 was 'Cardiovascular disease' ($7.7 billion, or 10.4% of total disease expenditure), followed by 'Oral health' ($7.2 billion, or 9.7%) and 'Mental disorders' ($6.4 billion, or 8.6%) (Figure 2.6).

Figure 2.6



Source: AIHW disease expenditure database.

Allocated health expenditure in Australia, by disease group and area of expenditure, 2008–09

Aboriginal and Torres Strait Islander health

In 2010–11, the total amount spent on health goods and services for Aboriginal and Torres Strait Islander people was estimated at $4.6 billion, or 3.7% of Australia's total recurrent health expenditure. (Expenditure for Aboriginal and Torres Strait Islander people includes expenditure for Indigenous-specific health programs as well as a portion of the expenditure from mainstream health programs.)

This equated to $7,995 per Indigenous person, which was around 1.5 times the $5,437 spent per non-Indigenous Australian in the same year.

In 2010–11, publicly provided services such as public hospital and community health services were the highest expenditure areas for the Indigenous population. For example, the average per person expenditure on public hospital services for Indigenous Australians ($3,631) was more than double that for non-Indigenous Australians ($1,683).

For health services that have a greater proportion of the costs funded through out-of-pocket payments, such as pharmaceuticals and dental services, Indigenous expenditure is generally lower relative to the non-Indigenous population. For example, the average per person expenditure on dental services was $149 for Indigenous Australians, compared with $355 for non-Indigenous Australians.

A significant proportion of Aboriginal and Torres Strait Islander people live in *Remote* and *Very remote* areas and this has an effect on the cost of delivering goods and services. In 2010–11, it was estimated that $6,625 was spent per Indigenous person in *Remote/Very remote* regions, compared with $3,904 per Indigenous person in *Major cities*.

Who pays for health and how has this changed over time?

Funding for health goods and services comes from a range of sources, including the Australian Government; state, territory and local governments; and non-government sources, such as private health insurers, out-of-pocket payments by individuals and injury compensation insurers. Decisions about where and when money is spent on health often involve interactions between multiple bodies, including funders, providers and consumers.

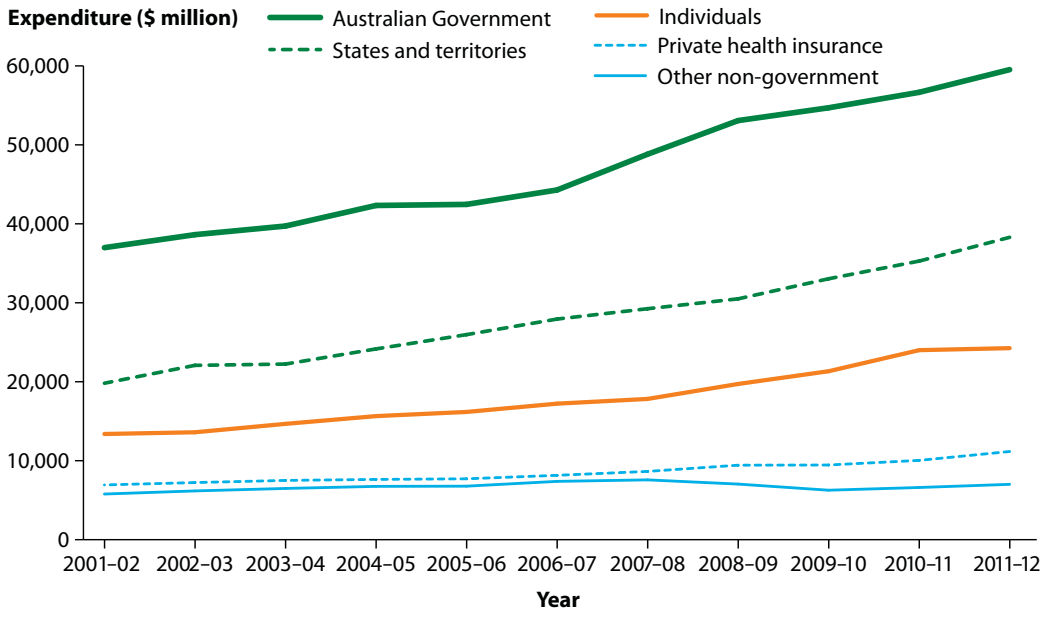
Expenditure from all sources of funds has increased over the past decade (Figure 2.7). Governments have remained the dominant source of funding for health in Australia, with the Australian Government continuing to provide the majority of health funding. The share of funding provided by the Australian Government has declined, however, and so has the share provided by non-government sources, which includes individual out-of-pocket expenditure. The share provided by state and territory governments has increased.

In 2011–12, governments funded $97.8 billion, or 69.7% of total health expenditure ($140.2 billion) in Australia. The Australian Government contributed $59.5 billion, while the state and territory governments contributed $38.3 billion (Figure 2.7 and 2.8).

The Australian Government's contribution to total health expenditure dropped from 44.0% in 2001–02 to 42.4% in 2011–12. The state and territory contribution grew steadily from 23.2% to 27.3% over the same period (Figure 2.8).

In 2011–12, non-government sources (individuals, private health insurance and other non-government sources) funded $42.4 billion, or 30.3%, of total health expenditure in Australia. This was down from 32.8% in 2001–02.

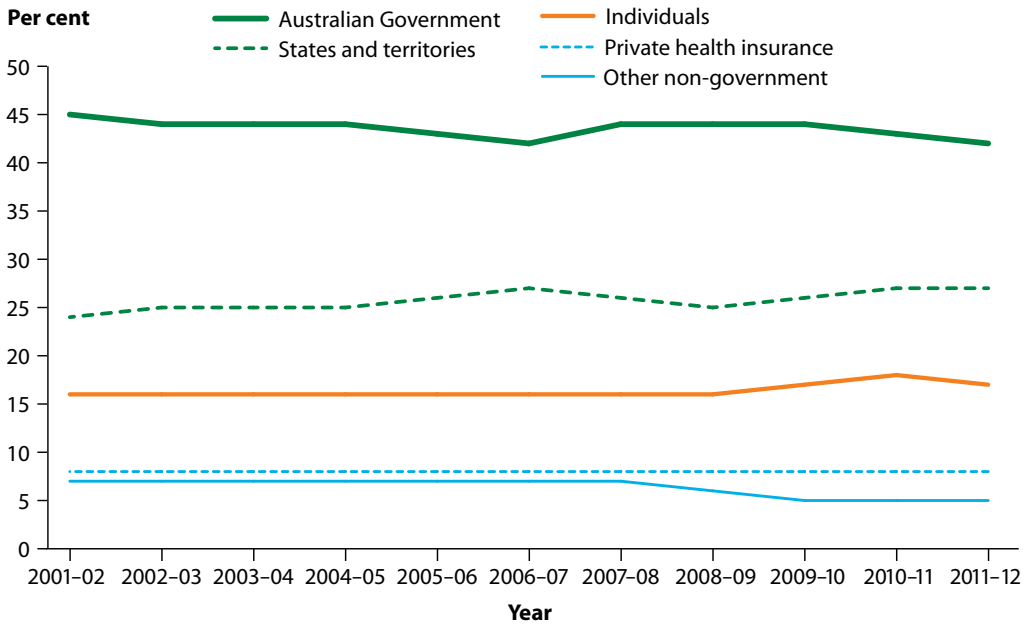
Figure 2.7



Source: AIHW health expenditure database.

Total health expenditure, by source of funds, constant prices, 2001–02 to 2011–12 ($ million)

Figure 2.8



Source: AIHW health expenditure database.

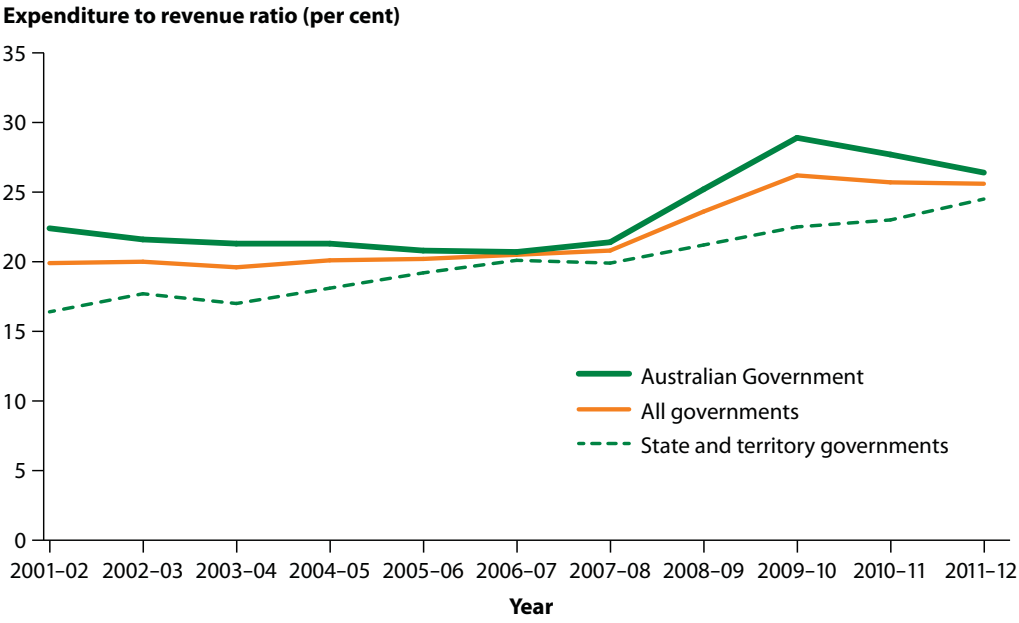
Total health expenditure, by source of funds as a proportion of total health expenditure, constant prices, 2001–02 to 2011–12 (per cent)

The largest share of non-government funding, $24.3 billion, was directly from individuals. Private health insurers funded $11.2 billion of health expenditure in 2011–12. Most of this funding was also sourced from individuals through private health insurance premiums.

Despite total expenditure growing faster than the broader economy, the main funders of health have not necessarily been spending a higher proportion of their incomes or revenues on health. Prior to the global financial crisis (GFC), which had its beginnings in 2007–08, the ratio of all government health expenditure to taxation revenue was relatively stable at around 20% (Figure 2.9). That suggests that, in broad terms, government revenues were increasing at the same rate as health expenditure. While the ratio of expenditure to GDP was increasing, the ratio to government revenues was relatively stable.

The GFC slowed government revenues without having an immediate impact on health expenditure. This increased the health to revenue ratio. The ratio has decreased slightly since 2009–10 as growth in government tax revenues has increased again. In 2011–12, the ratio of government health expenditure to taxation revenue was 25.6%.

Figure 2.9



Source: AIHW health expenditure database.

The ratio of health expenditure to tax revenue across all governments, current prices, 2001–02 to 2011–12 (per cent)

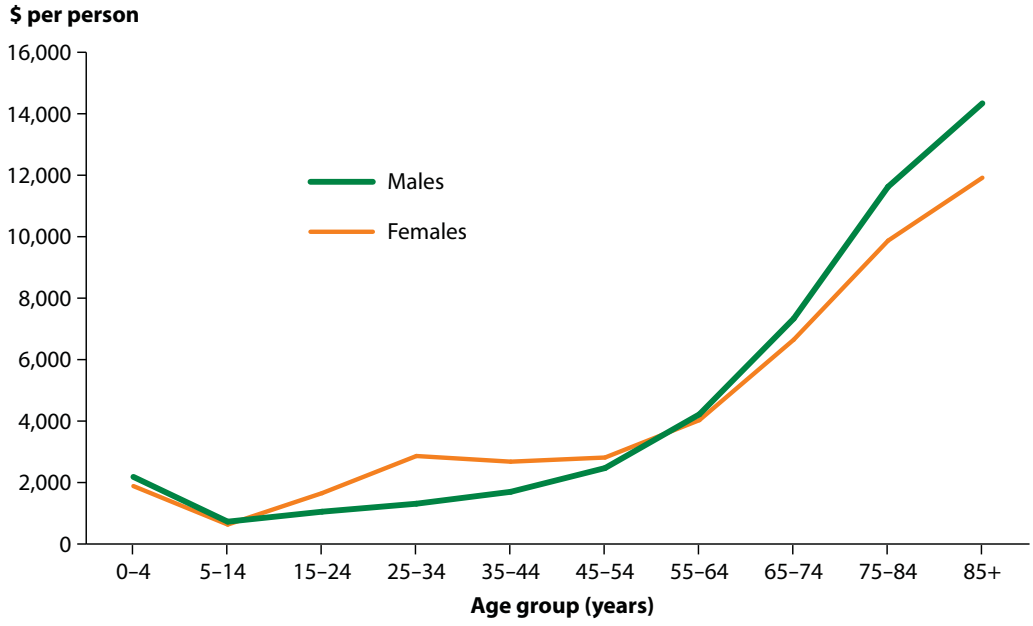
Main drivers of health expenditure

Many studies have been conducted into the drivers of health expenditure over the past decade. Population ageing has attracted particular attention in this context (OECD 2013; Productivity Commission 2005, 2013; Treasury 2010). This is largely due to the fact that health care expenditure is generally higher in the older age groups. In 2008–09, expenditure in Australia on adults aged 85 and over was almost 20 times as high per person as expenditure on children aged 5 to 14 (Figure 2.10). This was true for both men and women.

On the surface this suggests that as a population ages, the number of people in the age groups where the most expenditure occurs will increase and, therefore, demand for health expenditure will increase (see Chapter 6 'Ageing and the health system').

The relationship between ageing and demand for health services is complex, however, and the extent to which current and projected growth in health expenditure can be attributed to population ageing is the subject of much debate. And in any case, over the past 25 years health expenditure in Australia has risen at a faster rate than either population growth or ageing.

Figure 2.10



Source: AIHW disease expenditure database.

Allocated health expenditure per person, by age and sex, 2008–09

Much of the growth in health expenditure can be attributed to non-demographic factors such as the development of new technologies, pharmaceuticals and diagnostic and treatment techniques—these enable a wider range of health conditions to be managed more effectively. Correspondingly, community expectations of the health system and access to such technologies and services have also increased, driving health expenditure up faster than demographic factors would predict (Coory 2004; OECD 2013; Productivity Commission 2005, 2013; Richardson & Robertson 1999; Treasury 2010).

The effect of population ageing on demand (and costs) for health services may also be mitigated by the fact that although lifetime health costs are concentrated in the last few years of life, as healthy life expectancy increases, end of life health costs are postponed (Calver et al. 2006; Karamanidis et al. 2007; OECD 2013). Some have cautioned, however, that over time an ageing population (perhaps with higher levels of chronic disease) with high expectations of access to new health technologies and quality services, will increase and compound the independent effect of population ageing on health system costs (Goss 2008; Productivity Commission 2005, 2013).

The state of the broader economy plays an important role in determining health expenditure. As shown earlier in this article, analysis of AIHW health expenditure data and international experience since the GFC suggests that while health expenditure has grown faster than the broader economy, it has tended to keep pace with growth in the revenue of governments, the key funders of health in Australia (Figure 2.9). This in turn suggests that health expenditure tends to correlate with increased revenue more strongly than increased demand for health services. Many OECD countries are experiencing a similar phenomenon (OECD 2013).

Another important and related factor in determining health expenditure is the efficiency of the health system, which is heavily influenced by government policies. In 2010, the OECD argued that life expectancy across OECD countries could be increased by 2 years if all countries had health systems as efficient as the most efficient systems across the OECD countries. They argued that this could be done without any additional expenditure. While Australia was identified as having one of the more efficient health systems, the OECD still suggested that life expectancies in Australia could be improved through improved health system efficiency (OECD 2010).

What is missing from the picture?

The AIHW's definition of health expenditure closely follows the definitions and concepts provided by the OECD's System of Health Accounts framework (OECD 2000). It excludes:

- expenditure that may have a 'health' outcome but that is incurred outside the health sector (such as expenditure on building safer transport systems, removing lead from petrol, and educating health practitioners)
- expenditure on personal activities not directly related to maintaining or improving personal health
- expenditure that does not have health as the main area of expected benefit.

There are some data limitations in the AIHW health expenditure database, including:

- Total health expenditure excludes some sources of expenditure, including Australian Defence Force expenditure, some local government expenditure and some non-government organisation expenditure.
- There are some areas of expenditure for which data sources could be improved. For example, over-the-counter pharmaceuticals spending in Australia currently has no systemised data collection.
- Much expenditure data cannot be apportioned to specific geographic areas.
- There is a lack of comprehensive welfare expenditure information in Australia, which limits the degree to which comparisons and links can be made to this and other sectors.
- There is a lack of health outcome measures that can be linked with health expenditure to assess the effectiveness of Australia's health care system.

A particularly important gap in the available data is estimates of how much money is spent on particular diseases, with the most recent estimates being from 2008–09. Not all health expenditure can be readily allocated to disease or injury groups—in 2008–09, the figure was around 30% of recurrent health expenditure. This included capital expenditure, expenditure on non-admitted patients, over-the-counter pharmaceuticals, patient transport services, aids and appliances, administration, most community and public health services, and other health practitioner services.

Disease expenditure information, while useful in its own right, does not necessarily give an indication of the loss of health due to that disease, the priority for intervention, or the need for additional expenditure.

Where do I go for more information?

Further information on health expenditure in Australia is available on the AIHW website: www.aihw.gov.au/health-expenditure.

Health expenditure Australia 2011–12 (AIHW 2013a) contains detailed information and analyses of health expenditure and funding in Australia.

Expenditure on health for Aboriginal and Torres Strait Islander people 2010–11 (AIHW 2013b) provides estimates on health expenditure for Aboriginal and Torres Strait Islander people.

Expenditure on health for Aboriginal and Torres Strait Islander people: an analysis by remoteness and disease (AIHW 2013c) complements the preceding report and provides disaggregated expenditure estimates at the regional level as well as for specific disease and injury groups. These reports are available for free download. Further information on health expenditure can also be found in the online data tables and cubes.

This publication provides the most recent estimates of disease expenditure in Australia (2008–09). Further information on disease expenditure in Australia is available on the AIHW website: www.aihw.gov.au/disease-expenditure.

References

AIHW (Australian Institute of Health and Welfare) 2013a. Health expenditure Australia 2011–12. Health and welfare expenditure series no. 50. Cat. no. HWE 59. Canberra: AIHW.

AIHW 2013b. Expenditure on health for Aboriginal and Torres Strait Islander people 2010–11. Health and welfare expenditure series no. 48. Cat. no. HWE 57. Canberra: AIHW.

AIHW 2013c. Expenditure on health for Aboriginal and Torres Strait Islander people 2010–11: an analysis by remoteness and disease. Health and welfare expenditure series no. 49. Cat. no. HWE 58. Canberra: AIHW.

Calver J, Bulsara M & Boldy D 2006. In-patient hospital use in the last years of life: a Western Australian population-based study. Australian and New Zealand Journal of Public Health 30:143–6.

Coory M 2004. Ageing and healthcare costs in Australia: a case of policy-based evidence? Medical Journal of Australia 180:581–3.

Garnaut R 2008. The great crash of 2008. Melbourne University Press.

Goss J 2008. Projection of Australian health care expenditure by disease, 2003 to 2033. Health and welfare expenditure series no. 36. Cat. no. HWE 43. Canberra: AIHW.

Karamanidis K, Lim K, Da Cunha C, Talyor L & Jorm L 2007. Hospital costs of older people in New South Wales in the last year of life. Medical Journal of Australia 187:383–6.

OECD (Organisation for Economic Co-operation and Development) 2000. A system of health accounts, version 1.0. Paris: OECD.

OECD 2010. 'Health care systems: getting more value for money'. OECD Economics Department policy notes, No. 2. Paris: OECD.

OECD 2013. 'What future for health spending?' OECD Economics Department policy notes, No. 19 June 2013. Paris: OECD.

Productivity Commission 2005. Economic implications of an ageing Australia. Research report. Canberra: Productivity Commission.

Productivity Commission 2013. An ageing Australia: preparing for the future. Productivity commission research paper. Canberra: Productivity Commission.

Treasury 2010. Australia to 2050: future challenges. Intergenerational report series no. 3. Canberra: Treasury.

2.3 Who is in the health workforce?

SNAPSHOT

Health practitioners include medical practitioners, nurses and midwives, and allied health professionals such as dental practitioners, psychologists and optometrists.

Nurses and midwives are the largest group in the health workforce, with 290,144 nurses and midwives employed in 2012 (Table 2.1). The number of full-time equivalent nurses and midwives employed for every 100,000 people is almost 3 times that of the next largest profession, medical practitioners. In 2012, there were 1,124 full-time equivalent nurses and midwives employed for every 100,000 people. There were 374 medical practitioners and, in other examples, 85 psychologists and 15 podiatrists.

Table 2.1: Employed health practitioners 2012

Practitioner type	FTE rate[(a)]	Number
Nurses and midwives	1,124	290,144
Medical practitioners	374	79,653
Pharmacists	89	21,331
Psychologists	85	22,404
Physiotherapists	80	20,081
Dental practitioners (includes allied)	74	17,583
Medical radiation practitioners	47	7,806
Occupational therapists	45	7,231
Optometrists	17	4,066
Chiropractors	16	4,029
Podiatrists	15	3,491
Chinese medicine practitioners	13	3,580
Osteopaths	6	1,543
Aboriginal and Torres Strait Islander health practitioners	1	233

(a) FTE rate is the full-time equivalent number of employed per 100,000 population.
Full-time equivalent number is based on a 38-hour week except for medical practitioners where it is based on a 40-hour week.

Source: National Health Workforce Data Set 2012.

The number of nurses and midwives and medical practitioners has increased significantly in the last few years. For example, the number of full-time equivalent medical practitioners employed rose by 16% from 2008 to 2012 and the number of nurses and midwives rose by 7% (see Chapter 9 'Indicators of Australia's health'). In part this reflects an increase in the availability of training places for people studying in the relevant fields. For example, the number of domestic commencements in medicine increased between 2007 and 2012 by 18.6% (DoHA 2012, 2013). For every 1,000 people employed in Australia (ABS 2014), there were 35 medical practitioners and nurses and midwives employed in 2008. This increased to 36 in 2012.

More broadly, between the 2006 and 2011 Australian Bureau of Statistics Censuses, the number of people employed in the health care and social assistance industry increased from 956,150 to 1,167,633 (22.1%). This rise was similar to that between 2001 and 2006 (Table 2.2).

Table 2.2: Number of people employed in the health care and social assistance industry[(a)]

Year	Males	Females	Persons
2001	169,673	623,718	793,391
2006	204,501	751,649	956,150
2011	**245,315**	**922,318**	**1,167,633**

(a) Based on the Australian and New Zealand Standard Industrial Classification (ANZSIC) 2006, Revision 1 released in 2008. Data for 2001 and 2006 have been concorded.

Source: ABS 2012.

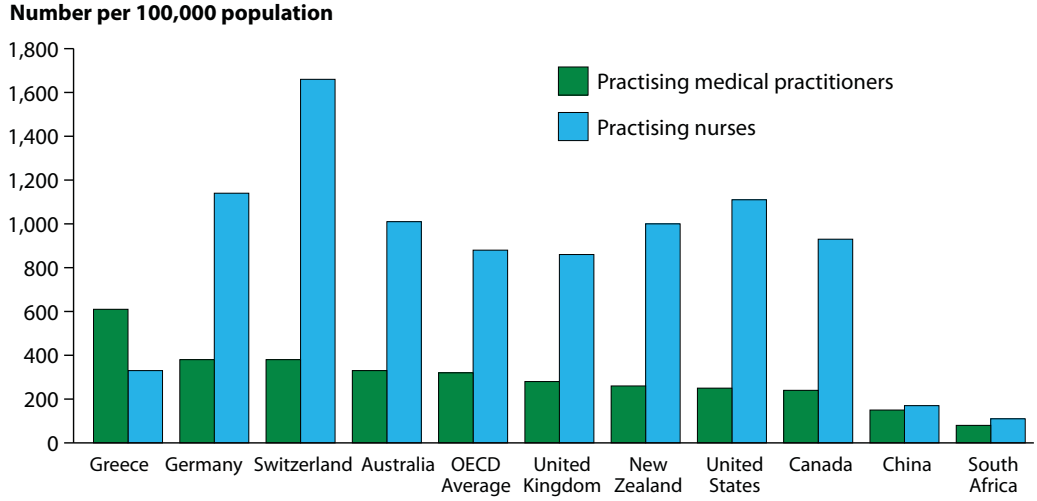
International comparisons

Australia has a similar number of practising medical practitioners per capita as the OECD average and a higher per capita number of practising nurses (Figure 2.11). International comparisons are affected by different regional distributions, scopes of practice and by different hours worked in the various countries.

Geographic distribution

- The concentration of health professionals in *Major cities* is greater than that for the broader population (Figure 2.12).
- The exception is Aboriginal and Torres Strait Islander health practitioners, where the full-time equivalent rate of employed practitioners is greatest in *Remote* and *Very remote* areas.

Figure 2.11



Note: Data include not only those providing direct care to patients, but also those working in the health sector as managers, educators, researchers.

Source: OECD 2013.

Practising medical practitioners and nurses, selected countries, 2011

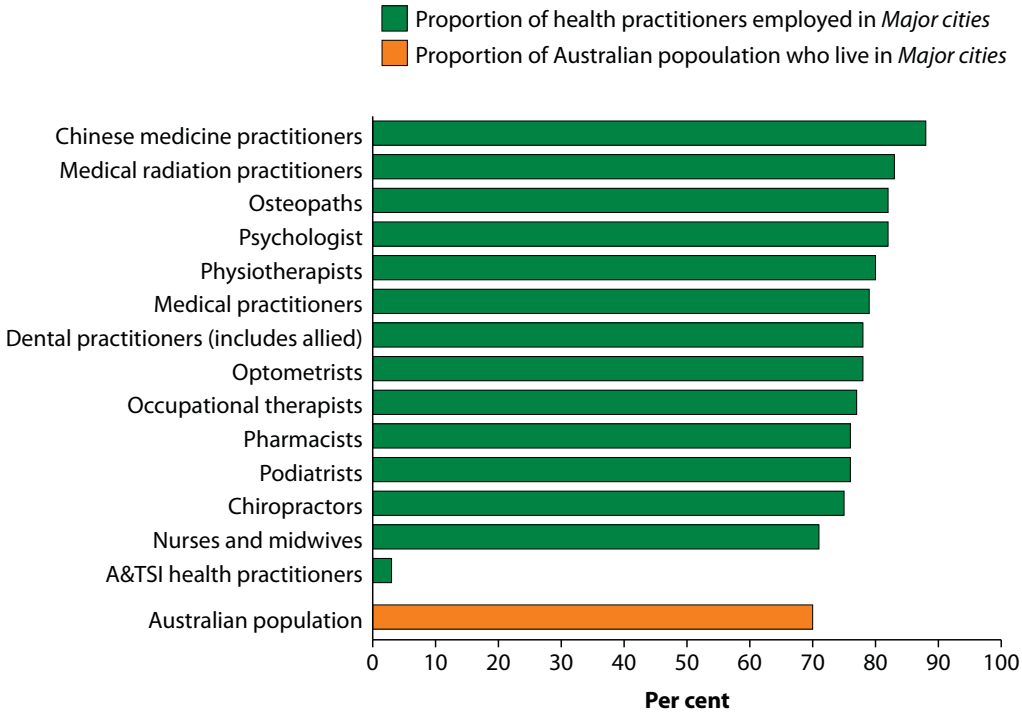
What is missing from the picture?

The data presented here do not account for the demand for health care or consider changes in the productivity of the workforce. In the future, longitudinal data from the National Registration and Accreditation Scheme, introduced in 2010, may enable a better understanding of the movement of different types of health professionals between work areas and geographical areas.

Where do I go for more information?

More information on the health workforce is available in the following AIHW reports, which are available for free download: *Allied health workforce 2012*, *Dental workforce 2012*, *Medical workforce 2012*, and *Nursing and midwifery workforce 2012*.

Figure 2.12



Source: National Health Workforce Data Set 2012.

Proportion of selected health practitioners employed in Major cities, 2012

References

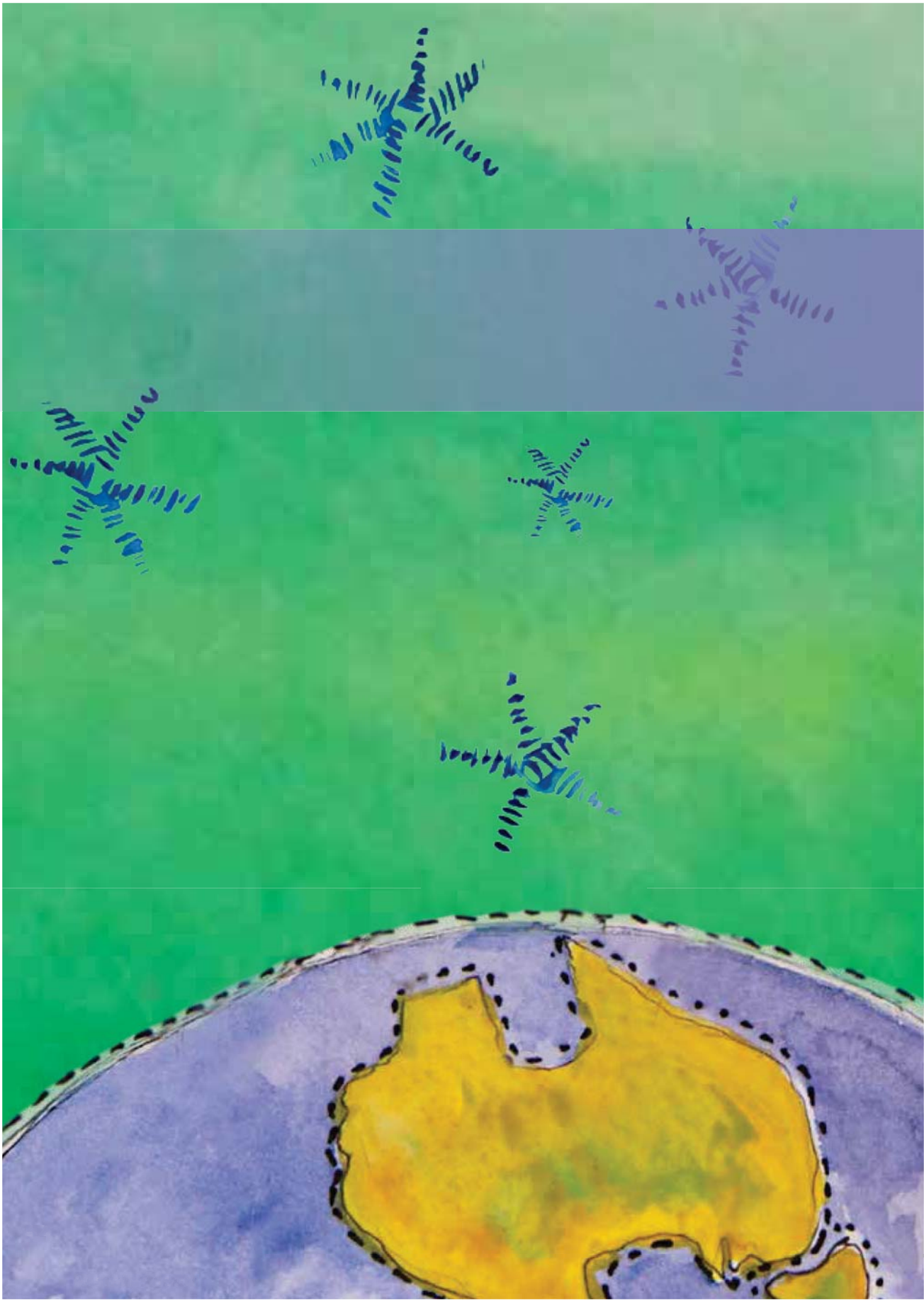
ABS (Australian Bureau of Statistics) 2012 Census of Population and Housing. Time series profile. ABS cat. no. 2003.0. Canberra: ABS.

ABS 2014. Labour Force, Australia, January 2014. ABS cat. no. 6202.0. Canberra: ABS.

DoHA (Department of Health and Ageing) 2012. Medical Training Review Panel sixteenth report. Canberra: DoHA. Viewed 16 August 2013, <http://www.health.gov.au/internet/publications/publishing.nsf/Content/work-pubs-mtrp-15-toc>.

DoHA 2013. Medical Training Review Panel sixteenth report. Canberra: DoHA. Viewed 16 August 2013, <http://www.health.gov.au/internet/publications/publishing.nsf/Content/work-pubs-mtrp-16-toc>.

OECD (Organisation for Economic Co-operation and Development) 2013. Health at a glance 2013: OECD indicators. Paris: OECD Publishing. Viewed 24 February 2014 <http://dx.doi.org/10.1787/health_glance-2013-en>.



Chapter 3

How healthy are we?

3.0 Introduction

Australians have one of the highest life expectancies in the world, but does this mean we are healthy? What does it mean to measure the health of a nation? And can we say, with such a diverse population, that we are doing better or worse across the board?

Death rates continue to drop in Australia, and not only are people living longer, but they are living with more years free of disability.

We have access to increasingly innovative and sophisticated health care, including improved detection, diagnosis and treatments that were not available to past generations.

Most deaths in Australia are caused by chronic disease rather than acute illnesses that were the cause of most deaths a hundred years ago. But many of these diseases, such as cardiovascular diseases, some cancers, chronic obstructive pulmonary disease and diabetes, are increasing because of changes to our lifestyles.

Chronic diseases not only have a profound effect on an individual's health, but they are placing an increasing burden on our national health-care system, including increased pressure on paying for and staffing our health system.

What is also clear is that not all Australians are as healthy as they could be. While we're doing better on many fronts, inequalities in health continue to exist for many population groups, including Indigenous Australians where the health gap is narrowing. However, big disparities, for instance in life expectancy, continue to exist.

Certain population groups, for example people living in lower socioeconomic areas, experience increased health risk factors compared with other Australians.

Assessing the health of Australians is a complex task, and involves looking at multiple aspects of health, including both physical health and mental health and wellbeing. This information can be derived from a number of sources, including from an individual's perspective via self-reporting, for example, through health surveys, and from health-care providers, for example, via information recorded in health records and on death certificates.

This chapter attempts to paint a summary picture of the ways Australia as a nation is healthy, and areas where we could be doing better.

It gives key measures that allow us to assess how healthy we are, including information on leading causes of death and life expectancy. It also includes an overview of changes in health status over time, attempting to answer the question, 'Are we getting healthier?'

Knowing where we are at in terms of our health helps governments plan and allocate for health care into the future, helps health-care professionals and researchers target research and innovation, and helps individuals and population groups assess their own health.

3.1 Life expectancy

SNAPSHOT

Life expectancy is the most commonly used measure of the overall health of a population. It can be defined as how long, on average, a person can expect to live, based on current death rates at different ages for males and females.

Life expectancy 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. Life expectancy changes over a person's lifetime because as a person survives the periods of birth, childhood and adolescence, their chances of reaching older ages increases.

Life expectancy varies over time and between population groups. Differences in life expectancy between population groups and geographical regions can indicate underlying health inequalities due to social, environmental or other factors.

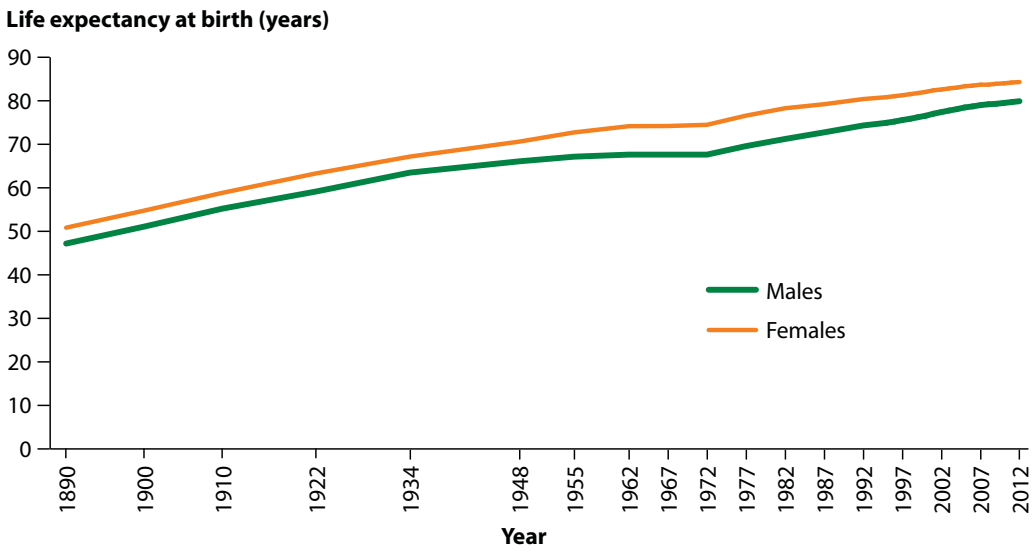
Life expectancy at different ages

- Life expectancy in Australia for a boy born in 2012 was 79.9 years, and for a girl, 84.3 years.
- Men who had survived to the age of 65 in 2012 could have expected to live, on average, an additional 19.1 years (to 84.1 years), and women an additional 22.0 years (to 87.0 years).

Trends in life expectancy

- Life expectancy in Australia has risen by more than 30 years since the late 1800s (Figure 3.1).
- A boy born in 1890 had a life expectancy of 47.2 years; for girls it was 50.8 years.

Figure 3.1



Note: Data points on this graph are based on either a 3- or 10-year period ending in the year shown to reduce the effect of fluctuations in death rates from year to year—for example the 2012 figure refers to babies born in 2010–2012, and the figure for 1890 is for babies born in 1881–1890.

Sources: ABS 2008, 2013.

Life expectancy at birth, Australia, by sex, 1890 to 2012

Life expectancy by state and territory

- In 2012, babies born in the Australian Capital Territory enjoyed the longest life expectancy of any state or territory in Australia— 81.2 years for boys and 85.1 years for girls (Table 3.1).
- The Northern Territory had the lowest life expectancy—74.7 years for boys in 2012, and 80.0 years for girls.
- Indigenous life expectancy continues to be substantially lower than for the non-Indigenous population (see Chapter 7 'Indigenous life expectancy and death rates').

Table 3.1: Life expectancy (years) at birth, by sex, by state and territory, 2012

State or territory	Males	Females
New South Wales	79.9	84.2
Victoria	80.5	84.5
Queensland	79.5	84.0
South Australia	79.8	84.2
Western Australia	80.1	84.8
Tasmania	78.7	82.6
Northern Territory	74.7	80.0
Australian Capital Territory	81.2	85.1

Source: ABS 2013.

How does Australia compare?

- In 2011, Australia was ranked 6th among OECD countries for life expectancy at birth for males, and 7th for females (Table 3.2).
- The highest life expectancy at birth in 2011 was 80.7 for males in Iceland and 85.9 for females in Japan.
- Over the last 2 decades, Australia has consistently ranked in the top 10 of OECD countries for life expectancy at birth (see Chapter 9 'International comparisons').

Table 3.2: Life expectancy (years) at birth, by sex, top 10 OECD countries, 2011

Rank	Country	Males	Country	Females
1	Iceland	80.7	Japan	85.9
2	Switzerland	80.5	France	85.7
3	Italy	80.1	Spain	85.4
4	Sweden	79.9	Italy	85.3
5	Israel	79.9	Switzerland	85.0
6	**Australia**	**79.7**	Korea	84.5
7	Japan	79.4	**Australia**	**84.2**
8	Spain	79.4	Iceland	84.1
9	Netherlands	79.4	Portugal	84.0
10	New Zealand	79.4	Austria	83.9

Source: OECD 2013.

What is missing from the picture?

There are currently no national data to describe the relationship between life expectancy and long-term health conditions or lifestyle behaviours—for example, life expectancy of smokers compared with non-smokers.

Similarly, no data are available on life expectancy by socioeconomic factors, country of birth, employment, or level of education.

Where do I go for more information?

Information about life expectancy is published on the AIHW life expectancy webpage www.aihw.gov.au/deaths/life-expectancy.

References

ABS (Australian Bureau of Statistics) 2008. Australian historical population statistics, 2008: life tables. ABS cat. no. 3105.0.65.001. Canberra: ABS.

ABS 2013. Deaths, Australia, 2012. ABS cat. no. 3302.0. Canberra: ABS.

OECD (Organisation for Economic Co-operation and Development) 2013. OECD health at a glance 2013: OECD indicators. Paris: OECD Publishing.

3.2 Leading causes of death in Australia

SNAPSHOT

Examining leading causes of death can help us to understand health in different populations and population groups. Exploring changes over time can help us to evaluate the effects of health policies, interventions, and new treatments.

Changes in the pattern of causes of death may also reflect changes in behaviours, exposures, and social and environmental circumstances.

About deaths data

Causes of death are documented on death certificates completed by medical practitioners or coroners, and coded using the World Health Organization (WHO) International Statistical Classification of Diseases and Related Health Problems (ICD) by the Australian Bureau of Statistics.

The ICD allows for the categorisation of causes of death into disease groups in a way that is meaningful for public health purposes. The AIHW uses the disease groups recommended by WHO (Becker et al. 2006) with minor modifications to suit the Australian context.

'Leading causes of death' analyses are based solely on what is called the *underlying cause of death*, which, broadly, is the disease or injury that initiated the train of events leading to death. Most deaths, however, are the result of more than one contributing disease or condition (see Chapter 3 'Multiple causes of death in Australia').

What are the leading underlying causes of death in Australia?

- There were 146,932 deaths in Australia in 2011.
- The leading underlying cause of death was coronary heart disease, accounting for 11,733 male deaths and 9,780 female deaths (Figure 3.2).
- For males the next most common causes of death were lung cancer (4,959 deaths) and cerebrovascular diseases (which include stroke) (4,427 deaths).
- For females the next most common causes of death were cerebrovascular diseases (6,824 deaths), and dementia and Alzheimer disease (6,596 deaths).

Have leading causes of death changed over time?

- For both males and females, the 5 leading causes of death were the same in 2001 and 2011, albeit with different rankings (Figure 3.2).
- The leading cause of death in both years was coronary heart disease, accounting for 20% of deaths in 2001 and 15% in 2011.
- For males, the largest changes in leading causes of death from 2001 to 2011 were the rise of dementia and Alzheimer disease from 13th to 6th place, and the fall of land transport accidents from 9th to 17th place.
- For males, 2 leading external causes of death (land transport accidents and suicides) fell in rank over this period while many cancer causes of death rose in rank (lung, prostate and pancreatic cancers, and cancers with unknown or ill-defined site).
- For females, many leading cancer causes of death (breast, colorectal, pancreatic and ovarian) fell in rank over this period—for example, breast cancer fell from 3rd in 2001 to 5th in 2011. Meanwhile, lung cancer deaths rose in rank, from 5th in 2001 to 4th in 2011.

Figure 3.2

Rank	% Male deaths	Leading causes of death, males, 2001	Leading causes of death, males, 2011	% Male deaths
1	20.8	Coronary heart disease (I20–I25)	Coronary heart disease (I20–I25)	15.6
2	7.3	Cerebrovascular diseases (I60–I69)	Lung cancer (C33, C34)	6.6
3	7.0	Lung cancer (C33, C34)	Cerebrovascular diseases (I60–I69)	5.9
4	4.8	Chronic obstructive pulmonary disease (COPD) (J40–J44)	Prostate cancer (C61)	4.4
5	4.1	Prostate cancer (C61)	Chronic obstructive pulmonary disease (COPD) (J40–J44)	4.4
6	3.9	Colorectal cancer (C18–C21)	Dementia and Alzheimer disease (F00–F03,G30)	4.3
7	2.9	Suicide (X60–X84)	Colorectal cancer (C18–C21)	3.0
8	2.5	Diabetes (E10–E14)	Diabetes (E10–E14)	2.9
9	2.1	Land transport accidents (V01–V89)	Cancer, unknown, ill-defined (C26, C39, C76–C80)	2.6
10	1.8	Heart failure and complications and ill-defined heart diseases (I50–I51)	Suicide (X60–X84)	2.3
11	1.8	Cancer, unknown, ill-defined (C26, C39, C76–C80)	Heart failure and complications and ill-defined heart diseases (I50–I51)	1.9
12	1.8	Influenza and pneumonia (J09–J18)	Pancreatic cancer (C25)	1.6
13	1.8	Dementia and Alzheimer disease (F00–F03,G30)	Kidney failure (N17–N19)	1.6
14	1.4	Pancreatic cancer (C25)	Influenza and pneumonia (J09–J18)	1.5
15	1.2	Cirrhosis and other diseases of the liver (K70–K76)	Cirrhosis and other diseases of the liver (K70–K76)	1.4
16	1.2	Lymphomas (C81-C85, C96)	**Melanoma (C43)**	1.4
17	1.2	Kidney failure (N17–N19)	Land transport accidents (V01–V89)	1.3
18	1.2	Leukaemia (C91–C95)	**Liver cancer (C22)**	1.3
19	1.2	Aortic aneurysm and dissection (I71)	Leukaemia (C91–C95)	1.2
20	1.1	Stomach cancer (C16)	**Oesophageal cancer (C15)**	1.2
	71.0	**Leading 20 causes**	**Leading 20 causes**	**66.4**
	66,835	**Total deaths**	**Total deaths**	**75,330**

Leading underlying causes of death, males and females, Australia, 2001 compared with 2011

Rank	% Female deaths	Leading causes of death, females, 2001	Leading causes of death, females, 2011	% Female deaths
1	20.0	Coronary heart disease (I20–I25)	Coronary heart disease (I20–I25)	13.7
2	11.8	Cerebrovascular diseases (I60–I69)	Cerebrovascular diseases (I60–I69)	9.5
3	4.2	Breast cancer (C50)	Dementia and Alzheimer disease (F00–F03,G30)	9.2
4	4.2	Dementia and Alzheimer disease (F00–F03,G30)	Lung cancer (C33, C34)	4.4
5	3.9	Lung cancer (C33, C34)	Breast cancer (C50)	4.1
6	3.5	Colorectal cancer (C18–C21)	Chronic obstructive pulmonary disease (COPD) (J40–J44)	3.6
7	3.4	Chronic obstructive pulmonary disease (COPD) (J40–J44)	Diabetes (E10–E14)	2.8
8	3.1	Heart failure and complications and ill-defined heart diseases (I50–I51)	Heart failure and complications and ill-defined heart diseases (I50–I51)	2.8
9	2.5	Influenza and pneumonia (J09–J18)	Colorectal cancer (C18–C21)	2.6
10	2.3	Diabetes (E10–E14)	Cancer, unknown, ill-defined (C26, C39, C76–C80)	2.5
11	2.0	Cancer, unknown, ill-defined (C26, C39, C76–C80)	Influenza and pneumonia (J09–J18)	1.9
12	1.4	Kidney failure (N17–N19)	Kidney failure (N17–N19)	1.7
13	1.4	Pancreatic cancer (C25)	Hypertensive diseases (I10–I15)	1.7
14	1.4	Ovarian cancer (C56)	Pancreatic cancer (C25)	1.7
15	1.3	Hypertensive diseases (I10–I15)	Cardiac arrhythmias (I47–I49)	1.4
16	1.2	Lymphomas (C81-C85, C96)	**Accidental falls (W00–W19)**	1.3
17	1.0	Diseases of the musculoskeletal system and connective tissue (M00–M99)	Ovarian cancer (C56)	1.3
18	1.0	Cardiac arrhythmias (I47–I49)	Diseases of the musculoskeletal system and connective tissue (M00–M99)	1.1
19	0.9	Leukaemia (C91–C95)	**Septicaemia (A40–A41)**	1.1
20	0.9	Perinatal and congenital conditions (P00–96, Q00–Q99 excl. P28.5)	**Non-rheumatic valve disorders (I34–I38)**	1.1
	71.2	**Leading 20 causes**	**Leading 20 causes**	**69.5**
	61,709	**Total deaths**	**Total deaths**	**71,602**

Source: AIHW National Mortality Database.

Notes

1. Rankings are based on number of deaths; a decline in rank does not necessarily indicate a decline in the number of deaths.
2. Codes refer to the International Classification of Diseases, 10th revision (ICD-10).
3. Data for 2011 are based on the preliminary version of cause of death data and are subject to further revision by the ABS. Causes of death that are likely to be affected by the revisions process are particular external causes of death, such as suicide and land transport accidents. Revised and finalised data may reflect higher counts of both suicide and land transport accidents.
4. Coloured lines point to the cause as ranked in 2011; causes in bold indicate they have moved into the leading 20 causes in 2011 while those in grey have moved out since 2001.

SNAPSHOT

Do leading causes of death vary depending on where you live?

- Coronary heart disease was the leading cause of death in all areas, from *Major cities* to *Very remote*, in 2009–2011.
- Diabetes ranked higher as a cause of death among people living in *Remote* and *Very remote* areas compared with regional and city areas.
- Cerebrovascular diseases, and dementia and Alzheimer disease ranked higher among diseases causing death in *Major cities*, and *Inner regional* and *Outer regional* areas compared with the more remote areas.
- Land transport accidents ranked more highly with increasing remoteness—they were not in the top 15 in *Major cities* or *Inner regional* areas, but ranked 13th in *Outer regional* areas, 8th in *Remote* areas and 4th in *Very remote* areas.
- Deaths from suicide accounted for a greater proportion of all deaths in *Remote* and *Very remote* areas, 4% and 3%, respectively, compared with 2% or less in other areas.
- Causes of death that ranked in the leading 15 causes of death in *Remote* and *Very remote* areas and not in *Major cities* and regional areas include perinatal and congenital conditions, cirrhosis and other diseases of the liver and unknown and ill-defined causes.

What is missing from the picture?

Socioeconomic factors such as highest level of education achieved and main occupation are known to be associated with mortality and particular causes of death. This information is not collected in Australian deaths data.

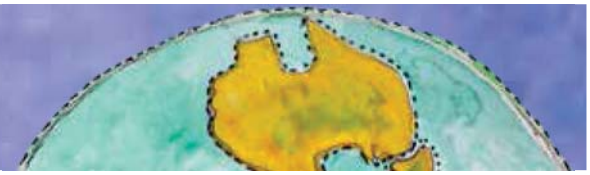
The leading causes of death presented here are based purely on counts of deaths in a particular year; the extra impact of early deaths due to particular causes is not assessed. Burden of disease analyses do, however, quantify the effects of diseases and injuries in terms of 'healthy life' lost due to premature death or disability (see Chapter 4 'Burden of disease').

Where do I go for more information?

More information on deaths and leading causes of death in Australia, including by different age groups, is available on the AIHW website www.aihw.gov.au/deaths.

Information on variations in leading causes of death by socioeconomic status, remoteness and other socio-demographic variables will be available in a forthcoming AIHW publication *Mortality inequalities in Australia*.

3.3 Multiple causes of death in Australia



Death statistics are usually analysed and reported using the underlying cause of death only (see Chapter 3 'Leading causes of death in Australia'). In most cases, however, more than 1 cause is recorded on the death certificate.

Examining multiple causes of death may offer better insights into all the disease processes occurring at the end of life, which can in turn be useful for developing better prevention and treatment policies and practices, refining disease surveillance activities, guiding research investment and enhancing burden of disease estimates (see Chapter 4 'Burden of disease').

Box 3.1

What are multiple causes of death?

The *underlying cause of death* is 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. Deaths are referred to here as 'due to' the *underlying cause of death*.

Associated causes of death are 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.

Multiple causes of death are defined here as all causes listed on the death certificate. This includes the *underlying cause of death* and all *associated causes of death* (ABS 2013).

The work presented here focuses on *natural* causes of death. These are deaths that were **not** due to external causes such as accidents, injury and poisoning, or due to ill-defined causes.

- Of the 146,932 deaths in Australia in 2011, 94% (137,809 deaths) were due to natural causes.
- In 2011, 81% of natural deaths had more than 1 cause and, on average, 3.2 diseases or conditions were recorded on the death certificate.

Chronic diseases as causes of death

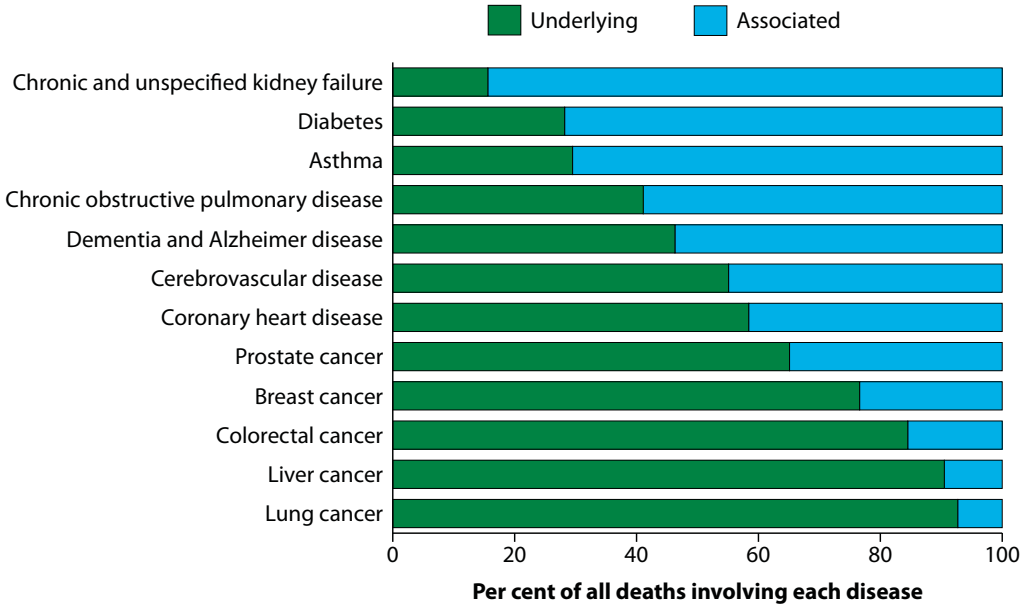
Analysis of multiple causes of death is particularly useful in relation to chronic diseases, which were commonly recorded in combinations of 2 or more. In 2011:

- Coronary heart disease was an *associated cause of death* for 51% of deaths due to diabetes, 28% of deaths due to chronic and unspecified kidney failure and 19% of deaths due to chronic obstructive pulmonary disease (COPD).
- Hypertensive disease was an *associated cause of death* for 35% of deaths due to diabetes, 28% of deaths due to cerebrovascular diseases (which include stroke) and 21% of deaths due to coronary heart disease.
- Kidney failure was an *associated cause of death* for 26% of deaths due to diabetes.
- Influenza and pneumonia was also a common *associated cause of death*—more specifically, for 31% of deaths due to asthma, 30% of deaths due to COPD and 29% of deaths due to dementia and Alzheimer disease.

Underlying versus associated causes of death

- Chronic diseases that are more likely to be reported as the *underlying cause of death* rather than as an *associated cause of death* include prostate, breast, colorectal (bowel), liver and lung cancers (Figure 3.3).
- Chronic diseases that are more likely to be reported as *associated causes of death* include chronic and unspecified kidney failure, diabetes, asthma, COPD, and dementia and Alzheimer disease.
- When deaths are reported by the *underlying cause of death* only, the involvement of certain diseases in overall mortality may be underestimated. This is particularly evident for chronic and unspecified kidney failure, diabetes, asthma, COPD, and dementia and Alzheimer disease.

Figure 3.3



Notes

1. Deaths registered in 2011 are based on the preliminary version of cause of death data and are subject to further revision by the ABS.
2. Underlying refers to deaths with the disease recorded as the underlying cause of death, regardless of whether the disease was also recorded as an associated cause of death. Associated refers to deaths with the disease recorded only as an associated cause of death.

Source: AIHW National Mortality Database.

Selected chronic diseases as underlying and associated causes of death, 2011 (per cent)

What is missing from the picture?

Socioeconomic factors such as highest level of education achieved and main occupation are known to be associated with mortality and particular causes of death. This information is not collected in Australian deaths data.

Where do I go for more information?

More information on multiple causes of death in Australia is available on the AIHW website www.aihw.gov.au/deaths/. The report *Multiple causes of death in Australia: an analysis of all natural and selected chronic disease causes of death 1997–2007* is also available for free download.

References

ABS (Australian Bureau of Statistics) 2013. Causes of death, Australia, 2011. ABS cat. no. 3303.0. Canberra: ABS.

3.4 Are we getting healthier?

FEATURE ARTICLE

Australians have one of the longest life expectancies in the world, but does this mean we are healthier than our parents or grandparents?

The concept of what it is to be 'healthy' encompasses more than just how many years a person lives—for example, it could also include consideration of how many of those years are spent in good health or with disability or chronic illness.

While a baby born today can expect to live about 30 more years than a baby born in the late 1800s, he or she will face a set of different health challenges, largely driven by lifestyle factors not encountered by previous generations.

Extra 'healthy' years

A boy born in 1881–1890 had a life expectancy of 47.2 years and a baby girl 50.8 years. Today, a baby boy can expect to live to 79.9 and a baby girl to 84.3 (see Chapter 3 'Life expectancy').

Importantly, we are not just living longer, but have more years living free of disability. A baby boy born in 2012 could expect to live 62.4 years free of disability and 17.5 years with some form of disability. This compares with a baby boy born in 1998 who could expect to live 58 years free of disability and 17.9 years with some form of disability. A baby girl born in 2012 could expect to live 64.5 years free of disability and 19.8 years with some form of disability. This compares with a baby girl born in 1998 who could expect to live 62.1 years free of disability and 19.4 years with some form of disability (AIHW forthcoming) (see Chapter 6 'Ageing and the health system').

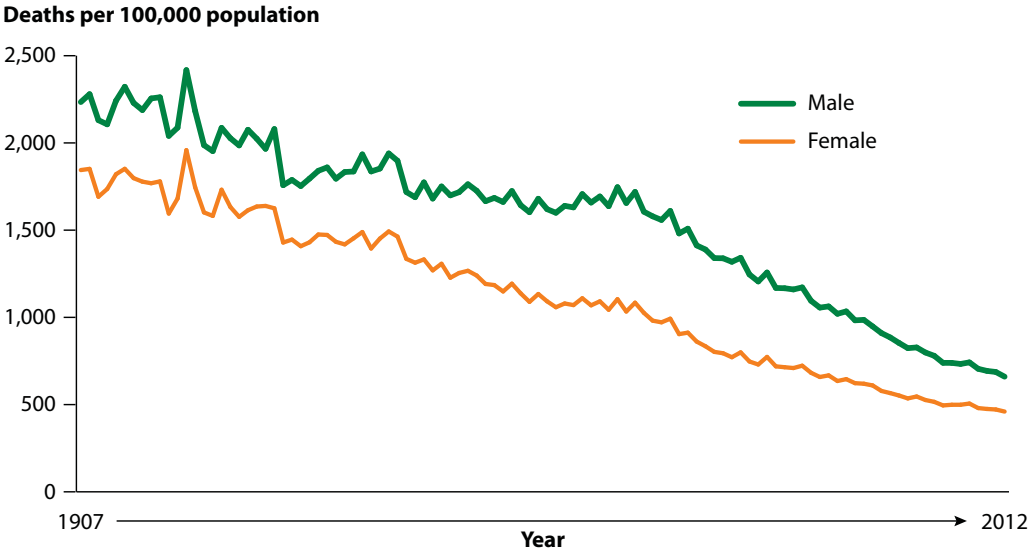
Box 3.2

Age-standardisation

'Age-standardised' refers to removing, statistically, the influence of differing age structures when comparing populations. See Glossary for more information.

There has been a long and continuing decline in death rates in Australia. Between 1907 and 2012, the age-standardised death rate fell by more than 70%, from 2,054 to 550 deaths per 100,000 population (ABS 2013d; AIHW 2013c) (see Figure 3.4).

Figure 3.4



Sources: ABS 2013d; AIHW 2013c.

Age-standardised death rates, by sex, 1907–2012

The rate of potentially avoidable deaths (deaths among people younger than 75 that are potentially avoidable within the present health-care system) has also been in decline.

Potentially avoidable deaths are divided into potentially preventable deaths (those amenable to screening and primary prevention, such as immunisation) and deaths from potentially treatable conditions (those amenable to therapeutic interventions). Preventable death rates fell by 36% between 1997 and 2010 (from 142 to 91 deaths per 100,000) and rates of deaths from treatable conditions fell by 41% between 1997 and 2010 (from 97 to 57 deaths per 100,000) (see Chapter 9 'Indicators of Australia's health').

We're dying of different things than in the past

In 1900, people could mainly expect to die from pneumonia, influenza, tuberculosis, gastrointestinal infections, heart disease and strokes (Jones et al. 2012).

In 2011, the top 5 causes of death in Australia for males were coronary heart disease, followed by lung cancer, cerebrovascular disease (including stroke), prostate cancer and chronic lower respiratory disease. For females, the top 5 causes were coronary heart disease, cerebrovascular disease, dementia and Alzheimer disease, lung cancer and breast cancer (see Chapter 3 'Leading causes of death in Australia').

Why the change and what does it mean for our health status?

Since the 1900s, sanitation and housing have improved and vaccines have been developed to help our fight against infectious diseases. In many parts of the world, diseases that killed our ancestors no longer prove fatal; however, while we have capitalised on medical advances and technological innovations to treat and prevent these diseases, new threats have emerged.

Changing lifestyles

We are now dealing with different causes of illness than past generations. Compared with previous generations, life for many of us today is increasingly inactive.

In the early 20th century, people ate fewer processed foods, walked more, did more manual labour, lived with fewer labour-saving appliances and gadgets, and spent less time in front of televisions and other screens.

According to the latest ABS Australian Health Survey (AHS), in 2011–12 adults spent an average of just over 30 minutes a day doing physical activity. When measured against the National Physical Activity Guidelines for adults 'to do at least 30 minutes of moderate intensity physical activity on most days', only 43% met the 'sufficiently active' threshold (ABS 2013c).

Children and teenagers aged 5–17 spent 1.5 hours a day doing physical activity and more than 2 hours a day in screen-based activity (watching TV, DVDs or playing electronic games). Moreover, physical activity fell as children got older (ABS 2013c).

As we are discovering, lifestyle factors such as this can have a profound effect on our health and increase our likelihood of being ill with chronic disease.

Today, nearly two-thirds of Australian adults are overweight or obese (63%), an increase from 56.3% in 1995 and 61.2% in 2007–08 (ABS 2013c). There are an estimated 1 million people aged 2 and over with diagnosed diabetes in Australia. However, this is likely to be an underestimate—for every 4 adults with diagnosed diabetes, there is estimated to be 1 with undiagnosed diabetes (AIHW 2013d) (See Chapter 4 'Diabetes').

As well as not getting enough exercise and carrying too much weight, many of us do not eat sufficient fruit and vegetables and some of us smoke tobacco or consume alcohol at risky levels.

In 2011–12, less than half of Australian adults (48.5%) reported that they usually ate the recommended 2 serves of fruit per day and only 8% that they ate the recommended 5 or more serves of vegetables per day. Overall, only 5.5% of Australian adults ate the recommended daily intake of both fruit and vegetables (ABS 2013c).

These self-reported findings were similar to those from the 2007–08 National Health Survey where 9% of people aged 15 and over did not usually consume sufficient serves of vegetables and about half (49%) did not usually consume sufficient serves of fruit (AIHW 2012)

Older Australians (aged 65 and over) in both surveys were more likely to meet the guidelines than younger Australians.

Smoking rates in Australia are still falling, continuing a long-term downtrend trend over the past 50 years. In 1964, 43% of Australian adults smoked (OECD 2013), but by 2010 this rate had dropped to 16%. Moreover, fewer younger people are now taking up smoking. In 2001, about one-quarter of 18- to 24-year-olds smoked daily—by 2010, this had fallen to 16% (see Chapter 5 'Tobacco smoking').

Results from the 2010 National Drug Strategy Household Survey showed that while daily drinking declined between 2007 (8.1%) and 2010 (7.2%), 1 in 5 people drank at a level that put them at risk of harm over their lifetime. The rate of people drinking at a level that put them at risk of harm over their lifetime has remained stable since 2001 (see Chapter 5 'Alcohol risk and harm').

These behaviours put us at an increased risk for a range of chronic diseases, including heart disease, stroke and cancer (see Table 3.3 and Chapter 4 'Chronic disease—Australia's biggest health challenge').

Table 3.3: Relationship between selected chronic conditions and risk factors

	Behavioural				Biomedical		
Conditions	**Tobacco smoking**	**Physical inactivity**	**Risky alcohol consumption**	**Poor diet**	**Obesity**	**Hypertension[a]**	**High blood fats**
Ischaemic heart disease	✓	✓		✓	✓	✓	✓
Stroke	✓	✓	✓	✓	✓	✓	✓
Type 2 diabetes	✓	✓		✓	✓	✓	
Kidney disease	✓	✓		✓	✓	✓	
Arthritis	✓[b]	✓[c]			✓[c]		
Osteoporosis	✓	✓	✓	✓			
Lung cancer	✓						
Colorectal cancer		✓	✓	✓	✓		
Chronic obstructive pulmonary disease	✓						
Asthma	✓						
Depression		✓	✓		✓		
Oral health	✓		✓	✓			

(a) High blood pressure.

(b) Relates to rheumatoid arthritis.

(c) Relates to osteoarthritis.

Note: The relationships shown above relate to the causation (development) of the chronic diseases. They do not to reflect the determinant's role (effect) on management of the chronic disease.

Source: AIHW 2012 adapted from AIHW 2008.

Stress of everyday life

Today's generation faces emotional, mental and physical stressors that are fuelled by living in a fast-moving, ever-changing world.

Stress has been associated with a range of illnesses, from headaches and sleep disorders to autoimmune diseases and heart problems (mindhealthconnect 2012). Stress can be triggered by a multitude of causes, from running late for an appointment to a life-changing event such as the death of a family member or partner. Common everyday stressors include job insecurity, financial worries and relationship difficulties.

While a British review of research into the health benefits of work found that, in general, work improved physical and mental health and wellbeing (Waddell & Burton 2006), work stress has been shown to increase the risk of developing mood and anxiety disorders, coronary heart disease and metabolic syndrome, which can be a precursor to type 2 diabetes, stroke and heart disease (Chandola et al. 2006; Marmot et al. 1997; Rosengren et al. 2004; Szeto & Dobson 2013) (see Chapter 6 'The health of our working age population').

Indigenous health

Indigenous Australians experience poorer health and have worse health outcomes than other Australians. They have a burden of disease 2–3 times greater than the general Australian population, and are more likely to die at younger ages, experience disability and report their health as fair or poor (see Chapter 7 'How healthy are Indigenous Australians?').

The gap in the health of Indigenous and non-Indigenous Australians is best illustrated by differences in life expectancy. Life expectancy at birth for Indigenous Australians in 2010–2012 was 73.7 years for females and 69.1 years for males, compared with 83.1 and 79.7 years for non-Indigenous females and males respectively (ABS 2013e) (see Chapter 7 'Indigenous life expectancy and death rates'). These differences in health start at birth and continue throughout life. Babies born to Indigenous mothers are more likely to be of low birthweight than babies born to non-Indigenous mothers and Indigenous children die at more than twice the rate of non-Indigenous children. Between 2008 and 2012, 203 out of 100,000 Indigenous children aged 0–4 died compared with 91 out of 100,000 non-Indigenous children. Indigenous adults of all ages also died at a higher rate than non-Indigenous Australians (AIHW 2013a; SCRGSP forthcoming) (See Chapter 7 'Indigenous life expectancy and death rates').

Despite this continuing health gap, there have been improvements in recent years. Overall mortality for Indigenous Australians fell by 19% from 1991 to 2011, and Indigenous infant mortality rates fell by 62% from 2001 to 2012 (AIHW 2013a).

While mortality rates for chronic diseases were much higher for Indigenous Australians (over 5 times the rate of non-Indigenous Australians for diabetes and twice the rate for circulatory diseases in 2007–11), deaths due to circulatory disease fell by 41% and deaths due to respiratory disease fell by 39% from 1997 to 2010 (AIHW 2013a). However, in the same period, there was a large increase (96%) in incidence rates of treated end-stage renal disease among Indigenous Australians (currently 7 times the rate for non-Indigenous Australians) and Indigenous Australians were twice as likely to be hospitalised for mental and behavioural disorders, and injury and poisoning, as non-Indigenous Australians between July 2010 and June 2012 (see Chapter 7 'How healthy are Indigenous Australians?').

Living with ill health

In the 19th and early 20th centuries, many people who became acutely ill died quickly. And, as outlined earlier, today many of these acute illnesses have been replaced by chronic, non-communicable illnesses that now cause most of the disease burden—in 2011, 90% of all Australian deaths were caused by a chronic disease (see Chapter 4 'Chronic disease—Australia's biggest health challenge').

Typically, chronic conditions are long-lasting, have persistent effects, and can range from conditions such as short- or long-sightedness to debilitating arthritis and low back pain, to life-threatening heart disease and cancers. Once present, chronic conditions often persist throughout life—which means that although Australians are now living longer, many people live with some type of ill health for many years, with a need for long-term management.

ABS Australian Health Survey data for 2011–12 indicate that about 3.3 million Australians (14.8% of the population) have arthritis, 2.3 million (10.2%) have asthma, 1 million have heart disease (5%) and 1 million have diabetes (5%) (ABS 2013b; 2013c).

Living with chronic illness

Living with a chronic illness can affect many aspects of a person's life. For example, people with asthma rate their health as worse than people without the condition, with most of the impact on their physical functioning and social and work life (ACAM 2011).

And while people who control their asthma with medication and a management plan can lead a normal life (National Asthma Council Australia 2013), most people with asthma do not have a written action plan, and poor asthma control (frequent symptoms and asthma exacerbations) is a common problem in both adults and children (ACAM 2011).

The burden of chronic conditions extends far beyond personal costs and results in a significant national economic burden. Estimates based on allocated health care expenditure indicate that the 4 most expensive disease groups are chronic—cardiovascular diseases, oral health, mental disorders, and musculoskeletal—incurring direct health-care costs of $32 billion, or 43% of all allocated health expenditure in 2008–09 (see Chapter 4 'Chronic disease—Australia's biggest health challenge').

New health responses

Although Australians now face the challenges of rises in non-communicable diseases which have a long latency period and are more frequent with ageing (Hetzel 2001), we also have new answers to those challenges. Today we have access to an increasingly innovative and sophisticated health system providing care and treatment regimens that were not available in the past. Cancer is one such example.

Cancer is the second leading cause of death in Australia (after cardiovascular disease) but despite a rise in new cases diagnosed, the mortality rate has fallen and people are living longer after diagnosis. Why? Detection and treatment have improved markedly in recent years, and national screening programs have been established for breast, bowel and cervical cancer (see Chapter 4 'Cancer in Australia'). So, while more people are being diagnosed with cancer, more people are surviving due to early detection (which is associated with more successful treatment, generally) and better treatment technology and delivery.

Inequalities

Presenting a broad picture of health status to some extent masks that there are clear inequalities in health for many Australians, particularly Indigenous Australians (as described earlier), people living in rural and remote areas, and the socioeconomically disadvantaged.

People living outside Australia's major cities have worse outcomes on leading indicators of health and access to care. They have higher rates of obesity, smoking and risky alcohol consumption, their rates of potentially preventable hospitalisations are also higher and they are less likely to gain timely access to aged care (COAG Reform Council 2013). The COAG Reform Council report, *Healthcare 2011–12: comparing outcomes by remoteness*, also found that people living outside major cities were more likely to defer access to dental services and general practitioners due to cost and were more likely to wait longer than 1 year for access to public dental services.

It has been suggested that socioeconomic factors have the largest impact on health, accounting for up to 40% of all influences compared with health behaviours (30%), clinical care (20%) and the physical environment (10%) (The British Academy 2014).

The World Health Organization's Commission on Social Determinants of Health concluded that social inequalities in health arise because of inequalities in the conditions of daily life and the fundamental drivers that give rise to them: inequities in power, money and resources (Commission on Social Determinants of Health 2008).

The WHO describes a 'social gradient in health' which shows that, in general, the lower an individual's socioeconomic position the worse their health. Where people are in the social hierarchy affects the conditions in which they grow, learn, live, work and age, their vulnerability to ill health and the consequences of ill health (WHO 2014).

So, are we healthier?

The change in the patterns and causes of illness and deaths in Australia and many other countries has been described as the 'health transition' from a pattern of high mortality from infectious diseases to one of lower overall mortality from non-communicable disease and injury (Hetzel 2001).

It could be argued that we are both healthier and unhealthier in different ways compared with the past, and that we have, perhaps, more control of our health. Today there are medications and treatments that were not available to our predecessors—medical technologies such as minimally invasive surgery and devices such as pacemakers and hip replacements offer not just more treatment options, but in some cases treatments that were previously not available at all.

Emerging technologies such as telehealth enable people to monitor chronic conditions such as diabetes and hypertension in their own homes, with the support of health professionals (see Chapter 2 'Australia's health system'). Avenues such as online health forums and websites provide better access to health information, making it easier to take more personal responsibility for our own health management.

How do we rate our own health?

According to the Australian Health Survey, in 2011–12 more than half (55.1%) of all Australians aged 15 and over considered themselves to be in 'excellent' or 'very good' health, and another 30.3% in 'good' health. Just over 1 in 10 (10.7%) rated their health as 'fair', and 4.0% as 'poor'. These ratings are slightly better than those recorded in 1995 when 54.3% rated their health as 'excellent' or 'very good', 28.3% as 'good', 13% as 'fair' and 4.2% as 'poor' (ABS 2006; 2013c).

Older Australians generally rated themselves as having poorer health than younger people. People aged 75–84, and 85 and over, recorded the highest proportions of 'fair' health (21.6% and 23.3% respectively) and 'poor' health (9.7% and 14.2%). About 35% of people aged 75–84 rated their health as 'excellent' or 'very good', and a further 33% as 'good'. About 30% of those aged 85 and over rated their health as 'excellent' or 'very good' and 32% as 'good' (ABS 2013c).

In comparison with figures given earlier for all Australians, only 39% of Indigenous Australians rated their health as 'excellent' or 'very good', 36% as 'good', 18% as 'fair' and 7% as 'poor' in 2012–13 (ABS 2013a).

Where do I go for more information?

Detailed information on Australians' health and wellbeing, including on leading causes of ill health and risk factors, is available at the AIHW website. Detailed information on the ABS Australian Health Survey is available at www.abs.gov.au.

References

ABS (Australian Bureau of Statistics) 2006. National Health Survey: summary of results 2004–05. ABS cat. no. 4364.0. Canberra: ABS. Viewed 23 January 2014, <http://www.ausstats.abs.gov.au/Ausstats/Subscriber.Nsf/0/3b1917236618a042ca25711f00185526/$File/43640_2004-05.Pdf>.

ABS 2013a. Australian Aboriginal and Torres Strait Islander Health Survey: first results, Australia, 2012–13. Canberra: ABS. Viewed 20 January 2014, <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/EB419CEC2488E1F8CA257C2F001456C8?opendocument>.

ABS 2013b. Australian Health Survey: first results, 2011–12. ABS cat. no. 4364.0.55.001. Canberra: ABS.

ABS 2013c. Australian Health Survey: updated results, 2011–12. ABS cat. no. 4364.0.55.004. Canberra: ABS. Viewed 20 January 2014, <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/4364.0.55.004Chapter1002011-12>.

ABS 2013d. Deaths, Australia, 2012. ABS cat. no. 3302.0. Canberra: ABS.

ABS 2013e. Life Tables for Aboriginal and Torres Strait Islander Australians, 2010–2012. ABS cat. no. 3302.0.55.003. Canberra: ABS.

ACAM (Australian Centre for Asthma Monitoring) 2011. Asthma in Australia 2011: with a focus chapter on chronic obstructive pulmonary disease. Asthma series no. 4. Cat. no. ACM 22. Canberra: AIHW. Viewed 19 December 2013, <http://www.aihw.gov.au/publication-detail/?id=10737420159>.

AIHW (Australian Institute of Health and Welfare) 2008. Indicators for chronic diseases and their determinants, 2008. Cat. no. PHE 75. Canberra: AIHW.

AIHW 2012. Risk factors contributing to chronic disease. Canberra: AIHW. Cat. no. PHE 157. Canberra: AIHW. Viewed 20 November 2013, <http://www.aihw.gov.au/publication-detail/?id=10737421466>.

AIHW2013a. Aboriginal and Torres Strait Islander Health Performance Framework 2012: detailed analyses. Cat. no. IHW 94. Canberra: AIHW.

AIHW 2013b. Australia's welfare 2013. Australia's welfare series no. 11. Cat. no. AUS 174. Canberra: AIHW.

AIHW 2013c. General Record of Incidence of Mortality (GRIM) Books 2011: all causes combined. Canberra: AIHW. Viewed 23 January 2014, <http://www.aihw.gov.au/deaths/aihw-deaths-data/#grim>.

AIHW 2013d. How common is diabetes? Canberra: AIHW. Viewed 10 December 2013, <http://www.aihw.gov.au/how-common-is-diabetes/>.

AIHW, forthcoming. Changes in life expectancy and disability in Australia 1998 to 2012. Canberra: AIHW.

Chandola T, Brunner E & Marmot M 2006. Chronic stress at work and the metabolic syndrome: prospective study. British Medical Journal 332: 521–25.

COAG (Council of Australian Governments) Reform Council 2013. Healthcare 2011–12: Comparing outcomes by remoteness Sydney: COAG Reform Council. Viewed 22 January 2014, <http://www.coagreformcouncil.gov.au/sites/default/files/files/Remoteness%20supplement%20-%20FOR%20WEBSITE.pdf>.

Commission on Social Determinants of Health 2008. CSDH final report: closing the gap in a generation: health equity through action on the social determinants of health. Geneva: WHO.

Hetzel DMS 2001. Death, disease and diversity in Australia. Medical Journal of Australia 174(1):21–24.

Jones D, Podolsky S & Greene J. The burden of disease and the changing task of medicine. New England Journal of Medicine 366:2333–38. doi: 10.1056/NEJMp1113569.

Marmot MG, Bosma H, Hemingway H, Brunner E & Stansfield S 1997. Contribution of job control and other risk factors to social variations in coronary heart disease. Lancet 350:235–40.

mindhealthconnect 2012. Stress. Sydney: Healthdirect Australia. Viewed 21 November 2013, <http://www.mindhealthconnect.org.au/stress>.

OECD (Organisation for Economic Co-operation and Development) 2013. OECD health data: statistics and indicators for 30 countries, CDROM and online version. Paris: OECD.

Rosengren A, Hawken S, Ounpuu S, Silwa K, Zubaid M, Almahmeed WA, et al. 2004. Association of psychosocial risk factors with risk of acute myocardial infarction in 11,119 cases and 13,648 controls from 52 countries (the INTERHEART study): case-control study. Lancet 364:953–62.

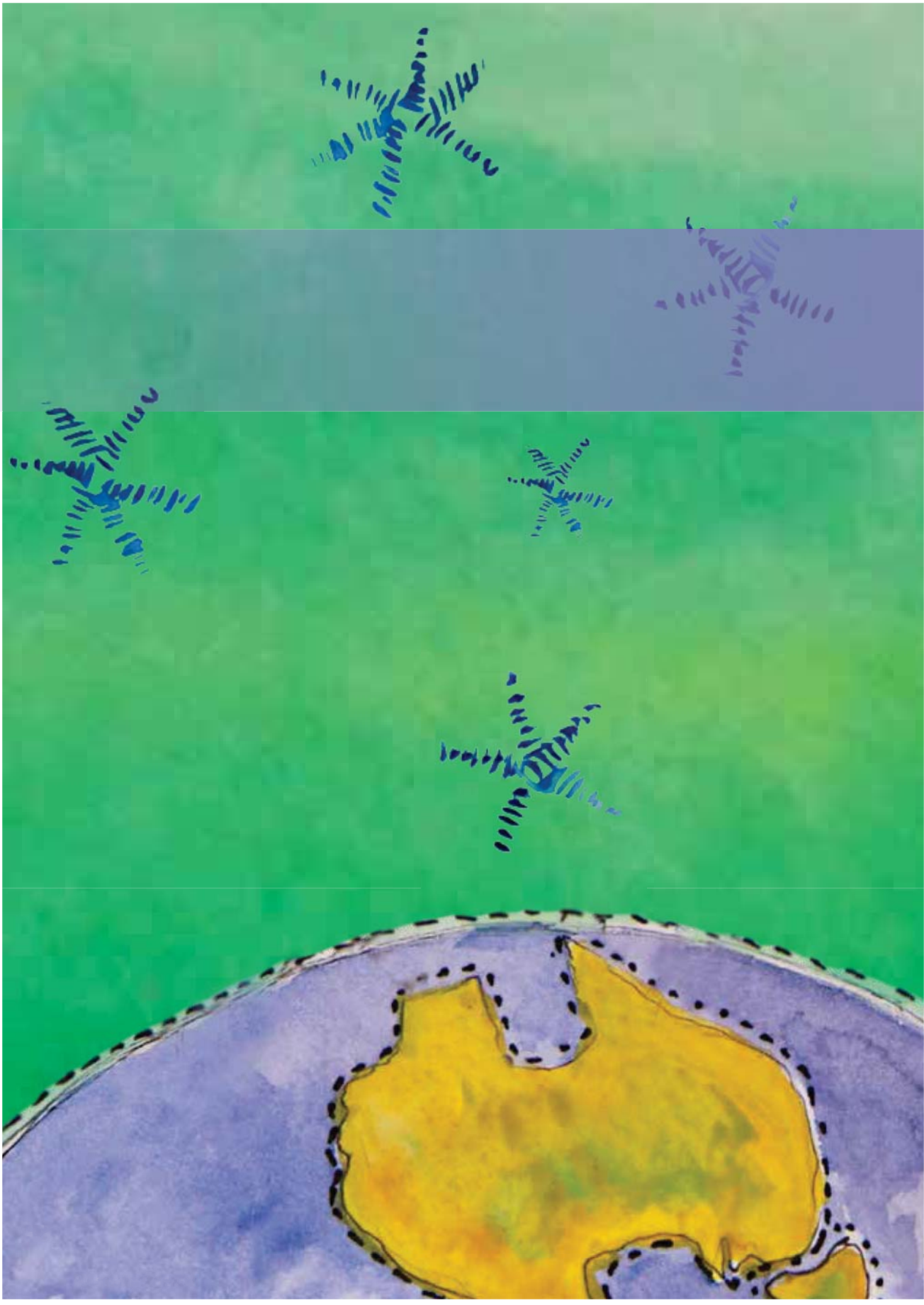
SCRGSP (Steering Committee for the Review of Government Service Provision), forthcoming. National Agreement Performance Information 2012–13: National Indigenous Reform Agreement. Canberra: Productivity Commission.

Szeto ACH & Dobson KS 2013. Mental disorders and their association with perceived work stress: an investigation of the 2010 Canadian Community Health Survey. Journal of Occupational Health Psychology 18:191–97.

The British Academy 2014. 'If you could do one thing …': nine local actions to reduce health inequalities. London: The British Academy. Visited 22 January 2014, <http://www.britac.ac.uk/policy/Health_Inequalities.cfm>.

Waddell G & Burton K 2006. Is work good for your health and well-being? London: TSO.

WHO (World Health Organization) 2014. Social determinants of health. Geneva: WHO. Viewed 23 January 2014, <http://www.who.int/social_determinants/thecommission/finalreport/key_concepts/en/>.



Chapter 4

Leading types of ill health

4.0 Introduction

Ill health can be physical, mental or both. An illness can be ***acute*** (coming on sharply, often brief, intense and/or severe) or ***chronic*** (long-lasting with persistent effects), or both, to some extent, in some cases.

Some physical and mental conditions can occur across the lifespan among all people, while others occur more frequently among certain age or population groups. And some types of ill health have a bigger impact on our society than others in terms of healthy years of life lost due to illness or death—often referred to as ***burden of disease***.

The impact of some types of illness can be surprising—for example, mental and behavioural disorders, which are mostly chronic rather than acute, rank only marginally behind cancer, musculoskeletal conditions and cardiovascular disease, in that order, in terms of disease burden in Australasia.

This chapter endeavours to highlight the leading causes of ill health in Australia, both physical and mental, and the impact of these illnesses. We also take a brief look at vaccine preventable diseases and vaccination coverage.

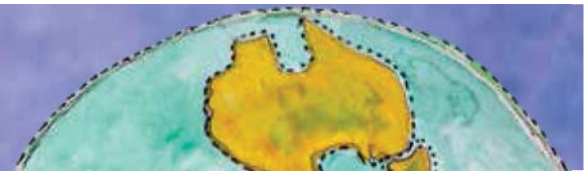
There is necessarily an emphasis, however, on chronic diseases. Chronic diseases, including cancer which is also featured in this chapter, are the leading cause of ill health and death in Australia, and have been for some decades, now that the impact of communicable diseases has diminished through vaccination and other prevention and treatment practices.

There has been considerable success in this country in preventing and treating many chronic diseases—for example, through national cancer screening programs that offer better and earlier detection. But overall, the adverse effects of behavioural and other health risk factors, combined with an ageing population, have led to an increase in their impact on our society.

Indeed, chronic diseases have been termed 'Australia's biggest health challenge' today and for the future, for 3 main reasons:

- significant and increasing costs
- most chronic diseases are preventable
- a growing understanding that many of these diseases arise from common underlying causes and risk factors, and potentially share some prevention, management and treatment strategies.

4.1 Burden of disease



SNAPSHOT

SNAPSHOT

To ensure a health system is aligned to a country's health challenges, policy makers must be able to compare the effects of different conditions that cause ill-health and premature death. Burden of disease analysis simultaneously compares the non-fatal burden (impact of ill-health) and fatal burden (impact of premature death) of a comprehensive list of diseases and injuries, and quantifies the contribution of various risk factors to the total burden as well as to individual diseases and injuries.

The most recent global estimates come from the Global Burden of Disease Study 2010, which covered 241 diseases and injuries and 57 risk factors for 187 countries for 1990, 2005 and 2010 (The Lancet 2012). To enable global comparability on such a broad scale, the study needed to introduce innovative methods as well as manage limitations in data availability.

The last national burden of disease analysis that provided estimates for the Australian and Aboriginal and Torres Strait Islander populations was published in 2007, based on 2003 data. The AIHW is updating these estimates using the 2010 global burden of disease methodology where possible, with some enhancements to better suit the Australian and Indigenous contexts, and using more recent and detailed Australian data. The revised estimates are expected to be finalised in 2015.

What follows is a snapshot of the global study findings for the Australasia region (Australia and New Zealand) published in late 2012.

What contributes most to burden of disease in Australasia?

- Non-communicable (largely chronic) diseases accounted for about 85% of the total burden of disease in Australasia in 2010, while injuries accounted for 10%. Communicable, maternal, neonatal and nutritional disorders accounted for 5%.
- The largest contributors to the total burden were cancer (16%), musculoskeletal disorders (15%), cardiovascular diseases (14%) and mental and behavioural disorders (13%).
- Cancer contributed 33% and cardiovascular diseases 26% of the fatal burden in 2010.
- Musculoskeletal disorders contributed 26% and mental and behavioural disorders 23% of the non-fatal burden in 2010.

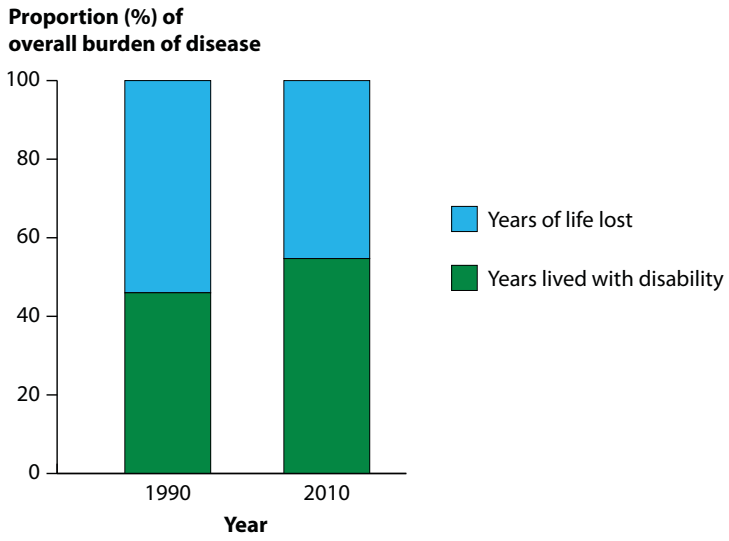
What were the biggest risk factors for Australasia?

- Of the risk factors considered by the study, dietary risks (accounting for 11% of the total burden), high body mass index (9%) and smoking (8%) were the leading risk factors.
- While these risk factors are known to be associated with many diseases, the main conditions affected by these risk factors were cancer, cardiovascular diseases, and diabetes, urogenital, blood and endocrine diseases combined.

How has this changed since 1990?

- A larger fraction of the burden is now caused by ill-health rather than premature death (Figure 4.1).
- Cancer (ranked 2 in 1990) and musculoskeletal conditions (ranked 3 in 1990) replaced cardiovascular diseases as the leading contributors to the Australasian total disease burden in 2010.
- Unintentional injuries (other than transport injuries) replaced transport injuries as the largest contributor to injuries.
- For risk factors, dietary risks and smoking were ranked 1 and 3 respectively in both 1990 and 2010. High body mass index was the second-highest risk factor in 2010, replacing high blood pressure, which was second highest in 1990.

Figure 4.1



Source: AIHW analysis of IHME 2013.

Proportion of overall burden of disease due to premature death and health loss, Australasia, 1990 and 2010

How does Australia compare internationally?

Many factors may contribute to differences between countries. Comparisons between Australia, New Zealand, Canada, the United States, the United Kingdom and Ireland for 2010 showed:

- Ischemic heart disease, lung cancer and stroke were the top 3 contributors to the fatal burden in all countries, while low back pain was the top contributor to the non-fatal burden.
- As a group, dietary risks was the largest risk factor contributor to overall burden in those countries.

What is missing from the picture?

The Global Burden of Disease Study 2010 is an important source of information for setting global health priorities. However, it does not provide estimates by population groups—in particular the Aboriginal and Torres Strait Islander population—or at a subnational level (for example, by state and territory, remoteness or socioeconomic classification). Indigenous and subnational breakdowns are key priorities for the current Australian Burden of Disease study.

The global study also included conditions and risk factors not experienced in Australia (for example, cholera), while other conditions and risk factors of policy interest to Australia were not included (for example, mesothelioma). Findings of the global study should be interpreted with this in mind.

Where do I go for more information?

More information on the AIHW Australian Burden of Disease study is available at www.aihw.gov.au/burden-of-disease/.

For more information on the 2010 global study, see Global Burden of Disease Study 2010.

References

IHME 2013. Data visualizations. Seattle: IHME. Viewed 6 November 2013, <http://www.healthmetricsandevaluation.org/tools/data-visualizations>.

The Lancet 2012. Global Burden of Disease Study 2010. The Lancet 380:2053–60.

4.2 Chronic disease—Australia's biggest health challenge

FEATURE ARTICLE

Chronic diseases are the leading cause of illness, disability and death in Australia, accounting for 90% of all deaths in 2011 (AIHW 2011b). The advent of chronic diseases follows successes in limiting infection and infant deaths during the late 19th and early 20th century. With changing lifestyles and ageing population, chronic diseases have become increasingly common and now cause most of the burden of ill health.

Many different illnesses and health conditions can be classified under the broad heading of chronic disease. They often coexist, share common risk factors and are increasingly being seen as acting together to determine the health status of individuals. There is great potential for integrating prevention and care, and treating selected chronic diseases together, to keep people healthy for as long as possible.

To simplify, chronic disease is often discussed in terms of 4 major disease groups—cardiovascular diseases, cancers, chronic obstructive pulmonary disease (COPD) and diabetes, with 4 common behavioural risk factors—smoking, physical inactivity, poor nutrition and harmful use of alcohol. Between them, these 4 disease groups account for three-quarters of all chronic disease deaths. Deaths alone, however, do not fully capture the impact of chronic disease. Notably, mental health-related issues are not a major cause of death, but they do cause significant ill health and disability in the Australian population (see Chapter 4 'Mental health in Australia').

Long common in Australia and other developed countries, illness and death from chronic disease is now becoming widespread in developing countries, as rising incomes, falling food prices and increasing urbanisation lead to global changes in diet, overweight and physical inactivity (AIHW 2012d; WHO 2011). The worldwide chronic disease 'pandemic' was the subject of a high-level United Nations meeting in 2011, which called for a 25% reduction by 2025 in mortality from chronic diseases among people aged between 30 and 70, adopting the slogan '25 by 25' (Beaglehole et al. 2011; Hunter & Reddy 2013).

Because of its personal, social and economic impact, tackling chronic disease and its causes is the biggest health challenge that Australia faces. A growing understanding that many of these diseases arise from similar underlying causes, have similar features, and share a number of prevention, management and treatment strategies, as well as significant and increasing costs, is challenging us to transform the way in which we respond to chronic disease.

Describing chronic disease

Typically, chronic diseases are long-lasting, and have persistent effects. They can result from complex causes, which can include a number of different health risk factors. They are a leading cause of disability, and have major impacts on health and welfare services (AIHW 2010). Many people have more than 1 chronic illness or condition at the same time.

Chronic diseases can range from mild conditions such as short- or long-sightedness, dental decay and minor hearing loss, to debilitating arthritis and low back pain, and to life-threatening heart disease and cancers. These conditions may never be cured completely, so there is generally a need for long-term management. Once present, chronic diseases often persist throughout life, although they are not always the cause of death. Examples of chronic diseases include:

- cardiovascular conditions (such as coronary heart disease and stroke)
- cancers (such as lung and colorectal cancer)
- many mental disorders (such as depression)
- diabetes
- many respiratory diseases (including asthma and COPD)
- musculoskeletal diseases (arthritis and osteoporosis)
- chronic kidney disease
- oral diseases.

These chronic diseases have each been the focus of recent surveillance efforts, because of their significant health effects and costs, and because actions can be taken to prevent them (AIHW 2011b).

Disease burden in Australia

From any perspective, the size of the chronic disease problem in Australia is large. Analysis of the 2007–08 National Health Survey indicates that one-third of the population (35%, or 7 million people) reported having at least 1 of the following chronic conditions: asthma, type 2 diabetes, coronary heart disease, cerebrovascular disease (largely stroke), arthritis, osteoporosis, COPD, depression or high blood pressure. The proportion increased with age (AIHW 2012a).

Table 4.1 gives a further indication as to how widespread these diseases are, with their consequent toll on health, their demands on primary health care and their cost.

Leaving aside more common chronic conditions such as short- or long-sightedness and hearing problems, Australian Health Survey data for 2011–12 indicate that almost 15% of the population had arthritis, 13% had back problems, 10% hypertensive disease, 10% asthma and 10% depression. In addition, the data show that about 360,000 people (1.6% of the population) were living with cancer, 999,000 (4.6%) were living with diabetes, and more than 1 million (5.0%) had heart or vascular disease, or had suffered a stroke (ABS 2013a, 2013b).

GPs report that the most common chronic diseases or conditions they see are hypertension, diabetes and depression, followed by arthritis and lipid disorders, including high blood cholesterol.

Table 4.1: Common chronic diseases in Australia

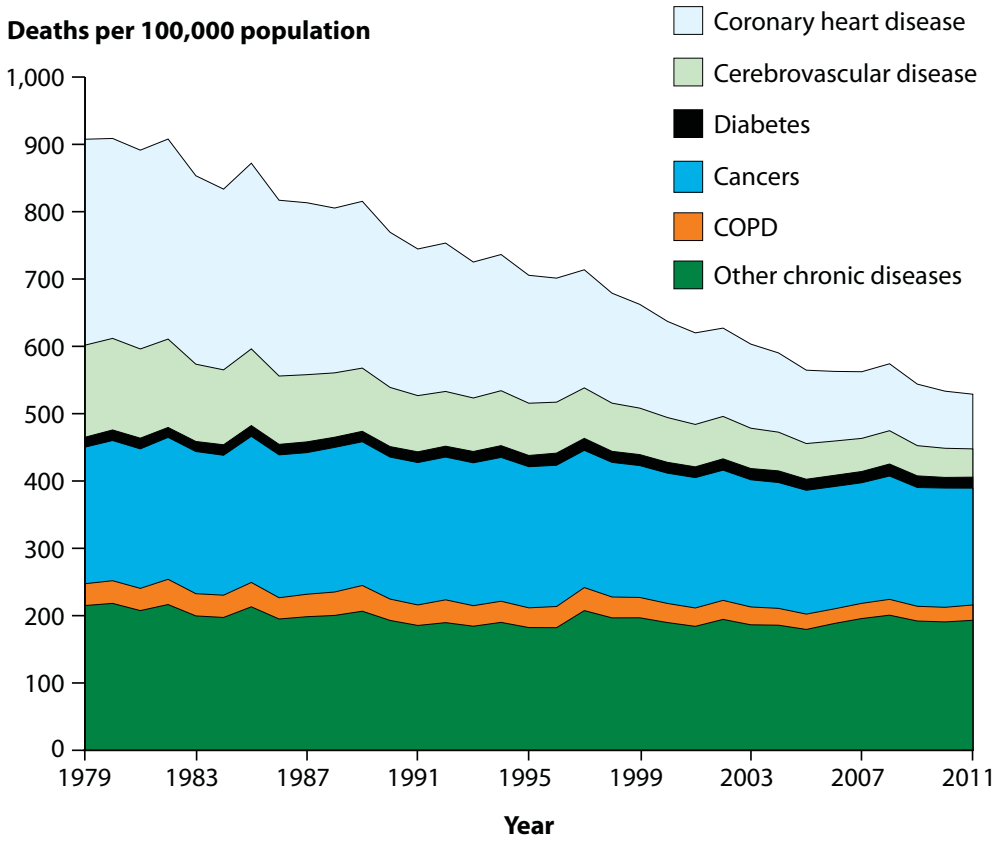
Common long-term conditions in 2011–12	Persons	% of population
Arthritis	3,265,400	14.8
Back pain/problems/disc disorders	2,805,500	12.7
Hypertension	2,262,000	10.2
Asthma	2,254,600	10.2
Depression	2,143,100	9.7
Most common chronic conditions managed by GPs in 2012–13	**% of chronic conditions**	**% of all GP visits**
Hypertension (non-gestational)	15.4	8.6
Diabetes (non-gestational)	7.6	4.2
Depression	7.3	4.1
Arthritis	6.8	3.8
Lipid disorders	6.0	3.3
Most common causes of death in 2011	**Persons**	**% of all deaths**
Coronary heart disease (I20–I25)	21,513	14.6
Cerebrovascular disease (I60–I69)	11,251	7.7
Dementia and Alzheimer disease (F01, F03, G30)	9,864	6.7
Lung cancer (C33, C34)	8,114	5.5
Chronic lower respiratory diseases (J40–J47)	6,570	4.5
Greatest burden of disease in 2010[(a)]	**Disability-adjusted life years (DALYs)**	**% of all DALYs**
Coronary heart disease	471,550	7.8
Low back pain	420,734	7.0
COPD	208,819	3.5
Depression	191,566	3.2
Cerebrovascular disease	183,477	3.1
Most costly disease groups in 2008–09	**Amount ($ billion)**	**% of total allocated health expenditure**
Cardiovascular diseases	7.74	10.4
Oral health	7.18	9.7
Mental disorders	6.38	8.6
Musculoskeletal	5.67	7.6

(a) Data are for Australasia, i.e. Australia and New Zealand.

Sources: ABS 2013a, 2013c; AIHW 2013; Britt et al. 2013; IHME 2013.

However, death rates for some chronic diseases appear to have peaked in Australia (Figure 4.2), particularly for cardiovascular disease and some cancers such as lung cancer. Since 1980, coronary heart disease (CHD) mortality has declined by 73%, cerebrovascular disease by 69% and all cancers by 17%. The relative contribution of these causes to total deaths has also changed—for CHD the relative contribution fell from 33% in 1980 to 15% in 2011, and for cerebrovascular disease from 15% to 8%. However, the relative contribution rose for all cancers, from 23% to 33%. Despite the falls in death rates and relative contributions to total deaths, the number of people dying from chronic diseases is still large because of Australia's growing and ageing population (see Chapter 6 'Ageing and the health system').

Figure 4.2



Notes

1. Rates have been age-standardised to the 2001 Australian population.
2. Deaths registered in 2009 and earlier are based on the final version of cause of death data; deaths registered in 2010 and 2011 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. Data for 2010 have not been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010.

Source: AIHW National Mortality Database.

Changes in death rates for chronic diseases, 1979–2011

Currently, 9 in 10 deaths have chronic disease as an underlying cause. Cardiovascular diseases (coronary heart disease and stroke), dementia and Alzheimer disease, lung cancer and chronic lower respiratory disease including COPD are the most common underlying causes, together being responsible for 40% of all deaths.

Often more than 1 disease is associated with a death—3 diseases is the average. About 20% of deaths have 5 or more associated diseases (AIHW 2012c). When a chronic disease is the underlying cause of death, other chronic diseases, such as cancers of unknown primary site, hypertensive diseases, and coronary heart disease, are common associated causes of death. (see Glossary for 'cause of death' definitions and Chapter 3 'Multiple causes of death in Australia').

Since chronic diseases are responsible for the greatest amount of illness and death, it is not surprising that they also cause the greatest burden of disease (Table 4.1). The overall burden is measured by the disability-adjusted life year (DALY), which is expressed as the number of years lost due to ill health, disability or early death (see Chapter 4 'Burden of disease'). A recent international study found that in Australia and New Zealand, chronic diseases together caused 85% of the total burden of disease, a similar figure to chronic diseases accounting for 90% of the burden due to deaths alone (IHME 2013).

The largest disease groups contributing to the Australasian burden of disease in 2010 were cancer, musculoskeletal disorders, cardiovascular diseases, and mental and behavioural disorders. The 5 leading individual causes of disease burden—heart attack, low back pain, COPD, depression and cerebrovascular disease—accounted for one-quarter of the disease burden.

The cost is large

In addition to the personal and community costs, chronic diseases result in a significant economic burden because of the combined effects of health-care costs and lost productivity from illness and death. Estimates based on allocated health-care expenditure indicate that the 4 most expensive disease groups are chronic—cardiovascular diseases, oral health, mental disorders, and musculoskeletal—incurring direct health-care costs of $27 billion in 2008–09. This equates to 36% of all allocated health expenditure (Table 4.1).

This amount is conservative because not all health-care expenditure can be allocated by disease, particularly diseases predominantly managed in primary health care. Chronic disease costs would also be far greater if non-health sector costs, such as residential care, were included.

Although patterns of spending vary by disease group, most health dollars that can be allocated to diseases are spent on admitted patient hospital services, out-of-hospital services, medications, and dental services (see Chapter 2 'How much does Australian spend on health care?' and Figure 2.6). The large cost, in the order of several billions of dollars, is 1 of the key drivers for more efficient and effective ways to prevent, manage and treat chronic disease.

Chronic disease is not uniformly distributed

Chronic diseases affect some population groups more than others. They occur more often among Indigenous Australians, for example, and at a much younger age (AIHW 2010). Two-thirds of the gap in death rates between Aboriginal and Torres Strait Islander and non-Indigenous people is contributed by chronic disease (AHMAC 2012). Indigenous people report diabetes at more than 3 times the rate of other Australians, and rates of treatment for end-stage kidney disease are more than 7 times as great. Indigenous people were almost twice as likely as non-Indigenous people to report having asthma. Accordingly, rates of hospitalisation and death are higher among Indigenous people (see Chapter 7 'How healthy are Indigenous Australians?').

Chronic diseases, also occur more often and with greater effect among socioeconomically disadvantaged people, for example:

- Coronary heart disease has a 40% higher death rate and has demonstrated a lesser rate of decline over time among people living in areas of lowest socioeconomic status compared with those in the highest (AIHW, forthcoming 2014b).
- The rate of new cases of lung cancer for people living in areas of lowest socioeconomic status was 1.6 times that of people in the highest, which is linked to their higher rates of smoking. Survival of people diagnosed with cancer living in the lowest status areas is also lower (AIHW & AACR 2012).

People who live in areas of lowest socioeconomic status are also more likely to take part in risky health behaviour, or combinations of behaviours, which can lead to poorer chronic disease outcomes. In 2011–12, people living in areas of lowest socioeconomic status were 2.3 times as likely to smoke as those living in the highest (ABS 2013a). People living in these same areas of disadvantage were 1.7 times as likely to report having 4 or more risk factors (AIHW 2012b).

Many people live with more than 1 chronic disease. In 2007–08, 350,000 people (2% of the total population) reported having 4 or more concurrent chronic health conditions out of a list comprising asthma, type 2 diabetes, coronary heart disease, cerebrovascular disease, arthritis, osteoporosis, COPD, depression and high blood pressure. This proportion increases with age, so that among people aged 65 or older, 8% had 4 or more of these chronic diseases. Arthritis and high blood pressure are 2 conditions that commonly occur together among adults. Among younger age groups, asthma and depression is the most common comorbidity. Having multiple chronic conditions is associated with worse health outcomes, more complex disease management and increased health costs (AIHW 2012b).

Chronic disease through the life course

As already noted, the occurrence of chronic disease increases with age. Some diseases, such as asthma and type 1 diabetes, usually begin in childhood or adolescence. Others, such as coronary heart disease or cerebrovascular disease, are uncommon before adulthood, although the processes leading to their occurrence begin earlier in life. Still other diseases, such as arthritis and dementia, most commonly occur later in life.

It is useful to examine how chronic disease occurs across different stages of the life course, because of the strong links between earlier exposures and later health outcomes. Often, adult chronic diseases reflect the cumulative influence of prior physical growth, of reproduction, infection, social mobility and changes in behaviour. Some of these influences can begin before birth. Today's children, who are subject to increased behavioural risks at earlier ages through the consumption of energy-dense foods and poor diet, increased screen time and reduced physical activity, will live longer with risk factors such as obesity (Amschler 2002; Swinburn et al. 2004). Based on current knowledge, the future impact of these behavioural risks on individuals, populations and the health system will be significant.

Social determinants of health, experienced at different life stages, can also influence the development of chronic diseases, through their effect on biological processes (Lynch & Davey Smith 2005). Low birthweight babies, for example, are more likely to come from less affluent backgrounds, and low birthweight is associated with increased rates of cardiovascular disease and diabetes later in life. Adult risk factors for chronic disease also have their own histories; what people do or do not eat in adulthood, for example, is often established much earlier in life. Observing risk factors and chronic disease development in populations from an early age can provide valuable lessons for future disease management.

Coronary heart disease and COPD are leading examples of strong links between several life course risk factors and processes and the later development of chronic disease (see Table 4.2). Many of these risk factors can interact with each other as well as with chronic disease development. For example, in-utero biological effects, combined with poor nutrition early in life, may affect how particular forms of fat are tolerated later in life. Early social disadvantage may interact with affluence in later life to increase coronary heart disease risk. Cholesterol, blood pressure and overweight measures at young ages often persist into adulthood, and can predict the later occurrence of coronary heart disease. Smoking habits acquired in adolescence or early adulthood greatly increase the risk for cardiovascular diseases and COPD in adulthood and old age—along with cancers and many other chronic diseases. The age of quitting smoking is also important and a major influence in reducing later COPD, coronary heart disease, and other chronic disease risk.

Table 4.2: Some life course risk factors for coronary heart disease and COPD

Life course stage	Coronary heart disease	COPD
In-utero	Maternal health, behaviour, stress and diet during pregnancy. Poor growth. Low birthweight.	Low birthweight.
Infancy	Infant feeding. Maternal attachment. Poor growth. Low socioeconomic status.	Infections. Overcrowded dwellings. Second-hand smoke. Low socioeconomic status.
Childhood	Low socioeconomic status. Poor growth. Nutrition. Obesity. Some infections.	Low socioeconomic status. Poor growth. Crowding. Second-hand smoke. Obesity. Indoor/outdoor air quality,
Adolescence	Low socioeconomic status. Nutrition. Physical activity. Obesity. Blood pressure. Cholesterol. Number of children (women).	Low socioeconomic status. Poor growth. Smoking. Obesity.
Adulthood	Low socioeconomic status. Short height. Smoking. Diet. Physical activity. Obesity. Cholesterol. Blood pressure. Binge drinking. Insulin resistance. Work. Psychosocial factors.	Low socioeconomic status. Poor growth. Smoking. Diet. Obesity. Physical activity. Occupational exposure. Indoor/outdoor air quality.
Across generations	Parental history. Maternal health, behaviour, stress and diet before pregnancy. Low socioeconomic status.	Parental history.

Source: Lynch & Davey Smith 2005.

Older Australians are most affected by chronic disease. Around 15% of people in the 0–24 age group reported having either asthma, type 2 diabetes, coronary heart disease, cerebrovascular disease, arthritis, osteoporosis, COPD, depression or high blood pressure, in 2007–08. Among people aged 65 or over, the figure is 78%. Similarly, around half of people aged 65–74 had to cope with 5 or more chronic diseases, increasing to 70% of those aged 85 and over (AIHW 2012a).

The most common chronic diseases or conditions among older Australians are some degree of vision or hearing loss, arthritis or other musculoskeletal problems, and elevated blood pressure or cholesterol levels. Yet despite the frequency of chronic disease in later life, two-thirds of older Australians aged 75 and over rate their health as good, very good or excellent.

Common risks, common prevention and integrated care

Many chronic diseases share common risk factors that are preventable. Modifying these can reduce the risk of developing a chronic condition, leading to large health gains in the population through the reduction of illness and rates of death (see Chapter 8 'Prevention for a healthier future').

Chronic diseases are closely associated with modifiable risk factors such as smoking, physical inactivity, poor nutrition and the harmful use of alcohol. These behaviours contribute to the development of biomedical risk factors, including overweight and obesity, high blood pressure, and high cholesterol levels, which in turn lead to chronic disease (see Chapter 5 'Biomedical risk factors' and 'Behavioural risk factors' for further details). Seventy per cent of all cardiovascular disease mortality in Australia has been attributed to the combined effects of high blood pressure, high cholesterol and physical inactivity (Begg et al. 2007).

People often have combinations of risk factors, and as their number of risk factors increase, so does the likelihood of developing certain chronic diseases. For example, males with 5 or more risk factors are 3 times as likely to have COPD as males with 2 or fewer risk factors. Females with 5 or more risk factors are 3 times as likely to have had a stroke, and two and a half times as likely to have depression as females with 2 or fewer risk factors (AIHW 2012b).

Two risk factors that commonly occur together are risky alcohol drinking and smoking. In 2010, 38% of current smokers also consumed alcohol at risky levels, compared with only 12% of people who had never smoked (AIHW, forthcoming 2014a). Daily smoking is also more commonly reported by people with low levels of physical activity. People who are obese often also have high blood pressure (AIHW 2012b).

A group of risk factors, known collectively as the 'metabolic syndrome', greatly increases the risk of type 2 diabetes. This risk factor group comprises obesity, impaired fasting blood glucose, raised blood pressure, raised blood triglycerides and reduced HDL cholesterol.

The cumulative effect of risk factors magnifies the risk, with earlier and more rapid development of a condition, more complications and recurrence, a greater disease burden, and a greater need for management of the condition (AIHW 2012b).

A key focus of the Australian health system therefore is the prevention and better management of chronic disease to improve health outcomes. Many common chronic diseases are amenable to preventive measures such as changes in behaviour. These changes, together with timely and better medical treatments, are important in improving chronic disease health outcomes. Identifying populations most at risk and monitoring and evaluating preventive interventions are also important (AIHW 2011b).

There would seem to be great potential in an integrated and coordinated approach to chronic disease care using shared prevention, management and treatment strategies. Reducing obesity, for example, may prevent diabetes, hypertension, heart disease, and certain types of cancers. Assessing

the risk of cardiovascular disease on the basis of the combined effect of multiple risk factors (absolute cardiovascular disease risk) can lead to better management of modifiable risk factors through lifestyle changes and pharmacological therapy (National Vascular Disease Prevention Alliance 2012). These strategies all involve better delivery and coordination across the health-care continuum, from health promotion and prevention, to early detection where appropriate, and to primary, secondary and tertiary care. GPs and their teams can perform a key role in screening and prevention, and coordinating services (RACGP 2012). Such an approach can strengthen and transform health-care systems, resulting in more effective, efficient, and timely care (Standing Council on Health 2013).

The future for chronic disease

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 will lead to increasing numbers of people living with chronic diseases. Helping people to make good lifestyle choices at all stages of the life course can help to keep them in good health and prevent illness for as long as possible.

The growing chronic disease burden will require effective treatment of multiple chronic conditions and catering to complex health-care needs. Developing and implementing new and innovative treatment methods—including coordinated care and chronic disease management plans—holds great promise for future disease management (see Chapter 8 'Primary health care in Australia').

What is missing from the picture?

The availability of 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 data 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 in developing a picture of how chronic diseases affect people in Australia and the effectiveness of strategies.

Where do I go for more information?

More information on chronic diseases in Australia is available on the AIHW website at www.aihw.gov.au/chronic-diseases.

For specific chronic diseases, refer elsewhere in this chapter.

FEATURE ARTICLE

References

ABS (Australian Bureau of Statistics) 2013a. Australian Health Survey: first results, 2011–12. ABS cat. no. 4364.0.55.001. Canberra: ABS.

ABS 2013b. Australian Health Survey: updated results, 2011–12. ABS cat. no. 4364.0.55.003. Canberra: ABS.

ABS 2013c. Causes of death, Australia, 2011. ABS Cat. no. 3303.0. Canberra: ABS.

AIHW (Australian Institute of Health and Welfare) 2010. Contribution of chronic disease to the gap in adult mortality between Aboriginal and Torres Strait Islander and other Australians. Cat. no. IHW 48. Canberra: AIHW.

AIHW 2011a. Australia's welfare. Cat. no. AUS 142. Canberra: AIHW.

AIHW 2011b. Key indicators of progress for chronic disease and associated determinants: data report. Cat. no. PHE 142. Canberra: AIHW.

AIHW 2012a. Australia's health 2012. Australia's health series no. 13. Cat. no. AUS 156. Canberra: AIHW.

AIHW 2012b. Risk factors contributing to chronic disease. Cat. no. PHE 157. Canberra: AIHW.

AIHW 2012c. Multiple causes of death. Bulletin no. 105. Cat. no. AUS 159. Canberra: AIHW.

AIHW 2012d. Australia's food and nutrition 2012. Cat. no. PHE 163. Canberra: AIHW.

AIHW 2013. Health expenditure Australia 2011–12. Health and welfare expenditure series 50. Cat. no. HWE 59. Canberra: AIHW.

AIHW, forthcoming 2014a. Head and neck cancers in Australia. Canberra: AIHW.

AIHW, forthcoming 2014b. Trends in coronary heart disease mortality. Canberra: AIHW.

AIHW & AACR (Australasian Association of Cancer Registries) 2012. Cancer in Australia: an overview, 2012. Cancer series no. 74. Cat. no. CAN 70. Canberra: AIHW.

Amschler D H 2002. The alarming increase of type 2 diabetes in children. Journal of School Health 72:39–41.

AHMAC (Australian Health Ministers' Advisory Council) 2012. Aboriginal and Torres Strait Islander Health Performance Framework 2012 report. Canberra: AHMAC.

Beaglehole R et al. 2011. Priority actions for the non-communicable disease crisis. Lancet 377: 1438–47.

Begg S, Vos T, Barker B, Stevenson C, Stanley L, Lopez AD 2007. The burden of disease and injury in Australia 2003. Cat. no. PHE 82. Canberra: AIHW.

Britt H et al. 2013. General practice activity in Australia 2012–13. General practice series no. 33. Sydney: Sydney University Press.

Hunter D J & Reddy K S 2013. Noncommunicable diseases. New England Journal of Medicine 369: 1336–43.

IHME (Institute for Health Metrics and Evaluation) 2013. DALY estimates for Australasia. Viewed 1 November 2013, <www.healthmetricsandevaluation.org>.

Lynch J & Davey Smith G 2005. A life course approach to chronic disease. Annual Review of Public Health 26: 1–35.

National Vascular Disease Prevention Alliance 2012. Guidelines for the management of absolute cardiovascular disease risk. Canberra: NVDPA.

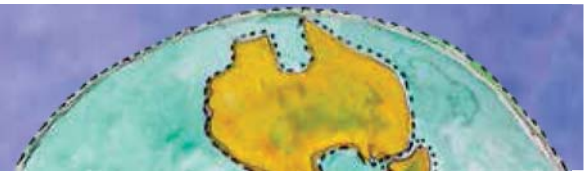
RACGP (Royal Australian College of General Practitioners) 2012. Guidelines for preventive activities in general practice, 8th edn. East Melbourne: RACGP.

Standing Council on Health 2013. National Primary Care Strategic Framework. Canberra: Commonwealth of Australia.

Swinburn BA, Caterson I, Seidell JC & James WPT 2004. Diet, nutrition and the prevention of excess weight gain and obesity. Public Health Nutrition 7(1A):123–46.

WHO (World Health Organization) 2011. Global status report on noncommunicable diseases 2010. Geneva: WHO.

4.3 Cancer in Australia



SNAPSHOT

SNAPSHOT

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. The abnormal cells can invade and damage the tissue around them, and spread to other parts of the body, causing further damage and eventually death. Despite a decline in cancer deaths and an increase in survival over time, cancer is still the second-most common cause of death in Australia—after cardiovascular diseases. Cancer has a significant impact on individuals, families and the health-care system and has had a prominent policy focus for decades.

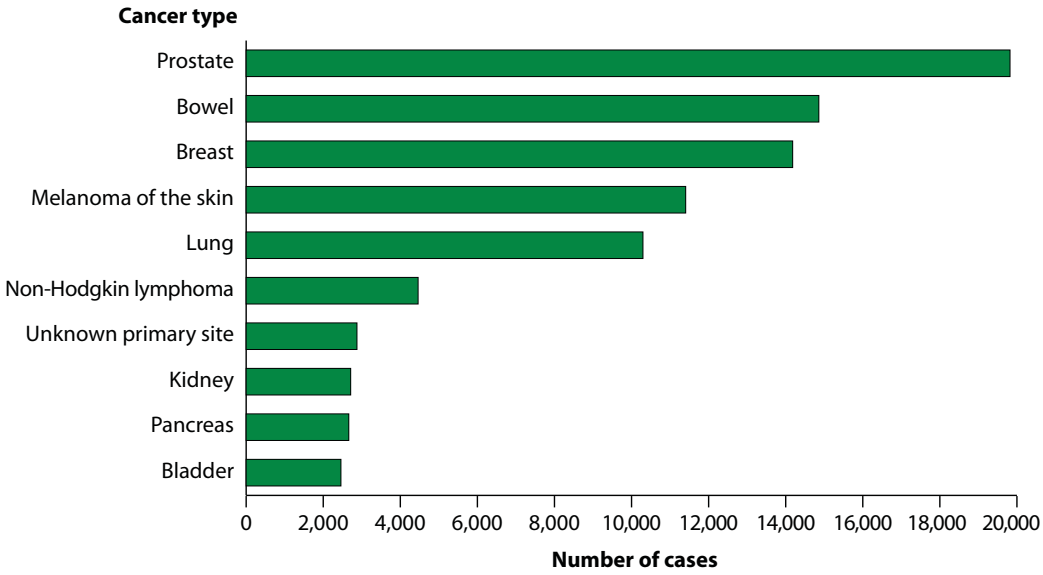
Incidence

- In 2010, 116,580 new cases of cancer were diagnosed in Australia (excluding basal and squamous cell carcinoma of the skin—the most common types of non-melanoma skin cancer). More than half (57%) of these cases were diagnosed in males.
- The risk of being diagnosed with any cancer before the age of 85 was 1 in 2 for males and 1 in 3 for females.
- The most commonly diagnosed cancers in 2010 were prostate in males (19,821), bowel (14,860), breast cancer in females (14,181), melanoma of the skin (11,405) and lung (10,296) (Figure 4.3).
- The number and rate of new cases of cancer have increased over time. Between 1990 and 2010, the age-standardised incidence rate (see Glossary) for total cancers rose by 16%, from 422 new cases per 100,000 people to 488 per 100,000. This was driven by rises in the incidence of prostate, breast and bowel cancers, due largely to improved detection and diagnosis of these cancers.
- The number of new cases of cancer diagnosed in Australia is projected to continue to rise over the next decade and is expected to reach 150,000 in 2020. This increase in the number of new cases, due primarily to population growth and ageing, is expected to be most evident among older populations.

Deaths

- In 2011, there were 43,221 deaths from cancer in Australia, accounting for 3 in 10 deaths. The risk of dying from cancer was 1 in 4 for males and 1 in 6 for females.
- The most common causes of cancer-related death in 2011 were lung (8,114 deaths), bowel (3,999), prostate in males (3,294), breast in females (2,937) and pancreatic (2,416) cancers.
- The number of cancer-related deaths has risen over time, but mortality rates have fallen. Between 1991 and 2011, the age-standardised mortality rate for all cancers combined fell by 17%, from 210 deaths per 100,000 people to 172 per 100,000. The fall in mortality rates was driven by falls in lung, prostate and bowel cancer death rates among males, and falls in breast and bowel cancer death rates among females.

Figure 4.3



Source: AIHW Australian Cancer Database 2010.

Incidence of the 10 most commonly diagnosed cancers, 2010

Survival

- In 2006–2010, people diagnosed with cancer had a 66% chance of surviving for at least 5 years compared with their counterparts in the general population (referred to as 5-year 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%.
- Five-year survival from all cancers increased over time, from 47% in 1982–1987 to 66% in 2006–2010. Some of the likely reasons for this include better diagnostic methods, earlier detection and improvements in treatment.
- The cancers with the largest survival gains were prostate cancer, kidney cancer and non-Hodgkin lymphoma. The cancers with a decline or no improvement in survival were bladder, larynx, lip and brain cancers, and chronic lymphocytic leukaemia.

Prevalence

- In 2007, about 1 in 28 living Australians had been diagnosed with cancer at some time in the previous 26 years (referred to as 26-year prevalence, see Glossary). This equates to 775,000 people, or 3.6% of the total population. The 26-year prevalence was highest for breast cancer (151,152 women), melanoma of the skin (136,016), prostate cancer (129,978 men) and bowel cancer (105,144).

Hospitalisations

- In 2011–12, there were more than 908,700 hospitalisations (see Glossary) for cancer or a cancer-related health service or treatment. Chemotherapy sessions accounted for 41% of these hospitalisations, followed by non-melanoma skin cancer (11%).

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 non-melanoma skin cancers. The AIHW and Cancer Australia 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, 2012*, *Cancer incidence projections: Australia, 2011 to 2020*, and *Cancer survival and prevalence in Australia: period estimates from 1982 to 2010*, are available for free download.

4.4 The changing cancer landscape

FEATURE ARTICLE

There have been many successes, and there are many remaining challenges, in cancer control. While the incidence of cancer is rising, the good news is that overall average mortality at the population level is falling and real improvements in survival are continuing.

These changes in the cancer landscape are not universal, and differ greatly by cancer type and population group. The overall average is not necessarily indicative or representative of individual experience, where a diagnosis of cancer is anything but 'good news'.

The observed rise in overall cancer incidence can be broadly attributed to advancements in early detection (through organised screening programs and better detection technology), the ageing population and changes in risk factor exposure. The observed fall in the overall cancer mortality rate can be mainly attributed to a combination of earlier detection (at a more treatable stage) and more effective treatments. The number of cancer-related deaths is attributable to changes in risk factor exposure and the ageing of the population.

The net result of increasing cancer incidence and decreasing overall mortality is more people living with cancer, that is, higher and gradually increasing prevalence due to increased survival in the population. Better survival rates for some cancers bring an increasing emphasis on living with, and after, a cancer diagnosis.

This article examines broadly some features of this changing landscape through:

- describing cancer and the current disease burden
- summarising the historical gains in cancer control
- estimating the future cancer disease burden and discussing emerging issues
- outlining areas where future gains could be made.

What do we know about cancer?

Box 4.1

Defining 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. There are several main types of cancer. Carcinoma is a cancer that begins in the skin or in tissues that line or cover internal organs. Sarcoma is a cancer that begins in bone, cartilage, fat, muscle, blood vessels, or other connective or supportive tissue. Leukaemia is a cancer that starts in blood-forming tissue, such as the bone marrow, and causes large numbers of abnormal blood cells to be produced and enter the blood. Lymphoma and multiple myeloma are cancers that begin in the cells of the immune system. Central nervous system cancers are cancers that begin in the tissues of the brain and spinal cord.

Source: National Cancer Institute 2014.

Cancer is a major cause of illness in Australia, with more than 116,500 people diagnosed with cancer in 2010 (excluding non-melanoma skin cancer), and around 43,200 dying from cancer in 2011 (see Box 4.1, Table 4.3). Cancer contributed 16% of the total disease burden in Australasia (Australia and New Zealand), based on findings from the Global Burden of Disease Study 2010. (For more information on the burden of disease, see Chapter 4 'Burden of disease'.)

In 2008–2009, the total health system expenditure in Australia on neoplasms (including cancer and non-cancerous tumours) was $4,526 million, an increase from $2,894 million in 2000–01, after adjusting for inflation (AIHW 2013). The majority of health system expenditure on cancer in 2008–09 was on hospital-admitted cancer services (79%), followed by prescription pharmaceuticals (12%) and out-of-hospital services (9%). Expenditure on national population screening programs was just over $332 million in 2008–09.

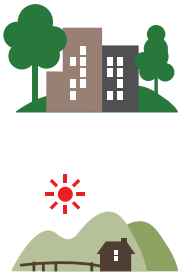
The cancer burden differs by sex, age and population group. These differences are summarised in Table 4.3.

Table 4.3: Cancer incidence, mortality and survival at a glance

	Incidence	Mortality	Survival
	There were 116,580 new cases of cancer in 2010 (excluding non-melanoma skin cancer), a rate of 487 per 100,000 people.	There were 43,211 deaths from cancer in 2011, a rate of 172 per 100,000 people.	In the period 2006–2010, 5-year relative survival for all cancers combined was 66%. That is, people diagnosed with cancer had a 66% chance of surviving at least 5 years compared with their counterparts in the general population.
	The incidence of all cancers combined was 1.4 times as high among males (585 per 100,000) compared with females (406 per 100,000).	Mortality from all cancers combined was 1.6 times as high among males (219 per 100,000) compared with females (137 per 100,000).	Females (67%) tended to experience slightly higher survival than males (65%) overall.
	Cancer can develop at any age but around 70% of all cancers are diagnosed in people aged 60 and over.	Deaths from cancer are most common among older people, with more than 80% of all deaths from cancer occurring in people aged 60 and over.	Survival decreased with age: from 86% among people aged 0–39 to 43% among those aged 80 and over.

continued

Table 4.3 (continued): Cancer incidence, mortality and survival at a glance

	Indigenous Australians were 1.1 times more likely to be diagnosed with cancer in 2004–2008 compared with their non-Indigenous counterparts.	Indigenous Australians were 1.5 times more likely to die from cancer in 2007–2011 compared with their non-Indigenous counterparts.	Indigenous Australians had lower 5-year relative survival (40%) in 1999–2007 compared with their non-Indigenous counterparts (52%).
	People living in areas of lower socioeconomic status had a higher incidence of all cancers combined (490 per 100,000) compared with people living in areas of higher relative socioeconomic status (482 per 100,000), in 2004–2008.	People living in areas of lower socioeconomic status had higher mortality from all cancers combined (172 per 100,000) compared with people living in areas of higher relative socioeconomic status (151 per 100,000), in 2006–2010.	People living in areas of lower socioeconomic status had lower 5-year relative survival (63%) compared with people living in areas of higher socioeconomic status (71%), in 2006–2010.
	Incidence rates of all cancers combined were higher for Australians living in *Inner regional* areas (504 per 100,000) than people living in *Outer regional* (495 per 100,000), *Major cities* (480 per 100,000) and *Remote* and *Very remote* areas (474 per 100,000), in 2004–2008.	Mortality rates for all cancers combined were higher for Australians living in *Remote* and *Very remote* areas (196 per 100,000) and *Outer regional* areas (193 per 100,000) than for those living in *Major cities* (171 per 100,000) and *Inner regional* areas (185 per 100,000), in 2006–2010.	Five-year survival from all cancers combined was highest among people living in *Major cities* (67%) compared with *Inner regional* (66%), *Outer regional* (65%) and *Remote* and *Very remote* areas (63%), in 2006–2010.

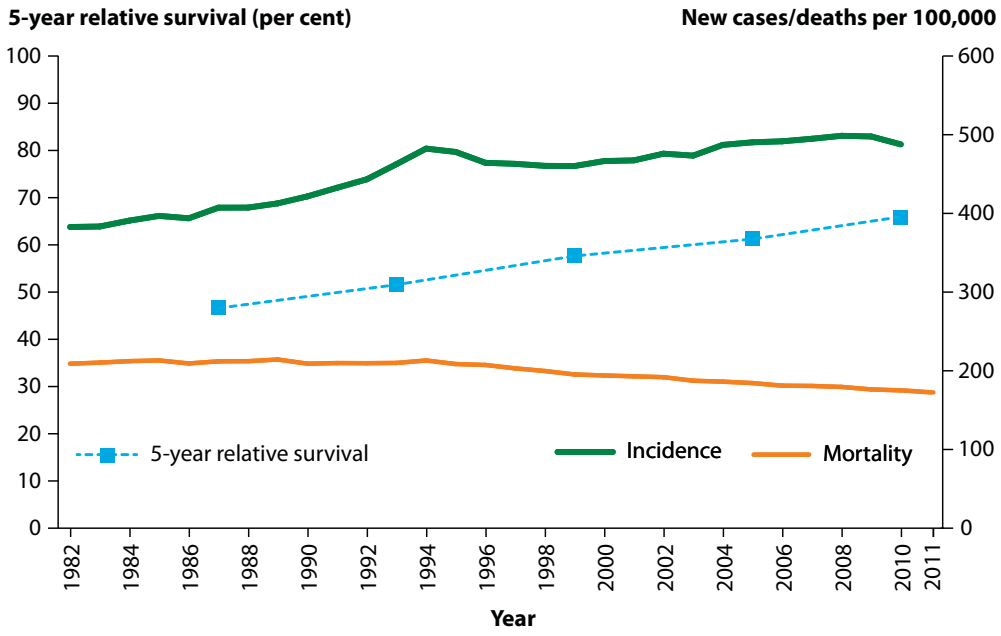
For more information, see Chapter 4 'Cancer in Australia'.

What has changed over time?

In Australia, there are some notable historical trends in cancer incidence, mortality and survival (Figure 4.4). The trend data presented here reflect the breadth (from first to most recent year) of available national data: 1982–2010 for incidence, 1968–2011 for mortality and 1982–1986 to 2006–2010 for survival.

The overall cancer incidence rate has on average increased by 0.9% per year between 1982 and 2010 (Figure 4.4). This increase reflects annual rises in the incidence of some of the most commonly diagnosed cancers such as prostate cancer, breast cancer and melanoma of the skin, as well as some rarer cancers such as liver and testicular cancers. In contrast, the incidence of some cancers, including lung, bladder and cervical, fell significantly in that same period. There has been a moderation in the overall trend in more recent years, with incidence rising by an average of 0.5% per year from 2001 to 2010.

Figure 4.4



Notes

1. Deaths registered in 2009 and earlier are based on the final version of cause of death data; deaths registered in 2010 and 2011 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. Data for 2010 have not been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010.
2. Data points for 5-year relative survival refer to the final year in each 5- or 6-year at-risk period: 1982–1987, 1988–1993, 1994–1999, 2000–2005, 2006–2010.

Sources: AIHW Australian Cancer Database 2010; AIHW National Mortality Database; AIHW 2012b.

Incidence (1982–2010), mortality (1982–2011) and 5-year relative survival (1982–1987 to 2006–2010) of all cancers combined, Australia

The good news is that despite the overall substantial increase in incidence, overall mortality on average from all cancers, including the cancers that are the leading causes of death, fell by 0.3% per year between 1968 and 2011 (Figure 4.4). This fall reflects substantial improvements in survival, thought to include substantial real gains in survival—that is, delaying death, and not only earlier diagnosis extending the measured time between diagnosis and death. There has been a gain in the overall trend in more recent years, with mortality falling by an average of 1.0% per year from 1991 to 2011.

Between 1982–1987 and 2006–2010, 5-year relative survival for all cancers combined rose from 46.9% to 66.1%, a rise of 41% across that period. This trend was observed for most, but not all, cancer types: survival from bladder, larynx and lip cancers fell, although the change was only significant for bladder cancer.

Changes in cancer incidence, mortality and survival have been shaped by a wide range of factors, including changes in exposure to the risk factors for cancer, improved primary prevention, advancements in cancer treatment, and for some cancers, earlier detection through organised screening programs (bowel, breast and cervical) and opportunistic testing (prostate) (Armstrong 2013).

Changes in exposure to risk factors

Changes in exposure to cancer risk factors at the population level can increase or decrease cancer incidence, which in turn may produce a parallel change in cancer mortality, noting the lag in time between exposure and the onset of cancer (Armstrong 2013). For most cancers, the causes are not fully understood; however, some causal factors are well recognised, and include:

- behavioural factors such as tobacco smoking, alcohol, diet, obesity and physical inactivity
- family history, genetic susceptibility and reproductive and hormonal factors
- occupational and environmental exposures (for example, radiation, asbestos, ultraviolet light and chronic infection)
- medical and iatrogenic factors (AIHW & AACR 2012; IARC 2008; WCRF & AICR 2007).

Selected cancers strongly influenced by changes in exposure to known and quantifiable risk factors in previous decades include lung and stomach cancers, melanoma of the skin and cervical cancer.

Tobacco smoking is the largest single risk factor for lung cancer in Australia, and is responsible for about 90% of lung cancers in males and 65% in females (AIHW: Ridolfo & Stevenson 2001). Lung cancer incidence and mortality among males has declined steadily since the 1980s, which is attributed to the steadily declining rate in daily tobacco smoking: from 58% in 1964 to 16% in 2010. In contrast, for females, lung cancer incidence and mortality among females continue to rise. This is attributable to a later turnaround in smoking rates: from a high of 33% in 1976 to 14% in 2010 (AIHW 2012a; OECD 2013).

Ultraviolet radiation is the leading risk factor for melanoma of the skin. In Australia, the incidence of melanoma of the skin rose between 1982 and 2010—at around 5.0% per year during the 1980s, moderating to 2.8% per year after that. The initial rapid increase is partly attributable to individual behaviour and the use of solariums, resulting in increased exposure to solar ultraviolet radiation (Armstrong & Kricker 2001; Cust et al. 2011). The moderated trend after the 1980s is consistent with increased awareness of skin cancer and improved sun protective behaviours as a result of extensive skin cancer prevention programs dating back to the 1970s (AIHW 2012a).

The major causes of stomach cancer are the bacterium *Helicobacter pylori*, poor nutrition and smoking. There have been continuous falls in stomach cancer incidence between 1982 and 2010, and stomach cancer mortality between 1968 and 2011—2% and 3% per year, respectively. The falls are largely attributable to a decline in the prevalence of *H. pylori*, and to dietary improvements and the decline in smoking rates (Armstrong 2013). Further improvements in incidence and mortality are expected as a result of the continued decreasing trend in daily smoking.

Chronic infection with the human papillomavirus (HPV) is the cause of around 70–80% of all cervical cancers (Brotherton 2008). The AIHW and the Victorian Cytology Service recently conducted a study to evaluate the effectiveness of the HPV vaccine against cervical abnormalities among school-aged women (Gertig et al. 2013). This study demonstrated that the population-based HPV vaccination program in Australia is preventing cervical pre-cancer lesions in young women, with a fall in cervical abnormalities after the program was implemented in 2007 (Gertig et al. 2013). The effect of the vaccine is expected to increase over time as women vaccinated at age 12–13 become eligible to be screened in the cervical screening program and enter the age ranges where cancer incidence is more common. This is an area where gains may also follow for other cancers with a similar viral aetiology (see Glossary) to cervical cancer.

Early detection through organised screening

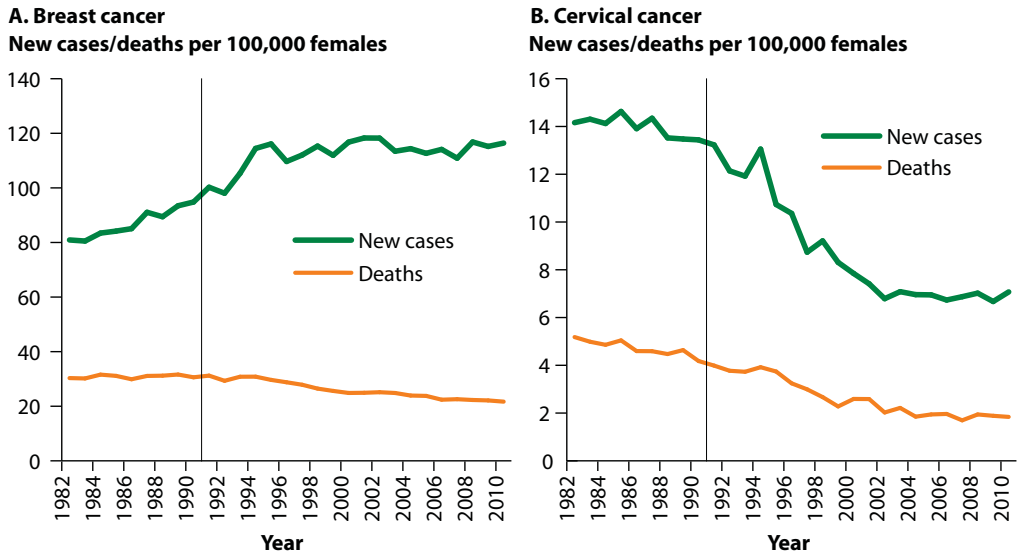
Australia has national population screening programs for 3 cancers—breast, cervical and bowel cancer. BreastScreen Australia was introduced in 1991, the National Cervical Screening Program (NCSP) also started in 1991, and the National Bowel Cancer Screening Program (NBCSP) was introduced in 2006.

These screening programs aim to reduce illness and death from these cancers through early detection of cancer and pre-cancerous abnormalities and effective follow-up treatment. Since it was introduced, BreastScreen Australia has had a major impact in moderating an increasing incidence trend and in contributing to falling mortality in breast cancer. Similarly, the NCSP has had a major impact in enhancing decreasing trends for cervical cancer incidence and mortality (Figure 4.5).

The introduction of the BreastScreen Australia program resulted in an initial rapid increase in the number of breast cancers diagnosed in 1992–1994, followed by a more moderate increasing trend to 2010, accompanied by a steady decline in breast cancer mortality from 1994 (Figure 4.5A). The introduction of the NCSP resulted in a rapid decline (from an already decreasing trend) in cervical cancer incidence from 1991 to 2002, followed by a more stable trend to 2010 and a steady decline in cervical cancer mortality from 1991 to 2004, followed by a stable trend to 2010 (Figure 4.5B). A similar effect from the NBCSP is expected for bowel cancer in the longer term.

For more information on cancer screening programs, see Chapter 8 'Cancer screening in Australia'.

Figure 4.5



Notes

1. Deaths registered in 2008 and earlier are based on the final version of cause of death data; deaths registered in 2009 and 2010 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. Data for 2010 have not been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010.
2. The solid vertical line at 1991 indicates the introduction of the national screening programs.

Sources: AIHW Australian Cancer Database 2010; AIHW National Mortality Database.

Incidence and mortality of breast cancer (A) and cervical cancer (B), Australia, 1982–2010

Improvements in treatment

Broadly, a variety of improvements in cancer treatments are thought to have led to improvements in cancer outcomes, particularly decreasing mortality (improved survival). These include: advances in imaging and technology used to develop and administer treatments; more focused or targeted therapies; multi-disciplinary approaches to treatment; more options in, and access to, treatment settings; and clinical trials for patients.

Examples of improvements include:

- the use of platinum-based chemotherapy, credited with the fall in mortality from testicular cancer (Einhorn 1981)
- multi-disciplinary use of chemotherapy and radiotherapy, effecting a reduction in mortality from rectal cancer (Philip et al. 1995; Roh et al. 2009; Sauer et al. 2012; Woods et al. 2001)

- the availability of and participation in clinical trials, a significant factor in reducing mortality from childhood cancers (Stiller et al. 2012)
- the advent of targeted, precision or personalised treatments, such as Hereceptin for HER-2 type breast cancers, leading to improved survival from that breast cancer sub-type (Romond et al. 2005).

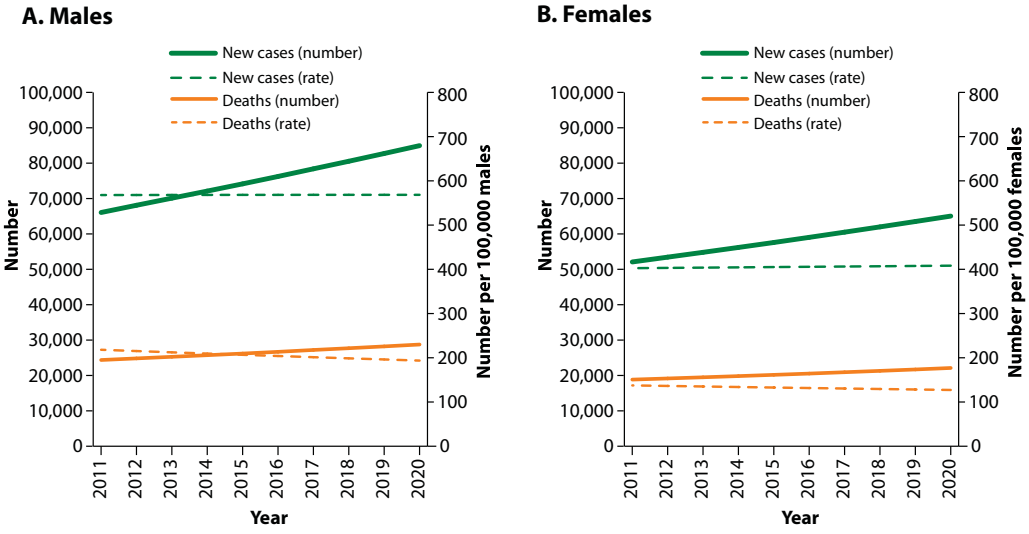
What might the future bring?

Projected incidence and mortality

Extrapolation of historical trend data for all cancer incidence (1982 to 2007) and mortality (1968 to 2010) shows that between 2011 and 2020:

- numbers of new cases and deaths are expected to rise for both males and females
- the incidence rate among females is expected to rise, although the change will not be significant
- the incidence rate among males is not expected to change
- the mortality rate is expected to fall for both males and females (Figure 4.6).

Figure 4.6



Note: Projected years 2011 to 2020 based on actual data from 1982 to 2007 (incidence) and 1968 to 2010 (mortality).
Sources: AIHW Australian Cancer Database 2010; AIHW National Mortality Database.

Projected cancer incidence and mortality among males (A) and females (B), all cancers combined, Australia, 2011 to 2020

Based on these projections, in 2020:

- 150,000 people are expected to be diagnosed with cancer, an increase of 29% from 2010
- 50,800 people are expected to die from cancer, an increase of 18% from 2010.

Emerging issues

The combined effect of several factors—increasing incidence, decreasing mortality in some cancers, high and improving survival for some cancers, earlier diagnosis and detection, and developments in treatment and management of cancer—is a steady increase in the proportion of the population who have been diagnosed with cancer. This population is also termed the prevalent or survivorship population.

In 2007, there were around 775,000 Australians alive who had been diagnosed with cancer in the 26 years since incidence data were first collected at a national level (from 1982), accounting for 3.7% of the total Australian population in that year (AIHW 2012b). It is likely, based on the continuation of current projected trends in incidence and mortality, that this population will continue to slowly rise over time, with an accompanying rise in the economic and social burden of cancer.

This will all mean, now and into the future, major changes in the experience of cancer for some individuals, their families and carers (Hawkins et al. 2010; Quality Health 2013). It also means a challenge for the health system in responding to these changes, particularly with an ageing population.

These changes and challenges are being seen now in emerging issues such as the survivorship experience, caring for people with cancer, ageing with cancer, recurrent and multiple primary cancers, and cancer in the presence of other conditions (comorbidity).

Survivorship experience

Survivorship is increasingly recognised as beginning at diagnosis and continuing long after treatment ends. It is more than simply not dying from cancer, and focuses on living with, and after, a cancer diagnosis (Jackson et al. 2013). Cancer survivors often face emotional, physical and financial challenges as a result of the detection, diagnosis and treatment of cancer. In the longer term, people diagnosed with cancer:

- may experience enduring physical symptoms following their treatment, such as late effects of radiation or post-surgical loss of function
- can be at risk of recurrence, that is, the return of the same primary cancer after treatment and after a period during which cancer cannot be detected
- may be at increased risk of developing other primary cancers due to the effects of treatment (for example, developing leukaemia after administration of alkylating agents), underlying genetics, and/or other risk factors for cancer (Youlden & Baade 2011).

These longer-term risks, and the associated stressors and reduced quality of life for cancer survivors and their family, friends and caregivers, highlight the importance of follow-up health care and of survivorship as part of the cancer control continuum (Hawkins et al. 2010; Jackson et al. 2013).

Cancer, caring and ageing

The increasing size of the population who have had cancer also means a corresponding increase in the number of people caring for someone through cancer diagnosis, treatment and remission, often into old age. As some cancer treatment and care modalities move away from the acute (hospital) setting and into outpatient, primary, nurse-led or community care settings, greater support for and recognition of informal carers of people with cancer will be needed (Access Economics 2010; Cancer Council Australia & Clinical Oncological Society of Australia 2010). Many cancer support organisations and groups recognise the importance and growing size of this population, and provide support to carers, siblings and friends of people with cancer (Cancer Council Victoria 2011). This shift away from the acute care setting is also apparent in palliative care, with a South Australian study reporting that 70% of respondents would prefer to die at home than elsewhere, if faced with a terminal illness such as cancer (Foreman et al. 2006). (For more information on Palliative care, see Chapter 6 'Palliative care in Australia'.)

The increasing size of the aged population in Australia is a contributing factor to the projected increase in the number of new cancer cases and cancer-related deaths to 2020. Ageing, in the context of survivorship and the increasing prevalence population, also increases the likelihood of:

- recurrent (returning) cancers, as people live longer and into old age after a cancer diagnosis
- the occurrence of multiple primary cancers, with ageing compounding the effect of existing cancer risk factors (that lead to the first primary cancer)
- cancer as a comorbid chronic disease.

The last of these, cancer and comborbidity, is discussed briefly below.

Cancer and comorbidity

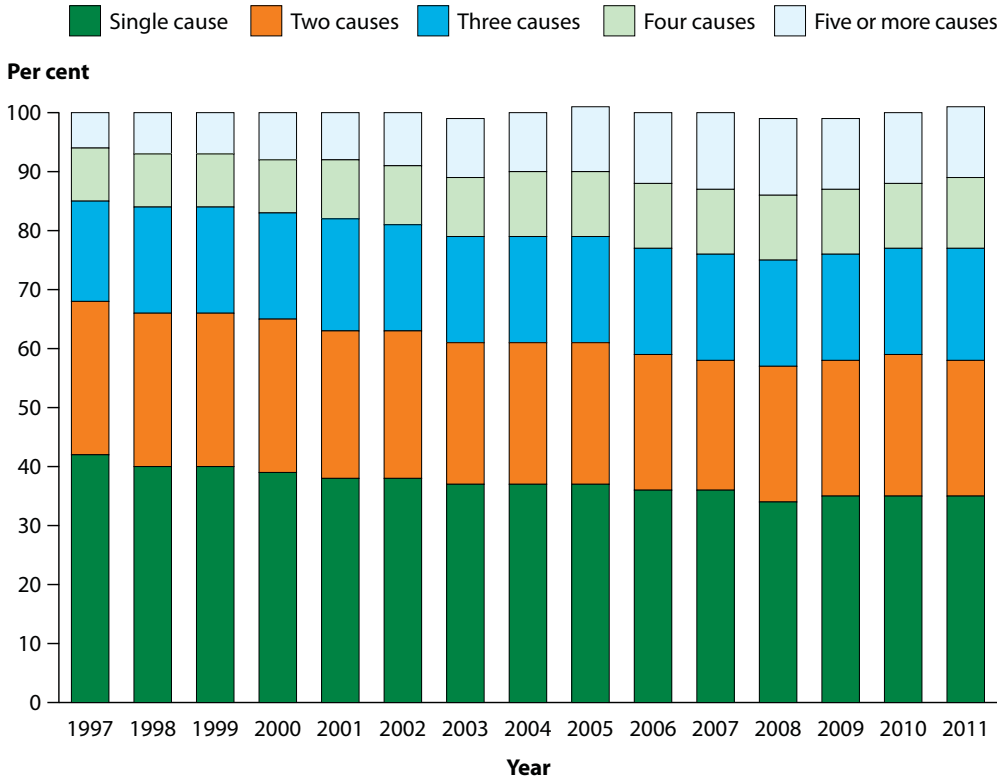
As people survive longer with cancer it will become increasingly important for cancer to be considered in the context of patients' other ongoing health conditions. While it is not possible with current available data to examine the incidence and prevalence of cancer as a comorbid condition, it is possible to use mortality data to analyse the proportion of Australians who have both cancer and other conditions recorded as causes of death.

Current monitoring tends to focus on cancer as an *underlying* cause of death. However, this type of analysis excludes those deaths where cancer was an *associated* cause of death, that is, any cause other than the underlying cause. (For more information on multiple causes of death, see Chapter 3 'Multiple causes of death in Australia'.)

In 2011, cancer was recorded as the underlying cause in 43,221 deaths, accounting for 29% of all deaths in that year. Cancer was recorded as an *associated* cause in an additional 6,299 deaths, where the most common underlying causes were chronic ischaemic heart disease, acute myocardial infarction or other chronic obstructive pulmonary disease. In total, 49,520 deaths in that year (34%) included cancer as a cause of death (either underlying or associated).

When cancer was recorded as a cause of death (either underlying or associated), it was the *underlying* cause in 87% of those deaths. Of these, 35% had only 1 cause recorded (the *underlying* cause), followed by 23% with 2 causes, 19% with 3 causes and 12% each with 4 and 5 or more causes. The proportion of deaths reported as being caused by 3 or more causes rose from 32% in 1997 to 42% in 2011 (Figure 4.7).

Figure 4.7



Note: Deaths registered in 2009 and earlier are based on the final version of cause of death data; deaths registered in 2010 and 2011 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. Data for 2010 have not been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010.

Source: AIHW National Mortality Database.

Number of causes of death when cancer is the underlying cause of death, 1997 to 2011

Where can future gains be made?

The data presented in the section 'What has changed over time?' indicate that, overall, there have been rises in cancer incidence, and falls in cancer mortality. This indicates that efforts in cancer control in recent decades have been successful in preventing and delaying deaths from cancer. Based on the latest projections presented in the section 'What might the future bring?', cancer incidence rates are expected to remain steady while cancer mortality rates are expected to continue to fall. For further gains to be made in cancer control, all aspects of the cancer control continuum will need attention, from primary prevention through to survivorship care. Areas where it appears that significant gains could be made are in risk reduction (primary prevention), early detection and multi-disciplinary care.

Risk reduction (primary prevention)

Reducing the risk of cancer can be achieved by reducing the prevalence of the genomic, modifiable, environmental and infectious risk factors for cancer in the population. Significant gains have already been achieved through control of modifiable risk factors such as tobacco smoking and sun exposure, and infectious risk factors such as HPV and *H.pylori*. Future approaches could build on these successes to focus on reducing modifiable risk factors such as abdominal overweight and obesity, alcohol and sedentary behaviour, and infectious risk factors such as hepatitis. Opportunities also exist in emerging technologies such as genome sequencing, which allows individuals to discover, and take appropriate preventive action to reduce or remove, their inherent cancer risk. (For more information on primary prevention, see Chapter 5 'Behavioural risk factors' and Chapter 8 'Prevention for a healthier future'.)

Early detection

Detecting cancer earlier, when it is most treatable and outcomes are likely to be better, has a significant impact on treatment outcomes and survival. Significant gains have already been achieved through the 3 existing population-based screening programs. These gains could be built on by implementing risk-based targeted screening programs and activities, expanding the existing screening programs (such as the planned expansion of the NBCSP) and investigating the potential for screening programs for other cancers where appropriate. (For more information on the existing national cancer screening programs in Australia, see Chapter 8 'Cancer screening in Australia'.)

Coordinated care models

Helping people with a cancer risk factor, pre-cancerous condition or cancer to get well and stay well will have a significant impact across the cancer continuum. Australia is fortunate in having evidence-based guidelines for all major cancers that are regularly reviewed and updated. Using standardised and coordinated approaches to survivorship care may help reduce the effect of risk factors, slow or prevent the progression of pre-cancerous conditions to cancer, improve treatment outcomes (including adverse and late effects) and reduce adverse psychosocial effects related to cancer diagnosis and treatment (Jackson et al. 2013).

What is missing from the picture?

In Australia, we are fortunate in having access to complete, timely and quality national cancer incidence and mortality data. However, there are broad areas for improvement, as outlined below.

Gaps in cancer data and information include areas where the data are:

- not available, for example, the incidence of non-melanoma skin cancers and cancer staging data
- incomplete, or not sufficient for national reporting purposes, for example, Indigenous status data.

Gaps in cancer analysis and reporting include areas where data are:

- not yet available for analysis, for example, Indigenous trends over time
- only now becoming available for analysis, for example, longitudinal cancer incidence data for recurrent and multiple primary cancer analyses
- available but require linkage, for example, differences in cancer outcomes for people who participate in screening programs compared with those who do not.

Improvements in cancer data completeness, quality and availability will help provide a stronger evidence base on emerging cancer issues, the current and planned cancer control interventions, and future trends.

Where do I go for more information?

More information on cancer in Australia is available at the AIHW website at www.aihw.gov.au/cancer.

References

Access Economics 2010. The economic value of informal care in 2010. Melbourne: Access Economics and Carers Australia.

AIHW (Australian Institute of Health and Welfare) 2012a. Cancer incidence projections: Australia, 2011 to 2020. Cancer Series no. 66. Cat. no. CAN 62. Canberra: AIHW.

AIHW 2012b. Cancer survival and prevalence in Australia: period estimates from 1982 to 2010. Cancer series no. 69. Cat. no. CAN 65. Canberra: AIHW.

AIHW 2013. Health system expenditure on cancer and other neoplasms in Australia 2008–09. Cancer series no. 81. Cat. no. CAN 78. Canberra: AIHW.

AIHW & AACR (Australasian Association of Cancer Registries) 2012. Cancer in Australia: an overview, 2012. Cancer series no. 74. Cat. no. CAN 70. Canberra: AIHW.

AIHW: Ridolfo B & Stevenson C 2001. The quantification of drug-caused mortality and morbidity in Australia, 1998. Drug statistics series no. 7. Cat. no. PHE 29. Canberra: AIHW.

Armstrong B 2013. Time trends in cancer incidence and mortality. Medical Journal of Australia 199(9):570–1.

Armstrong B & Kricker A 2001. The epidemiology of UV induced skin cancer. Journal of Photochemistry and Photobiology B: Biology 63(1–3):8–18.

Brotherton J 2008. How much cervical cancer in Australia is vaccine preventable? A metaanalysis. Vaccine 26:250–6.

Cancer Council Australia & Clinical Oncological Society of Australia 2010. Submission: Towards a National Carer Strategy.

Cancer Council Victoria 2011. Support for carers. Melbourne: Cancer Council Victoria. Viewed 13 February 2014, <http://www.cancervic.org.au/living-with-cancer/information_for_carers/carers-support>.

Cust A, Armstrong B, Goumas C, Jenkins M, Schmid H, Hopper J et al. 2011. Sunbed use during adolescence and early adulthood is associated with increased risk of early-onset melanoma. International Journal of Cancer 128.

Einhorn L 1981. Testicular cancer as a model for a curable neoplasm: the Richard and Hinda Rodenthal Foundation Award Lecture. Cancer Research 41:3275–80.

Foreman L, Hunt R, Luke C & Roder D 2006. Factors predictive of preferred place of death in the general population of South Australia. Palliative Medicine 20:447–53.

Gertig D, Brotherton J, Budd A, Drennan K, Chappell G & Saville A 2013. Impact of a population-based HPV vaccination program on cervical abnormalities: a data linkage study. BMC Medicine 11:227.

Hawkins N, Smith T, Zhao L, Rodriguez J, Berkowitz Z & Stein K 2010. Health-related behavior change after cancer: results of the American Cancer Society's Studies of Cancer Survivors. Journal of Cancer Survivorship 4:20–32.

IARC (International agency for Research on Cancer) 2008. World cancer report 2008. Lyon: IARC.

Jackson J, Scheid K & Rolnick S 2013. Development of the Cancer Survivorship Care Plan: What's next? Life after cancer treatment. Clinical Journal of Oncology Nursing 17(3):280–4.

National Cancer Institute 2014. NCI Dictionary of cancer terms. National Cancer Institute at the National Institutes of Health. Viewed 10 January 2014, <http://www.cancer.gov/dictionary/>.

National Lung Screening Trial Research Team, Aberle D, Adams A, Berg C, Black W, Clapp J et al. 2011. Reduced lung-cancer mortality with low-dose computed tomographic screening. New England Journal of Medicine 365(5):395–409.

OECD (Organisation for Economic Co-operation and Development) 2013. OECD.stat. Paris: OECD. Viewed 4 December 2013, <http://stats.oecd.org/index.aspx?queryid=24879>.

Philip T, Guglielmi C, Hagenbeek A, Somers R, Van der Lelie H, Bron D et al. 1995. Autologous bone marrow transplantation as compared with salvage chemotherapy in relapses of chemotherapy-sensitive non-Hodgkin's lymphoma. New England Journal of Medicine 333(23):1540–5.

Quality Health 2013. National Cancer Patient Experience Survey 2012–13 National Report. London: NHS (National Health Service) England.

Roh M, Colangelo L, O'Connell M, Yothers G, Deutsch M, Allegra C et al. 2009. Preoperative multimodality therapy improves disease-free survival in patients with carcinoma of the rectum: NSABP R-03. Journal of Clinical Oncology 27(31):5124–30.

Romond E, Perez E, Bryant J, Suman V, Geyer CJ, Davidson N et al. 2005. Trastuzumab plus adjuvant chemotherapy for operable HER2-positive breast cancer. New England Journal of Medicine 353(16):1673–84.

Sauer R, Liersch T, Merkel S, Fietkau R, Hohenberger W, Hess C et al. 2012. Preoperative versus postoperative chemoradiotherapy for locally advanced rectal cancer: results of the German CAO/ARO/AIO-94 randomized phase III trial after a median follow-up of 11 years. Journal of Clinical Oncology 30(16):1926–33.

Stiller C, Kroll M & Pritchard-Jones K 2012. Population survival from childhood cancer in Britain during 1978–2005 by eras of entry into clinical trials. Annals of oncology 23:2464–69.

WCRF (World Cancer Research Fund) & AICR (American Institute for Cancer Research) 2007. Food, nutrition, physical activity and the prevention of cancer: a global perspective. Washington: AICR.

Woods W, Neudorf S, Gold S, Sanders J, Buckley J, Barnard D et al. 2001. A comparison of allogeneic bone marrow transplantation, autologous bone marrow transplantation, and aggressive chemotherapy in children with acute myeloid leukemia in remission. Blood 97(1):56–62.

Youlden D & Baade P 2011. The relative risk of second primary cancers in Queensland, Australia: a retrospective cohort study. BMC Cancer 11:83.

4.5 Arthritis and other musculoskeletal conditions

SNAPSHOT

Arthritis and other musculoskeletal conditions, such as back problems and osteoporosis, affect the bones, muscles and joints.

Many Australians, young and old, are affected by these conditions, which vary in duration, severity, complications and associated disability, and can severely affect a person's health and quality of life. This places a substantial burden on the community, including through the use of hospital and other health services and lost productivity due to pain and disability.

How common are these conditions?

In Australia in 2011–12:

- An estimated 6.1 million people (28% of the total population) had arthritis and/or another musculoskeletal condition.
- Arthritis was the most common condition, affecting 3.3 million people (15% of the population), including 8% with osteoarthritis and 2% with rheumatoid arthritis. The prevalence is higher in females than males (18% compared with 12%) and increases with age (affecting 52% of people aged 75 or over).
- Back problems and disc disorders affect about 2.8 million people (13% of the population). The rates are highest among people aged 65–74.
- An estimated 725,500 people (3% of the population) reported that they had been diagnosed with osteoporosis or low bone density (osteopenia). Most cases were reported by women (82%) and people aged 55 and over (83%) (ABS 2012). As these conditions have no overt symptoms, the figures may be underestimated.
- An estimated 64,200 children aged 0–14 had arthritis or another musculoskeletal condition (ABS 2012). Juvenile arthritis affected less than 1% of Australian children.

Impact

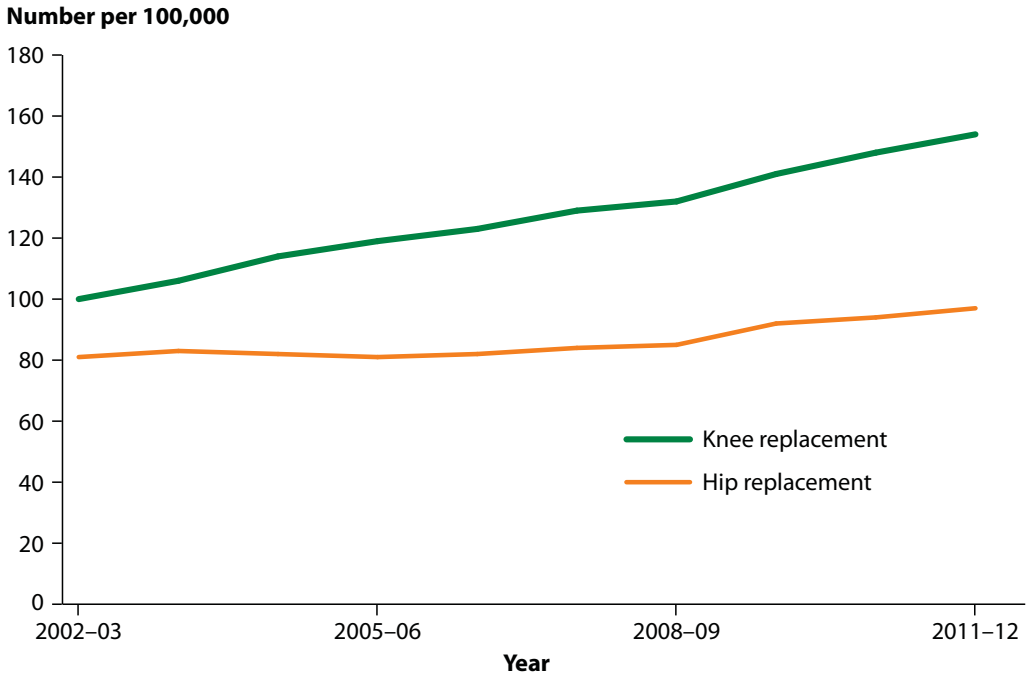
People with arthritis and other musculoskeletal conditions were more likely to report:

- limitations in performing core activities (particularly self-care and mobility) than the overall population (44% compared with 15%)
- high or very high psychological distress (17%) than people without these conditions (9%)
- experiencing mental disorders than those without these conditions (1.5 times as high).

Health care

- These conditions are predominantly managed in primary health care settings by a range of health professionals and involving a combination of medication, physical therapy, self-management education and (where necessary) referral to specialist care.
- Survey data suggest these conditions were managed by general practitioners in about 18 per 100 patient encounters in 2012–13 (Britt et al. 2013).
- In 2011–12, there were 494,228 hospitalisations of people with a principal diagnosis of a musculoskeletal condition.
- There were 62,751 total joint replacements performed (38,679 knee and 24,072 hip) in people with osteoarthritis in 2011–12. Knee replacement was most common among females aged 75–79. Hip replacement was more common among males up to the age of 59 and females aged 60 and over.
- The number and rate of total joint replacements increased over the 10 years to 2011–12 (see Figure 4.8). The overall rate of knee replacement increased by 54% and hip replacement by 20%.

Figure 4.8



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

Source: AIHW National Hospital Morbidity Database.

Trends in total knee and hip replacements for osteoarthritis, 2002–03 to 2011–12

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 no information about the use of vitamins, nutritional supplements and over-the-counter pharmaceuticals, such as paracetamol, which are often used to manage musculoskeletal conditions (RACGP 2009a, 2009b, 2010). Prescription pharmaceutical data can be used in some specific circumstances to better understand management, but is limited because it lacks information about the diagnosis for which the medication was prescribed.

There is also a substantial lack of data on the impact of these conditions, for example, in terms of quality of life and costs (although there are some estimates of direct health expenditure).

Where do I go for more information?

More information on arthritis and other musculoskeletal conditions in Australia is available at www.aihw.gov.au/arthritis-and-musculoskeletal-conditions/. The report *When musculoskeletal conditions and mental disorders occur together* is available for free download. More information will also be available in the forthcoming AIHW reports *Arthritis and other musculoskeletal conditions across the life stages* and *Data sources for monitoring arthritis and other musculoskeletal conditions*.

References

ABS (Australian Bureau of Statistics) 2012. Australian Health Survey: first results. ABS cat. no. 4364.0.55.001. Canberra: ABS.

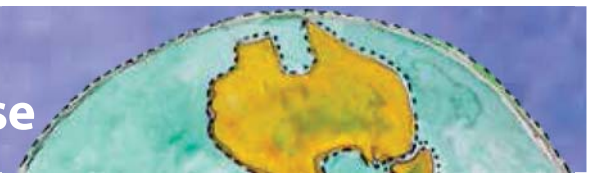
Britt H, Miller G, Henderson J, Bayram C, Valenti L, Harrison C et al. 2013. General practice activity in Australia 2012–13. General practice series no. 33. Sydney: Sydney University Press.

RACGP (The Royal Australian College of General Practitioners) 2009a. Clinical guideline for the diagnosis and management of early rheumatoid arthritis. Melbourne: RACGP.

RACGP 2009b. Clinical guideline for the diagnosis and management of juvenile idiopathic arthritis. Melbourne: RACGP.

RAGCP 2010. Clinical guideline for the prevention and treatment of osteoporosis in postmenopausal women and older men. Melbourne: RACGP.

4.6 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 2 major clinical forms of CHD: *heart attack*—an acute life-threatening event where the blood vessel is completely blocked, requiring prompt treatment; and *angina*—a chronic condition where there is a temporary deficiency in the blood supply. Although angina is less severe than a heart attack, people with the condition are at increased risk of heart attack or sudden cardiac death (see Glossary).

CHD kills 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 pressure, high blood cholesterol, physical inactivity, poor nutrition and obesity (see Chapter 5 'Biomedical risk factors' and 'Behavioural risk factors').

How common is coronary heart disease?

- In 2011–12, an estimated 585,900 Australians had CHD, with the condition being more common in men (3.3%) than women (2.0%) and among those aged 70 and over (15% compared with 2.2% for those aged 25–69) (ABS 2013).
- In 2011, an estimated 69,900 people aged 25 and over had a heart attack. There has been a 20% fall in heart attack rates over the last 5 years (age-standardised rate of 427 per 100,000 people in 2011 compared with 534 in 2007) (see Chapter 9 'Indicators of Australia's health' for more information).

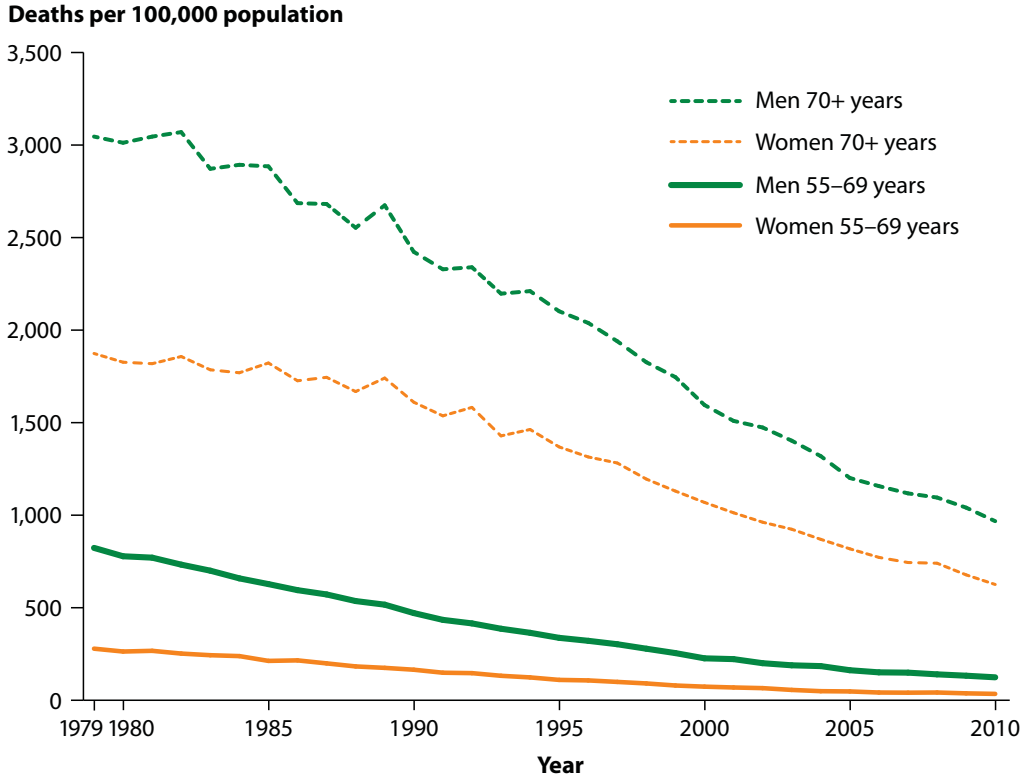
Deaths

- In 2011, there were 21,500 deaths with CHD recorded as the underlying cause of death. CHD contributed to 15% of all deaths in Australia and almost 1 in 2 cardiovascular disease deaths.
- CHD death rates have fallen by 73% over the last 3 decades; however, the rate of decline has varied over time and across age groups. For some age groups, CHD death rates continue to fall at accelerated rates (such as for those aged 70 and over), while for others, such as the 55–69 age group, there has been a levelling-off or plateauing over the last 5 years (Figure 4.9).

Health care

- In 2011–12 there were 153,700 hospitalisations for CHD (an age-standardised rate of 615 per 100,000 population), a 28% decline from 1993–94 when the age-standardised rate was 859 per 100,000.
- The downward trend in CHD hospitalisations was similar for men and women (27% and 31%, respectively), although men are hospitalised at much higher rates than women.

Figure 4.9



Notes

1. Rates have been age-standardised to the 2001 Australian population.
2. Deaths registered in 2008 and earlier are based on the final version of cause of death data; deaths registered in 2009 and 2010 are based on the revised and preliminary versions, respectively, and are subject to further revision by the ABS. Data for 2010 have not been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010.

Source: AIHW forthcoming.

Trends in coronary heart disease death rates among people aged 55 and over, 1979–2010

Prevention

Significant reductions in CHD deaths can be attributed to improvements in medical and surgical treatment. These include better emergency care and early identification of risk, the increasing use of antithrombotic and blood pressure- and blood cholesterol-lowering drugs, and cardiac procedures that restore blood flow to the heart by removing or bypassing blockages. Reductions in risk factors, such as tobacco smoking, high blood cholesterol and high blood pressure, have also contributed to these declines.

Variations among population groups

- The burden of CHD is greater in Aboriginal and Torres Strait Islander people than in other Australians—rates of heart attack events in adults aged 25 and over were 2.6 times as high in 2011.
- CHD death rates are also higher for Indigenous adults compared with other Australian adults (2.0 and 1.6 times as high for men and women, respectively, in 2009–2010).
- CHD death rates were 1.4 times as high for adults living in the lowest socioeconomic status (SES) groups compared with the highest SES groups in 2007.

What is missing from the picture?

There are no reliable national and jurisdictional data on the number of new cases of CHD each year. Consequently, proxy measures have been developed that combine hospital and mortality data to estimate new cases of heart attack (including unstable angina, also known as 'acute coronary syndrome').

More data on the care pathways of patients with CHD as they move through the health system, and on the medicines prescribed in the various settings, could lead to better identification of any gaps in health care, and to potentially better care overall.

Where do I go for more information?

The following reports are available for free download on the AIHW website:

Cardiovascular disease: Australian facts 2011 and *Health care expenditure on cardiovascular diseases 2008–09*.

Two forthcoming AIHW reports of interest are *Cardiovascular, diabetes and kidney disease: Australian facts 2014* and *Coronary heart disease mortality trends in age groups and populations*.

References

ABS (Australian Bureau of Statistics) 2013. Australian Health Survey: updated results, 2011–2012. ABS cat. no. 4364.0.55.003. Canberra: ABS.

AIHW, forthcoming. Coronary heart disease mortality trends in age groups and populations. Canberra: AIHW.

4.7 Stroke

SNAPSHOT

Stroke occurs when an artery supplying blood to the brain either suddenly becomes blocked (ischaemic stroke) or begins to bleed (haemorrhagic stroke) (see Glossary).

This may result in part of the brain dying, leading to sudden impairment that can affect 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.

In many but not all cases stroke is preventable because many of its risk factors are modifiable, such as high blood pressure, physical inactivity, abdominal obesity and tobacco smoking (O'Donnell et al. 2010) (see Chapter 5 'Biomedical risk factors' and 'Behavioural risk factors').

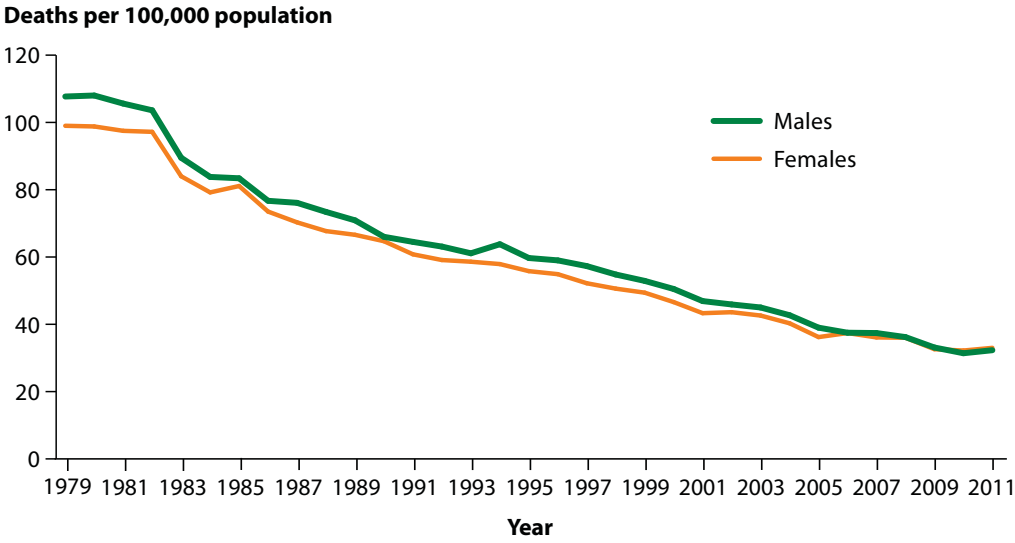
How common is stroke?

- In 2009, an estimated 375,800 Australians (205,800 males and 170,000 females) had had a stroke at some time in their lives. Most (70%) were aged 65 or over.
- The rate of stroke events has fallen by 25% over the last decade (from an age-standardised rate of 186 to 140 per 100,000 population between 1997 and 2009). But the total number of Australians experiencing a stroke rose by 6% over the same period, reflecting the ageing of the population.
- In 2009, over one-third (35%) of Australians who experienced a stroke had a resulting disability; this was an improvement from 1998 when the rate was 45%.

Deaths

- In 2011, there were 8,800 deaths with stroke recorded as the underlying cause of death, accounting for 6% of all deaths in Australia (1 in 5 cardiovascular disease deaths; see Glossary and Chapter 3 'Multiple causes of death in Australia' for 'cause of death' definitions).
- Over the last 3 decades, stroke death rates have fallen by almost 70% (from an age-standardised rate of 103 to 33 deaths per 100,000 population between 1979 and 2011) (Figure 4.10).
- Death rates were similar for males and females (age-standardised rate of 33 compared with 32 deaths per 100,000 population respectively); but more females than males die from stroke (5,400 stroke deaths for females in 2011 compared with 3,500 deaths for males). This largely reflects that there are more older women than men.

Figure 4.10



Notes

1. Rates have been age standardised to the 2001 Australian population.
2. The rates included in this report may differ from previous AIHW reports due to revised ABS Estimated Resident Populations (1991 to 2011).
3. Deaths registered in 2009 and earlier are based on the final version of cause of death data; deaths registered in 2010 and 2011 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. Data for 2010 have not been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010.

Source: AIHW National Mortality Database.

Trends in stroke death rates, 1979 to 2011

SNAPSHOT

Health care

- In 2011–12, there were 36,800 hospitalisations for acute care of stroke and 27,400 hospitalisations for rehabilitation care for stroke. The average length of stay in acute hospital care for stroke was 9 days, and in rehabilitation care 14 days.
- Over the last decade, hospitalisation rates for stroke fell by 17% (from an age-standardised rate of 174 to 145 per 100,000 population between 1998–99 and 2011–12).
- Stroke units significantly improve health outcomes of stroke patients. Between 2007 and 2011, the number of stroke units in public hospitals increased from 54 to 74 and the proportion of patients receiving stroke unit care increased from 50% to 60%.
- In 2009, informal carers played an important role in care of stroke survivors. Of the estimated 75,000 primary carers who provided assistance to people with stroke and resulting disability, more than half spent 40 hours or more per week in their caring role.

Variations among population groups

- Aboriginal and Torres Strait Islander people were 1.7 times as likely to have had a stroke as non-Indigenous Australians. Further, hospitalisation rates for stroke among Indigenous Australians were twice as high as for other Australians and stroke death rates 1.5 times as high as for non-Indigenous Australians.
- People living in remote areas of Australia and in the lowest socioeconomic status (SES) groups also have a higher burden of stroke compared with people living in *Major cities* and in the highest SES groups.

What is missing from the picture?

Currently, there are no comprehensive national data on the incidence of stroke (new cases) or treatment and care responses such as the time elapsed between the onset of stroke symptoms and emergency response, and the presentation to hospital. Nor are there national data on the uptake of best practice clinical guidelines or on medications given in acute care or at discharge.

Where do I go for more information

The following reports are available for free download on the AIHW website:

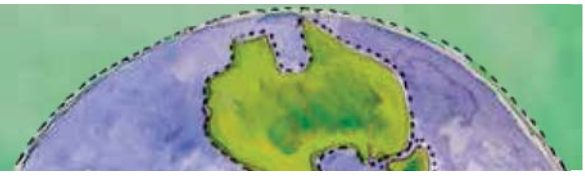
Cardiovascular disease: Australian facts 2011, *Stroke and its management in Australia: an update* and *Health care expenditure on cardiovascular diseases 2008–09*.

More information will also be available in the forthcoming AIHW report, *Cardiovascular, diabetes and kidney disease: Australian facts 2014*.

Reference

O'Donnell MJ, Xavier D, Liu L, Zhang H, Chin SL, Rao-Melacini P et al. 2010. Risk factors for ischaemic and intracerebral haemorrhagic stroke in 22 countries (the INTERSTROKE study): a case-control study. Lancet 376:112–23.

4.8 Mental health in Australia



FEATURE ARTICLE

FEATURE ARTICLE

The term 'mental disorder' describes a spectrum of conditions that can vary in both severity and duration. The most common mental disorders are depression, anxiety and substance use disorders. Less common, and often more severe disorders include schizophrenia, schizoaffective disorder and bipolar disorder.

Mental illness can vary in severity. The National Mental Health Report 2013 reviewed the evidence on the epidemiology of mental illness and estimated that 2–3% of Australians—around 600,000 people—have severe disorders, as judged by diagnosis, intensity and duration of symptoms, and degree of disability. This group is not confined to those with psychotic disorders who represent only about one-third of those with severe mental illness; it also includes people with severe and disabling forms of depression and anxiety. Another 4–6% of the population (about 1 million people) have moderate disorders, and a further 9–12% (about 2 million people) have mild disorders (DoHA 2013).

Mental disorders may have a damaging effect on both individuals and families, and far-reaching effects on society as a whole. For those with severe conditions, it can interfere significantly with a person's cognitive, emotional and/or social abilities and is commonly associated with economic disadvantage, unemployment or under-employment, homelessness and reduced productivity. (McLachlan et al. 2013; Slade et al. 2009). People with a severe mental disorder are often isolated by the symptoms of their illness and may experience stigma or discrimination because of their disorder (Morgan et al. 2011).

The importance of good mental health has been recognised by the Australian Government and all state and territory governments. Over the last 3 decades they have worked together, via the National Mental Health Strategy, to develop mental health programs and services to better meet the mental health needs of Australians. Through these arrangements, state and territory governments have tended to fund and provide specialist care for Australians affected by severe disorders. The Australian Government funds a range of services for Australians with mental disorder (through the Medicare and Pharmaceutical Benefits Schedules) and also provides social support and income support programs, the latter group most notably through the Australian Government disability and carer support income payment programs.

More recently a number of governments have established Mental Health Commissions to help them monitor and guide their mental health reform activities. The Australian Government established the National Mental Health Commission in 2012 and the Western Australian, New South Wales and Queensland governments have also established state-based commissions. The commissions have emphasised a collaborative approach across all sectors of Australian society, rather than specialist mental health services alone, to help Australians living with a mental health difficulty or problem to live successfully in the community. The National Mental Health Commission uses the term 'a contributing life'.

In early 2014, the Australian Government requested the National Mental Health Commission to undertake a wide-ranging review of existing mental health programs and services across the government, not-for-profit and private sectors to find ways to deliver services more efficiently and effectively.

Box 4.2

Mental Disorders

'Mental disorders' is a general term that refers to a group of specific disorders that includes:

'Clinical depression'—a group of illnesses characterised by excessive depressed mood which affects the person's life. Clinical depression is more intense than the unhappiness experienced in daily life.

'Anxiety disorders'—a group of illnesses characterised by feelings of high anxiety. People are likely to be diagnosed with an anxiety disorder when their level of anxiety is so extreme that it significantly interferes with their daily life. Anxiety disorders include panic disorder, post-traumatic stress disorder, obsessive compulsive disorder, agoraphobia and other phobias, social anxiety, generalised anxiety disorder and other conditions.

'Substance use disorders'—characterised by dependence on, or harmful use of alcohol or other substances.

'Schizophrenia'—a psychotic disorder typically characterised by hallucinations, disorganised thinking and impairment in functioning.

'Schizoaffective disorder'—a mental illness where the person has symptoms of a mood disorder (either mood swings, or depression) along with other symptoms similar to those found in schizophrenia.

'Bipolar disorder'—a psychotic disorder that involves extreme mood swings, from depression and sadness to elation and excitement.

What do we know?

How many Australians have a mental disorder?

In recognition of the importance of mental health, the Australian Government conducted a program of population-based surveys (referred to collectively as the National Survey of Mental Health and Wellbeing) to determine the extent and impact of mental disorders. The survey program consisted of 3 components: a 1997 and 2007 survey of the adult population (ABS 1998, 2008), a 2010 survey of people living with psychotic illnesses (Morgan et al. 2011) and a 1998 survey of children and adolescents (Sawyer et al. 2000).

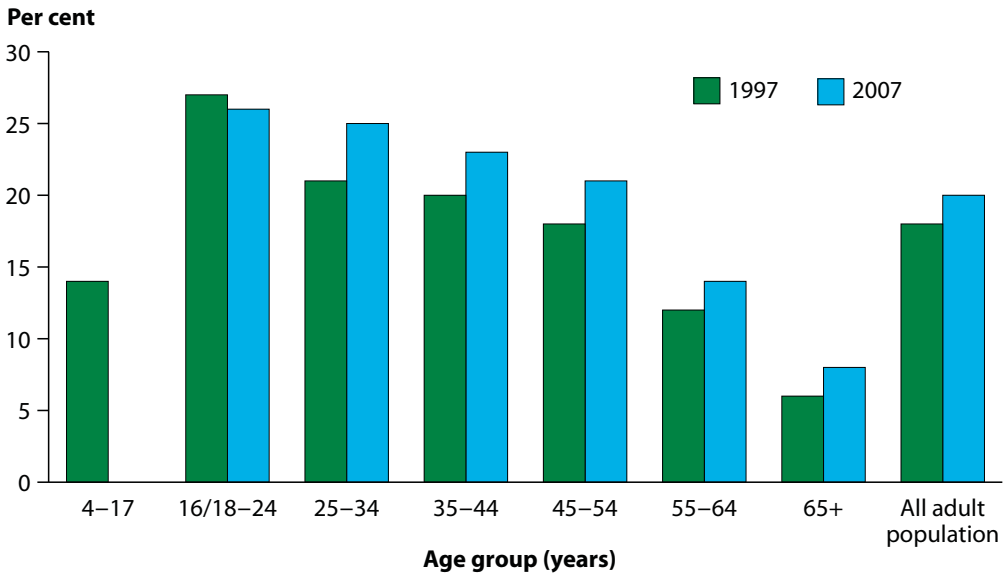
A new child and adolescent survey is currently being conducted by the University of Western Australia, with results expected in mid-2015.

From these surveys we know that there is a high prevalence of mental disorders in the Australian population. Data from the 2007 survey of the Australian adult population estimated that 45% of Australians aged 16–85 had experienced a mental disorder sometime in their lifetime (equating to 7.3 million people), and that an estimated 1 in 5 (20%) of the population aged 16–85 (equating to 3.2 million people) had experienced a common mental disorder in the previous 12 months. Of these, anxiety disorders (such as social phobia) were the most common, afflicting 14.4% of the population, followed by affective disorders (such as depression, 6.2%) and substance-use disorders (such as alcohol dependence, 5.1%). These 3 groups of common mental disorders were most prevalent in people aged 16–24 and decreased as age increased (Figure 4.11). Prevalence was higher for females than males in all age groups.

From the child and adolescent survey conducted in 1998, 14% of children and adolescents aged 4–17 (an estimated 321,181 people in 2013) had a clinically significant mental health problem.

In terms of less common but more severe mental disorders, estimates from the 2010 National Survey of People Living with Psychotic Illness indicated that 0.45% of the population aged 18–64 (almost 64,000 people) were treated annually by public sector mental health services for a psychotic disorder, with schizophrenia being the most common disorder.

Figure 4.11



Note: Data for the 4–17 age group pertain to 1998 (rather than 1997). For the 16/18–24 age group, the 1997 data relate to those aged 18–24 and the 2007 data to those aged 16–24.

Source: DoHA 2013.

Prevalence of common mental disorders in the Australian population, 1997/1998 and 2007

What is the impact?

Mental disorders were estimated to be responsible for 13% of the total burden of disease in Australia in 2003, placing it third as a broad disease group after cancers and cardiovascular disease (Begg et al. 2007). More recently, the 2010 Global Burden of Disease Study has reaffirmed the contribution made by mental and substance use disorders to the burden of disease (see Chapter 4 'Burden of disease') and estimates that these disorders account for 7% of disability-adjusted life years lost worldwide (Whiteford et al. 2013). Some key findings from national surveys regarding the impact of mental health problems on people's lives are as follows:

- Australians with affective (mood) disorders can experience severe levels of interference with life, including home responsibilities, work or study, close relationships and social life (up to 72%) (Slade et al. 2009).
- Australians living with anxiety disorders can report high levels of psychological distress. For example, high or very high psychological distress was reported by 53% of people with generalised anxiety disorder in the 2007 survey of the Australian adult population (Slade et al. 2009).
- One-third (32%) of Australians living with a psychotic disorder were assessed as having a significant level of impairment in their ability to care for themselves (Morgan et al. 2011).
- Nearly one-quarter (22%) of Australians with a psychotic disorder participating in the psychosis study reported feeling socially isolated and lonely (Morgan et al. 2011).
- The 2007 survey of the Australian adult population shows that suicidality (9%) (suicidal ideation, suicide plans and suicide attempts) in the previous 12 months was three and a half times as high for Australians with a mental disorder as for the general population (Slade et al. 2009).
- Almost half (49%) of participants in the 2010 National Survey of People Living with Psychotic Illness reported that they had attempted suicide at some time over their lifetime.

Psychiatric disability

In 2012, about 4.2 million people in Australia reported living with disability. Of these, mental and behavioural disorders were 1 of the main disabling conditions, affecting 11.5% of those with a disability, or almost 486,933 people (ABS 2013). Of the 317,616 people who accessed a disability support service funded under the National Disability Agreement in 2011–12, 17.9% (56,733 people) reported psychiatric disability as their primary disability, and 27.6% (87,649) reported psychiatric disability as either their primary or additional disability.

Recent data from the Department of Social Services indicate that 31% of people receiving a Disability Support Pension (DSP) (256,380) have a psychological or psychiatric condition. These conditions have recently overtaken musculoskeletal conditions as the largest group of qualifying conditions for DSP (DSS 2013).

Comorbidity

Comorbidity is common among people with a mental disorder, and people with multiple disorders are more disabled and consume more health resources than those with only 1 disorder (ABS 2008). Data from the 2007 survey of the Australian adult population indicate that 12% of Australians aged 16–85 had a mental disorder and a physical condition concurrently, and that these people were more likely to be female, and aged in their early forties (ABS 2008). The most common comorbidity (9%) was an anxiety disorder combined with a physical condition, affecting about 1.4 million Australian adults (ABS 2008).

In general, comorbidity increased with increasing disadvantage. For example, people living in the most disadvantaged areas of Australia were 65% more likely to have comorbidity than those living in the least disadvantaged areas (AIHW 2012).

Prevention and early intervention

In recognition of the importance of prevention and early intervention in assisting children and adolescents with mental health difficulties, a number of initiatives have been taken recently by governments to support them in their important developmental years. For example, the Australian Government has funded 60 'headspace' youth mental health services for people aged between 12 and 25. Between 1 January and 30 June 2013, 21,274 clients received centre-based services from 55 headspace centres. Of these clients, 64% were female, 36% male and 0.7% transgender, intersex or transsexual; 7.7% identified as Indigenous and 7.0% were born overseas. The most frequently reported reason for presenting to a headspace centre was emotional problems, including feeling sad, depressed or anxious (72%), followed by relationship problems (11%) (Rickwood et al. 2014).

State and territory governments have also been developing and augmenting existing youth services; for example, Western Australia recently established Statewide Specialist Aboriginal Mental Health Services to provide specialist interventions to help in the transition from adolescence to adulthood.

Use of mental health services

The considerable variation in severity of mental health disorders and the uniqueness of each individual's experience of mental illness means that support needs and use of services are also diverse.

The estimated population treatment rate for people with mental disorders from the 2007 National Survey of Mental Health and Wellbeing was 35% (1.1 million people) (Slade et al. 2009). More than two-thirds (71%) consulted general practitioners (GPs), 38% consulted psychologists and 23% consulted psychiatrists. Eighty-six per cent of those with a mental disorder who did not receive mental health care reported that they perceived having no need for any of a range of services, including counselling, medication and information (Slade et al. 2009).

More recent analysis of administrative data (DoHA 2013; Whiteford et al. 2014) suggests that there has been significant improvement on the relatively low treatment rates observed in the 2007 National Survey of Mental Health and Wellbeing. The analysis suggests that the percentage of the population with a current mental illness who received care in 2009–10 was 46%, substantially higher than the 35% estimate found by the ABS in 2007. Growth in the proportion of the population seen by Medicare-funded mental health services is the sole driver of the change over the 3 years, primarily arising from initiatives introduced in 2006 to provide Medicare-funded access to mental health care by allied health professionals (see also Chapter 8 'Mental health services in Australia' for more detail on service usage).

In more recent times, the Australian and state and territory governments have concentrated on providing a wider range of support services for those experiencing mental health difficulties, with an emphasis on helping people to stay well rather than providing support only when they are in crisis. Initiatives have been community-based rather than institutional, and there has been a growing involvement of the non-government, not-for-profit sector in service delivery. New programs include: online therapy services for the treatment of mild to moderately severe depression and anxiety disorders; youth mental health services for people aged between 12 and 25; and state-based step-up and step-down services aimed at preventing admission to hospital and preparing participants for a return to the community.

What is missing from the picture?

The increasing use of more integrated and coordinated models of care to cater for the individual needs of Australians living with a mental disorder reinforces the need for the collection of pertinent data to determine whether these measures are making a difference. The AIHW is currently working with stakeholders to better meet the data and information collection challenges implicit in these changing models of care. In particular, national initiatives are currently being progressed to collect and report more detailed information about consumer and carer perceptions of mental health care.

An expert reference group chaired by the National Mental Health Commission also recently reviewed Australia's current range of mental health indicators. The group emphasised the importance of a 'whole-of-life approach' in refining the current indicators. In particular, consideration of social determinants and factors outside the health domain were recommended for attention. Areas for further consideration included life expectancy, recovery, housing, employment, suicide attempts, stigma and discrimination and mental health wellbeing.

The publication of the 2013 child and adolescent survey by the University of Western Australia in mid-2015 will fill the current gap in contemporary information about the extent and impact of mental illness on children and adolescents; the last survey was undertaken in 1998. With other major national surveys also now becoming dated, consideration of cost-effective methods of ensuring regular and up-to-date information about prevalence and trends is warranted.

Where do I go for more information?

More information on mental health in Australia is available on the AIHW website at www.aihw.gov.au/mental-health/.

References

ABS (Australian Bureau of Statistics) 1998. Mental Health and Wellbeing: profile of adults, Australia, 1997. ABS cat. no. 4326.0. Canberra: ABS.

ABS 2008. National Survey of Mental Health and Wellbeing: summary of results, 2007. ABS cat. no. 4326.0. Canberra: ABS.

ABS 2013. Disability, ageing and carers, Australia: summary of findings, 2009. ABS cat. no. 4430.0. Canberra: ABS.

AIHW (Australian Institute of Health and Welfare) 2012. Comorbidity of mental disorders and physical conditions 2007. Cat. no. PHW 155. Canberra: AIHW.

Begg S, Vos T, Barker B, Stevenson C, Stanley L & Lopez AD 2007. The burden of disease and injury in Australia 2003. Cat. no. PHE 82. 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: Commonwealth of Australia.

DSS (Department of Social Services) 2013. Characteristics of Disability Support Pension customers, June 2013. Canberra: DSS.

McLachlan R, Gilfillan G & Gordon J 2013. Deep and persistent disadvantage in Australia. Canberra: Productivity Commission.

Sawyer MG, Arney FM, Baghurst PA, Graetz BW, Kosky RJ, Nurcombe B et al. 2000. The mental health of young people in Australia. Canberra: Department of Health and Aged Care.

Morgan VA, Waterreus A, Jablensky A, Mackinnon A, McGrath JJ, Carr V, et al. 2011. People living with psychotic illness: report on the second Australian national survey. Canberra: Commonwealth of Australia.

Rickwood DJ, Telford NR, Parker AG, Tanti CJ, McGorry PD. 2014. headspace—Australia's innovation in youth mental health: who are the clients and why are they presenting? Medical Journal of Australia 200:108–111.

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: DoHA.

Whiteford HA, Degenhardt L, Rehm J, Baxter AJ, Ferrari AJ, Erskine HE et al. 2013. Global burden of disease attributable to mental and substance use disorders: findings from the Global Burden of Disease Study 2010. Lancet 382:1575–86.

Whiteford HA, Buckingham WJ, Harris MG, Burgess PM, Pirkis JE, Barendregt JJ et al. 2014. Estimating treatment rates for mental disorders in Australia. Australian Health Review 38:80–5.

4.9 Chronic respiratory conditions

SNAPSHOT

Chronic respiratory conditions affect the airways and are characterised by symptoms such as wheezing, shortness of breath, chest tightness and cough. Conditions include: *asthma*, a chronic inflammatory condition of the airways associated with episodes of wheezing, breathlessness and chest tightness; *chronic obstructive pulmonary disease* (COPD), which includes both 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).

Smoking is a major risk factor for chronic respiratory conditions. A range of environmental factors (such as exposure to viral infections and air pollutants) and genetic factors (such as for cystic fibrosis) also play a role.

This snapshot does not examine acute respiratory conditions such as the common cold and influenza.

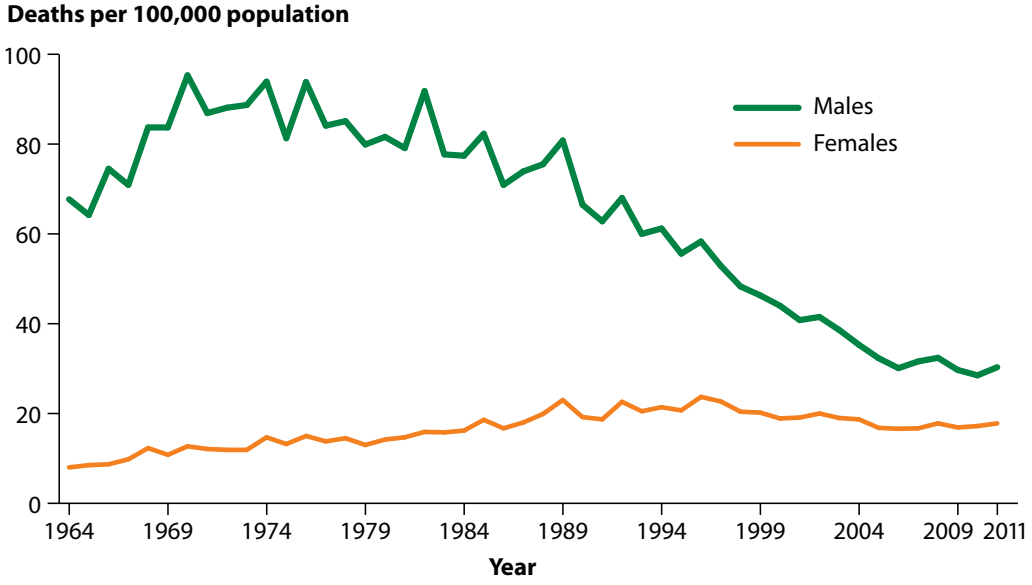
How common are these conditions?

- In 2011–12, about 3 in 10 Australians (29%) suffered from 1 or more chronic respiratory conditions (6.3 million people).
- Hay fever and asthma were the 2 most common conditions, affecting an estimated 3.7 million (17%) and 2.3 million Australians (10%) respectively.
- Asthma was one of the most common chronic health conditions among children, affecting an estimated 393,000 children aged 0–14 (9%) in 2011–12.
- COPD was comparatively rarer, affecting an estimated 529,000 Australians (2%).
- Both COPD and asthma were more common in areas of lowest socioeconomic status than in areas with the highest status (4% compared with 2% for COPD, and 12% compared with 9% for asthma).
- There was a small fall in the age-standardised prevalence of asthma and COPD between 2001 and 2011–12, from 12% to 10% for asthma and from 4% to 2% for COPD (ABS 2012).

Deaths

- In 2011, COPD caused 5,900 deaths, asthma 378 deaths and bronchiectasis 314 deaths.
- The age-standardised death rate from asthma fell from a peak of 6.6 per 100,000 population in 1989 to 1.5 per 100,000 in 2011.
- The death rate from COPD for males has decreased markedly over the past 40 years, with the age-standardised rate in 2011 less than one-third of that in 1970 (falling from 95 to 30 per 100,000 population). In contrast, there was a small rise in the death rate for females over this period (from 13 to 18 per 100,000 population) (Figure 4.12). This may reflect differences in smoking prevalence and history among males and females.

Figure 4.12



Notes

1. Rates have been age-standardised to the 2001 Australian population.
2. Deaths registered in 2009 and earlier are based on the final version of cause of death data; deaths registered in 2010 and 2011 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. Data for 2010 have not been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010.

Source: AIHW National Mortality Database.

Death rates for COPD, 1964–2011

Health care

- Chronic respiratory conditions are predominantly managed in primary health care. Survey data suggest that asthma was the most common chronic respiratory condition managed by general practitioners, accounting for about 2 per 100 GP–patient encounters in 2012–13 (Britt et al. 2013).
- In 2011–12, only 24% of people who reported asthma as a long-term condition had a written asthma action plan (ABS 2013).
- The hospitalisation rate for asthma was 173 per 100,000 population in 2011–12. The age-standardised hospitalisation rate fell by 38% between 1998–99 and 2011–12 (37% for males and 39% for females).
- The hospitalisation rate for COPD (among those aged 55 and over) was 1,200 per 100,000 population. The age-standardised hospitalisation rate for males aged 55 and over fell by 18% between 1998–99 and 2011–12. The rate for females aged 55 and over varied little over the same period.

What is missing from the picture?

The prevention, management and treatment of chronic respiratory conditions beyond hospital settings, including the appropriateness of care with respect to clinical guidelines, cannot be examined in detail because of a lack of information about primary health care.

There is also a lack of nationally comparable information in specific areas such as access to, and use of, long-term oxygen therapy and pulmonary rehabilitation for respiratory diseases such as COPD (AIHW et al. 2013a), management of asthma during pregnancy (AIHW et al. 2013b) and uptake of recommended vaccinations among people with chronic respiratory conditions (AIHW 2012).

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. The report *Asthma in Australia 2011* and other recent publications are available for free download.

References

ABS (Australian Bureau of Statistics) 2012. Australian Health Survey: first results, 2011–12. ABS cat. no. 4364.0.55.001. Canberra: ABS.

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

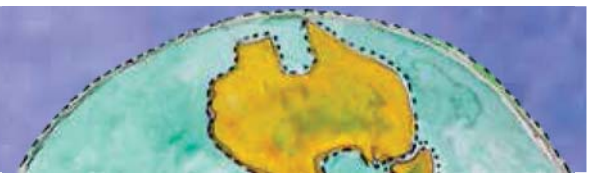
AIHW (Australian Institute of Health and Welfare) 2012. Vaccination uptake among people with chronic respiratory disease. Cat. no. ACM 25. Canberra: AIHW.

AIHW: Marks G, Reddel H, Guevara-Rattray E, Poulos L & Ampon R 2013a. Monitoring pulmonary rehabilitation and long-term oxygen therapy for people with chronic obstructive pulmonary disease (COPD). Cat. no. ACM 29. Canberra: AIHW.

AIHW: Marks G, Reddel H, Guevara-Rattray E & Ampon R 2013b. Monitoring asthma in pregnancy: a discussion paper. Cat no. ACM 28. Canberra: AIHW.

Britt H, Miller GC, Henderson J, Bayram C, Valenti L, Harrison C et al. 2013. General practice activity in Australia 2012–13. General practice series no. 33. Sydney: Sydney University Press.

4.10 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 produced 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***—a lifelong autoimmune disease that usually has onset in childhood but can be diagnosed at any age; ***type 2 diabetes***—usually associated with lifestyle factors and largely preventable; and ***gestational diabetes***—when higher-than-normal blood glucose is diagnosed in pregnancy (see Glossary).

Diabetes may progress to a range of health complications, including heart disease, kidney disease, blindness and lower limb amputation. For example, diabetes was the leading cause and accounted for 1 in 3 new cases of end-stage kidney disease requiring dialysis or transplantation, in 2011 (see Chapter 4 'Chronic kidney disease').

While type 1 diabetes is believed to be caused by an interaction of genetic predisposition and environmental factors, type 2 diabetes is largely preventable by maintaining a healthy lifestyle. Modifiable risk factors for type 2 diabetes include physical inactivity, unhealthy diet, obesity, tobacco smoking, high blood pressure and high blood lipids (see Chapter 5 'Biomedical risk factors' and 'Behavioural risk factors').

How common is diabetes?

- There are an estimated 1 million people aged 2 or over with diagnosed diabetes in Australia. However, this is likely to be an underestimate—for every 4 adults with diagnosed diabetes, there is estimated to be 1 with undiagnosed diabetes (ABS 2013a).
- Of all people with diabetes, around 85% have type 2 diabetes and 12% have type 1 diabetes (ABS 2013a). In addition, gestational diabetes affects about 1 in 20 pregnancies each year.
- Diabetes is becoming more common—the rate of self-reported diabetes more than doubled, from 1.5% to 4.2% of Australians, between 1989–90 and 2011–12.
- In 2011–12, diabetes was more common in men (6%) than women (4%) and was more common in older age groups—affecting 15% of those aged 65–74 compared with 5% for those aged 45–54 (ABS 2013a).
- In 2011, there were around 2,400 new cases of type 1 diabetes, with half of these being among people aged 18 or under. Rates of type 1 diabetes remained stable over 2000–2011, with age-standardised rates of around 10 to 12 new cases per 100,000 population per year.
- In 2011–12, there were around 49,800 new cases of diagnosed type 2 diabetes among people 10 and over, based on preliminary findings. Despite nearly all cases (92%) occurring in those aged 40 and over, there were around 430 new cases among children and young people aged 10–24—even though type 2 diabetes is generally regarded as a disease of adulthood.

Deaths

- Diabetes was the sixth leading cause of death in Australia in 2011, contributing to 10% of all deaths. In around 4,200 deaths diabetes was the underlying cause and in a further 10,900 it was an associated cause of death (see Glossary for 'cause of death' definitions and Chapter 3 'Multiple causes of death in Australia').

Health care

- Diabetes was the principal diagnosis for around 40,000 hospitalisations in 2010–11, and was an additional diagnosis for a further 180,000 hospitalisations. Together, these represented 2.5% of all hospitalisations in 2010–11.
- In 2012, almost 8.2 million prescriptions were dispensed for diabetes medicines: 11% for insulin and 89% for other blood glucose-lowering medications, with about half of these being for metformin.
- Between 1992 and 2012, the annual number of prescriptions filled for metformin rose by an average of 8% a year; for other blood glucose-lowering medications the annual rise was 7%, and for insulin it was 5% (Figure 4.13).
- In 2011, about 53,500 people began using insulin to treat their diabetes.
- In 2011, there were 10,510 insulin pump users in Australia—representing 10% of people with type 1 diabetes. Almost half of all insulin pump users were aged under 25.

Variations among population groups

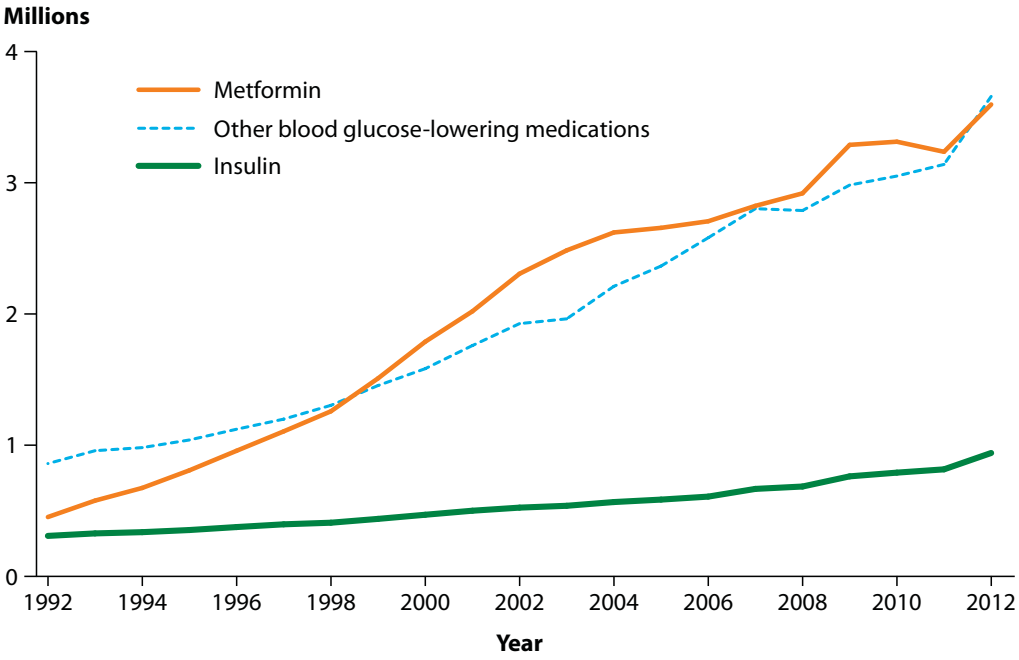
- Aboriginal and Torres Strait Islander people were over three times as likely as non-Indigenous Australians to have diabetes, in particular type 2 diabetes (ABS 2013b).
- People in the lowest socioeconomic status (SES) groups were more likely to have diabetes compared with people in the highest SES groups.
- People living outside *Major cities* were more likely to have diabetes compared with people living in *Major cities* (ABS 2013c).

What is missing from the picture?

Currently, there is no national data collection on new cases of diagnosed type 2 diabetes each year. Symptoms are often absent in the early stages of diabetes, so people can go undiagnosed for a long time. In addition, there can be problems with misdiagnosis and misreporting of diabetes type.

There is a lack of good information on diabetes in Aboriginal and Torres Strait Islander people and people from different ethnic backgrounds. Further monitoring and surveillance of diabetes is crucial for guiding preventive measures, determining clinical care and informing health policy and service planning.

Figure 4.13



Source: Data extracted by AIHW (January 2013) from the Department of Human Services website.

Prescriptions claimed for diabetes medicines, 1992–2012

Where do I go for more information?

The following reports are available for free download on the AIHW website:

Insulin pump use in Australia and *Type 2 diabetes in Australia's children and young people: a working paper*. More information will also be available in 2 forthcoming AIHW reports, *Incidence of insulin-treated diabetes in Australia, 2000–2011* and *Cardiovascular, diabetes and kidney disease: Australian facts 2014*.

References

ABS (Australian Bureau of Statistics) 2013a. Australian Health Survey 2011–12. Canberra: ABS. Viewed 10 December 2013, <http://www.abs.gov.au/australianhealthsurvey>.

ABS 2013b. Australian Aboriginal and Torres Strait Islander Health Survey: first results, 2012–13. ABS cat. no. 4727.0.55.001 Canberra: ABS.

ABS 2013c. Australian Health Survey: updated results, 2011–2012 . ABS cat. no. 4364.0.55.003 Canberra: ABS.

4.11 Chronic kidney disease

SNAPSHOT

Chronic kidney disease (CKD) refers to all kidney conditions where a person has evidence of kidney damage and/or reduced kidney function, lasting at least 3 months. Many people do not know that they have kidney disease as up to 90% of kidney function can be lost before symptoms appear (Kidney Health Australia 2014). Fortunately, simple tests of kidney function and damage can detect the early signs of CKD.

End-stage kidney disease (ESKD), the most severe form of CKD, usually requires kidney replacement therapy (KRT) to survive. KRT has 2 forms—a kidney transplant or dialysis. Dialysis is an artificial way of removing waste substances from the blood and is mostly provided in hospitals or satellite dialysis units, but can also be provided in a home setting. Not all patients with ESKD receive KRT. Prognosis, anticipated quality of life (with or without KRT), treatment burden on the patient, and patient preference all play a part in the decision for or against KRT (Murtagh et al. 2007).

CKD is common, and largely preventable as many of its risk factors are modifiable, such as high blood pressure, tobacco smoking and obesity (see Chapter 5 'Biomedical risk factors' and 'Behavioural risk factors'). Many of the risk factors for CKD also apply to other chronic diseases such as cardiovascular disease and diabetes, which in turn, are risk factors for CKD.

How common is chronic kidney disease?

- According to the 2011–12 Australian Health Survey, 1 in 10 people (or 1.7 million Australians) aged 18 and over have biomedical signs of CKD (ABS 2013).
- There were about 2,500 new cases of KRT-treated-ESKD in 2011 (equating to an age-standardised rate of 10 people per 100,000 population or 7 new treated-ESKD cases per day).
- Diabetes was the leading cause of KRT-treated-ESKD in 2011, accounting for 1 in 3 new cases (ANZDATA 2013).

Deaths

- In 2011, CKD contributed to over 10% of all deaths in Australia (15,000 deaths)—with the vast majority of these deaths recorded as an *associated cause of death* (11,900 deaths; see Glossary for 'cause of death' definitions and Chapter 3 'Multiple causes of death in Australia').

Health care

- Of the 1.4 million hospitalisations for CKD in 2011–12, 86% were for regular dialysis treatment. Dialysis treatment is the most common reason for hospitalisation in Australia.
- Over the last decade, the number of hospitalisations for dialysis has almost doubled. In addition, the hospitalisation rate for CKD (excluding dialysis) has also increased substantially from an age-standardised rate of 125 to 156 per 100,000 people between 2000–01 and 2011–12.

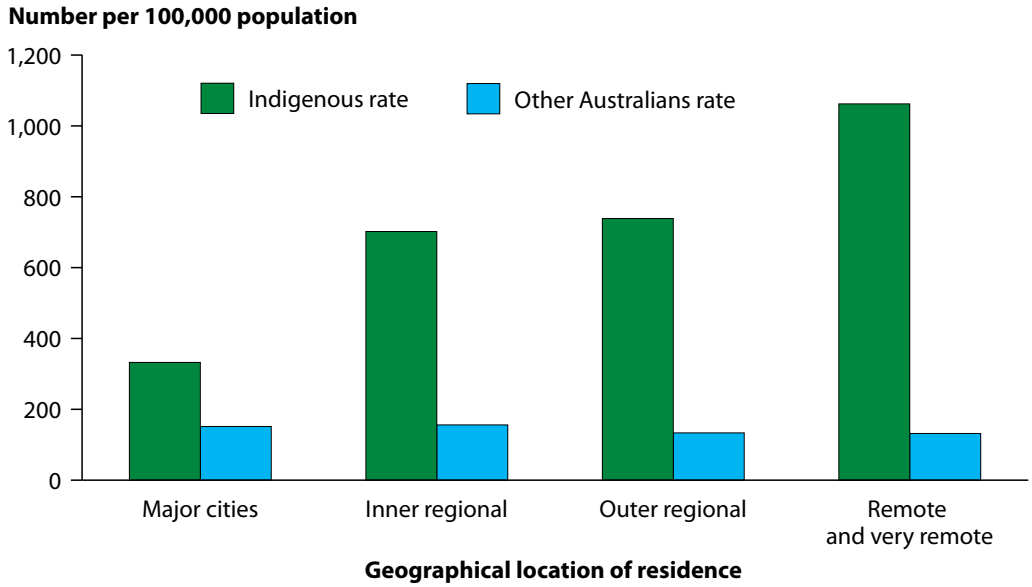
- The number of people with a functioning kidney transplant or on dialysis for ESKD has been increasing more rapidly for Indigenous Australians than non-Indigenous Australians. Over the period 2001 to 2011, the number of Indigenous Australians with KRT-treated-ESKD almost doubled (from 762 to 1,491); this compares with a 59% increase among non-Indigenous Australians over the same period (from 11,613 to 18,289).
- In 2011, dialysis was the most common form of KRT for ESKD, with 56% of KRT-treated-ESKD patients receiving dialysis and the remaining 44% treated with a transplant. Indigenous Australians with ESKD were far less likely to be treated with a functioning kidney transplant than their non-Indigenous counterparts in 2011 (13% compared with 47%, respectively).
- Over the period 2001 to 2011, the proportion of dialysis patients receiving treatment in the home setting decreased from 37% to 27% of dialysis patients.
- Not all people with ESKD receive dialysis or a transplant. During 2002–2010, for every new case of ESKD that received KRT, there was 1 that did not.
- There were 825 kidney transplants in 2011, an increase from 470 in 1991 (ANZDATA 2013).
- Over the last 2 decades, there has been a 45% increase in transplants from deceased donors, increasing from 392 to 570 deceased donor transplants between 1991 and 2011. There has also been a rapid rise in transplants from living donors—a fourfold increase from 78 to 354 living donor transplants between 1991 and 2008. However, in recent years the number of transplants from living donors has fallen (354 to 255 between 2008 and 2011, respectively).

Variations among population groups and impact

- In 2010–11, almost 11% of people with ESKD who were beginning KRT identified as Indigenous, despite making up only 3% of the total population.
- CKD hospitalisation rates (excluding dialysis) are also higher among Indigenous Australians, with the difference between Indigenous and other Australians increasing with remoteness—from twice as high in *Major cities* to 8 times as high in *Remote and very remote* areas (Figure 4.14).
- The higher CKD hospitalisation rates among Indigenous Australians are due in part to the considerably higher rates of obesity and diabetes in this population.

For dialysis patients, the need to adhere to strict treatment protocols and the need for frequent treatment—normally 4–5 hour sessions 3 times per week for in-centre dialysis—places a large health, time and cost burden on patients, especially Indigenous Australians living in rural and remote areas who often need to relocate to access KRT (Preston-Thomas et al. 2007). This can result in a loss of social and cultural connectedness, loss of autonomy and control, and loss of status and authority (George Institute for Global Health 2011).

Figure 4.14



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

Source: AIHW National Hospital Morbidity Database.

Hospitalisations with a principal diagnosis of CKD (excluding regular dialysis) by Indigenous status and region, 2010–11

What is missing from the picture?

Nearly all people with ESKD in Australia who receive KRT are recorded in the Australian and New Zealand Dialysis and Transplant (ANZDATA) Registry. But information on the number of people with ESKD *not* receiving KRT is lacking. By using data linkage techniques across the ANZDATA registry, and mortality and hospitals data, it may be possible to estimate the total number of *current* cases of ESKD in Australia (including cases not receiving KRT). This work would expand on the AIHW's work on estimating the total number of new cases of non-KRT-treated and KRT-treated-ESKD.

Where do I go for more information?

The following reports are available for free download on the AIHW website:

Dialysis and kidney transplantation in Australia: 1991–2010, *Chronic kidney disease in Aboriginal and Torres Strait Islander people*, *Chronic kidney disease: regional variation in Australia* and Cardiovascular, diabetes and kidney disease: Australian facts 2014 (forthcoming).

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.

ANZDATA (Australian and New Zealand Dialysis and Transplant) 2013. ANZDATA Registry report 2012. Adelaide: Australia and New Zealand Dialysis and Transplant Registry.

George Institute for Global Health 2011. Central Australia renal study—final report. Canberra: DoHA.

Kidney Health Australia 2014. Fast facts on CKD in Australia. Kidney Health Australia. Viewed 18 February 2014, <http://www.kidney.org.au/Kidneydisease/FastFactsonCKD/tabid/589/Default.aspx>.

Murtagh FE, Marsh JE, Donohoe P, Ekbal NJ, Sheerin NS & Harris FE 2007. Dialysis or not? A comparative survival study of patients over 75 years with chronic kidney disease stage 5. Nephrology, Dialysis, Transplantation 22:1955–62.

Preston-Thomas A, Cass A & O'Rourke P 2007. Trends in the incidence of treated end-stage kidney disease among Indigenous Australians and access to treatment. Australian and New Zealand Journal of Public Health 31:419–21.

4.12 Injuries

SNAPSHOT

Injury has a major, but often preventable, impact on the health of Australians of all ages. It is the largest cause of death for those aged under 35, and leaves many with serious disability or long-term conditions. While the majority of injuries are relatively minor and require little or no treatment, more serious injuries may require hospital care or result in death.

Deaths due to injury

- Injury was recorded as a cause of 10,668 deaths in 2009–10 in Australia, or 7.6% of all deaths.
- One-third of male injury deaths and almost two-thirds of female cases occurred at ages 65 and older. Less than 2% of cases were at ages younger than 15.
- The most common causes of injury deaths in 2009–10 were falls (32.2%), intentional self-harm (20.8%) and transport accidents (13.9%).
- From 1999–00 to 2009–10, injury deaths comprised a fairly constant proportion of all deaths in Australia, ranging from 7.4% to 8.1%.
- Adjusting for age, injury deaths decreased from 55.1 per 100,000 population in 1999–00 to 46.8 in 2004–05, with little change in more recent years. The injury death rate was 45.4 per 100,000 population in 2009–10.
- For most external causes, rates of injury deaths tended to decline from 1999–00 to 2007–08—by 3.8% per year for transport injury, 3.3% for thermal injury (that is, exposure to smoke, fire, heat and hot substances), 5.5% for drowning, 3.2% for suicide and 5.5% for homicide. Rates of poisoning deaths involving pharmaceuticals fell sharply to 2001–02, then rose by 2.2% per year to 2007–08.
- Rates of fall injury deaths did not show a marked trend (AIHW, forthcoming).

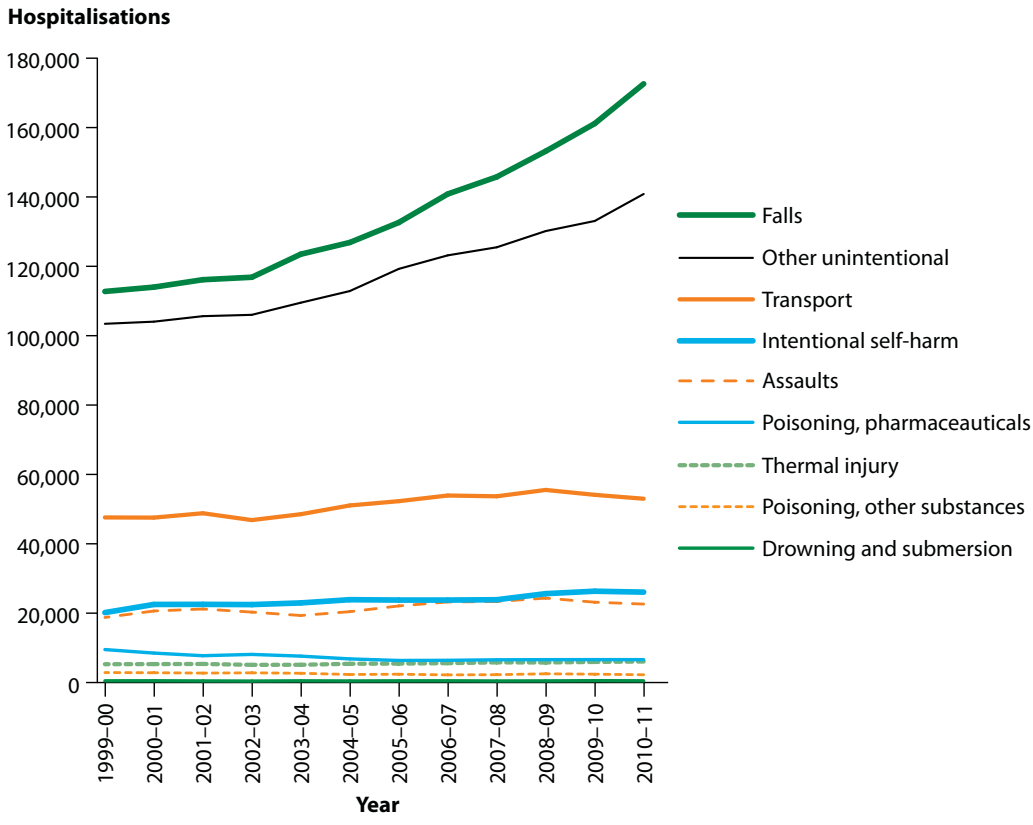
Hospitalisations due to injury

- In 2010–11, there were 472,000 hospitalisations due to injury, or 5% of all hospitalisations. Given that some injuries result in more than 1 stay in hospital, it is estimated that these stays involved just over 438,000 people.
- The age group with the highest number of injury-related hospitalisations was people aged 85 and older, at 10,945 hospitalisations per 100,000 population.
- Males were more likely than females to be hospitalised for most types of injury.
- Falls (40%), other unintentional injury (33%) and transport accidents (12%) (mostly motor vehicles) were the 3 main causes of injury. Other unintentional injury covers a broad range of causes, including exposure to electric currents, contact with venomous animals and plants, and being caught or jammed between objects.

- The age-standardised rates of injury-related hospitalisations rose between 1999–00 and 2010–11 by an average of 1% per year. During this time, there were rises in the rates of injury-related hospitalisations due to falls (2% per year), intentional self-harm (1% per year), and assaults (1% per year). There were falls in the rates of injury-related hospitalisations due to poisoning by pharmaceuticals (5% per year) and by other substances (4% per year), and drowning and near drowning (1% per year, and 3% for children aged under 5) (Figure 4.15).
- The number of injury-related hospitalisations per 100,000 population continued to be higher for Aboriginal and Torres Strait Islander people (3,838) than other Australians (1,897).

Note that these data exclude complications of medical and surgical care and conditions that are the consequence of previous injury. The 'Hospitalisations for injury and poisoning' indicator in Chapter 9 includes those types of injury.

Figure 4.15



Number of injury-related hospitalisations, by broad type of injury, 1999–00 to 2010–11

What is missing from the picture?

Detailed information on injuries that do not require hospitalisation is not routinely available in Australia. People with less serious injuries often do not seek health care, or interact with the health system by visiting a general practitioner or an emergency department.

There is a lack of detailed information on primary health care (including general practitioners) in Australia. And current national emergency department presentation data do not include information on cause or nature of injury. That type of information will be available as part of the Non-admitted Patient Emergency Department Care National Minimum Data Set from late 2014, so work can begin now on how to best use these data for reporting on injury.

Information on injury could be collected in national population health surveys, as occurs for other health conditions. Injury information was not collected in the latest Australian Bureau of Statistics Australian Health Survey (for 2011–12), nor in recent predecessor surveys.

Where do I go for more information?

More information on hospitalisations due to injury in Australia is available at www.aihw.gov.au/injury. The report *Trends in hospitalised injury, Australia: 1999–00 to 2010–11* and other recent publications are available for free download.

Reference

AIHW. Trends in injury deaths, Australia, 1999–00 to 2009–10. Injury research and statistics series. Canberra: AIHW.

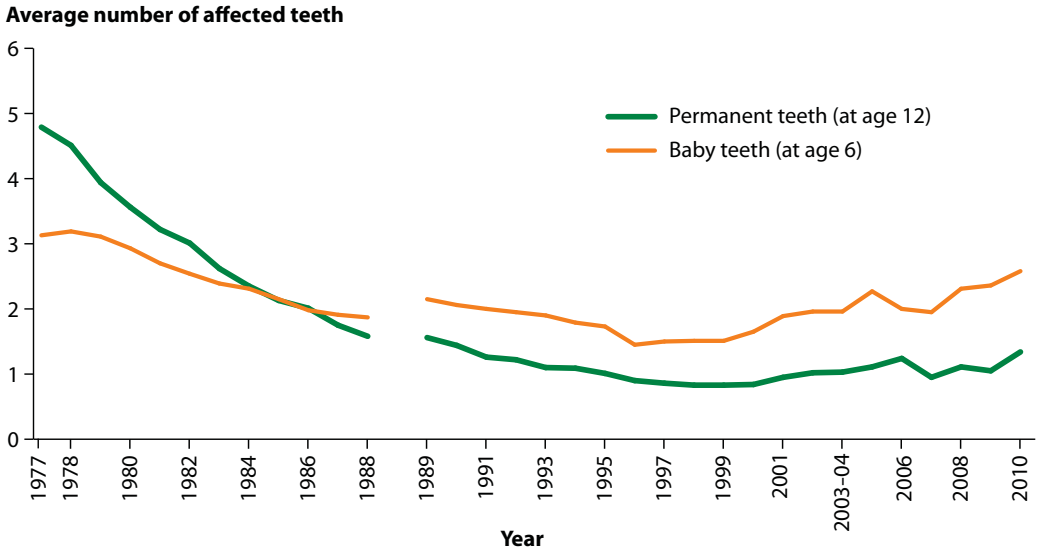
4.13 Oral health

On the whole, oral health has improved in Australia over recent decades, particularly in response to fluoride being added to water supplies from the 1950s. Recent trends, however, suggest that changes in diet and behaviour—such as increased consumption of bottled water, sports drinks and soft drinks—may be having some negative impacts on oral health.

What is the condition of our teeth?

Poor childhood oral health is a strong predictor of poor adult oral health. After falling steadily since the 1970s, rates of tooth decay in children slowly rose from the late 1990s onwards (Figure 4.16).

Figure 4.16



Note: Data are combined for 2003 and 2004.

Sources: From 1977 to 1988, data are from the Australian School Dental Scheme evaluation. From 1989, data are from the Child Dental Health Survey.

Trends in dental decay in children, 1977–2010

Data from examination of children's teeth at public dental clinics in 6 Australian states and territories showed that, in 2010:

- more than half of children aged 6 had experienced decay in their baby teeth
- almost half of children aged 12 had experienced decay in their permanent teeth
- on average, every child aged 15 had at least 1 filled permanent tooth, and at least 1 other with untreated decay.

Adult oral health has improved over time, though at a slower rate than in children.

- From 1994 to 2010, of those adults who visited the dentist, the number who received a filling fell from 5 in 10 to 4 in 10.
- Between 1994 and 2010, both the proportion of adults who had visited a dentist with a problem in the last year, and those who had visited for a check-up (not a problem), increased, from 56% to 62% and from 48% to 61% respectively. (People who have regular check-ups generally have fewer extractions and fillings.)
- From 1999 to 2010, adults reporting 'fair' or 'poor' oral health fell from 1 in 4 to less than 1 in 5.
- Despite these improvements, in 2005 more than 90% of adults had some history of decay in their permanent teeth.
- In 2010, about 12% of adults had fewer than 21 natural teeth remaining and more than 20% had severe gum disease.
- In 2010–11, the rate of hospitalisations for dental conditions which could have been avoided if the patient had received timely and adequate non-hospital care was highest for children aged 5–9 and lowest for adults aged 25–34. The highest rates were in *Very remote* areas and the lowest in *Major cities*.

Australia's oral health system

- In 2011–12, spending on dental services ($8.3 billion) was 6.3% of total health spending. This was the lowest share of the total in 10 years.
- Around half of all people aged 5 and over had some level of private dental cover in 2010. The majority of adults with insurance reported that their insurance paid some (79%) or all (8%) of the dental costs of their last visit. Only 9% of insured adults paid all their own dental expenses.
- In 2012, for every 100,000 people there were about 57 dentists, 4 dental therapists, 5 dental hygienists, 3 oral health therapists and 5 dental prosthetists (full-time equivalent rates).
- The highest number of employed dentists was in *Major cities* and the lowest in *Remote* and *Very remote* areas.

What is missing from the picture?

There is a lack of routinely collected dental service use data in Australia. Some data are collected from public dental services; however, governments fund less than 30% of total dental services expenditure. Public dental service data are also not necessarily representative, due to variation between jurisdictions in the scope and coverage of public dental programs.

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 reports *Adult oral health and dental visiting in Australia: results from the National Dental Telephone Interview Survey 2010*, *Health expenditure Australia 2011–12*, and *Dental workforce 2012* are available for free download.

More information is also available at the Australian Research Centre for Population Oral Health website, the Australian Government Department of Health website and at National Oral Health Plan.

4.14 Immunisation and vaccine preventable disease

SNAPSHOT

Vaccination is one of the most successful and cost-effective health interventions. There are 16 diseases for which vaccines are provided free in Australia to people of particular age or risk groups. The characteristics of diseases and vaccines differ. Sometimes it is possible to achieve disease eradication, while for other vaccines the aim is to limit severe disease in the most vulnerable. This snapshot looks at vaccination coverage and then considers the impact of vaccination on disease notifications, hospitalisations and deaths.

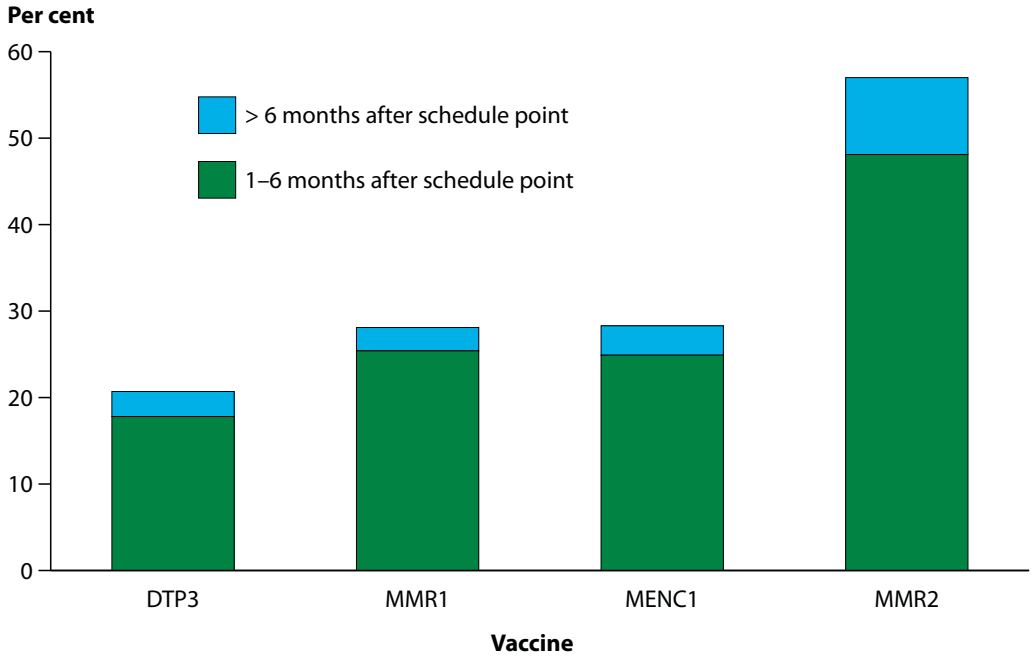
Vaccination coverage

- At December 2012, 92% of children were assessed as fully vaccinated at each of the 3 childhood milestones (12, 24 and 60 months). Coverage at 12 and 24 months has been steady at around 90% since 2003, while at 60 months it rose substantially from around 80% in 2008 after a change in eligibility rules for incentive payments.
- The proportion of Australian children vaccinated late varies by vaccine type and dose. The greatest delay was with the second dose of measles, mumps and rubella (MMR) vaccine, with 57% of doses given late and 9% given more than 6 months late (Figure 4.17).
- 20% of infants received their vaccination due at 6 months of age at least 1 month after the due date in 2012, putting them at risk of severe diseases such as whooping cough.
- Indigenous children at 12 months of age have coverage 6 percentage points lower than non-Indigenous children. Coverage for both groups is comparable at 24 and 60 months.
- In 2012, 82% of females aged 14–15 had received at least 1 dose of human papillomavirus (HPV) vaccination, and 71% had received all 3 doses. HPV vaccination coverage in all age groups was higher for earlier doses—as high as 82% for the first dose in females aged 14–15. Coverage was higher for younger females who were vaccinated at school—just under half (44%) of females aged 20–26 were fully vaccinated.
- Influenza (in previous 12 months) and pneumococcal polysaccharide (in previous 5 years) vaccine coverage for older Australians (65 and over) was 75% and 54% respectively in 2009.

Impact of vaccine preventable diseases

- Several previously common vaccine preventable diseases (VPDs) have been eliminated or are now rare, including diphtheria and poliomyelitis (0 cases in 2012).
- In 2012, there were 7 deaths reported in young children due to VPDs. All children were either too young to be vaccinated, or incompletely vaccinated.
- Each year, influenza infects an estimated 5–10% of the population, causes 13,000 hospitalisations (mainly in young children and the elderly) and 3,000 deaths (nearly all in the elderly) (Neuzil et al. 2002; Newall et al. 2008).

Figure 4.17



DTP3 = 3rd dose of a diphtheria (D), tetanus (T) and pertussis-containing (P) vaccine, schedule point at 6 months of age.
MMR1 = 1st dose of a measles, mumps and rubella vaccine, schedule point at 12 months of age.
MENC1 = 1st dose of a meningococcal C vaccine, schedule point at 12 months of age.
MMR2 = 2nd dose of a measles, mumps and rubella vaccine, schedule point at 48 months of age.

Note: This analysis is for doses assessed in 2012, allowing sufficient time to capture delayed doses.

Source: Australian Childhood Immunisation Register.

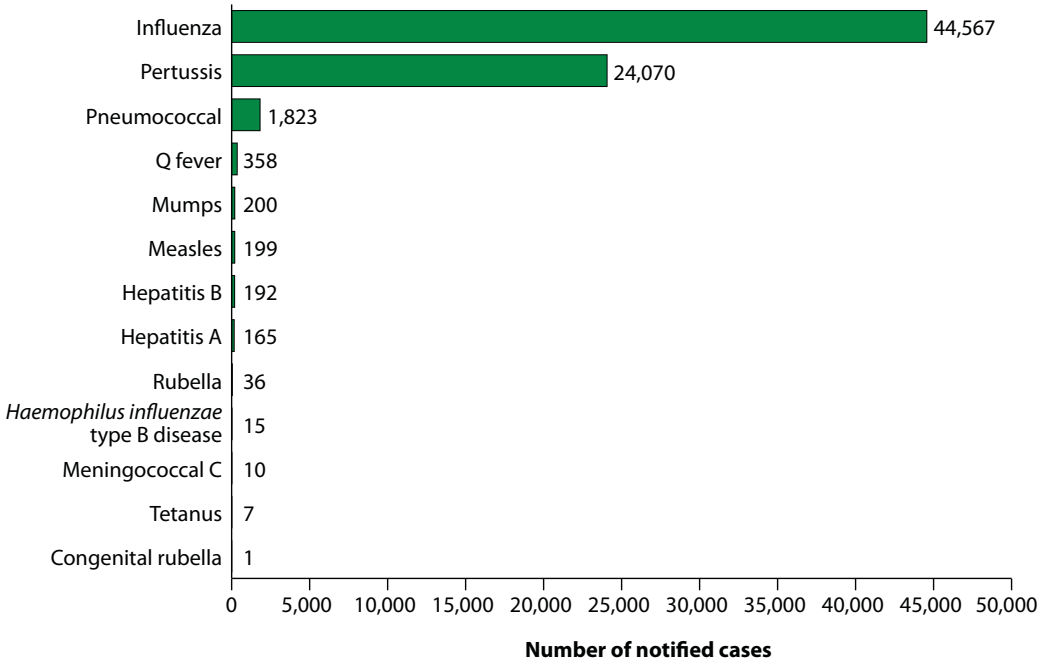
Vaccination delay for Australian children, 2012

- Pertussis (whooping cough) is the second most commonly notified VPD after influenza (see Figure 4.18). The highest incidence of whooping cough by age group was in infants aged under 6 months (1 in 300) but 50% of all cases were in adults aged 20 and over (Pillsbury et al. forthcoming). The most recent whooping cough epidemic was in 2009–2010. Between 2000 and 2010, multiple epidemics of pertussis occurred in Australia, with the highest rate of notifications reported in 2010 (156 cases per 100,000 population) (Department of Health 2013).
- There were 888 hospitalisations recorded due to invasive pneumococcal disease in 2011–12, with the highest rates in people aged under 1 and over 80. Infant vaccination for pneumococcal disease also prevents an estimated 1,500 pneumonia hospitalisations in children each year (Jardine et al. 2010). In 2012, there were 123 deaths due to invasive pneumococcal disease, of which 86 were people aged over 65.

SNAPSHOT

- There were 1,280 hospitalisations recorded due to rotavirus in 2011–12. Hospitalisations for all cases of acute gastroenteritis are an estimated 7,000 a year fewer than in pre-vaccine years (Dey et al. 2012).
- An average of 3,794 women a year aged under 25 had high-grade cervical abnormalities detected in 2010–2011, about 700 a year fewer than in 2004–2006—the period immediately before the human papillomavirus vaccine was introduced.
- There were 805 hospitalisations for chickenpox in 2011–12, an estimated 600 fewer per year than in pre-vaccine years (1998–1999).

Figure 4.18



Source: National Notifiable Diseases Surveillance System.

Most commonly notified vaccine preventable diseases in Australia, 2012

What is missing from the picture?

VPDs are most commonly monitored using reports of disease notifications (predominantly laboratory diagnoses), hospitalisations and deaths. Any diseases or manifestations not easily captured by these sources are more difficult to monitor.

There are no national data on vaccination coverage for adolescents for vaccines other than HPV. HPV coverage by Indigenous status is not available due to limitations in Indigenous status reporting. Vaccination coverage for the elderly is only obtainable when periodical Adult Vaccination Surveys are undertaken.

Where do I go for more information?

Communicable disease information including publications related to VPDs can be found at the National Notifiable Diseases Surveillance System website. Information on the National Immunisation Program is at the Immunise Australia website. See also www.ncirs.edu.au.

References

Department of Health 2013. The Australian Immunisation Handbook 2013. 10th edn. Canberra: Department of Health.

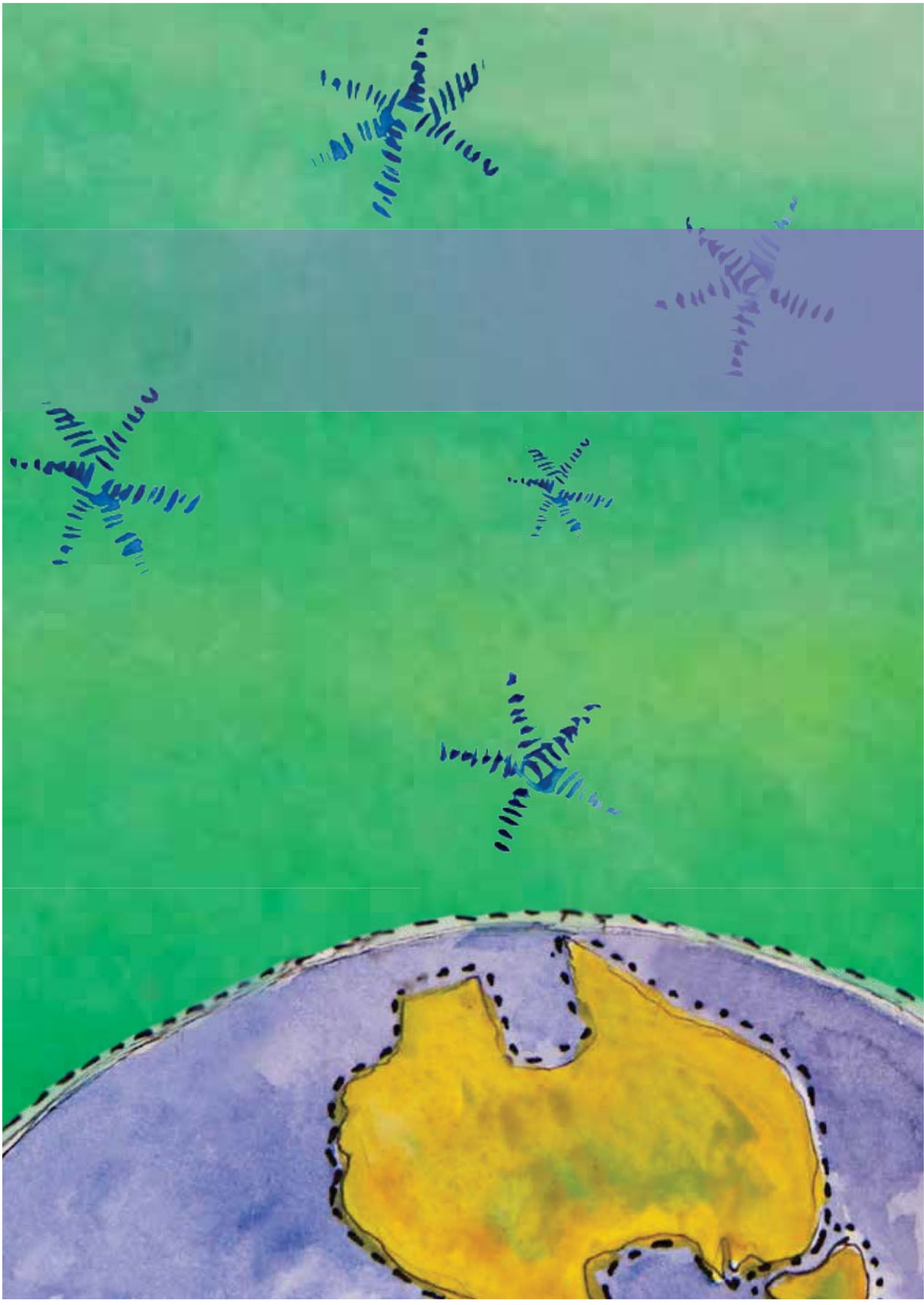
Dey A, Wang H, Menzies R & Macartney K 2012. Changes in hospitalisations for acute gastroenteritis in Australia after the national rotavirus vaccination program. Medical Journal of Australia 197:453–57.

Jardine A, Menzies R & McIntyre P 2010. Reduction in hospitalizations for pneumonia associated with the introduction of a pneumococcal conjugate vaccination schedule without a booster dose in Australia. Pediatric Infectious Disease Journal 29:607–12.

Neuzil KM, Zhu Y, Griffin MR, Edwards KM, Thompson JM, Tollefson SJ et al. 2002. Burden of interpandemic influenza in children younger than 5 years: a 25-year prospective study. Journal of Infectious Diseases 185:147–52.

Newall AT, Wood JG & MacIntyre CR 2008. Influenza-related hospitalisation and death in Australians aged 50 years and older. Vaccine 26:2135–41.

Pillsbury A, Quinn H & McIntyre P, forthcoming. Australian Vaccine Preventable Disease Epidemiological Review Series: Pertussis 2006–2012. Communicable Diseases Intelligence.



Chapter 5

Health behaviours and other risks to health

5.0 Introduction

A person's health and wellbeing are influenced by a number of intrinsically related biological, lifestyle, societal and environmental factors, many of which can be modified to some extent.

Individual biological factors can be as fundamental as genetic make-up, while lifestyle factors can encompass a range of matters, for example, diet, activity levels, and substance use. Societal and environmental influences can include where you live, and the affordability and availability of health-care services.

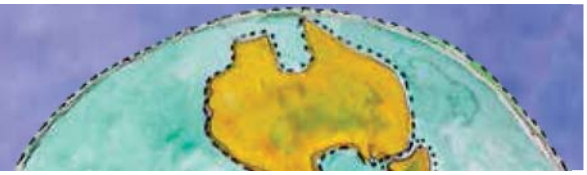
Things that increase our risk of ill health are known as risk factors. There are some population groups and certain life stages where risky behaviours and other risks to health are more common—for example, risky behaviours are particularly prevalent in youth (see Chapter 6).

This chapter focuses on common behavioural risk factors such as tobacco, alcohol and illicit drug use, and excess body weight (as the outcome of dietary and exercise behaviours). Biomedical risk factors such as high blood pressure and high cholesterol levels are also examined.

There is a snapshot on known risk factors for dementia, a topic of high public interest in an ageing Australian population.

In terms of societal and environmental influences, we have chosen to take a look at 2 population groups with unusual health risks—people in regional and remote areas, and prisoners.

5.1 Biomedical risk factors



SNAPSHOT

SNAPSHOT

Biomedical risk factors are bodily states that contribute to the development of chronic disease. The 3 biomedical factors in this snapshot—high blood pressure, high blood cholesterol and impaired fasting glucose—have direct and specific risks for health, and may be influenced by behavioural risk factors (see Chapter 5 '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 be amplified when other behavioural or biomedical risk factors are involved. The longer a person lives with 1 or more risk factors, the greater the effect on their overall health and wellbeing.

The latest risk factors results have been sourced from the biomedical component of the Australian Health Survey (AHS) 2011–12 (ABS 2013) and are presented for Australians aged 18 and over unless otherwise specified. The relationships between biomedical and other risk factors and specific diseases are discussed elsewhere in this report, in particular in Chapter 4.

High blood pressure

High blood pressure, also known as hypertension, is a risk factor for stroke, heart disease and chronic kidney disease and can also be considered a cardiovascular disease in its own right. Blood pressure represents the forces exerted by blood on the wall of the arteries. The results for measured high blood pressure presented here include those for people who might otherwise have high blood pressure but are managing their condition with medication.

In 2011–12:

- Of adults who had their blood pressure measured, 32% had high blood pressure—a greater proportion of men (34%) than women (29%) had high blood pressure.
- Of those with high blood pressure (excluding those taking medication), almost half (48%) were not aware before the measurement was taken that they had high blood pressure.
- High blood pressure was most common among people aged 85 and older (88%) and was present in 10% of people aged 18–44.

High blood cholesterol

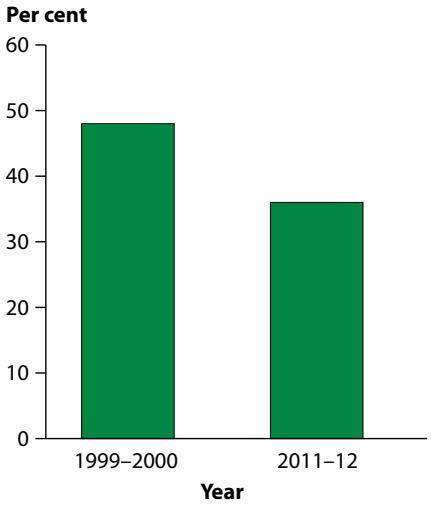
Cholesterol is a fatty substance produced by the liver from saturated fats in the diet. Sufficient physical activity and a diet low in saturated fats are both important contributors to maintaining desirable cholesterol levels. High blood cholesterol is a major risk factor for heart disease and stroke. The results presented are for measured high blood cholesterol only and do not include people who have normal cholesterol levels because they take cholesterol-lowering medication.

SNAPSHOT

In 2011–12:

- More than 1 in 3 people aged 25 and older had high blood cholesterol (36%), a significantly lower proportion than in 1999–2000 (48%) (Figure 5.1).
- One in 10 adults with measured high blood cholesterol (10%) were either unaware that they had the condition or did not consider it to be a long-term or current problem.
- A total of 5.6 million adults had high blood cholesterol—women (2.9 million) outnumbered men (2.7 million).
- One in 3 Australian adults (33%) had high levels of LDL 'bad' cholesterol and 23% had low levels of HDL 'good' cholesterol (see Glossary).
- High blood cholesterol was most common among those aged 55–64 (48%) and was present in 24% of people aged 18–44.

Figure 5.1



Sources: AIHW analysis of the 1999–2000 AusDiab Study; ABS 2013.

Proportion of people, aged 25 and older, with high blood cholesterol 1999–2000 and 2011–12

Impaired fasting glucose

Impaired fasting glucose (IFG) is defined as the presence of higher than usual levels of glucose in the blood after fasting. It is associated with impaired insulin secretion and is 1 of 2 measures used to define impaired glucose regulation, the other being impaired glucose tolerance. Both measures are risk factors for the future development of diabetes and cardiovascular disease (see Chapter 4 'Diabetes' and 'Coronary heart disease').

In 2011–12:

- About 416,000 adults had IFG—almost twice as many men (273,000) as women (143,000) had it.
- IFG was most common among people aged 75 and over (8%) and was present in 1% of people aged 18–44.

What is missing from the picture?

It is not clear when future collections of the biomedical data needed to determine trends will be undertaken. Currently there are some comparable biomedical data for 2 time points only—1999–2000 and 2011–12—and more time points will be needed to monitor the progress of these risk factors in the Australian population.

Where do I go for more information?

More information on biomedical risk factors is available from the following AIHW reports that are available for free download: *Prevention of cardiovascular disease, diabetes and chronic kidney disease: targeting risk factors*, *Risk factors contributing to chronic disease* and the forthcoming Cardiovascular, diabetes and kidney disease: Australian facts 2014.

Reference

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.

5.2 Behavioural risk factors

SNAPSHOT

This snapshot examines a number of behaviours that may have a detrimental effect on health. These include tobacco smoking, excessive alcohol consumption and poor patterns of eating and physical activity. Additional information about risk factors can be found in Chapter 4 and Chapter 5. See Chapter 7 'Health behaviours of Indigenous Australians' for a discussion of risk factors among Indigenous Australians.

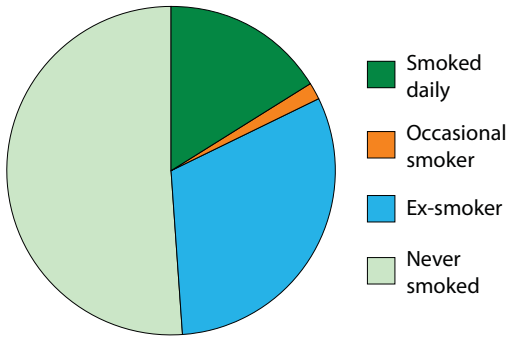
Information is drawn from the Australian Bureau of Statistics (ABS) Australian Health Survey (AHS) 2011–12 and previous National Health Surveys. Results are presented for people aged 18 and over unless otherwise specified.

Smoking

Smoking has been shown to increase the risks of developing a range of chronic health conditions, including cancer, heart disease, stroke and emphysema. In 2011–12:

- There were 2.8 million Australian adults (16%) who smoked daily (18% of men and 14% of women) (Figure 5.2).
- The daily smoking rate was higher in areas with the lowest socioeconomic status (SES) than in areas with the highest SES (23% and 10% respectively).
- The age-standardised daily smoking rate had fallen to 16% from 22% in 2001. For more information, see Chapter 5 'Tobacco smoking'.

Figure 5.2



Source: ABS 2013.

Smoking status in 2011–12

Alcohol consumption

Excessive alcohol consumption can lead to liver damage and a range of other health problems (see Chapter 5 'Alcohol risk and harm'). Based on the standards outlined in the 2009 National Health and Medical Research Council (NHMRC) guidelines (NHMRC 2009), in 2011–12:

- One in 5 Australian adults (20%) drank at levels that placed them at risk of lifetime harm. Lifetime risky drinking was almost 3 times as high among men as women (29% compared with 10%), and higher in low SES areas (22%) than in high SES areas (17%).
- Over 2 in 5 Australian adults (45%) drank at levels that placed them at risk of an alcohol-related injury from a single drinking occasion at least once per year (58% of men and 32% of women). The rate was lower in low SES areas (39%) than in high SES areas (47%).

Body weight

Being overweight or obese are risk factors for many chronic health conditions such as heart disease and some cancers. Being underweight can also carry health risks. In 2011–12:

- More than 3 in 5 Australian adults (63%) were overweight or obese (70% of men and 56% of women).
- Overweight and obesity were more common in areas with the lowest SES than areas with the highest SES (66% compared with 59%).
- The age-standardised overweight and obesity rate increased to 63% from 57% in 1995.
- Less than 2% of Australian adults were underweight.
- For children aged 5–17, 26% were overweight or obese, and 5% were underweight (see Chapter 6 'Childhood overweight and obesity').

Exercise

Insufficient exercise is a risk factor for chronic health conditions such as heart disease, stroke and high blood pressure. For adults 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). In 2011–12:

- Just over 2 in 5 adults (43%) were sufficiently active to meet the recommended guidelines (45% of males and 42% of females).
- Sufficient activity levels decreased with age, from 53% of those aged 18–24 to 25% of those aged 75 and over.
- Sufficient physical activity was more common in areas with the highest SES (52%) than areas with the lowest SES (34%).

Consumption of fruit and vegetables and 'treat' foods

Fruit and vegetables are an important source of nutrition and dietary fibre. Inadequate consumption of fruit and vegetables is a risk factor for stomach cancer, colorectal cancer and cardiovascular disease. The NHMRC recommends that adults consume 2 serves of fruit and 5 serves of vegetables each day (NHMRC 2013).

- In 2011–12, 92% of Australian adults did not eat 5 serves of vegetables, and 52% did not eat 2 serves of fruit.

'Treat' foods are high in energy and low in nutrients. Over-consumption of these foods can contribute to obesity and other health problems.

- On average, 'treat' foods contributed to 36% of energy intake for adults and 41% for children, which is more than the recommended 0–3 serves per day (depending on age and sex) (AIHW 2012).

What is missing from the picture?

More information on nutritional risk factors, such as measured levels of Vitamin D, iron and iodine, and self-reported salt intake, will be released from the AHS in 2014.

Where do I go for more information?

Information about behavioural risk factors is published in many AIHW reports, which are available at www.aihw.gov.au. Two reports of interest are: *Risk factors contributing to chronic disease* and *Cardiovascular, diabetes and kidney disease: Australian facts, 2014* (forthcoming).

AHS results are available at www.abs.gov.au.

The Australian National Preventive Health Agency's first national assessment of the state of preventive health in Australia is available at www.anpha.gov.au.

References

ABS (Australian Bureau of Statistics) 2013. Australian Health Survey: updated results, 2011–12. ABS cat. no. 4364.0.55.003. Canberra: ABS.

AIHW (Australian Institute of Health and Welfare) 2012. Australia's food & nutrition 2012. Cat. no. PHE 163. Canberra: AIHW.

DHAC (Department of Health and Aged Care) 1999. An active way to better health: national physical activity guidelines for adults. Canberra: DHAC.

NHMRC (National Health and Medical Research Council) 2009. Australian guidelines to reduce health risks from drinking alcohol. Canberra: NHMRC.

NHMRC 2013. Australian dietary guidelines. Canberra: NHMRC.

5.3 Alcohol risk and harm

The consumption of alcohol is widespread within Australia and entwined with many social and cultural activities. Excessive consumption is a major cause of road and other accidents, domestic and public violence, crime, liver disease and brain damage, and contributes to family breakdown and broader social dysfunction (MCDS 2011). In 2004–05, the cost to the Australian community of alcohol-related social problems such as crime, road accidents or lost workplace productivity, was estimated to be $15.3 billion (Collins & Lapsley 2008).

The National Drug Strategy 2010–2015 provides a national framework for action to minimise harm to individuals, families and communities from alcohol consumption (MCDS 2011). Action includes policy and strategy development, legislative change (including advertising, taxation and licensing), social marketing and media campaigns, and education.

Box 5.1

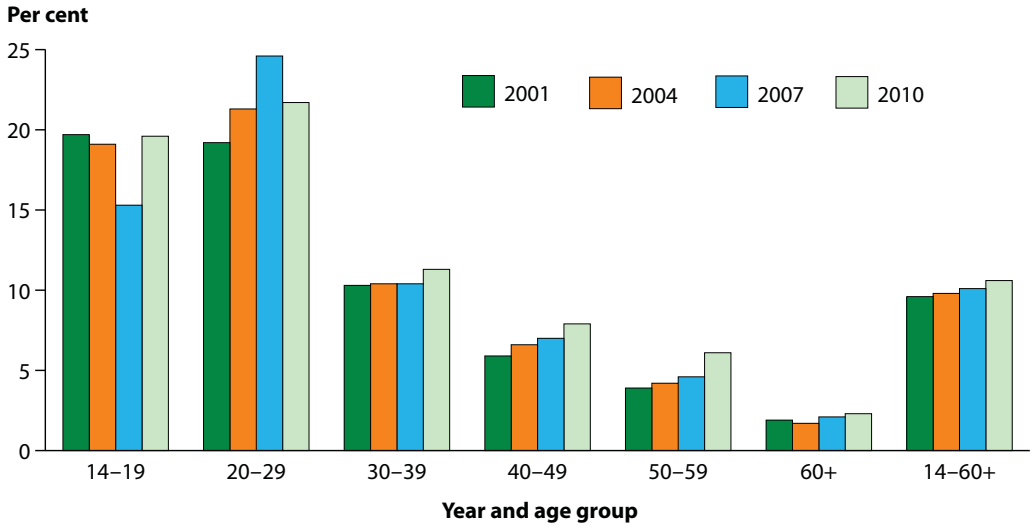
Alcohol risk

In 2009, the National Health and Medical Research Council released new Australian guidelines to reduce health risks from drinking alcohol. 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, and drinking no more than 4 standard drinks on a single occasion reduces the risk of alcohol-related injury arising from that occasion.

Are people drinking more alcohol?

- The volume of alcohol consumed by people in Australia gradually declined between 2006–07 and 2011–12 from 10.76 to 9.88 litres per year per person (ABS 2014).
- The National Drug Strategy Household Survey (NDSHS) also showed that between 2007 and 2010, daily drinking fell from 8.1% to 7.2% and the proportion of people abstaining rose from 10.1% to 12.1% between 2007 and 2010.
- Between 2007 and 2010, there was little change in the proportion of people drinking alcohol at levels that put them at risk of harm over their lifetime (at about 1 in 5), or from a single drinking occasion at least once a month (at about 1 in 4).
- People in their late teens and 20s were the most likely to drink at risky levels (for harm over their lifetime and from a single drinking occasion) compared with other age groups. For example, almost 1 in 2 were at risk of harm from a single drinking occasion (at least monthly) and this pattern remained stable between 2007 and 2010.
- The proportion of recent drinkers drinking large volumes of alcohol (11 or more drinks on a single occasion) at least once a month increased slightly between 2001 and 2010 (Figure 5.3). Patterns of this type of alcohol consumption varied by age with those in their teens and 20s more likely to drink at these levels (with patterns fluctuating over time) and 40s and 50s less likely to drink at these levels (but with this pattern of drinking increasing over time).

Figure 5.3



Sources: AIHW analysis of NDSHS data, 2001 to 2010.

Proportion of recent drinkers who have consumed 11 or more drinks on a single occasion at least monthly, by age group, and total, 2001 to 2010

Hospitalisations, treatment and other harm

While alcohol consumption, including risky consumption, has fluctuated, there have been increases in some measures of alcohol-related harm:

- Between 2007 and 2010, there was an increase in the proportion of people who reported being victims of physical abuse (4.5% to 8.1%) and put in fear (13.1% to 14.3%) by those under the influence of alcohol (NDSHS).
- In 2011–12, about 1% of hospitalisations had a drug-related principal diagnosis; of those, 57% were for alcohol. Over the last decade, the number (from 40,000 to more than 60,000) and rate (from about 200 to 270 hospitalisations per 100,000) of alcohol-related hospitalisations have risen annually (AIHW analysis of the National Hospital Morbidity Dataset).

While use of formal alcohol treatment services is not a measure of alcohol-related harm, it is nevertheless indicative of people's level of concern about their drinking. In the decade to 2011–12, publicly funded alcohol and other drug treatment services also showed a rise in the rate of treatment for alcohol problems (from about 280 to 340 episodes per 100,000 people aged 10 and older) and in the total number of alcohol treatment episodes (from nearly 50,000 to nearly 70,000 episodes) (AODTS NMDS).

What is missing from the picture?

Estimation of the 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 1 of a number of contributing factors. The data presented above on alcohol-related hospitalisations therefore represents a fraction of the total harm caused by alcohol. The latest data available on alcohol-attributable hospitalisations and deaths are for 2003; new data are expected to be available from forthcoming AIHW work on the burden of disease and injury in Australia. This information is expected to be finalised in 2015.

Self-reported alcohol consumption through surveys is likely to be an underestimate of the total amount of alcohol consumed in Australia (Stockwell et al. 2004). Wholesale sales data are an alternative measure of alcohol 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. 2012).

From 2013–14, information on primary and additional diagnoses will be available in the Emergency Department National Minimum Data Set which will provide insights into the number of alcohol-related emergency department presentations. However, nationally coordinated, publicly available data on alcohol-related police call-outs (such as for domestic and other violence) and ambulance attendances are also needed.

Where do I go for more information?

For more information on alcohol consumption and harms in Australia, refer to reports available online at www.aihw.gov.au/alcohol-and-other-drugs; and the *Risk factor trends: age patterns in key health risks over time* report.

In addition, several areas of this *Australia's health 2014* report present information on alcohol issues.

References

ABS (Australian Bureau of Statistics) 2014. Apparent consumption of alcohol, Australia, 2012–13. ABS cat. no. 4307.0.55.001. Canberra: ABS.

Collins D & Lapsley H 2008. The costs of tobacco, alcohol and illicit drug abuse to Australian society in 2004–05. National Drug Strategy Monograph Series no. 66. Canberra: DoHA.

Loxley W, Catalano P, Gilmore W & Chikritzhs T 2012. National alcohol sales data project stage 3: final report. Perth: Drug and Alcohol Office, Government of Western Australia and Curtin University, National Drug Research Institute.

MCDS (Ministerial Council on Drug Strategy) 2011. The National Drug Strategy 2010–2015. Canberra: Commonwealth of Australia.

Stockwell T, Donath S, Cooper-Stanbury M, Chikritzhs T, Catalano P & Mateo C 2004. Under-reporting of alcohol consumption in household surveys: a comparison of quantity-frequency, graduated-frequency and recent recall. Addiction 99(8):1024–33.

5.4 Tobacco smoking

SNAPSHOT

Tobacco smoking is a leading risk factor for chronic disease and death, including many types of cancer, respiratory disease and heart disease.

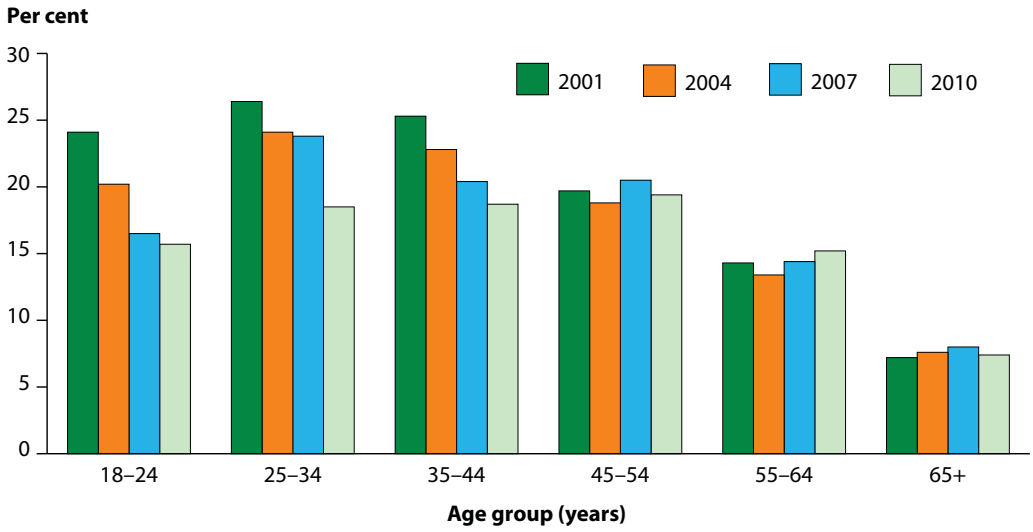
The National Tobacco Strategy 2012–2018 provides a national framework for action to minimise harm to individuals, families and communities from tobacco smoking (IGCD 2013). Strategies to minimise the harm caused by tobacco smoking have been persistent and multifaceted over decades. Action includes activities such as policy and strategy development, legislative change (including advertising—such as plain packaging—and taxation and licensing), social marketing and media campaigns, and education.

Smoking rates continue to fall

The 2010 National Drug Strategy Household Survey (NDSHS) and the 2011–12 Australian Health Survey (ABS 2013) reported similar rates for adult daily smoking at about 16%. Both surveys reported falls in daily smoking over the last decade, continuing the long-term downward trend of tobacco smoking in Australia from 43% in 1964 (OECD 2013).

- The recent fall is strongly influenced by fewer young people taking up smoking and fewer adults aged up to 45 smoking daily. In 2001, 24% of 18–24 year olds smoked daily—by 2010, this had fallen to 16%.
- The same falls have not been seen among older people (Figure 5.4). People aged 45–54 smoked on average the largest number of cigarettes compared with other age groups (about 130 per week).

Figure 5.4



Source: AIHW analysis of 2001 to 2010 NDSHS data.

Adult daily smoking rates, by age group, 2001 to 2010

Surveys of students have shown similar trends as adults—a significant fall in daily smoking over the last decade; however, this slowed in the 3–4 years up to 2011. Over the last decade (to 2011), smoking in the past 4 weeks among students aged 12–15 fell from about 20% to 6% and more than three-quarters (77%) had never smoked (increasing from 53% in 2002) (White & Bariola 2012; White & Hayman 2004).

In addition to information from surveys, excise and customs data can be used to monitor trends in tobacco use. Between 2001 and 2011, total excise on locally manufactured tobacco together with customs duties on imported products increased by 38%, from $4.6 billion to $6.4 billion (ATO 2012). Using a combination of data sources, it was estimated that 24 billion cigarettes, cigars and cigarette equivalents were consumed in 2010–11, down from 31.5 billion in 1998–99 (Scollo & Winstanley 2012).

Quitting can be hard

Tobacco dependence is a chronic condition. To quit smoking, repeated attempts are typically required (Zwar et al. 2011). Successfully quitting smoking, however, can result in an increase in life expectancy of up to 10 years, if it occurs early enough. In 2010, almost 40% of smokers had reduced the amount they smoked each day and 29% had tried unsuccessfully to give up smoking; most tried because smoking was affecting their health or because the cost had increased (NDSHS). Age seems to be an important factor in quitting—in 2010, about three-quarters of 18–34 year olds had or were planning to give up within the next 12 months, but intent declines as age increases to about half of those aged 65 and over (NDSHS).

What is missing from the picture?

Estimation of the exact amount of ill health and death associated with tobacco use is complex. While both can occur as a direct result of tobacco smoking, in most cases tobacco smoking is one of a number of contributing factors. Data on tobacco-related hospitalisations therefore represent a fraction of the total harm caused by tobacco smoking. The latest data available on tobacco-attributable hospitalisations and deaths are for 2003; new data are expected to be available from forthcoming AIHW work on the burden of disease and injury in Australia. This information is expected to be finalised in 2015. There is also a lack of national data about people who have quit smoking and why they have been successful.

Where do I go for more information?

For more information on tobacco smoking in Australia, refer to the reports available online at www.aihw.gov.au/alcohol-and-other-drugs; and *Tobacco in Australia: facts and issues* at www.tobaccoinaustralia.org.au.

In addition, several areas of this *Australia's health 2014* report present information on tobacco smoking.

SNAPSHOT

References

ABS (Australian Bureau of Statistics) 2013. Australian Health Survey: first results, 2011–12. ABS cat. no. 4364.0.55.001. Canberra: ABS.

ATO (Australian Taxation Office) 2012. Taxation statistics 2009–10: a summary of income tax returns for the 2009–10 income year and other reported tax information for the 2010–11 financial year. Canberra: ATO.

IGCD (Intergovernmental Committee on Drugs) Standing Committee on Tobacco 2013. National Tobacco Strategy. Canberra: Commonwealth of Australia.

OECD (Organisation for Economic Co-operation and Development) 2013. OECD health data: statistics and indicators for 30 countries, CD ROM and online version. Paris: OECD.

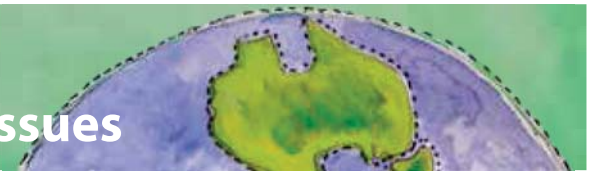
Scollo M & Winstanley M 2012. Tobacco in Australia: facts and issues. 4th edn. Melbourne: Cancer Council Victoria.

White V & Bariola E 2012. Australian secondary school students' use of tobacco, alcohol, and over-the counter and illicit substances in 2011. Melbourne: Cancer Council Victoria.

White V & Hayman J 2004. Smoking behaviours of Australian secondary school students in 2002. National Drug Strategy monograph series no. 54. Canberra: DoHA.

Zwar N, Richmond R, Borland R, Peters M, Litt J, Bell J et al. 2011. Supporting smoking cessation: a guide for health professionals. Melbourne: The Royal Australian College of General Practitioners.

5.5 Illicit drug use—current and future issues



FEATURE ARTICLE

FEATURE ARTICLE

This article focuses on illicit drug use, which is a risk factor for ill health and death in Australia (see Box 5.2 for definitions). Illicit drug use is associated with conditions such as HIV/AIDS, hepatitis C, low birthweight, malnutrition, infective endocarditis (leading to damage to the heart valves), poisoning, mental illness, suicide, self-inflicted injury and overdose (AIHW 2010). The relative health impact of illicit drug use varies depending on the specific type of drug used and the circumstances of its use. Overall, however, illicit drug use (and disorders) account for an increasing proportion of the global burden of disease (moving from the 18th to 15th ranking risk factor between 1990 and 2010) (IHME 2013).

Illicit drugs not only have dangerous health impacts but they are a significant contributor to crime, road accidents and violent incidents, and to relationship breakdown and social dysfunction (MCDS 2011). In 2004–05, illicit drugs were estimated to cost Australia $8.2 billion dollars for that year, including $201 million in health-care costs (compared with $15.3 billion for alcohol) (Collins & Lapsley 2008).

The National Drug Strategy commenced in 1985 and seeks to engage all levels and parts of government, the non-government sector and the community. The overarching approach of the Strategy is harm minimisation, which encompasses the 3 equally important pillars of demand reduction, supply reduction and harm reduction (MCDS 2011). The harm-minimisation approach encourages collaboration and partnerships between those groups with a direct interest in drug policy and legislation.

Since 1998, reported use of all illicit drugs combined has fallen in the general population. Within this overall trend, however, use of some drugs increased, and in recent years a number of new drugs and trends have emerged, with associated changes in the broader illicit drugs environment.

In particular, these developments have included:

- increased use of specific illicit drugs such as cannabis, cocaine and hallucinogens
- increased misuse of over-the-counter and prescription pharmaceutical drugs such as prescription opioids and benzodiazepines
- emerging psychoactive substances or 'EPS', such as synthetic cannabinoids and mephadrone (sometimes also referred to as 'new' or 'novel' drugs)
- the emergence of new markets and technologies, especially internet-based trading schemes, of which the Silk Road is perhaps the best-known example.

This article explores these trends, highlights current evidence on these issues, and highlights areas where additional information would inform activity to reduce the health-related harms, costs and impacts of illicit drug use on Australians.

Box 5.2

Definition of illicit drug use

The term 'illicit drug' can encompass a number of broad concepts including:

- illegal drugs—a drug that is prohibited from manufacture, sale or possession in Australia, for example, cannabis, cocaine, heroin and ecstasy
- misuse, non-medical or extra-medical use of pharmaceuticals—drugs that are available from a pharmacy, over-the-counter or by prescription, which may be subject to misuse, 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, or inhalants such as petrol, paint or glue (but not including tobacco or alcohol) (MCDS 2011).

Each data collection cited in this article uses a slightly different definition of illicit drug use; please see the relevant report for additional information.

Data on the general population have generally been drawn from the National Drug Strategy Household Survey (NDSHS). The scope of the survey is residential households, and excludes institutional settings, hostels, motels and homeless people. Findings are subject to sampling and non-sampling bias and are based on self-reported data (and therefore not empirically verified by blood tests or other screening measures) (AIHW 2011). Data from this and previous surveys in the series are used in this article to report on illicit drug use trends among the general population. Results from the 2013 NDSHS will be available in the second half of 2014.

Data on young people in this article are drawn from the Australian School Students Alcohol and Drug (ASSAD) survey (White & Bariola 2012).

In addition to general population surveys, data are collected from people who inject drugs, and from current ecstasy users. Data in this article on these sentinel populations are drawn from the Illicit Drug Reporting System (IDRS) and the Ecstasy and related Drugs Reporting System (EDRS). When combined with data from interviews with key experts and other indicator data, these surveys provide early warnings of trends in illicit drug use.

What we know about illicit drug use

Illicit drug overview

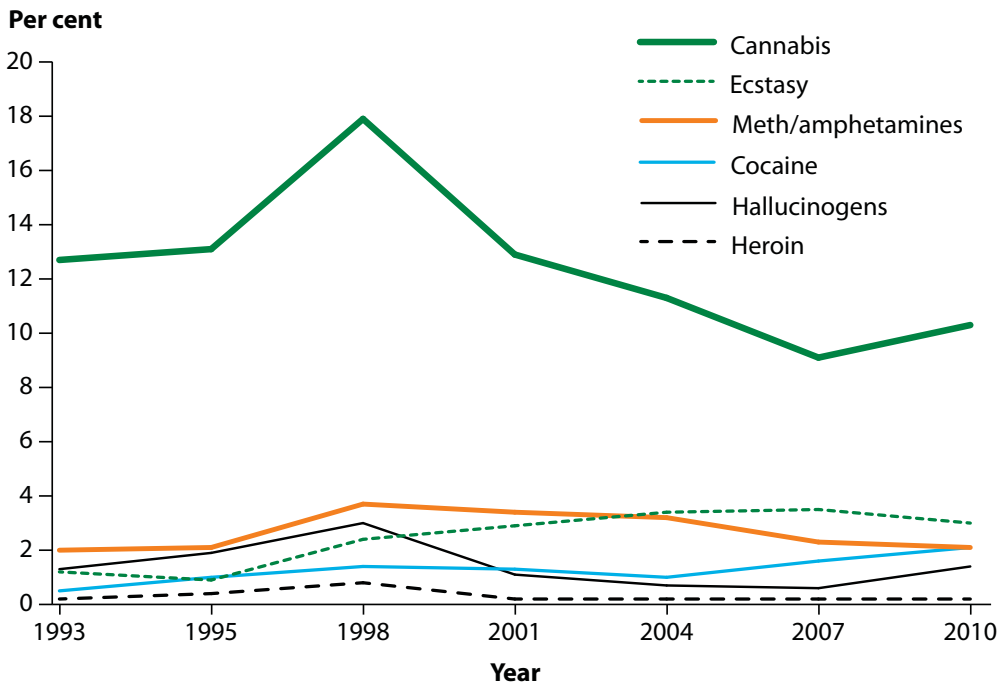
In 2011, between 167 million and 315 million people worldwide aged 15–64 were estimated to have used an illicit substance in the preceding year. This corresponds to between 3.6% and 6.9% of the global adult population (UNODC 2013a).

Findings from the 2010 NDSHS showed that in 2010 in Australia most people had never used an illicit drug (60.2%) but that just over 1 in 7 (14.7%) had used 1 in the last 12 months (AIHW 2011).

The most common illegal drugs recently used in 2010 were cannabis (used by 10.3% of the population), ecstasy (3.0%) methamphetamines (2.1%), and cocaine (2.1%). Pharmaceutical misuse (4.2%) eclipsed illegal drug use (except cannabis) when drug types were combined.

Illicit drug use in the previous 12 months fluctuated between 1993 and 2010 for various drugs (Figure 5.5). Between 2007 and 2010, the overall figure rose from 13.4% of the population to 14.7% for all illicit drugs combined. This rise was mainly due to an increase in people using cannabis, pharmaceuticals for non-medical purposes, cocaine and hallucinogens (for example, LSD or magic mushrooms). Recent use of pharmaceuticals for non-medical purposes increased between 2007 and 2010, from 3.7% to 4.2%. This was the first rise for this category since 2001.

Figure 5.5



Source: AIHW 2011.

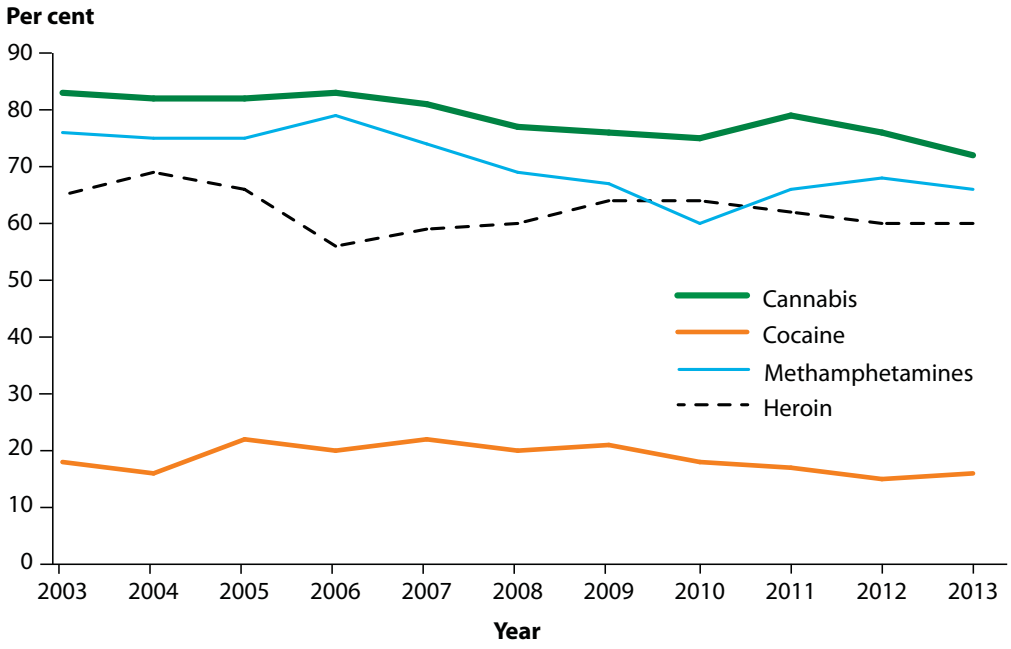
Recent illicit drug use (in the last 12 months), selected drugs, people aged 14 and over, 1993 to 2010

Illicit drug use varies by population characteristics and was more prevalent among the following groups when compared with the proportion for the whole population (14.7%):

- males (17.0% compared with 12.3% for females)
- younger people (27.5% for people aged 20–29)
- people who identified as being homosexual/bisexual (35.7%)
- unemployed people (24.9%).

The drug use patterns of injecting drug users surveyed through the IDRS were different to the general population. Cannabis (72%) was the most commonly used drug, but this was followed by methamphetamine (66%) and heroin (60%) (Figure 5.6). The 2 most common illicit drugs used among the general population (not including ecstasy) were also used most frequently among recent ecstasy users. According to the EDRS, 86% of recent (last 6 months) ecstasy users had used cannabis in the previous 6 months and 50% had used methamphetamines.

Figure 5.6

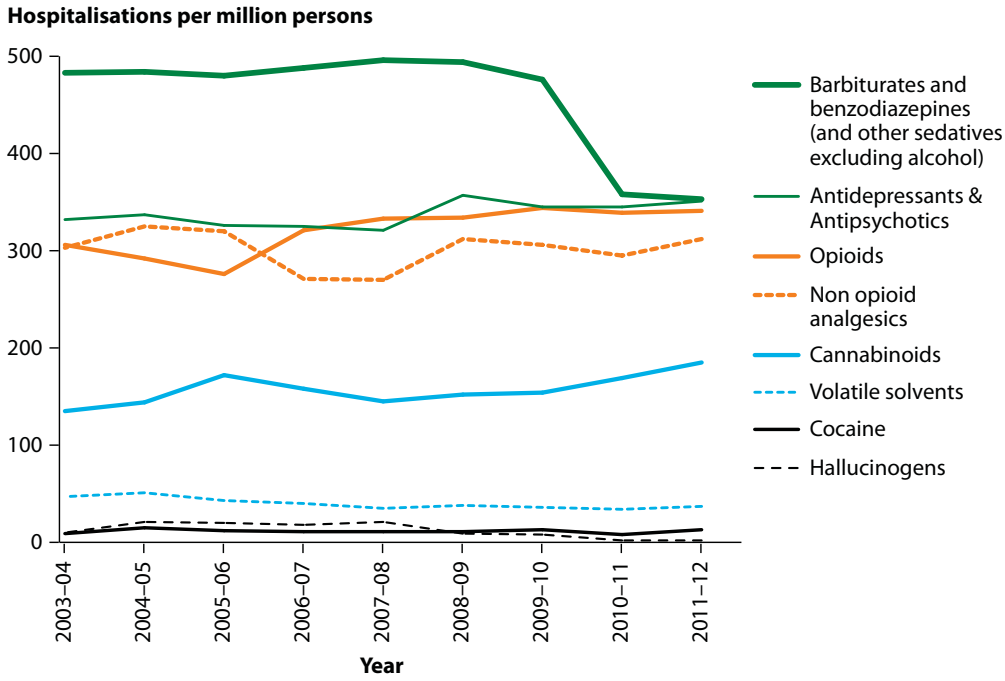


Source: Stafford & Burns 2011.

Use of selected illicit drugs by injecting drug users in the previous 6 months, 2003 to 2013

While the total number of drug-related hospitalisations gradually increased from about 81,000 in 2003–04 to 108,000 in 2011–12, this was largely driven by alcohol rather than illicit drugs. Indeed, the rate of hospitalisations for illicit drugs remained relatively stable over the period 2003–04 to 2011–12, except for a fall in the rate of hospitalisations for barbiturates and benzodiazepines (and other sedatives excluding alcohol) over the latter part of that period. There have, however, been increases associated with antidepressants and antipsychotics, opioids and non-opioid pain-killers, some of which may have been due to misuse (Figure 5.7).

Figure 5.7



Notes

1. Rates represent hospitalisations per million population.
2. All rates are based on the latest version of the Australian estimated resident population as at 30 June of the reference year.

Source: AODTS NMDS 2011–12 report.

Hospitalisations with a drug-related principal diagnosis (selected drugs), per million people, 2003–04 to 2011–12

Cannabis

In 2010, recent use of cannabis was 10.3%, up from 9.1% in 2007. The only statistically significant increase, however, was in people aged 50–59 (from 3.8% in 2007 to 5.5% in 2010). Over the longer term there has been a fall in recent cannabis use (from a peak of 17.9% in 1998).

Cannabis was the most commonly used illicit drug among young people aged 12–17, with 15% of students in 2010 reporting the use of cannabis at some time in their life. This was less than the 2005 figure of 18%.

In 2013, 86% of recent ecstasy users had used cannabis.

Cannabis use has changed very little among recent ecstasy users, fluctuating between 76% and 86% over the last decade. Just under 3 in 4 (72%) of injecting drug users had used cannabis in the last 6 months, down from 83% in 2003.

Treatment demand for cannabis use has remained relatively stable over the last decade at between 30,000 and 35,000 treatment episodes annually.

Ecstasy

Recent use of ecstasy was lower in 2010 (3%) than in 2007 (3.5%), after increasing steadily since 1995. Just 2.7% of secondary school students in 2010 had ever used ecstasy and use has fallen from 3.9% in 2005. It is not possible to measure ecstasy use over time in the EDRS. However, looking at drug of choice over time, people nominating ecstasy as their preferred drug has declined over the last decade from 52% to 32% in 2013.

Methamphetamines

In 2010, at 2.1%, use of methamphetamines had fallen to the lowest level seen since 1995. A similar trend has been seen among young people where students were less likely to have ever used the drug in 2011 (2.9%) than in 2005 (5.3%). Similar patterns were also seen among ecstasy and injecting drug users between 2003 and 2013 (from 84% down to 50% for ecstasy users and 76% down to 66% for injecting drug users). Treatment for amphetamines has fluctuated between 10,000 and 15,000 episodes each year over the last decade.

Cocaine

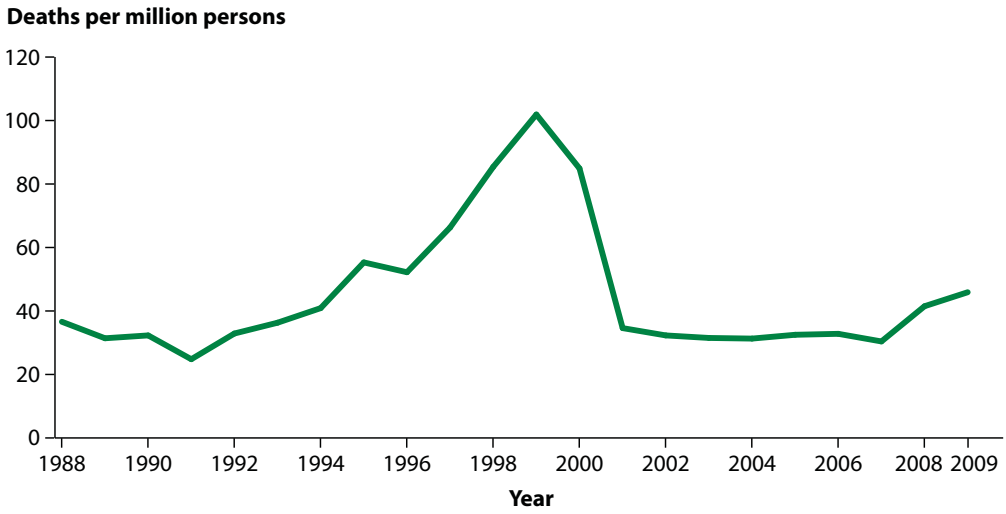
Cocaine use has been increasing since 2004, and this trend continued in 2010 with a rise from 1.6% in 2007 to 2.1% in 2010. Cocaine users were more likely to live in major cities and be more socioeconomically advantaged than other drug users. Use among regular ecstasy users increased from 23% in 2003 to 36% in 2013, peaking at 48% in 2010. Cocaine use among injecting drug users has declined since 2003 (from 83% to 72% in 2013). Use of cocaine was rare among young people.

Heroin and other opioids

After peaking at 0.8% in 1998, heroin use among the general population remained stable between 2001 and 2010 at 0.2%. Similar patterns of heroin use were seen among injecting drug users, with the proportion reporting heroin use in the preceding 6 months remaining fairly stable between 2007 and 2013 (between 59% and 64%).

There was a major change in the heroin market in Australia in early 2001 when reductions in heroin availability and purity, and increases in price, resulted in decreased heroin use and harm, which was followed by a sharp fall in fatal heroin-related overdoses (Degenhardt & Day et al. 2006). The level of opioid-related deaths in the years following the shortage has remained relatively low, although there was a small rise between 2007 and 2009, attributed to a rise in deaths from prescription opioid overdoses (Figure 5.8).

Figure 5.8



Source: Roxburgh & Burns 2013. Data on accidental deaths are collected from the medical certificates of cause of death submitted to each state or territory's registrar of births, deaths and marriages, and from the National Coroners Information System. Data are compiled by the Australian Bureau of Statistics. Deaths are coded according to the WHO's ICD-10 classification.

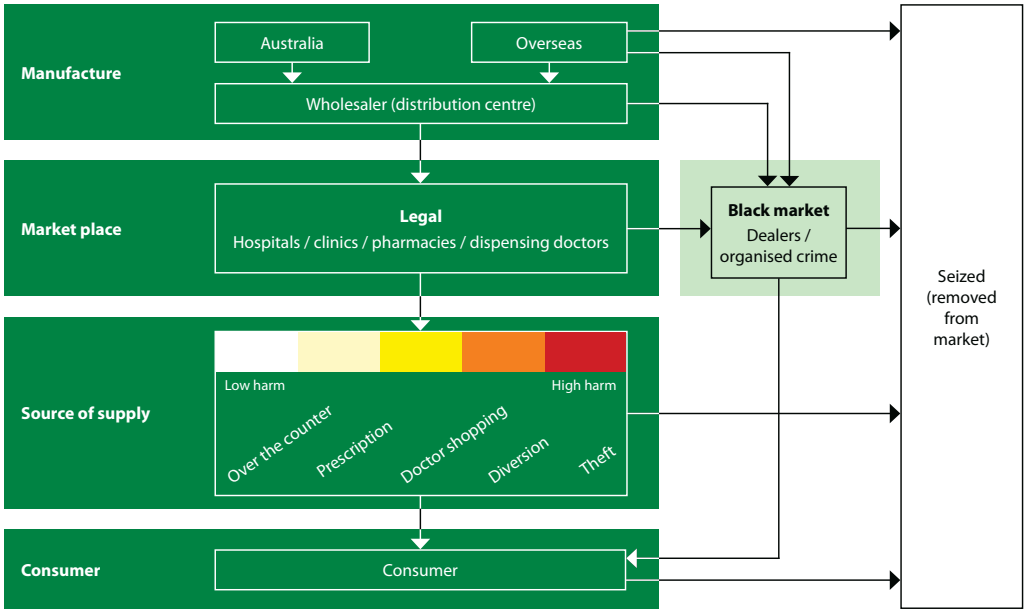
Rate of deaths due to opioids per million persons among 15–54 year olds, 1988–2009

Use and misuse of pharmaceutical drugs including opioids

Pharmaceutical drugs provide a broad range of benefits to improve the health and quality of life of Australians. The fact that some medicines are also subject to misuse does not detract from these benefits. However, pharmaceutical misuse is an emerging issue of concern (Nicholas et al. 2011) and therefore 1 of the issues explored in this article.

Australian interest in pharmaceutical misuse stems from the Canadian and United States experience where use and harms of prescription drugs are now more common than for heroin (Nicholas et al. 2011). In addition, as highlighted in figures 5.7 and 5.8, Australia has seen an increase in mortality and morbidity associated with prescription drugs, from opioids in particular. The source of supply of pharmaceuticals is complex, which creates challenges for monitoring and control (Figure 5.9).

Figure 5.9



Pharmaceutical supply chain

Opioid dependence is a chronic, relapsing condition that requires long-term treatment. Treatment is tailored to a person's individual circumstances, and treatment types may be combined (for example, opioid pharmacotherapy combined with counselling) or varied over time (NDARC 2004). The 3 main treatment approaches for opioid dependence are:

- detoxification (also called withdrawal)
- opioid pharmacotherapy (also called substitution or maintenance treatment)
- abstinence-based treatments including self-help groups, counselling and therapeutic communities (NDARC 2004).

The broad goal of treatment for opioid dependence is to reduce the health, social and economic harms to individuals and the community arising from dependence (DoHA 2007).

Opioid pharmacotherapy involves replacing the drug of dependence with a legally obtained, longer-lasting opioid that is taken orally. It reduces or eliminates withdrawal symptoms and drug cravings (NDARC 2004). Research suggests that pharmacotherapy treatment reduces heroin use and associated criminal behaviour and improves physical and mental health and social functioning (Ritter & Chalmers 2009).

In Australia, 3 medications are registered for short-term detoxification and long-term maintenance treatment for opioid-dependent people:

- methadone oral liquid (available since 1969)
- buprenorphine tablet (available since 2000)
- buprenorphine–naloxone tablet (available since 2005) or film (available since 2011) (DoHA 2007; DoHA 2012).

National data on treatment specifically for opioid use are available from 2 main sources, the Alcohol and Other Drug Treatment Services National Minimum Data Set (AODTS NMDS) and the National Opioid Pharmacotherapy Statistics Annual Data (NOPSAD) collection.

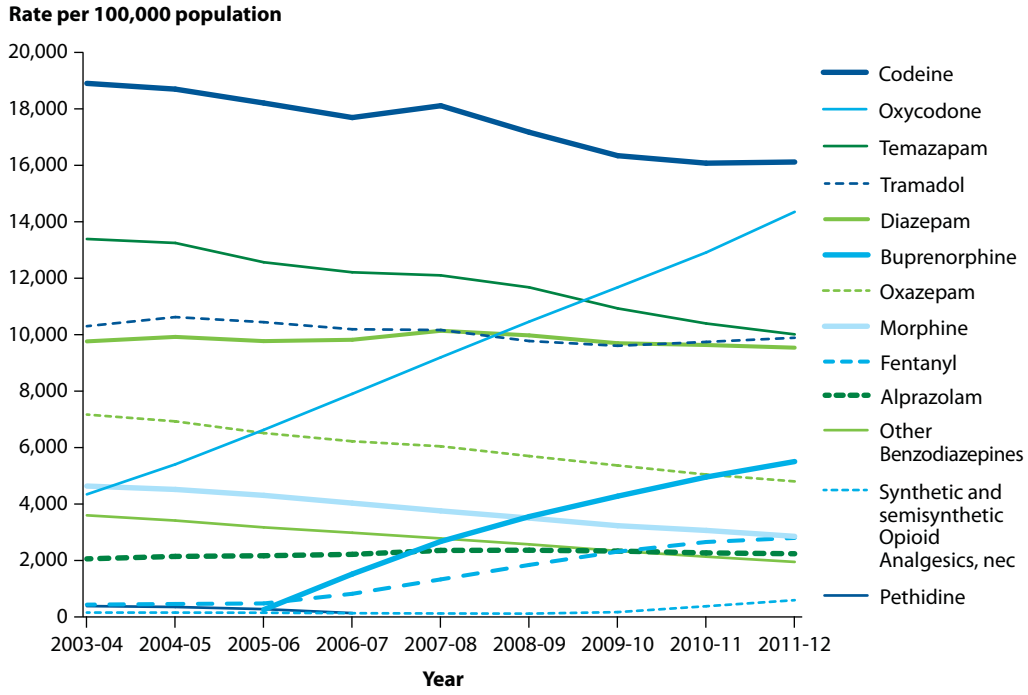
Findings from the AODTS NMDS show that treatment for heroin declined from about 23,000 to 13,000 episodes over the last decade (AIHW 2013a); however, treatment for some pharmaceutical opioids, including morphine, codeine, oxycodone and fentanyl, increased over the last 5 years. These increases are likely to be conservative estimates due to data coding issues in some jurisdictions. The AODTS NMDS does not capture the majority of treatment provided for opioid dependence. NOPSAD captures information on opioid pharmacotherapy in Australia and showed an increase in the number of clients receiving pharmacotherapy treatment from about 24,700 in 1998 to 47,442 in 2013 (AIHW 2014). Clients were about twice as likely to report heroin as an opioid drug of dependence than they were for all opioid pharmaceuticals combined.

Prior to 2001, heroin was responsible for more than two-thirds of opioid-related hospitalisations (at around 5 or 6 hospitalisations per 100,000 people) until 2005–06 when other opioids, including morphine, oxycodone and codeine, became twice as likely as heroin to be reported as a principal diagnosis (Roxburgh et al. 2011).

Australia has experienced a substantial increase in pharmaceutical opioid supply in recent years. Data from the Pharmaceutical Benefits Scheme shows an increase in prescriptions of some pharmaceutical opioids (including oxycodone, buprenorphine and fentanyl) over the last decade (Figure 5.10). Prescription of benzodiazepines has remained stable or declined over the same period. Analysis of PBS and other data by Roxburgh et al. (2011) suggests that prescriptions for oxycodone are increasing in Australia, predominantly for low-dose formulations, and for older patients. However, increased availability is linked to increased misuse, medical emergencies and poisoning deaths (Roxburgh et al. 2011).

The latest data published by the Australian Crime Commission in its 2011–12 Illicit Drug Data Report showed that in 2011–12, the total number of pharmaceuticals detected at Australian borders (imported illegally) increased by 10 per cent, from around 1,200 in 2010–11 to 1,300 in 2011–12, the highest reported in the last decade. The majority (97%) of these detections were benzodiazepines. The total number of pharmaceutical opioids detections has remained relatively stable at around 40 in both 2010–11 and 2011–12. Oxycodone was the most common pharmaceutical opioid detected at Australian borders in 2011–12, accounting for about half of those detections (ACC 2013).

Figure 5.10



Notes

1. Solid lines are opioids, dashed and dotted lines are benzodiazepines.
2. The DUSC Drug Utilisation Database comprises data on PBS and RPBS subsidised medicines (supplied by Medicare Australia) and estimates of non-subsidised medicines (under co-payment and private prescriptions) are calculated from continuous data on all prescriptions dispensed from a validated sample of community-based pharmacies. In-patient hospital prescribing is not included. Data are based on the date of supply or dispensing of prescriptions.
3. Rates represent prescriptions per 100,000 population. All rates are based on the latest version of the Australian estimated resident population as at 30 June of the reference year.

Source: DUSC Drug Utilisation Database, Commonwealth of Australia.

Pharmaceutical opioid and benzodiazepine prescriptions, 2003–04 to 2011–12

'New', 'novel' or emerging psychoactive substances

In recent years, so-called 'new', 'novel' or emerging psychoactive substances (EPS) have entered the illicit drug market as 'legal' alternatives to illegal drugs with the potential to pose risks to public health and safety (UNODC 2013b). EPS have been known in the market by terms such as 'legal highs', 'herbal highs', 'bath salts' and over the last decade have been introduced through various modes of distribution and account for an increasingly significant share of illicit drug markets in some countries (UNODC 2013b).

EPS often mimic the effects of existing illicit psychoactive drugs such as cannabis, ecstasy and LSD, or have a chemical structure very similar to existing illicit substances (NDARC 2013a). They include substances such as synthetic cannabinoids (such as 'spice') and synthetic cathinones (such as mephedrone, called 'drone' or 'MCAT' and dimethylmethcathinone, called 'MM-CAT' or 'meowmeow').

Recent data from the EDRS found that, overall, just under half (44%) of regular ecstasy users surveyed reported recent use of any form of EPS in 2013, including synthetic cannabinoids, in the preceding six months. This proportion has increased slightly from 40% in 2012 (NDARC 2013b).

Analysis of border seizures containing EPS indicates that the number of seizures has continued to increase since 2006–07 (ACC 2013).

Emerging marketplaces

Over the last 15 years, both in Australia and internationally, there have been new developments in the marketing and distribution of drugs, with the Internet playing an increasing role (PWMRG 2010). There are now many internet sites selling drugs such as prescription opioids, substances marketed as 'legal' highs, and EPS.

The National Drug and Alcohol Research Centre's 'Drugs and new technologies' or 'DNeT' project uses a number of methods to monitor 'surface' websites (registered with search engines, and hence can be found using tools such as Google), and 'deep web' marketplaces for the illicit drug trade (where transactions are encrypted and therefore anonymised). There is some evidence that the most commonly known of these marketplaces, the Silk Road, has broadened the availability of EPS and other more conventional illicit drugs (Van Buskirk et al. 2013a).

Over the 12-month period between August 2012 and August 2013, the number of retailers shipping to Australia on the surface web gradually declined from a peak of 119 in September 2012 to 79 in August 2013. The number of retailers on the Silk Road, however, increased from 282 to 532 (Van Buskirk et al. 2013b). In October 2013, following the arrest of its alleged moderator, the Silk Road website was closed down. However, following the closure, discussions on the Silk Road forums and elsewhere suggested alternative marketplaces have since emerged.

What is missing from the picture?

Data on the costs of illicit drugs to the community were last published in 2008 (based on 2004–05 data). More up-to-date data would provide better insights into the scale of this issue in Australian society.

While information on both licit and illicit drug use is available through population surveys, and administrative and other data collections, understanding the complexities of the relationship between use and harms associated with these drugs, particularly for poly-drug use, remains a challenge. Data on the structure of the illicit drug market, price variations and supply chains is also difficult to explore given the illegal activities often involved.

For the AODTS NMDS and NOPSAD collections, the AIHW is working with states and territories to improve data on pharmaceutical opioids. Changes were implemented to the NOPSAD collection in 2013 to include the main opioid drug of dependence that led clients to opioid pharmacotherapy treatment. Results of this work were released in June 2014. National collection of drug-related emergency department presentations will also contribute to better understanding of this emerging issue, as data on primary and additional diagnoses will be collected from 2013–14.

The Electronic Recording and Reporting of Controlled Drugs (ERRCD) initiative, originally developed by the Tasmanian Government, is a way to develop a nationally consistent system to collect and report real time data relating to the dispensing of drugs such as prescription opioids. The system is at various stages of implementation across the country.

New questions on EPS have been included in the 2013 NDSHS questionnaire and will provide the first national general population estimate of the use of these drugs. Results from the survey will be released in the second half of 2014. Questions have also been included on whether people source selected illicit drugs online. It is also anticipated that questions on where drugs are obtained (specifically on the Internet) will be included in future EDRS research.

Performance and Image Enhancing Drugs (PIEDs) have received considerable recent public and media attention. While recent information on criminal justice activity (such as seizures) is available, more information on the use of these drugs is needed. The release of results from the 2013 NDSHS, as mentioned above, will also shed light on the size and complexity of this issue.

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>. Also see the additional research and statistics from the *National Drug and Alcohol Research Centre*, the *Australian Crime Commission* and the *National Centre for Education and Training on Addiction* websites.

More information can also be found in Chapter 5 'Alcohol risk and harm' and 'Tobacco smoking', Chapter 6 'Youth health: the prime of life?' and Chapter 7 'Health behaviours of Indigenous Australians'.

References

ACC (Australian Crime Commission) 2013. 2011–12 Illicit drug data report. Australian Crime Commission. Canberra: ACC.

AIHW (Australian Institute of Health and Welfare) 2010. Australia's health 2010. Australia's health series no. 12. Cat. no. AUS 122. Canberra: AIHW.

AIHW 2011. 2010 National Drug Strategy Household Survey report. Drug statistics series no. 25. Cat. no. PHE 145. Canberra: AIHW.

AIHW 2013a. Alcohol and other drug treatment services in Australia 2011–12. Drug treatment series 21. Cat. no. HSE139. Canberra: AIHW.

AIHW 2014. National Opioid Pharmacotherapy Statistics Annual Data Collection 2013. Drug treatment series no. 23. Canberra: AIHW.

Collins D & Lapsley H 2008. The costs of tobacco, alcohol and illicit drug abuse to Australian society in 2004-05. National Drug Strategy Monograph Series no. 66. Canberra: DoHA.

Degenhardt L, Day C, Gilmour S & Hall W 2006. The 'lessons' of the Australian 'heroin shortage'. Substance Abuse Treatment, Prevention, and Policy 1:11. doi:10.1186/1747-597X-1-11.

DoHA (Department of Health and Ageing) 2007. National pharmacotherapy policy for people dependent on opioids. Canberra: DoHA for National Drug Strategy.

DoHA 2012. Pharmaceuticals Benefit Scheme. Canberra: DoHA. Viewed 22 March 2013 <www.pbs.gov.au/medicine/item/6470M-6471N-9749D-9750E>.

IHME (Institute for Health Metrics and Evaluation) 2013. GBD Profile: Australia. Seattle: Institute for Health Metrics and Evaluation.

Ministerial Council on Drug Strategy (MCDS) 2011. National Drug Strategy 2010–2015: a framework for action on alcohol, tobacco and other drugs. Canberra: Commonwealth of Australia.

NDARC (National Drug and Alcohol Research Centre) 2004. Treatment options for heroin and other opioid dependence: a guide for frontline workers. Canberra: DoHA for the National Drug Strategy. Viewed 11 February 2013, <http://www.nationaldrugstrategy.gov.au/internet/drugstrategy/publishing.nsf/content/C8A49A8F08C2F7FBCA2575B4001353A9/$File/opioid_workers.pdf>.

NDARC 2013a. Emerging psychoactive substances (EPS) fact sheet. Sydney: NDARC, University of New South Wales. Viewed 28 November 2013, <http://ndarc.med.unsw.edu.au/sites/default/files/ndarc/resources/EPS%20Fact%20Sheet.pdf>.

NDARC 2013b. The highs and lows of the party, EDRS key findings presentation. Sydney: NDARC, University of New South Wales. Viewed 28 November 2013, <http://ndarc.med.unsw.edu.au/sites/default/files/ndarc/resources/Presentation_EDRS%20National%202013_Sindicich.pdf>.

Nicholas R, Lee N, & Roche A. 2011. Pharmaceutical drug misuse in Australia: complex problems, balanced responses. Adelaide: National Centre for Education and Training on Addiction (NCETA), Flinders University.

PWMRG (Psychonaut Web Mapping Research Group) 2010. Psychonaut Web Mapping Project: final report. London: Institute of Psychiatry, King's College.

Rainsford C, Lenton S & Fetherston J 2010. Indicators of changing trends in heroin and other opioid use in IDRS data nationally and in Western Australia. Drug Trends Bulletin, April 2010. Sydney: National Drug and Alcohol Research Centre, University of New South Wales.

Ritter A & Chalmers J 2009. Polygon: the many sides to the Australian opioid pharmacotherapy maintenance system. ANCD research paper no. 18. Canberra: Australian National Council on Drugs.

Roxburgh A, Bruno R, Larance B & Burns L 2011. Prescription of opioid analgesics and related harms in Australia. Medical Journal of Australia 195(5):280–84.

Roxburgh A & Burns L 2013. Accidental drug-induced deaths due to opioids in Australia, 2009. Sydney: National Drug and Alcohol Research Centre.

Stafford J & Burns L 2011. Key findings from the 2013 Illicit Drug Reporting System (IDRS). Sydney: National Drug and Alcohol Research Centre.

Sindicich N & Burns L 2013. An overview of the 2013 Ecstasy and Related Drugs Reporting System. Sydney: National Drug and Alcohol Research Centre.

UNODC (United Nations Office of Drugs and Crime) 2013a. World drug report 2013. Publication Sales No. E.13.XI.6. Vienna: United Nations.

UNODC 2013b. The challenge of new psychoactive substances. Vienna: United Nations.

Van Buskirk J, Roxburgh A, Bruno R & Burns L 2013a. Drugs and the internet, Issue 1. Sydney: National Drug and Alcohol Research Centre.

Van Buskirk J, Roxburgh A, Bruno R & Burns L 2013b. Monitoring the silk road: findings from the first year. Drug and Alcohol Review 32 (Supplement S1):2–74.

White V & Bariola E 2012. Australian secondary school students' use of tobacco, alcohol, and over-the counter and illicit substances in 2011. Melbourne: Cancer Council Victoria.

5.6 Health in regional and remote areas

SNAPSHOT

In 2012, 30% of the Australian population lived in regional and remote areas, 18% in *Inner regional* areas, 9% in *Outer regional* areas, 1.4% in *Remote areas* and 0.9% in *Very remote* areas.

Australians in regional and remote areas tend to have shorter lives and higher rates of disease and injury than people in *Major cities*.

Poorer health outcomes in regional and remote areas may reflect a range of social and other factors that are detrimental to health. People living in more remote areas are often disadvantaged with regard to educational and employment opportunities, income, and access to goods and services. They 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.

There are also higher proportions of Aboriginal and Torres Strait Islander people in *Remote* (16%) and *Very remote* (45%) areas than in *Major cities* (1%), and they have poorer health outcomes (see Chapter 7 'Remoteness and the health of Indigenous Australians').

The interactions between area of residence, social and other factors, and health outcomes are complex. For example, this snapshot presents some instances where the poorest health outcomes are for people living in *Inner Regional* areas (which include cities such as Wagga Wagga, Ballarat, Bundaberg and Hobart).

Box 5.3

Defining regional and remote areas

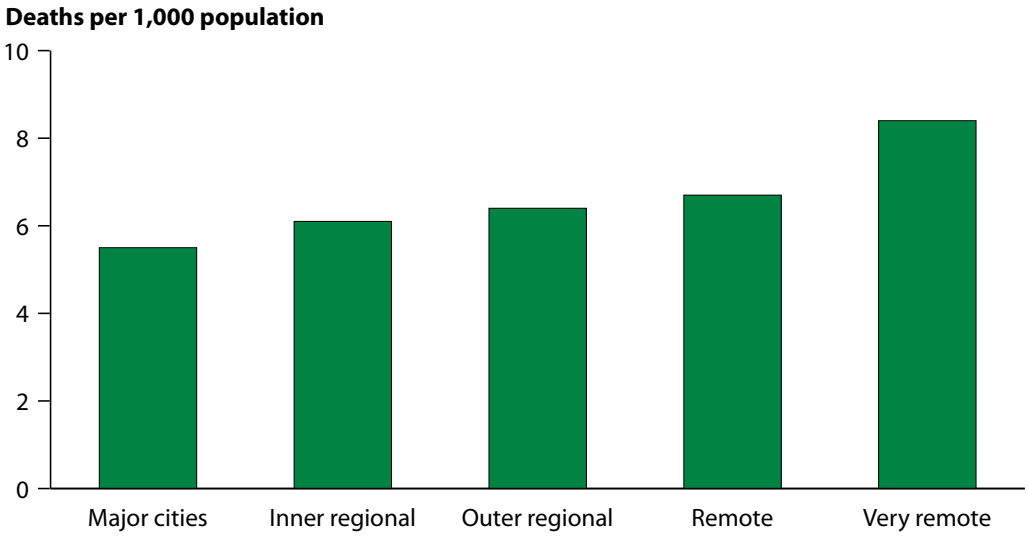
This section uses the Australian Bureau of Statistics (ABS) Remoteness Area classification that allocates 1 of 5 categories to areas depending on their distance from urban centres, where the population of the urban centre is considered to influence the services available.

Regional and remote areas are compared with *Major cities* in most analyses. *Very remote* areas are excluded from some analyses where data are not available or of sufficient quality.

Health status

- Overall, death rates increase with increasing remoteness. In 2012, the age-standardised rate was highest in *Very remote* areas (8.4 per 1,000 population), followed by *Remote* (6.7), *Outer regional* (6.4), *Inner regional* (6.1) and *Major cities* (5.5) (Figure 5.11).
- In 2004–08, the age-standardised incidence rate of cancer was significantly higher in *Inner regional* areas (504 per 100,000 population) than in *Major cities* (480), *Outer regional* (495) and *Remote and very remote* (474) areas.
- In 2009, the age-standardised rate of disability among people aged under 65 was highest in *Inner regional* areas (at 15% compared with 14% in *Outer regional and remote* areas and 12% in *Major cities*) as was the rate of severe or profound core activity limitations (4.6% in *Inner regional* areas compared with 3.2% in *Outer regional and remote* areas and *Major cities*).

Figure 5.11



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

Source: ABS 2013.

Age-standardised death rates by remoteness area, 2012

Health behaviours and risk factors

- In 2011–12, based on the Australian Health Survey (AHS), people in regional and remote areas (excluding *Very remote* areas and discrete Aboriginal and Torres Strait Islander communities) were more likely than their urban counterparts to:
  - be a daily smoker (*Outer regional and remote* 22% and *Inner regional* 18% compared with 15% in *Major cities*)
  - be overweight or obese (70% and 69% compared with 60%)
  - be insufficiently active (60% and 63% compared with 54%)
  - drink alcohol at levels that place them at risk of harm over their lifetime (24% and 21% compared with 19%) or at risk of an alcohol-related injury from a single occasion (52% and 47% compared with 43%)
  - have high blood cholesterol (37% and 38% compared with 31%).

Health care

- In 2012, rates of employed GPs were higher in regional and remote areas than in *Major cities*. However, the overall rates of employed medical practitioners (including specialists) were lower. Whether there is adequate supply of medical practitioners to meet demand is difficult to determine because of the influence of factors such as varying health-seeking behaviours, professional scope of practice and health system efficiency across remoteness areas. For example, in 2010–11, despite there being more GPs in remote areas, there were about half the GP services provided per person in *Very remote* areas as in *Major cities* (Duckett et al. 2013).
- Participation in some cancer screening programs varies by remoteness areas—with breast cancer screening participation rates highest in *Outer regional* areas (58%) and lowest in *Very remote* areas (47%) in 2011–2012, and participation in bowel cancer screening generally decreasing with increasing remoteness (38% *Major cities*, 41% *Inner regional*, 40% *Outer regional*, 36% *Remote* and 27% *Very remote*) in 2011–12.
- People with end-stage kidney disease who live in isolated areas may need to travel long distances or relocate to receive treatment—57% of patients who lived in *Very remote* areas at the start of their treatment moved to less remote areas within 1 year.
- The proportion of people who go to hospital for conditions that are considered potentially preventable with timely and adequate non-hospital care is also higher outside *Major cities* (see Chapter 9 'Indicators of Australia's health').

What is missing from the picture?

It can be difficult to assess the implications of remoteness on health due to the interactions between remoteness, socioeconomic disadvantage and the higher proportion of Indigenous Australians in many of these areas compared with *Major cities*. There are also gaps in the availability and coverage of health data in regional and remote areas, and gaps in information available at the local area level to guide better population health planning and to understand improvements in health.

Where do I go for more information?

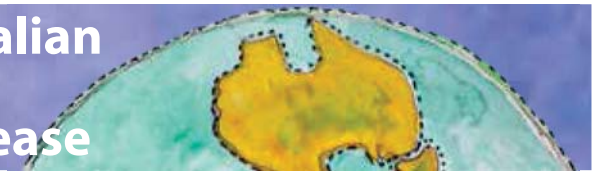
Information is presented by remoteness categories for a range of risk factors, health conditions and health care settings in various AIHW reports, including *Cardiovascular, diabetes and kidney disease: Australian facts 2014* (forthcoming), *Australia's welfare 2013*, *Cancer in Australia: an overview, 2012*, *Chronic kidney disease: regional variation in Australia, Australian hospital statistics 2011–12* and *Medical workforce 2012*. These reports are available for free download at www.aihw.gov.au. AHS results are available at www.abs.gov.au.

References

ABS (Australian Bureau of Statistics) 2013. Deaths, Australia, 2012. ABS cat. no. 3302.0. Canberra: ABS.

Duckett S, Breadon P & Ginnivan L 2013. Access all areas: new solutions for GP shortages in rural Australia. Melbourne: Grattan Institute.

5.7 The health of Australian prisoners—from incarceration to release



SNAPSHOT

Australia's prison population has a much different demographic profile to the population in general: it is composed mostly of young males, with a significant overrepresentation of Aboriginal and Torres Strait Islanders (ABS 2012; AIHW 2013). At 30 June 2012, there were over 29,000 people in prisons throughout Australia (sentenced or unsentenced) (ABS 2012). Around half of all sentenced prisoners were expecting to serve less than 2 years in prison (median sentence length of 23 months) and as a result there are thousands of people being released into the community each year (ABS 2012). This means that the health issues and concerns of prisoners are also those of the general population.

The National Prisoner Health Data Collection is the main source of data about the health of prisoners. Information is collected at prison entry, while prisoners are in custody, pre-release and post release. In 2012, data were collected from 794 prison entrants, about 4,000 prisoners who visited the prison clinic, more than 9,000 prisoners taking medication and 387 prison dischargees. This snapshot presents some findings from the collection.

The data show that the health profile of the prison population is very different to the general community (see AIHW 2013). People often arrive at prison with high rates of mental health problems, certain chronic conditions and communicable diseases. They also exhibit high rates of alcohol misuse, tobacco smoking and illicit drug use prior to prison entry. Most prisoners, however, report improvements in their physical and/or mental health during their time in prison.

Physical and mental health

- One in 3 prison entrants (32%) reported having 1 or more chronic conditions—asthma was the most common (24%), followed by arthritis (7%) and cardiovascular disease (5%).
- About one-third (34%) of female prison entrants and 21% of male entrants tested positive to hepatitis C compared with an estimated national prevalence of 1.4% (Butler et al. 2011).
- A large proportion of entrants reported a history of mental health-related issues; almost 2 in 5 (38%) reported having ever been told they had a mental health disorder.
- On reception to prison, about one-quarter (26%) of prison entrants were referred to mental health services for observation and assessment, and 20% of all prisoners took medications for mental health-related conditions while in custody.

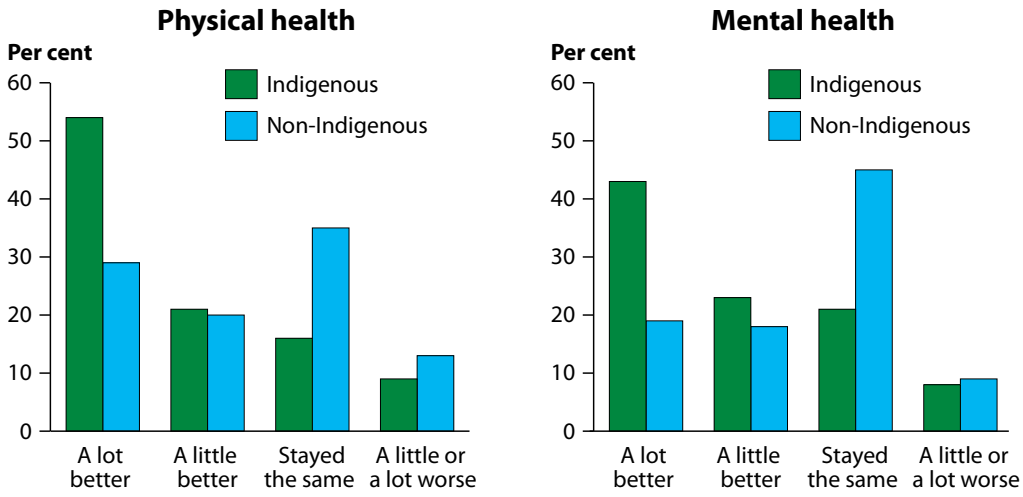
Risky health behaviours

- More than 4 in 5 prison entrants (84%) reported being a current smoker—about 5 times the rate of the general community.
- Almost half (46%) of all prison entrants reported drinking alcohol at risky levels before imprisonment, and 7 in 10 had used illicit drugs in the 12 months before entering prison.

Changes during incarceration

- More than half (57%) of prisoners about to be released felt their physical health had got 'a little better' (20%) or 'a lot better' (37%) since being in prison, and 47% that their mental health became a little or a lot better.
- While about one-third (35%) of prison dischargees tried to quit smoking while in prison, only 8% were successful.
- Indigenous prisoners about to be released were more likely than their non-Indigenous counterparts to report positive changes to their health while in prison (Figure 5.12).

Figure 5.12



Note: Excludes Western Australia as it did not participate in the 2012 National Prisoner Health Data Collection. These data should be treated with caution due to low participation rates among prisoners preparing for release from prison.

Source: AIHW 2013: tables A2 and A10.

Prisoners due to be released from prison, self-rated changes in physical and mental health while in prison, by Indigenous status, 2012 (per cent)

What is missing from the picture?

Jurisdictional coverage of the National Prisoner Health Data Collection has improved in recent years, but is still incomplete; in 2012, all jurisdictions except Western Australia participated. 2012 was the first year where information about prisoners preparing to leave prison was collected, and there was a relatively low participation rate among these people (about 28% compared with 60% of entrants).

The AIHW is working with the jurisdictions to improve coverage and participation rates for the next data collection, currently scheduled to be conducted during 2015, actively engaging with jurisdictions to ensure the information to be collected will be of good quality and useful for policy and service delivery purposes within jurisdictions. At this stage, all jurisdictions except New South Wales will be participating in the 2015 collection.

Where do I go for more information?

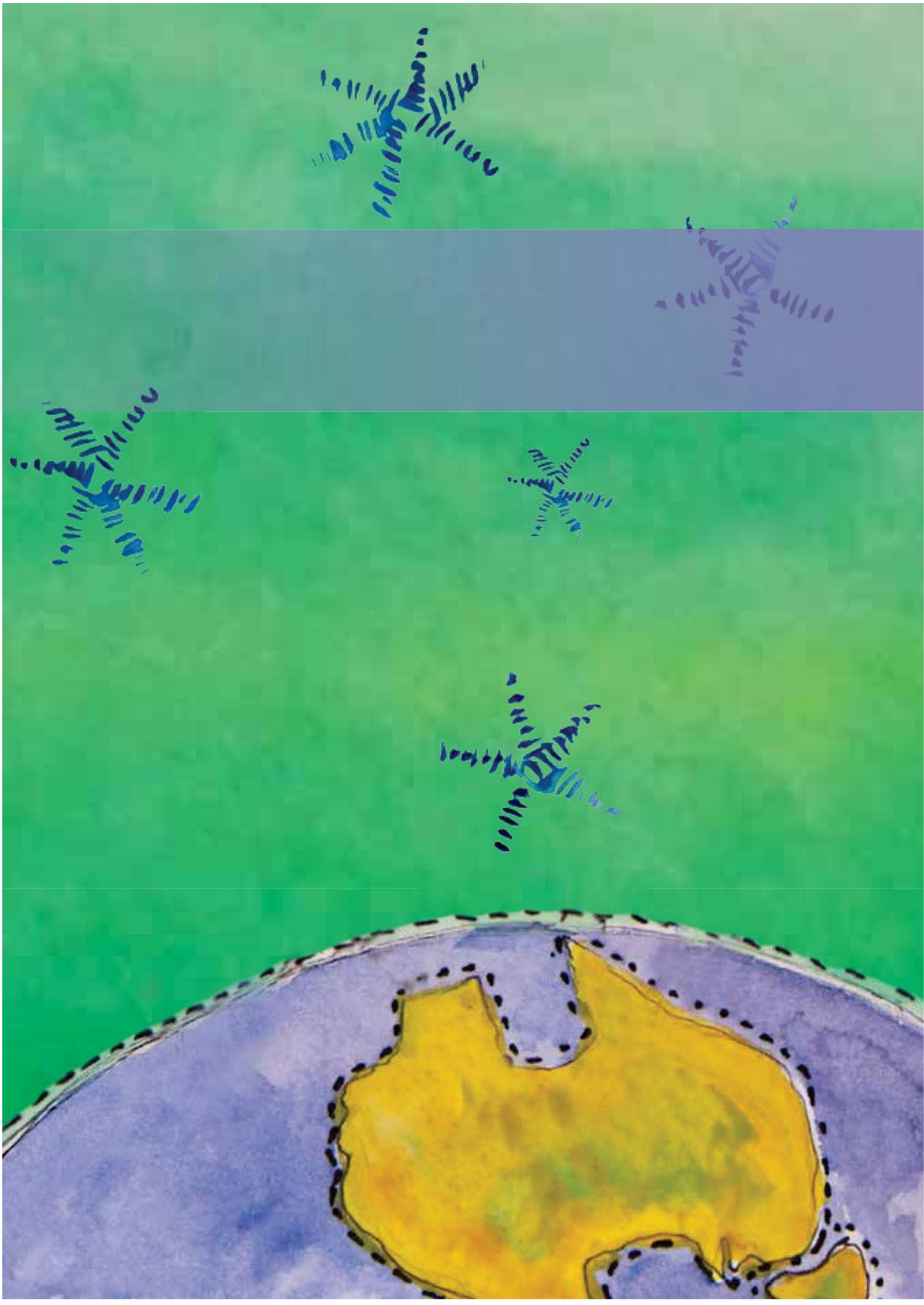
More information on the health of Australian prisoners is available at www.aihw.gov.au/prisoner-health/. The report *The Health of Australian Prisoners* and other recent publications are available for free download.

References

ABS (Australian Bureau of Statistics) 2012. Prisoners in Australia 2012. ABS cat. no. 4517.0. Canberra: ABS.

AIHW (Australian Institute of Health and Welfare) 2013. The health of Australia's prisoners 2012. Cat. no. PHE 170. Canberra: AIHW.

Butler T, Lim D & Callendar D 2011. National prison entrants' bloodborne virus and risk behaviour survey 2004, 2007, and 2010. Sydney: The Kirby Institute (University of New South Wales) and National Drug Research Institute (Curtin University).



Chapter 6

Health through your life

6.0 Introduction

The various life stages between birth and older ages are accompanied by different health challenges and therefore different pathways through the health system and differing health support needs over a person's lifetime.

Life stages are already a long-established focus of the health system, and are the target of specialists, researchers and policy planners. For instance, there are specialists for babies and children, mothers and childbirth, and for older people.

Most aspects of health will vary with age, with some health problems increasing in severity as a person ages. Problems 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, respectively, lead to heart disease or depression later in life.

This chapter looks at the major individual life stages in presenting an overall picture of health across the lifespan, while highlighting some of the unique challenges we face at each stage.

It covers a range of age groups, from babies and their mothers to children, youth, and the health of our working age population. The chapter also examines ageing and the health system, and the challenges, opportunities and adaptations that lie ahead as life expectancy improves and our population ages.

6.1 The health of mothers

SNAPSHOT

SNAPSHOT

Information and statistics about the health of mothers is important for monitoring and evaluating the provision and outcomes of maternity services and care in Australia. Attributes of Australia's mothers, such as maternal age, maternal mortality, risk factors during pregnancy and where they give birth, are described in this snapshot.

Place and type of birth

- Of the 297,126 women who gave birth in Australia in 2011, 97% gave birth in a hospital, 2% in a birth centre, and 0.4% at home.
- The rate of women giving birth by caesarean section has increased from 27% in 2002 to a peak of 32% in 2011 (see Chapter 6 'Caesarean births'). Instrumental deliveries remained stable at about 11% for this period.

Maternal age

The age at which a woman gives birth can be a risk factor for obstetric and perinatal outcomes. Adverse outcomes are more likely to occur in younger and older mothers. In 2011:

- The average maternal age was 30.0 years. This has remained stable since 2009 but is an increase from 28.3 in 1994 (Figure 6.1).
- Of the 297,126 mothers who gave birth, just over 66,900 were aged 35 or older (22.6% of all mothers) and 12,700 were 40 or older (4.3%). The proportion of mothers aged 40 or more has increased over time (Figure 6.2).
- Almost 4% of all mothers were teenagers (under the age of 20). Births to teenage mothers have been decreasing over time (Figure 6.2).
- 4% of mothers giving birth identified as being of Aboriginal or Torres Strait Islander origin. Indigenous mothers tended to be younger than non-Indigenous mothers, with average ages of 25.3 years and 30.2 years respectively.
- A total of 6,686 women giving birth received assisted reproductive technology (ART) treatment and their average age was 34.4. This was older than the average age of women who did not receive ART treatment (29.8). In 2011, 63.4% of mothers who received ART treatment were having their first baby and 36.4% had given birth previously.

Antenatal period and risk factors

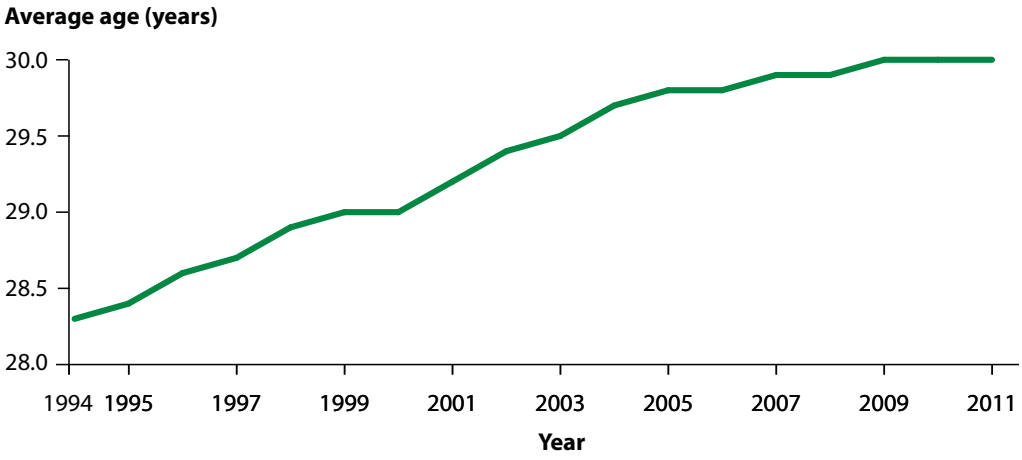
Maintaining a healthy lifestyle during pregnancy and attending routine antenatal care contributes to better outcomes for both mother and baby.

- In 2011, 95% of women who gave birth at 32 weeks or more in New South Wales, Queensland, South Australia, Tasmania, the Australian Capital Territory and the Northern Territory attended 5 or more antenatal visits; 99.9% had at least 1 antenatal visit.
- In 2009, Aboriginal and Torres Strait Islander mothers were less likely to commence antenatal care in their first trimester than non-Indigenous mothers (62% compared with 80%) (AIHW 2013).

SNAPSHOT

- Obesity in pregnancy contributes to increased morbidity and mortality for both mother and baby (CMACE & RCOG 2010). In 2011, about 1 in 5 Australian women who gave birth were obese.
- Just over 13% of women smoked during their pregnancy in 2011 compared with 17% in 2004 (AIHW 2013). Smoking rates were higher for Indigenous mothers (50%), mothers living in *Very remote* areas (36%) and mothers living in areas of most disadvantage (25%) than the overall rate of 15% (2009 data).
- About half (51%) of all mothers in 2010 consumed at least some alcohol during pregnancy (2010 National Drug Strategy Household Survey; published in *A picture of Australia's children 2012*).

Figure 6.1



Note: Provisional data were provided by Victoria for 2009 and 2010.

Source: Australia's mothers and babies reports, 2003–2011.

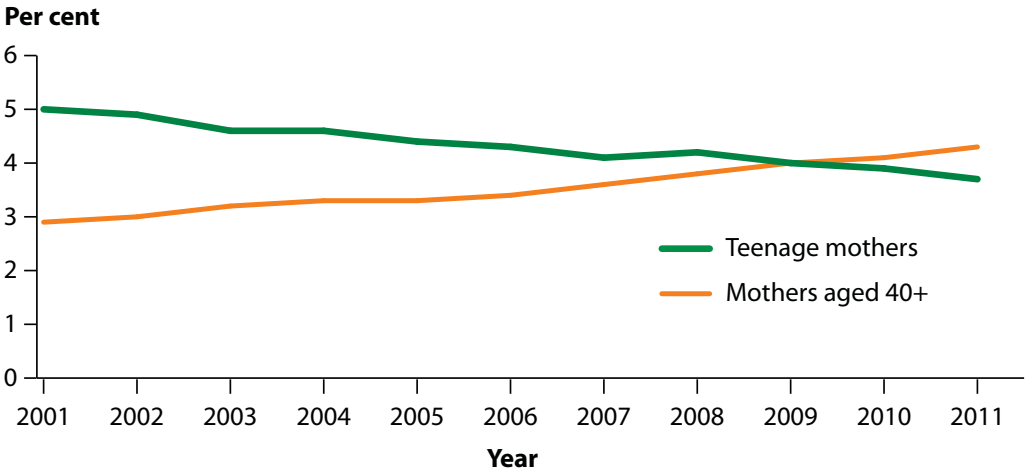
Average age of mothers, 1994–2011

Maternal deaths

While maternal deaths are rare in Australia, they are an important measure of maternal services and obstetric care. However, rates should be interpreted with caution due to the small numbers of deaths and inconsistent review processes among states and territories.

- Ninety-nine women died from pregnancy or childbirth-related causes in Australia between 2006 and 2010, which equates to 6.8 deaths per 100,000 women who gave birth. The rate is lower than in 2000–2002 (11.1 per 100,000, or 84 deaths) and 2003-05 (8.4 per 100,000, or 65 deaths).
- Indigenous women were almost 3 times as likely to die from pregnancy or childbirth-related causes as non-Indigenous women (Johnson et al. forthcoming).

Figure 6.2



Note: Provisional data were provided by Victoria for 2009 and 2010.

Source: Australia's mothers and babies reports, 2002–2011.

Proportions of teenage and older mothers, 2001–2011

What is missing from the picture?

Alcohol consumption during pregnancy is associated with severe adverse perinatal outcomes, including fetal alcohol spectrum disorder. Historically, only limited data on this has been collected in the National Drug Strategy Household Survey, but additional questions were included in the 2013 survey and results are due in the second half of 2014.

The AIHW, in consultation with clinical experts and jurisdictions, is investigating how best to fulfil data requirements for a number of maternal risk factors and conditions, including hypertension, pre-eclampsia, diabetes, maternal height and weight.

Where do I go for more information?

More information on mothers/babies is available at www.aihw.gov.au/mothers-and-babies/. Unless otherwise citied, data presented is from *Australia's mothers and babies 2011*. The latest and previous editions of this annual publication are available for free download.

References

AIHW (Australian Institute of Health and Welfare) 2013. National Core Maternity Indicator Data Portal. Canberra: AIHW. Viewed 11 March 2014, < www.aihw.gov.au/ncmi/>.

CMACE & RCOG (Centre for Maternal and Child Enquiries & Royal College of Obstetricians and Gynaecologists) 2010. Management of women with obesity in pregnancy. Viewed 11 March 2014, <http://www.rcog.org.uk/womens-health/clinical-guidance/management-women-obesitypregnancy>.

Johnson S, Li Z, Hilder L & Sullivan EA, forthcoming. Maternal deaths in Australia 2006–2010. Canberra: AIHW.

6.2 Caesarean section

SNAPSHOT

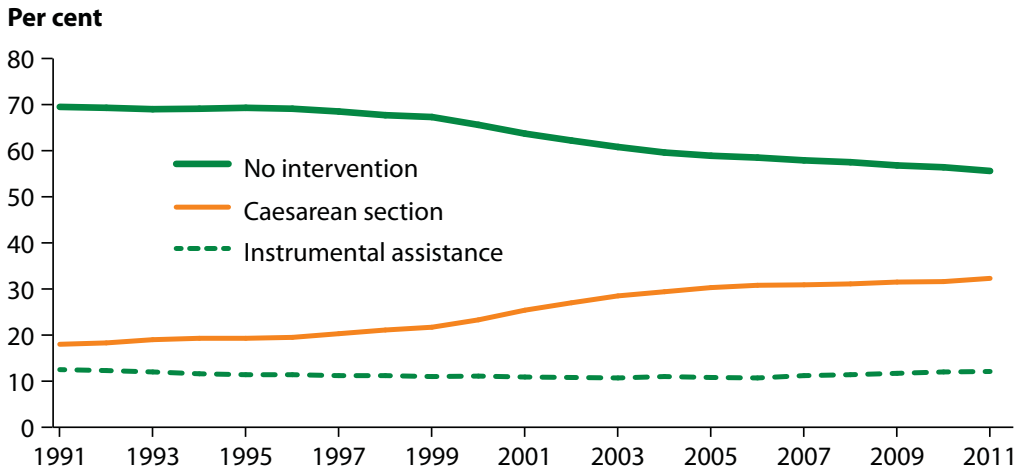
A baby is born by caesarean section when it is delivered through a cut in the mother's abdomen and uterus. This may be necessary if signs indicate that a normal birth will be risky to the health of the mother or the baby. The decision to have a caesarean section may be planned during pregnancy or made during labour if problems occur.

Rates of caesarean section in Australia have risen over the past 2 decades. At the same time, there have been changes in the population of women giving birth in Australia, including a rise in maternal age, fewer births per woman and increasing use of assisted reproductive technology.

Caesarean section rates in Australia

- In 2011, 95,894 women gave birth by caesarean section, which is about 1 in 3 deliveries (32%).
- Rates of caesarean section have risen from 18% in 1991 to 32% in 2011 (Figure 6.3). At the same time, vaginal births without intervention fell from 70% to 56%. Births requiring instrumental assistance, such as forceps or vacuum extraction, have remained relatively stable between 1991 (13%) and 2011 (12%).

Figure 6.3



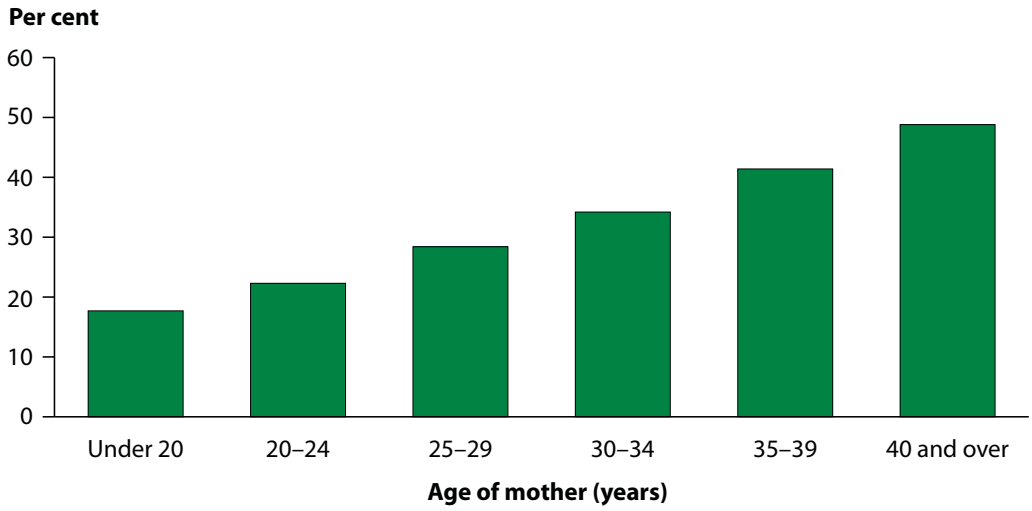
Source: Australia's mothers and babies reports, 1991–2011.

Method of birth, all mothers, Australia, 1991–2011

Characteristics of mothers who deliver by caesarean section

- Caesarean sections are more common among older mothers, first-time mothers and women who have given birth by caesarean section before.
- The rate of caesarean section was 41% among mothers aged 35–39 and 49% for mothers aged 40 and over (Figure 6.4).
- In 2011, 1 in 3 first-time mothers (33%) gave birth by caesarean section compared with 1 in 10 women (10%) who had given birth before.
- In 2011, 84% of mothers with a history of caesarean section had a repeat caesarean section, 12% gave birth without intervention and 4% gave birth with instrumental assistance.

Figure 6.4



Source: Li et al. 2013.

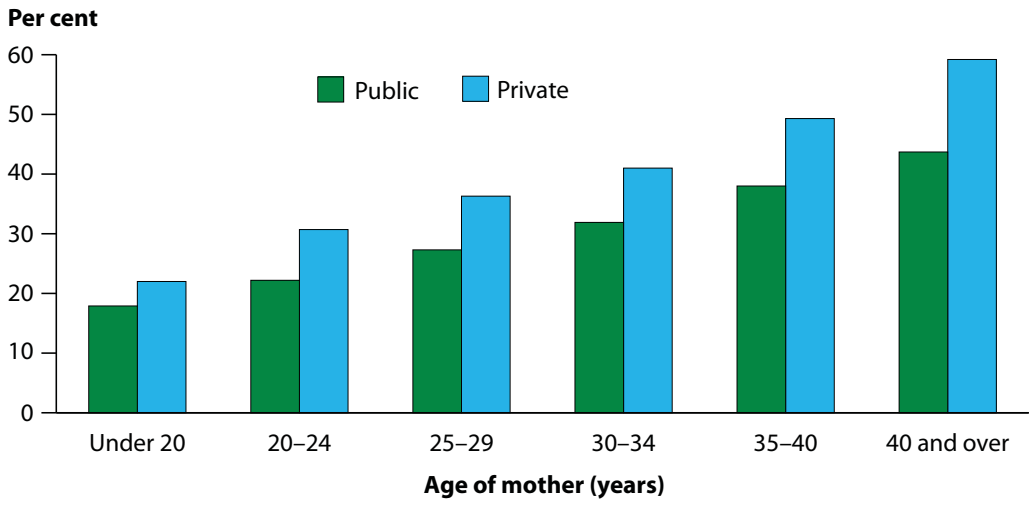
Proportion of mothers who delivered by caesarean section, by maternal age, Australia, 2011

Hospital sector

- Caesarean section rates are higher in private hospitals than in public hospitals across all age groups (Figure 6.5).
- In 2011, 43% of women in private hospitals gave birth by caesarean section compared with 30% in public hospitals.
- The difference between sectors was greatest among mothers aged 40 and over (59% in private hospitals had a caesarean section compared with 44% in public hospitals).

- Women who give birth in private hospitals tend to be older and live in less disadvantaged areas. After adjusting for age differences, 40% of women in private hospitals gave birth by caesarean section in 2011 compared with 30% in public hospitals.

Figure 6.5



Source: Li et al. 2013.

Proportion of women who gave birth by caesarean section, by maternal age and hospital sector, Australia, 2011

What is missing from the picture?

There are no data available on the urgency of caesarean section and the health condition(s) associated with the procedure. This is essential information for evaluating the outcomes of caesarean section.

National data development is being pursued with the states and territories to improve data used to generate information on caesarean section. Data being developed on maternal risk factors and the clinical indication for caesarean section will provide a more complete picture of an individual woman's risk profile. This should better inform policy and care aimed at minimising caesarean delivery.

Where do I go for more information?

More information on caesarean section is available at www.aihw.gov.au/mothers-and-babies.
AIHW reports available for free download include *Australia's mothers and babies 2011* and *National core maternity indicators*.

Reference

Li Z, Zeki R, Hilder L & Sullivan EA 2013. Australia's mothers and babies 2011. Perinatal statistics series no. 28. Cat. no. PER 59. Canberra: AIHW National Perinatal Epidemiology and Statistics Unit.

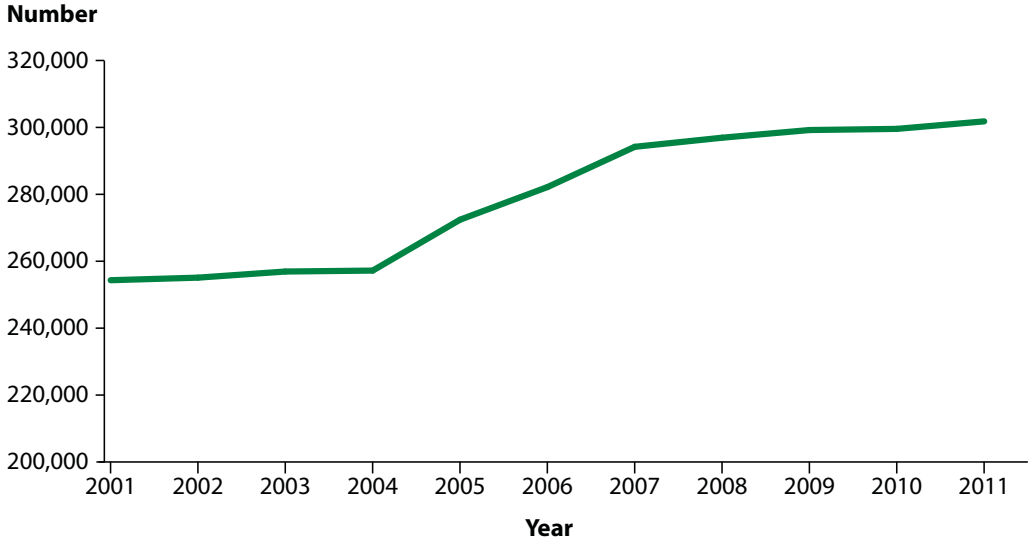
6.3 Australia's babies

Every year around 300,000 babies are born in Australia. The health of a baby at birth is a key determinant of subsequent health and wellbeing. A key national objective is that 'Australians are born healthy and remain healthy' (COAG 2011). This snapshot focuses on key indicators of babies' health, including gestational age, low birthweight and perinatal mortality.

How many births?

- The number of babies born each year continues to increase. In 2011, there were 301,810 births to 297,126 mothers. Of the births, 299,588 (99%) were live births and 2,220 were stillbirths (1%) (Figure 6.6).
- In 2011, Australia's total fertility rate (TFR) was 1.92 babies per woman, a decrease from a 30-year high of 2.02 in 2008 but higher than the low of 1.74 recorded in 2001. Since 1976, the TFR has been below the population replacement level, currently estimated at 2.1 babies per woman (ABS 2012).
- In 2011 the rate of still births (or fetal death rate) was 7.4 per 1,000 births. This has increased since 2002 (when it was 6.7 per 1,000 births), to a maximum of 7.8 per 1,000 in 2009.
- Males accounted for 51.4% of all live births.
- About 4% of women who gave birth (11,895 women) identified as being of Aboriginal or Torres Strait Islander origin.

Figure 6.6



Note: Provisional data were provided by Victoria for 2009 and 2010.

Sources: Australia's mothers and babies reports 2010 and 2011.

Number of births in Australia, 2001–2011

Gestational age

Gestational age is the duration of a pregnancy in weeks. A pre-term birth is before 37 completed weeks of gestation, and is associated with a higher risk of adverse neonatal outcomes. In 2011:

- The mean gestational age for all babies was 38.7 weeks, and most babies (91%) were born between 37 and 41 weeks.
- About 14% of babies born to Aboriginal and Torres Strait Islander mothers were born pre-term compared with 8% of babies of non-Indigenous mothers. These rates have remained within 1% of these values for the last decade.

Birth outcomes

Birthweight is a key indicator of infant health and a principal determinant of a baby's chance of survival and good health. Babies 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. Low birthweight is when the baby weighs less than 2,500 grams.

- In 2011, 6.3% of babies were of low birthweight. This rate has remained relatively stable since 2006 (6.4%).
- In 2010, babies born to Indigenous mothers were twice as likely as those born to non-Indigenous mothers to be of low birthweight (12% compared with 6%) (AIHW 2013).
- Babies born in *Remote and very remote* areas were more likely to be of low birthweight (8.1%) than babies born in *Major cities* (6%).
- Babies born in the lowest SES areas were also more likely to be of low birthweight (7.2%) than babies born in the highest SES areas (5.4%).

Perinatal mortality

A perinatal death is the death of an unborn baby (at least 400 grams or 20 weeks' gestation) or of a baby which is born alive but dies within 28 days.

- In 2011, there were 2,992 perinatal deaths, equating to a rate of 9.9 perinatal deaths per 1,000 births). Of these, 74% were fetal deaths (stillbirths).
- The rate of perinatal deaths increased from 8 deaths per 1,000 births in 2002 to a high of 10.3 deaths per 1,000 births in 2006 (*AIHW mothers and babies*, multiple years).
- Higher rates of perinatal deaths were reported for babies of teenage mothers and of Indigenous mothers.
- The most common causes of perinatal death were congenital anomalies (27%), spontaneous pre-term birth (21%) and unexplained fetal death before the onset of labour (16%).

What is missing from the picture?

The AIHW has been developing a set of national core maternity indicators to monitor the quality of maternity care in Australia. Ten indicators have been developed to date in the areas of antenatal care, normal and operative birth, and baby's postpartum health. A further 8 indicators are being developed for which data will progressively become available for reporting.

Where do I go for more information?

More information on mothers and babies and core maternity indicators is available at www.aihw.gov.au/mothers-and-babies/. The latest edition (and previous editions) of the annual publication *Australia's mothers and babies* and the *National core maternity indicators* are available for free download.

References

ABS (Australian Bureau of Statistics) 2012. Births, Australia, 2012. ABS cat. no. 3301.0. Canberra. ABS.

AIHW (Australian Institute of Health and Welfare) 2013. Children's headline indicators data portal. Canberra: AIHW. Viewed 11 March 2014, <http://www.aihw.gov.au/chi/>.

AIHW National Perinatal Epidemiology and Statistics Unit and AIHW 2013. National core maternity indicators. Cat. no. PER 58. Canberra: AIHW.

COAG (Council of Australian Governments) 2011. National Health Care Agreement 2011. Canberra: COAG.

6.4 How healthy are Australian children?

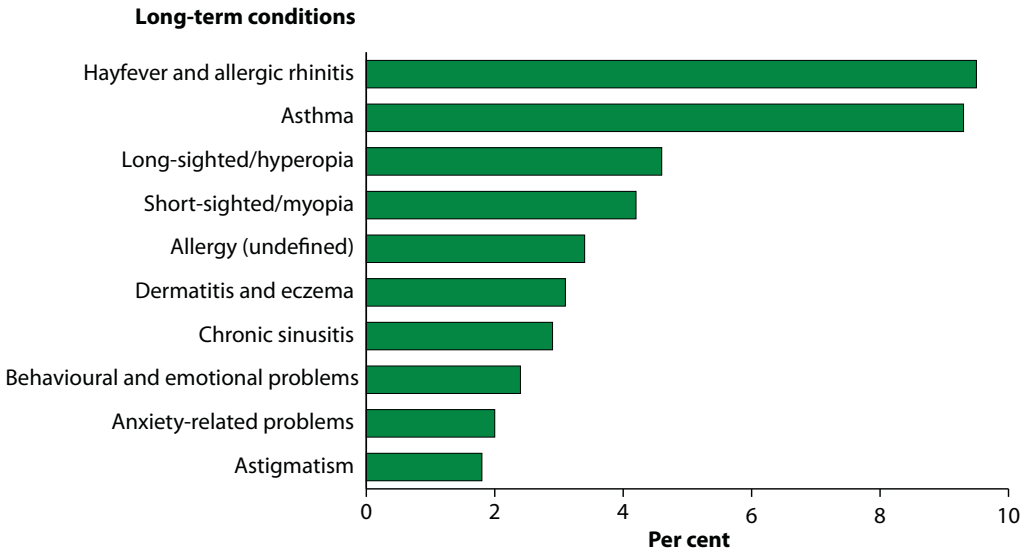
SNAPSHOT

While most Australian children enjoy good health, some experience chronic or acute conditions that can disrupt normal growth and childhood development, and affect participation in school and other activities. This snapshot looks at some of the chronic diseases that have serious health effects on children (defined as those aged 0–14). In 2012, there were almost 4.2 million children in Australia (2.2 million boys and 2 million girls)—almost one-fifth (19%) of the total population.

Common long-term health conditions

In 2011–12, the most common long-term conditions affecting children were hay fever and allergic rhinitis, asthma and long- and short-sightedness (see Figure 6.7).

Figure 6.7



Notes

1. More than 1 problem may have been reported for each child.
2. Long-term condition is defined here as a current medical condition that has lasted, or is expected to last, for 6 months or more.

Source: ABS 2012.

Most frequently reported long-term conditions in children, aged 0–14, 2011–12

The following selected serious conditions, which are also National Health Priority Areas, can affect the physical, social and emotional development of children.

Asthma

- Asthma and allergic rhinitis commonly occur in people with hypersensitivity to allergens. In 2011–12, asthma affected 393,100 children (about 9%) (ABS 2012). There has been little change since 2007–08.
- Asthma was more common among boys than girls (11% compared with 7%), even though after the age of 15 it was more common in women than men (ABS 2012). (See also Chapter 6 'Youth health: the prime of life?').

Diabetes

Type 1 diabetes is a serious condition that most often appears during childhood or adolescence and requires ongoing management to control and reduce the risk of complications. Type 2 diabetes is rare in younger age groups, with incidence stable over the last 10 years (AIHW 2014b).

- In 2008, more than 5,700 children had type 1 diabetes and the number is projected to rise to more than 6,400 by the end of 2013 (AIHW 2011).
- In 2011 there were 983 new cases of type 1 diabetes among children (23 per 100,000 children) with little difference between boys and girls (AIHW 2014a).
- The rate of new cases of type 1 diabetes in children did not change significantly from 2000 to 2011, fluctuating between 21 and 26 per 100,000 children each year.

Cancer

Although cancer is rare in childhood, it is a leading cause of death, accounting for about 19% of deaths among 1–14 year olds in 2009–11.

- During 2006–2010, an average of 599 of new cases were diagnosed annually (15 per 100,000 children), with little difference between boys and girls. The rate has remained unchanged from 2001–2005 (AIHW Australian Cancer Database 2010).
- Since 2001, the most common cancer types in these cases have been lymphoid leukaemias, neuroblastoma and ganglioneuroblastoma, and acute myeloid leukaemias (4.1, 1.1 and 0.8 per 100,000 children respectively during 2006–2010).
- The proportion of 0–14 year olds who survived cancer 5 years after diagnosis improved from 68% in 1983–1989 to 81% in 2004–2010.

What is missing from the picture?

Emotional and behavioural problems that are not dealt with during the early years can develop into full-scale, long-term mental health problems. Child behavioural problems have been identified as an indicator requiring further data development work in the *National Outcome Measures for Early Childhood Development*.

Where do I go for more information?

More detailed information on children's health, including overweight and obesity is available at www.aihw.gov.au/child-health-development-and-wellbeing/ or the AIHW's data portal for Children's Headline Indicators at www.aihw.gov.au/chi/.

References

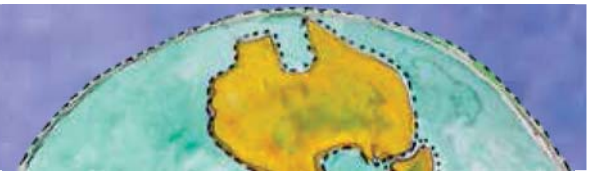
ABS (Australian Bureau of Statistics) 2012. Australian Health Survey: first results, 2011–12. ABS cat. no. 4364.0.55.001. Canberra: ABS.

AIHW (Australian Institute of Health and Welfare) 2011. Prevalence of type 1 diabetes in Australian children, 2008. Diabetes series no. 15. Cat. no. CVD 54. Canberra: AIHW.

AIHW, 2014a. Incidence of insulin-treated diabetes in Australia, 2000–2011. Cat. no. CVD 66. Canberra: AIHW.

AIHW 2014b. Type 2 diabetes in Australia's children and young people: a working paper. Diabetes series no. 21. Cat. no. CVD 64. Canberra: AIHW.

6.5 Healthy child development



Healthy child development helps to prevent disease and improve learning outcomes for children. Protective factors that promote positive development include breastfeeding, vaccinations, good oral health, parental health status and the family environment all have significant impact on children health and development. (For risk factors associated with child development, including smoking and drinking in pregnancy and low birthweight, see Chapter 6 'The health of mothers' and 'Australia's babies'.)

Breastfeeding

Breastfeeding provides the best nutritional start in life. In Australia and internationally it is recommended that infants be exclusively breastfed until around 6 months of age (NHMRC 2012; WHO 2003).

- In 2010, exclusive breastfeeding was initiated for 90% of babies at birth (that is their first feed was breastmilk) (AIHW 2011).
- The proportion of babies exclusively breastfed fell to 61% before the end of the first month of life and continued to fall, with 39% of babies exclusively breastfed to around 4 months of age and 15% to around 6 months.

Vaccinations and vaccine preventable diseases

- As at December 2012, the majority of children (92%) were assessed as fully vaccinated at each of the 3 childhood milestones (12, 24 and 60 months of age).
- The proportion of children who are fully vaccinated at 12 and 24 months has been stable at about 90% since 2003. At 60 months, there was a substantial increase in coverage from around 80% in 2008 (see also Chapter 4 'Immunisation and vaccine preventable disease').

Dental health

Dental disease can cause pain, discomfort and difficulties with eating, potentially leading to poor nutrition, sleeping difficulties, school absences and poor academic performance.

According to the Child Dental Health Survey:

- In 2009, about 42% of 5 year olds and more than half (53%) of 6 year olds had at least 1 decayed, missing or filled tooth.
- The average number of decayed, missing or filled baby teeth was 1.8 for 5 year olds and 2.4 for 6 year olds (Chrisopoulos & Harford 2013).
- Rates of tooth decay in children have risen slowly since the late 1990s (see Chapter 4 'Oral health').

Parental health

Good parental health can have a significant impact on children's health and lives in general. Conversely, living with and possibly caring for a chronically ill parent can be stressful for children and can negatively affect their health and wellbeing.

- In 2010, around 12% of parents living with children rated their health as fair or poor, and 15% were affected by poor mental health (AIHW 2012).
- Indigenous parents were almost twice as likely to report fair or poor health as non-Indigenous parents (21% compared with 12%).

Family environment

- According to the Longitudinal Study of Australian Children, most families reported high levels of family cohesion in 2010–11, although the proportion of one-parent families with children aged 6–7 and 10–11 who reported 'good' to 'excellent' cohesion (83% and 81% for the age groups respectively) was lower than for couple families (93% and 91%) (AIHW 2013).
- In 2011–12, 37,781 children aged 0 to 17 were subject to a substantiated case of abuse or neglect (7.4 per 1,000 children). The most commonly reported abuse type was emotional abuse (2.8 per 1,000), with neglect the next most common (2.1 per 1,000).

Measuring early childhood development

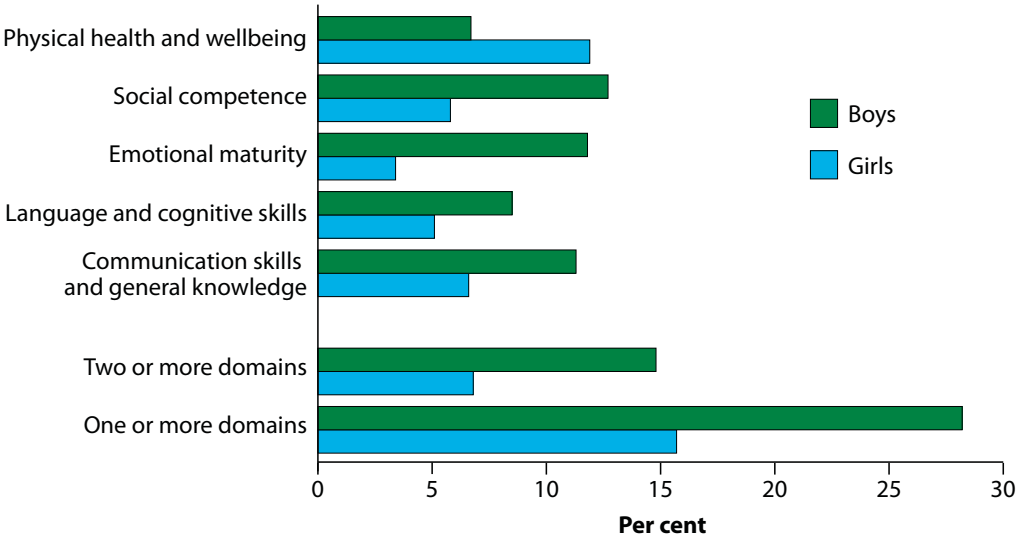
The Australian Early Development Index (AEDI) measures early childhood development across 5 domains: physical health and wellbeing, social competence, emotional maturity, language and cognitive skills, and communication skills and general knowledge. In 2012:

- More than 1 in 5 children (22%) were developmentally vulnerable—that is, their score ranked in the lowest 10% on 1 or more domains (see Figure 6.8). This compares with almost one-quarter of children in 2009 (Australian Government 2013).
- About 11% were vulnerable on 2 or more domains, and are considered to be at high risk developmentally. The proportion in 2009 was 12%.
- Boys were more likely to be developmentally vulnerable than girls across all domains (see Figure 6.8).

What is missing from the picture?

The data on breastfeeding in this snapshot is from the 2010 Australian National Infant Feeding Survey. The Australian Health Survey (AHS) 2011–12 also collected data on breastfeeding, with similar results. For ABS data, see www.abs.gov.au/ausstats/.

Figure 6.8



Source: Australian Government 2013.

Proportion of developmentally vulnerable children by AEDI domain, Australia, 2012

Where do I go for more information?

More detailed information on children's health is available at www.aihw.gov.au/child-health-development-and-wellbeing/ or the AIHW's data portal for Children's Headline Indicators at www.aihw.gov.au/chi/.

References

AIHW (Australian Institute of Health and Welfare) 2011. 2010 Australian National Infant Feeding Survey: indicator results. Cat. no. PHE 156. Canberra: AIHW.

AIHW 2012. A picture of Australia's children 2012. Cat. no. PHE 167. Canberra: AIHW.

AIHW 2013. Australia's welfare 2013. Australia's welfare series no. 11. Cat. no. AUS 174. Canberra: AIHW.

Australian Government 2013. Snapshot of early childhood development in Australia 2012—AEDI national report. Canberra: Australian Government.

Chrisopoulos S & Harford JE 2013. Oral health and dental care in Australia: key facts and figures 2012. Cat. no. DEN 224. Canberra: AIHW.

NHMRC (National Health and Medical Research Council) 2012. Infant feeding guidelines. Canberra: NHMRC.

WHO (World Health Organization) 2003. Global strategy for infant and young child feeding. Geneva: WHO.

6.6 Childhood overweight and obesity

FEATURE ARTICLE

Overweight and obesity is an important public health issue in Australia and around the world. It reflects abnormal or excessive fat accumulation in the body that can present significant risks to health. It generally occurs when more energy is consumed through eating and drinking than is expended through physical activity (energy imbalance).

Childhood overweight and obesity is a major concern that puts children at an increased risk of poor physical health in the short term and of developing many chronic diseases later in life (Daniels 2006). In 2008, the total annual cost of obesity to Australia, including health system costs, loss of productivity costs and carers' costs, was estimated at around $58 billion (Access Economics 2008). The future implications of obesity in terms of the population's health and wellbeing, and the resources necessary for the health system to respond are likely to be considerable.

This article looks at the prevalence of overweight and obesity in children, and key contributing factors: physical activity and nutrition. In this article, children are defined as aged 5–14. Overweight and obesity is measured using body mass index (BMI) (See Box 6.1). Unless otherwise stated, data are drawn from customised reports from the ABS 2011–12 Australian Health Survey and the 2011–12 National Nutrition and Physical Activity Survey.

Box 6.1

Defining and measuring overweight and obesity

Body mass index (BMI) is used to indirectly measure overweight and obesity in the child population. It is calculated as the ratio of weight in kilograms divided by height in metres squared (kg/m2).

At the population level, **international cut-off points** are used to determine the number of children either overweight or obese based on their age and sex (Cole et al. 2000). In children, BMI changes substantially with age and can differ between boys and girls, rising steeply in infancy, falling during the preschool years and increasing through to adolescence and into adulthood (DoHA 2009).

The ABS 2011–12 Australian Health Survey collected physical measurements of the height and weight of around 85% of the children aged 5–14 sampled for the survey. Therefore, the estimate of the number of overweight and obese children presented below assumes that the pattern of overweight/obesity amongst those children who were not measured is the same as for those who were.

What do we know?

In 2011–12, of children aged 5–14 who had their measurements taken for the ABS Australian Health Survey, an estimated 26% were either overweight (19%) or obese (7%). This is equivalent to around 716,000 Australian children aged 5–14 (see Box 6.1). Over two-thirds (69%) of children had a healthy weight, with the remaining 5% being underweight. There was no significant difference between boys and girls, or between age groups 5–9 years and 10–14 years.

Implications of overweight and obesity

In the short term, overweight and obesity increases a child's risk of developing conditions that can affect physical health, such as sleep apnoea, breathlessness on exertion and/or reduced exercise tolerance, some orthopaedic and gastrointestinal problems, and non-alcoholic fatty liver disease (NHMRC 2013).

Overweight and obese children also frequently experience discrimination, bullying and teasing by their peers. This may contribute to poor peer relationships, school experiences and psychological wellbeing, particularly among older overweight or obese children (Griffiths et al. 2006; Hayden-Wade et al. 2005; NHMRC 2013; Sawyer et al. 2006).

In the long term, obese children are at greater risk of persistent obesity, cardiovascular risk factors, diabetes, certain cancers, depression, arthritis, and premature mortality (Guo et al. 2002; Reilly & Wilson 2006).

While research from the Longitudinal Study of Australian Children (LSAC) found that some children who were overweight at a young age (4–5 years) did return to a healthy body weight at 8–9 years, obesity generally becomes increasingly entrenched throughout early childhood and possibly less reversible by the middle school years (Wake & Maguire 2012). Overweight and obese children are subsequently at risk of being overweight and obese in adulthood.

Overweight and obese adults have increased likelihood of illness and early death (Daniels 2006; Guo et al. 2002). Conditions such as cardiovascular disease, diabetes and some cancers (such as colon, kidney, endometrial and breast cancer) have been associated with obesity. In addition, carrying extra weight can lead to musculoskeletal problems such as osteoarthritis and back pain (Crowle & Turner 2010). As a consequence, more bariatric surgeries are being performed, as are knee replacements and hip replacements (Bourne et al. 2007; Gilbert & Wolfe 2012). Obesity can also adversely affect fertility (Pasquali et al. 2007), and is associated with an increased rate of caesarean birth (Callaway et al. 2006; Chu et al. 2007; HAPO 2010). Obesity can also have an intergenerational health effect for the mother and baby (Li et al. 2009).

Costs

Little is known about the costs of childhood obesity. However, research based on data from the Longitudinal Study of Australian Children found that being overweight at age 4–5 was associated with significantly higher medical and pharmaceutical costs for children in their first 5 years at school (Au 2012).

In addition, the ill health that arises from overweight and obesity in adults is an added burden for the health system. The costs of overweight and obesity in 2008–09 were estimated to be $37.7 billion. This comprises direct health-care costs (associated with 4 main medical conditions: cardiovascular disease, type 2 diabetes, osteoarthritis, and some specific forms of cancer), indirect costs (productivity loss from both missing work or working when unwell and premature mortality) and burden of disease costs (financial and social costs) (Medibank 2010).

Causes of overweight and obesity

While genetic factors strongly influence an individual's predisposition to excess weight gain, the increase in overweight and obesity prevalence around the world in recent decades suggests that there are other important contributors to the energy imbalance that leads to these conditions (WHO 2000). These socio-environmental factors include the increased availability, decreased relative costs and the increased marketing of food and drinks that tend to be more energy dense and relatively nutrient-poor (NHMRC 2013). Less physical activity from an increased reliance on car travel due to urban design, an increase in sedentary pursuits, and reduced perceptions of safety leading to fewer opportunities for physical activity are also involved. Economic and consumer changes, such as a greater number of women in the paid workforce, decreased food literacy and cooking skills, and greater reliance on convenience and takeaway foods are also probable contributors (NHMRC 2013).

The key components of successful weight management in children include an increase in physical activity, dietary modification, reducing sedentary behaviours and the involvement of parents (Hughes & Reilly 2008). Early childhood is an ideal period for prevention and early intervention, particularly as food preferences and dietary habits are firmly established in the early years of life (Benton 2004; Daniels et al. 2009).

Children are central to the National Partnership Agreement on Preventive Health (NPAPH) which focuses on the rising prevalence of behaviour-related chronic diseases, including those caused by overweight and obesity, and aims to lay the foundations for healthy behaviours in the daily lives of Australians. The NPAPH came into effect in 2009.

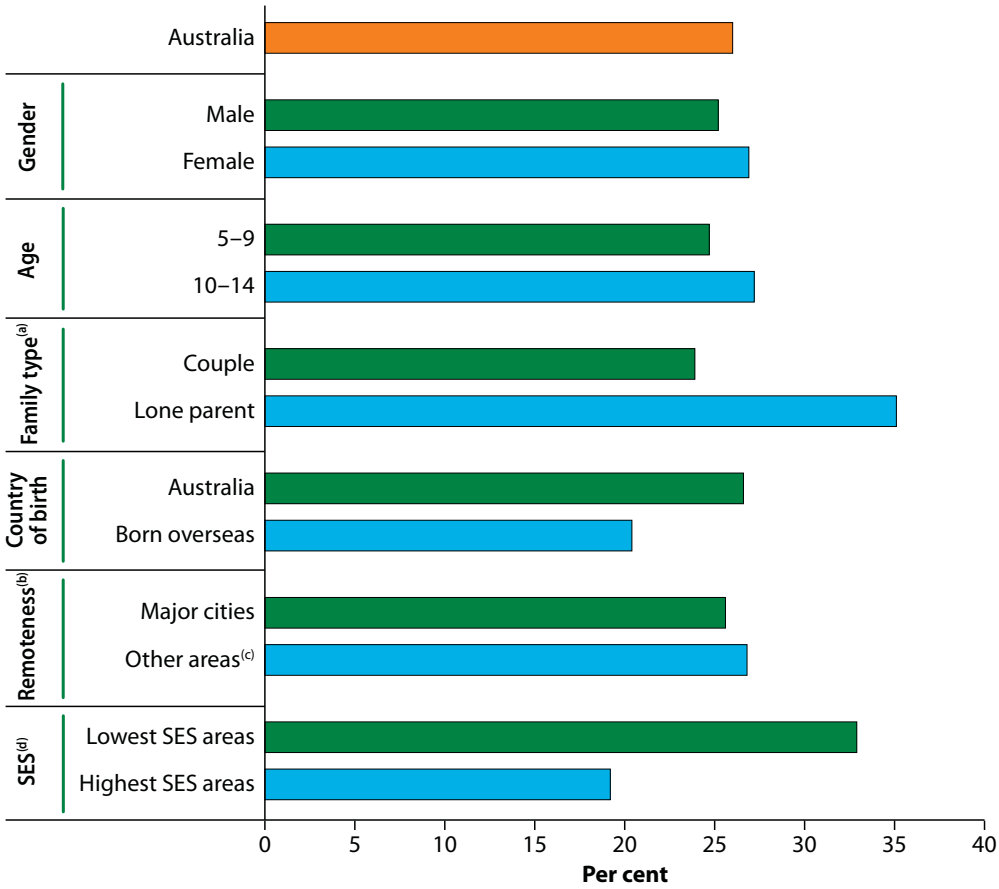
Does overweight and obesity vary across population groups?

Children living in couple families were less likely to be overweight or obese than those living in one-parent families (24% compared with 35%) (see Figure 6.9). Overseas-born children were less likely to be overweight or obese (20%) than their Australian-born counterparts (27%). Children living in areas with the lowest socioeconomic status (33%) were more likely to be overweight or obese compared with those living in the highest socioeconomic status areas (19%). These differences are consistent with findings on overweight and obesity for the total population (see Chapter 5, 'Behavioural risk

factors'; Wake & Maguire 2012). In 2012–13, 33% of Indigenous children aged 5–14 years were overweight or obese (ABS 2013a).

There were no significant differences in levels of childhood overweight and obesity between those who lived in *Major cities*, and those who lived elsewhere (26% compared with 27%). (Data were not collected for children living in *Very remote* areas.)

Figure 6.9



(a) Includes families with children aged less than 15 years only, and families with children aged less than 15 years and older.
(b) Based on 2011 Australian Statistical Geographic Standard.
(c) Other areas include *Inner regional*, *Outer regional*, and *Remote* areas.
(d) Based on 2011 Index of Relative Socio-economic Disadvantage.

Source: ABS 2013c.

Overweight and obese children aged 5–14, by population groups, 2011–12

Has there been a change over time?

Obtaining a picture of trends of overweight and obesity over time for 5–14 year olds is difficult because of a lack of directly comparable data. Between 1985 and 1995, levels of excess body weight in children showed an apparent dramatic increase for both boys (from 10.7% to 20.5%) and girls (from 11.8% to 21.1%). However, these surveys (the 1985 Australian Health and Fitness survey and the 1995 National Nutrition Survey) looked at different age groups, 7–15 years and 5–17 years respectively, which can affect comparability (AIHW 2010).

Between 1995 and 2007–08, estimates from large-scale national surveys for children aged 5–12 showed only a slight increase in measured overweight and obesity, from 21% in 1995 to 22% in 2007–08 (ABS 2009).

The 2011–12 Australian Health Survey showed that in the 4 years since the 2007–08 National Health Survey there was no statistically significant difference in the proportion of overweight or obese 5–14 year olds (23% in 2007–08 and 26% in 2011–12). Other research also suggests that childhood obesity rates plateaued between 1996 and 2008 (Olds et al. 2011).

The overall conclusion that can be drawn from this variety of data sources is that the prevalence of overweight and obesity among children and adolescents has shown little change in Australia over the last 17 years—but the rates remain high, and are therefore a cause for concern.

International comparisons

International comparisons are limited due to differences in data collection methods between countries, and the years of data collection. Data from the International Association for the Study of Obesity reported by the OECD in 2013 showed that Australia ranked 18th out of 40 countries in the proportion of overweight and obese boys. The United Kingdom reported the same proportion as Australia (22%). However, the news was not as good for Australian girls, where Australia ranked 10th in the proportion of girls who were overweight or obese, with Spain and Canada reporting the same proportion as Australia (24%). Greece had the highest values for both boys and girls (44% and 38% respectively) while Indonesia had the lowest values for both boys and girls (11% and 8% respectively) (OECD 2013).

Physical activity and screen time

How many children met the physical activity recommendations?

Based on the 2011–12 National Nutrition and Physical Activity Survey, only about one-quarter (23%) of Australian children aged 5–14 met the national physical activity recommendations every day (see Box 6.2). About half collectively met the recommendations on either 5–6 days (32%) or 3–4 days (22%) a week, while the remaining one-quarter (23%) met the guidelines even less frequently (see Figure 6.10).

Box 6.2

Physical activity and screen time recommendations for children

The National Physical Activity Recommendations provide guidance on the number of hours to spend on particular types of activities to help become healthier.

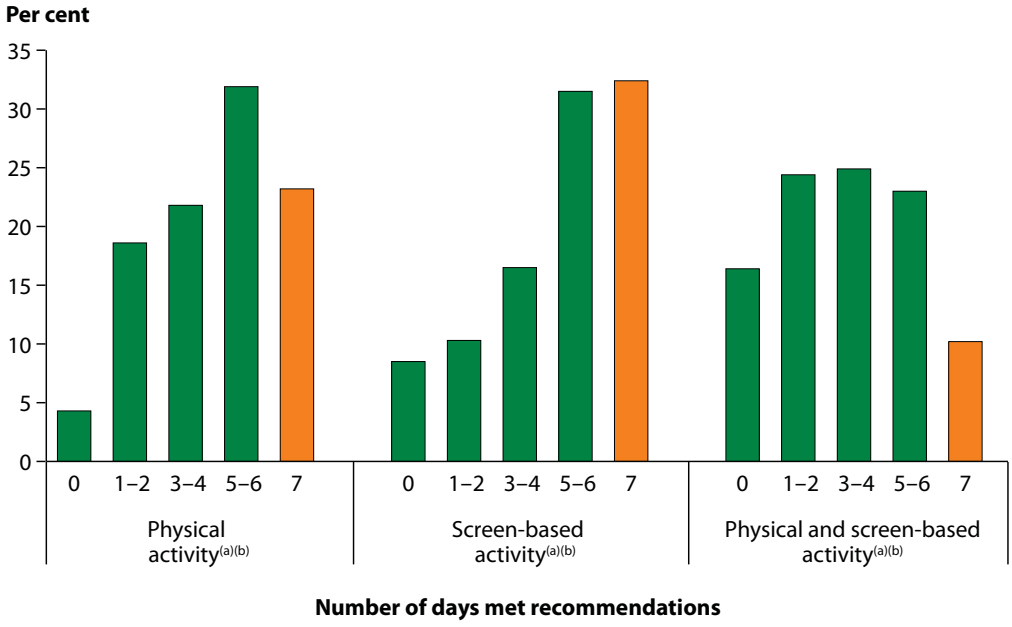
The recommendations cover 3 separate age groups for children: 0–5 years, 5–12 years and 12–18 years.

The current recommendations for children aged 5–12 and 12–18 are the same, and are:

- at least 60 minutes of moderate to vigorous physical activity every day
- a maximum of 2 hours screen-based activity for entertainment/non-educational purposes a day.

The ABS 2011–12 National Nutrition and Physical Activity Survey collected information on whether children met these physical activity and screen-based activity recommendations.

Figure 6.10



(a) See Box 6.2 for physical activity and screen activity recommendations.
(b) In 7 days prior to interview.

Source: ABS 2013d.

Number of days per week children aged 5–14 met physical and screen-based activity recommendations, 2011–12

There was no significant difference between boys and girls in meeting the recommendations (24% and 22% respectively); however, younger children (aged 5–9) were twice as likely as older children (aged 10–14) to meet the physical activity recommendations on all 7 days (32% and 15% respectively). Children living in *Inner regional*, *Outer regional* and *Remote* areas combined were more likely than children living in *Major cities* to meet the recommendations (30% to 20%).

There was little difference between children living in areas of most and least disadvantage (23.5% and 24.7% respectively). While the proportion of children of healthy weight who met the physical activity recommendations was higher than for children who were overweight/obese (23% compared with 19%), the difference was not statistically significant.

Trends in levels of physical activity among children are difficult to determine. The physical activity questions used in 2011–12 National Nutrition and Physical Activity Survey have not been used previously in ABS surveys. And while some other one-off surveys have collected relevant data, differences in collection methods make comparisons, and therefore determination of trends, problematic.

How many children met the screen-based activity recommendations?

About one-third (32%) of children met the national screen-based activity recommendations (Box 6.2) on all 7 days in a week, according to the 2011–12 National Nutrition and Physical Activity Survey. An additional one-third (32%) met the recommendation on 5–6 days. Girls were more likely to meet the guidelines than boys (38% compared with 27%). Younger children (aged 5–9) were also more likely to meet the guidelines than 10–14 year olds (39% compared with 26%).

There was no significant difference between children living in *Major cities* compared with other areas, nor was there a significant difference between children living in the most disadvantaged areas compared with those living in the least disadvantaged areas. There was also no significant difference between children with healthy weight and those who were overweight or obese.

It is not possible to determine national trends in children's screen-based activities because the questions on these activities in the 2011–12 National Nutrition and Physical Activity Survey have not been used before in ABS surveys. Some other surveys have collected data relevant to the topic, but due to differences in collection methods direct comparisons are not recommended.

How many children met physical activity *and* screen-based recommendations?

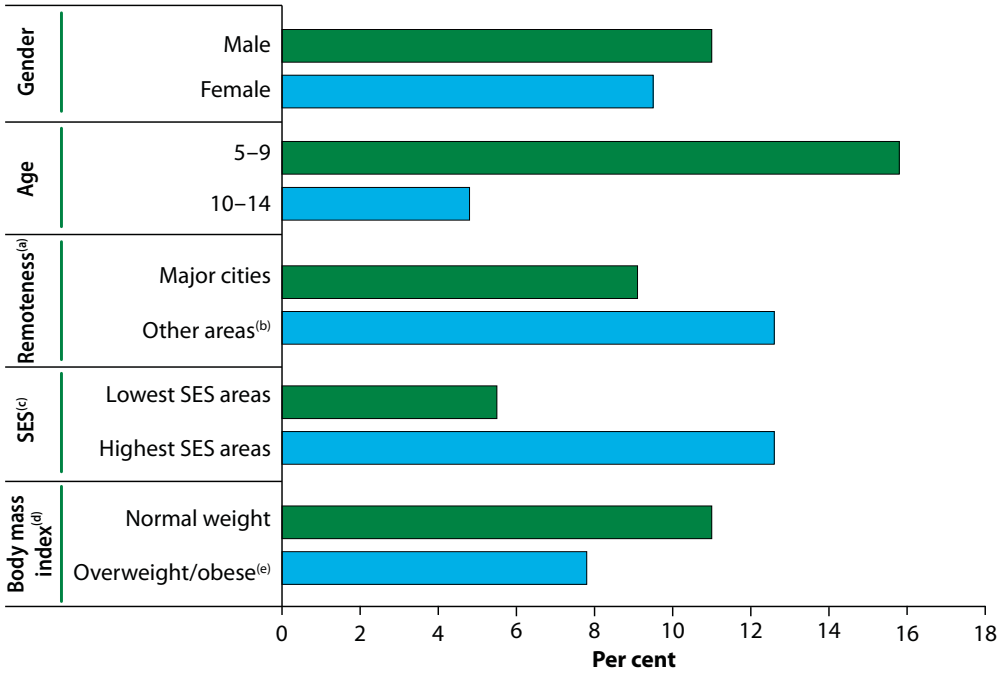
Only around 10% of children met both physical and screen-based activity recommendations on all 7 days in a week. Around 23% of children met the guidelines on 5–6 days, a further 25% on 3–4 days, and 24% on 1–2 days. Sixteen per cent of children never met the guidelines on any day (See Figure 6.10).

There was little difference between boys and girls; however, younger children (aged 5–9) were over 3 times as likely to meet both guidelines (16%) as older children (5%) (see Figure 6.11). Children in the highest socioeconomic status areas were twice as likely to meet both guidelines as children in the lowest socioeconomic areas (13% compared with 6%).

Despite an apparent difference between children in *Major cities* meeting both sets of recommendations (around 9%) compared with *Inner regional/Outer regional/Remote* areas (around 13%), the difference was not statistically significant. Nor was there a statistically significant difference in meeting both sets of guidelines between children of a healthy weight and those who were overweight or obese (11% compared with around 8%) (Figure 6.11). These conclusions nevertheless

need to be treated with caution due to high variability (or 'relative standard error' in statistical terms) in the results for overweight or obese children.

Figure 6.11



(a) Based on 2011 Australian Statistical Geographic Standard.
(b) Other areas include *Inner regional*, *Outer regional*, and *Remote* areas.
(c) Based on 2011 Index of Relative Socio-economic Disadvantage.
(d) Only includes children for whom height and weight were measured.
(e) Has a relative standard error between 25% and 50% and should be used with caution.

Note: Met recommendations in the 7 days prior to interview.

Source: ABS 2013d.

Children aged 5–14 who met both physical and screen-based activity recommendations, by population groups, 2011–12

How many children eat enough fruit and vegetables?

Good nutrition is part of maintaining the 'energy balance'. The National Health and Medical Research Council (NHMRC) reports that there is a suggestive association between the consumption of fruit and vegetables and a reduced risk of obesity and weight gain (NHMRC 2013).

In 2011–12, fewer than 1 in 3 (30%) of children aged 5–14 met fruit and vegetable consumption recommendations specified in the 2003 *Dietary guidelines for children and adolescents* (see Box 6.3). As these guidelines recommended a lower intake of fruit and vegetables than the revised 2013 *Australian dietary guidelines*, the proportion of children meeting the revised guidelines would be even lower.

Box 6.3

Fruit and vegetable intake for children

The following 2003 NHMRC guidelines for the daily consumption of fruit and vegetables (from the 2003 *Dietary guidelines for children and adolescents in Australia*) were used in the 2011–12 Australian Health Survey:

- 4–7 years: 1 serve of fruit and 2 serves of vegetables
- 8–11 years: 1 serve of fruit and 3 serves of vegetables
- 12–17 years: 3 serves of fruit and 4 serves of vegetables.

Usual daily intake of fruit and vegetables was based on self-reported data.

One serve of vegetables can be:

1/2 cup cooked vegetables or cooked legumes = 1 medium potato = 1 cup salad vegetables

One serve of fruit can be:

1 medium piece (e.g. apple) = 2 small pieces (e.g. apricots) = 1 cup chopped or canned fruit

In 2013, the NHMRC released revised dietary guidelines (*Australian dietary guidelines 2013*), with the following recommendations:

- 4–8 years: 1½ serve of fruit and 4½ serves of vegetables
- 9–11 years: 2 serve of fruit and 5 serves of vegetables
- 12–13 years: 2 serves of fruit and 5½ (boys) and 5 (girls) serves of vegetables
- 14–18 years: 2 serves of fruit and 5½ (boys) and 5 (girls) serves of vegetables.

There were no significant differences in fruit and vegetable consumption between boys and girls; however, younger children (aged 5–9 years) were more likely to meet the guidelines compared with those aged 10–14 (44% compared with 15%). Children living in *Major cities* (26%) were less likely to meet the guidelines than children living in *Inner regional/Outer regional/Remote* areas combined (38%).

There was no significant difference in fruit and vegetable consumption between children living in areas of the greatest disadvantage compared to those living in areas of the least disadvantage; nor was there any significant difference between children of a healthy weight, and those who were overweight or obese.

In 2012–13, only around 7% of Indigenous children aged 5–17 met the 2013 recommended guidelines for fruit and vegetable consumption (ABS 2013a).

Direct comparisons of fruit and vegetable intake in children between the 2007–08 National Health Survey and the 2011–12 Australian Health Survey are difficult because the definition of a serve of vegetables changed between the 2 surveys.

'Treat' foods consumption

A substantial proportion of children's overall energy intake comes from 'extra' or treat foods, which are generally high in energy and low in nutrients, such as potato crisps, soft drinks, cakes and biscuits.

Results from the 2007 Australian National Children's Nutrition and Physical Activity Survey found that 'extra' foods contributed 35% of the energy intake for children aged 2–16 (Rangan et al. 2011). This was less than the 40% figure from the 1995 National Nutrition Survey. Nevertheless, consumption remains well above the recommended limit of 5–20% of energy intake as set out in the *Australian guide to healthy eating* (Rangan et al. 2011). The 'extra' foods that contributed most to average energy intakes in the 2007 Survey were 'fried potatoes', 'cakes, muffins and slices' and 'potato crisps and similar snacks'.

Some Australian parents may face barriers to providing healthier foods such as fruit, vegetables and wholegrain foods, to their children. This may be due to the unavailability of fresh foods in some regions, or because healthier food is not as affordable as other food for some families. A recent study published in the *British Medical Journal* found that healthy food cost more, and that cost was a barrier to a better diet (Rao et al. 2013). The authors argued that the difference in cost between healthy and unhealthy food was minor compared with the financial burden on individuals and society caused by diet-related chronic diseases.

What is missing from the picture?

With 26% of Australian children being overweight or obese, there is a need for close ongoing national monitoring of this aspect of health through the collection of comparable data so that an accurate time series can be established. As happened in 2011–12, measured body mass index will again be included in the 2014–15 ABS Australian Health Survey. More detailed monitoring is needed, however, of the composition of young people's diets and their physical activity, particularly for overweight and obese children, to determine whether patterns are changing and whether changes accord with physical and dietary guideline recommendations.

Determining how factors such as physical inactivity, nutrition, technology use and urbanisation interact to increase rates of childhood overweight and obesity can be difficult when information about these factors comes from different data sources (Crowle & Turner 2010). While there is evidence to show that patterns in overweight and obesity in children are similar to trends in behavioural and environmental risk factors (Swinburn et al. 2011), direct relationships cannot be verified if the information is collected from different sources. Improved coverage and coordination of data collection is required so that we can have a more comprehensive and cogent view of how these factors may interact to better inform policy and affect a positive change. More research is also needed to know exactly how to extrapolate from childhood obesity to adult health and associated costs.

Where do I go for more information?

More information on children's health status is available at www.aihw.gov.au/child-health-development-and-wellbeing and in the AIHW's data portal for Children's Headline Indicators at www.aihw.gov.au/chi. The report *A picture of Australia's children 2012* and other recent publications are available for free download.

References

ABS (Australian Bureau of Statistics) 2013a. Australian Aboriginal and Torres Strait Islander Health Survey: first results, Australia, 2012–13. ABS cat. no. 4727.0.55.001. Canberra: ABS.

ABS 2013b. Australian Health Survey: users' guide, 2011–13. ABS cat. no. 4363.0.55.001. Canberra: ABS.

ABS 2013c. Australian Health Survey: 2011–12, customised report. Canberra: ABS.

ABS 2013d. National Nutrition and Physical Activity Survey, customised report. 2011–12. Canberra: ABS.

Access Economics 2008. The growing cost of obesity in 2008: three years on. Canberra: Diabetes Australia.

AIHW (Australian Institute of Health and Welfare) 2010. Australia's health 2010. Cat. no. AUS 122. Canberra: AIHW.

Au N 2012. The health care cost implications of overweight and obesity during childhood. Health Services Research 47:2.

Benton D 2004. Role of parents in the determination of the food preferences of children and the development of obesity. International Journal of Obesity 28(7):858–69.

Bourne R, Mukhi S, Zhu N, Keresteci M & Marin M 2007. Role of obesity on the risk for total hip or knee arthroplasty. Clinical Orthopaedics and Related Research 465:185–88.

Callaway LK, Prins JB, Chang AM, McIntyre HD 2006. The prevalence and impact of overweight and obesity in an Australian obstetric population. Medical Journal of Australia 184(2):56–59.

Chu SY, Kim SY, Schmid CH et al. 2007. Maternal obesity and risk of cesarean delivery: a meta-analysis. Obesity Review 8(5):385–94.

Crowle J & Turner E 2010. Childhood obesity: an economic perspective. Melbourne: Productivity Commission.

Daniels S 2006. The consequences of childhood overweight and obesity. The Future of Children 16:47–68.

Daniels LA, Magarey A, Battistutta D, Nicholson JM, Farrell A, Davidson G et al. 2009. The NOURISH randomised control trial: positive feeding practices and food preferences in early childhood—a primary prevention program for childhood obesity. BMC Public Health 9(1):387–96.

Franks P, Hanson R, Knowler W, Sievers M, Bennett P & Looker H 2010. Childhood obesity, other cardiovascular risk factors, and premature death. New England Journal of Medicine 362:485–93.

Gilbert E & Wolfe B 2012. Bariatric surgery for the management of obesity: state of the field. Plastic & Reconstructive Surgery 130:513e–23e.

Griffiths LJ, Wolke D, Page AS, Horwood JP & ALSPAC Study Team 2006. Obesity and bullying: different effects for boys and girls. Archives of Disease in Childhood 91(2):121–5.

Guo SS, Wu W, Chumlea WC & Roche AF 2002. Predicting overweight and obesity in adulthood from body mass index values in childhood and adolescence. American Journal of Clinical Nutrition 76:653–8.

HAPO Study Cooperative Research Group 2010. Hyperglycaemia and Adverse Pregnancy Outcome (HAPO) study: associations with maternal body mass index. British Journal of Obstetrics & Gynaecology 117(5):575–84.

Hayden-Wade HA, Stein RI, Ghaderi A, Saelens BE, Zabinski MF & Wilfey DE 2005. Prevalence, characteristics, and correlates of teasing experiences among overweight children vs. non-overweight peers. Obesity Research 13(8):1381–92.

Hughes A & Reilly J 2008. Disease management programs targeting obesity in children. Disease Management and Health Outcomes 16(4):11.

Li L, Law C, Lo Conte R, Power, C 2009. Intergenerational influences on childhood body mass index: the effect of parental body mass index trajectories. The American Journal of Clinical Nutrition 89: 551–7.

Medibank 2010. Obesity in Australia: financial impacts and cost benefits of intervention. Canberra: Medibank.

NHMRC (National Health and Medical Research Council) 2013. Australian dietary guidelines. Canberra: NHMRC.

OECD (Organisation for Economic Co-operation and Development) 2013. Health at a glance 2013: OECD indicators. Paris: OECD.

Olds T, Maher C, Zumin S, Péneau S, Lioret S, Castetbon K et al. 2011. Evidence that the prevalence of childhood overweight is plateauing: data from nine countries. International Journal of Pediatric Obesity 6:342–60.

Pasquali R, Patton L, Gambineri A 2007. Obesity and infertility. Current Opinion in Endocrinology, Diabetes, and Obesity. 4(6):482–7.

Rangan A, Kwan J, Flood VM, Louie JCY, Gill TP 2011. Changes in 'extra' food intake among Australian children between 1995 and 2007. Obesity Research and Clinical Practice 5:e55–e63.

Rao M, Afshin A, Singh G, Mozaffarian D 2013. Do healthier foods and diet patterns cost more than less healthy options? A systematic review and meta-analysis. British Medical Journal Open 3:e004277.

Reilly J, Wilson D 2006. ABC of obesity: childhood obesity. BMJ 33: 1207–10.

Sawyer MG, Miller-Lewis L, Guy S & Wake M 2006. Is there a relationship between overweight and obesity and mental health problems in 4–5 year-old Australian children? Ambulatory Pediatrics 6(6):306.

Swinburn BA, Sacks G, Hall KD, McPherson K, Finegood DT, Moodie ML & Gartmaker SL 2011. The global obesity pandemic: shaped by global drivers and local environments. Lancet 378:804–14.

Wake M & Maguire B 2012. Children's body mass index: cohort, age and socio-economic influences. In: Australian Institute of Family Studies (ed.). The Longitudinal Study of Australian Children annual statistical report 2011. Melbourne: Australian Institute of Family Studies.

Wake M, Nicholson J, Hardy P & Smith K 2007. Preschooler obesity and parenting styles of mothers and fathers: Australian National Population Study. Pediatrics 120(6):7.

6.7 Youth health: the prime of life?

FEATURE ARTICLE

Adolescence and young adulthood is a significant transition period in a person's lifetime. Its beginning is marked by the onset of puberty, and it is generally considered to end when social milestones are met such as completing schooling, entering employment or tertiary education, beginning a serious intimate relationship, and having children. With many young people taking on these social roles at older ages, the duration of adolescence and young adulthood is increasing.

Many of the physical, emotional and neural changes and development that occur during adolescence and young adulthood can impact on health and wellbeing. The brain continues to develop until the early 20s and improved self-control, judgement and decision-making appear late in adolescence (NIMH 2001). Many important modifiable risk factors for later life either emerge or accelerate during this period. These include smoking, drinking excessively, using illicit drugs, physical inactivity, poor nutrition and obesity. These risk factors can determine whether a person becomes a healthy adult or develops chronic illnesses or experiences the consequences of injury. Preconception health for young women also becomes an important issue during these years, as risky health behaviours can have intergenerational effects in terms of maternal and newborn child health (see also Chapter 6 'The health of mothers').

For these reasons, adolescence and young adulthood offer opportunities for health gains both through prevention and early intervention. This article examines what is known about issues that can have an impact on the health and wellbeing of Australia's youth, defined here as aged 15–24. An overview of the health of Australia's young adults is presented first, before exploring the risky health behaviours that young people may engage in. The article concludes by investigating the leading cause of death among youth—injury and poisoning. Relevant data are disaggregated for the age groups 15–19 and 20–24 where possible; in some cases, however, different age ranges are used due to the limitations of various data sets.

What do we know?

In 2012, there were more than 3 million young people aged 15–24 in Australia—1.6 million males and 1.5 million females, or about 14% of the population. Young people are commonly thought to be in the best of health with the majority (91%) of young adults assessing their own health as 'excellent', 'very good' or 'good' in the ABS 2011–12 Australian Health Survey (ABS 2013c). This has not changed significantly since the 2007–08 survey (93%) (ABS 2008).

A long-term Australian study also found that the majority of young people were 'very satisfied' with their lives in 2011 (79% of 15–19 year olds and 69% of 20–24 year olds), an improvement from 2001 (73% and 64% respectively) (FYA 2013).

However, this is not the same for everyone. During this stage of life, health inequalities are likely to become embedded and to continue throughout life. Indigenous young people, refugees and young people living in areas of lowest socioeconomic status often have poorer outcomes, a higher prevalence of risk factors and worse health than the general youth population (AIHW 2011b). Youth is also a time when mental disorders may arise, particularly anxiety and depression, and concerns about body image. Attention Deficit/Hyperactivity Disorder often persists into adolescence as well (Sawyer & Patton 2011).

In adolescence and early adulthood, young people, and males in particular, are most vulnerable to the influences of peer pressure and popular culture, and may be inclined to experiment, push boundaries and take risks that could result in accidents or injury (NPHP 2004). Rates of self-harm, suicide, injuries and sexually transmitted infections such as chlamydia are also high. Adolescence and young adulthood is also a critical period for establishing personal health behaviours that can protect against chronic diseases such as maintaining a healthy body weight, getting sufficient physical exercise and good nutrition.

How healthy are Australia's young adults?

Long-term health conditions

In 2011–12, the 2 most common chronic conditions reported among young people were hay fever and allergic rhinitis (18.8%) and short-sightedness (18.7%). The small increase in short-sightedness from about 17% in 2007–08 was not significant. Asthma was the third most commonly reported long-term condition, affecting about 11% (323,400) of young people. Mood problems and anxiety-related problems were reported by about 8% of the youths surveyed (ABS 2012a).

In 2011, there were an estimated 469 new cases of type 1 diabetes—a rate of about 15 per 100,000 young people. The rate decreases with age (around 18 per 100,000 those aged 15–19 compared with about 13 per 100,000 for those aged 20–24 respectively) (AIHW 2014a).

In 2011–12, there were an estimated 389 new cases of type 2 diabetes—a rate of around 13 per 100,000. The rate rose with age, from about 10 per 100,000 population for 15–19 year olds to around 15 per 100,000 for 20–24 year olds (AIHW 2014b).

Although cancer is uncommon in young people, it is a leading cause of death. The most common cancer types were melanoma of the skin and Hodgkin lymphoma (around 6 and 4 per 100,000 young people respectively) and cancer of the testis (about 4 per 100,000 males).

Mental health

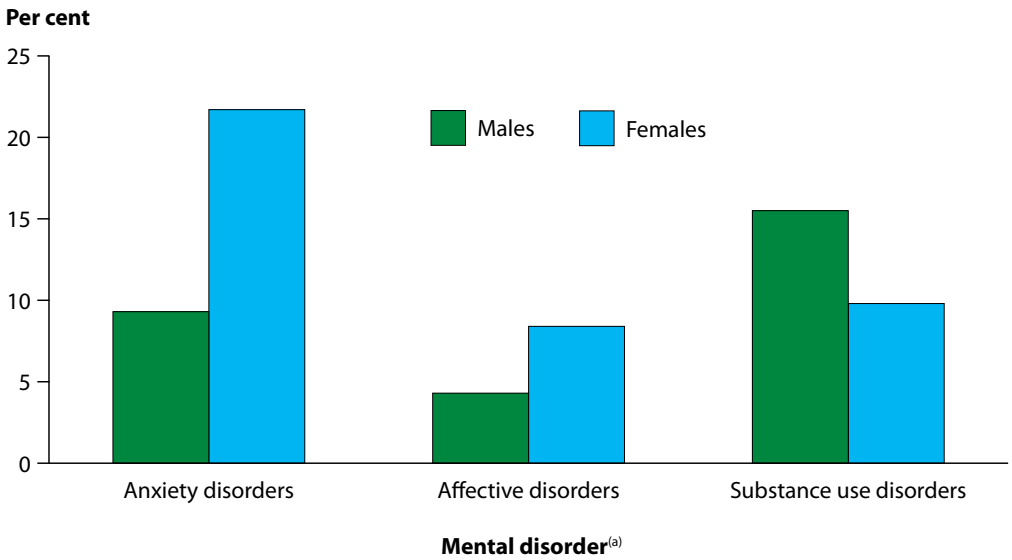
Young people can experience difficulties coping with stress (see also Chapter 4 'Mental health in Australia'). In the ABS 2011–12 Australian Health Survey, an estimated 258,100 (12%) of young adults aged 18–24 reported 'high' or 'very high' levels of psychological distress (ABS 2012a). There was no statistically significant difference between young women and young men. There has been no change between 2007–08 (12%) and 2011–12 in the proportion of young adults reporting 'high' or 'very high' levels of psychological distress.

The 2007 National Survey of Mental Health and Wellbeing found that an estimated 671,100 or 26% of young people aged 16–24 were suffering from a mental disorder. More young women (30%) than young men (23%) reported a mental disorder. Of the 3 categories of disorders investigated in this survey, 15% of young people had anxiety disorders, 13% had substance use disorders and 6% had affective disorders (such as mania or depression) (ABS 2008) (Figure 6.12). Some survey respondents had more than 1 type of disorder.

A 1998 survey found that Attention Deficit/Hyperactivity Disorder (ADHD) continued to be prevalent in adolescents aged 13–17, and was more common among young males (10%) than females (4%) (Sawyer 2000). A 2013 study (Slade et al.) found that the average age of onset of first anxiety disorder was 20 for males and 19 for females.

Young people with a mental disorder are more likely to have lower educational attainment, experience joblessness, and to have poor physical health. It is not possible to decide whether these things cause mental problems or vice versa, but the experience of adverse situations during youth can contribute to the worsening of a mental disorder (AIHW 2008).

Figure 6.12



(a) People who met the criteria for diagnosis of a lifetime mental disorder (with hierarchy) and had symptoms in the 12 months before interview.

Source: ABS 2008.

Mental disorder among young people aged 16–24, by sex, 2007

Eating disorders

Eating disorders are a group of mental illnesses that include anorexia nervosa, bulimia nervosa and binge eating disorder. Anorexia nervosa develops frequently in young women between the ages of 13 and 18, while bulimia nervosa usually occurs between 16 and 18 (Deloitte Access Economics 2012).

Prevalence data on eating disorders is not routinely collected in Australia. A recent study based on epidemiological studies, estimated that 75,150 young girls aged 15–19 and 105,622 aged 20–24, suffered from eating disorders in 2012. Young men also suffered: 29,543 aged 15–19 and 41,386 aged 20–24 (Deloitte Access Economics 2012).

Body weight, physical activity and nutrition

Maintaining a healthy body weight through adequate exercise and good nutrition is an important determinant of good adult health. Being overweight or obese is a significant risk for many chronic health conditions such as diabetes, heart disease and some cancers. It also influences the psychological wellbeing of young people. In 2011–12, 33% of young Australians aged 15–24 were overweight (20%) or obese (13%). Rates of overweight and obesity were similar to 2007–08 when 23% of 15–24 year olds were overweight and 13% were obese (AIHW analysis of ABS National Health Survey 2007–08).

In 2011–12, young people (15–24 years) had higher rates of overweight and obesity (33% total) than children aged 5–14 (26%), indicating that excess body weight increases with age (see also Chapter 6 'Childhood overweight and obesity'). Young people aged 20–24 were also more likely to be overweight or obese (38%) than those aged 15–19 (28%) (ABS 2013).

While 30% of children aged 5–14 consumed the recommended daily intake of fruit and vegetables, this drops dramatically to 4% of 15–24 year olds (ABS 2013).

Almost half (46%) of 15–24 year olds were either sedentary (9%) or reported low levels of exercise (37%) (ABS 2013). Young adults aged 18–24 spent an average of 4.6 hours on physical activity in the week prior to the survey, and an average of 38.5 hours per week on sedentary behaviour. An average of 9 hours was spent watching television, and an average of 9 hours was spent using the computer or internet (ABS 2013b).

Risky health behaviours

Young people who engage in risky health behaviours, such as smoking, excessive alcohol consumption and unsafe sex, place themselves at an increased risk of injury, acquiring a sexually transmissible infection, or developing a long-term illness such as coronary heart disease, liver disease or mental illness. As we will see in the following sections, the relationships among all of these risks and consequences are complex.

Substance use

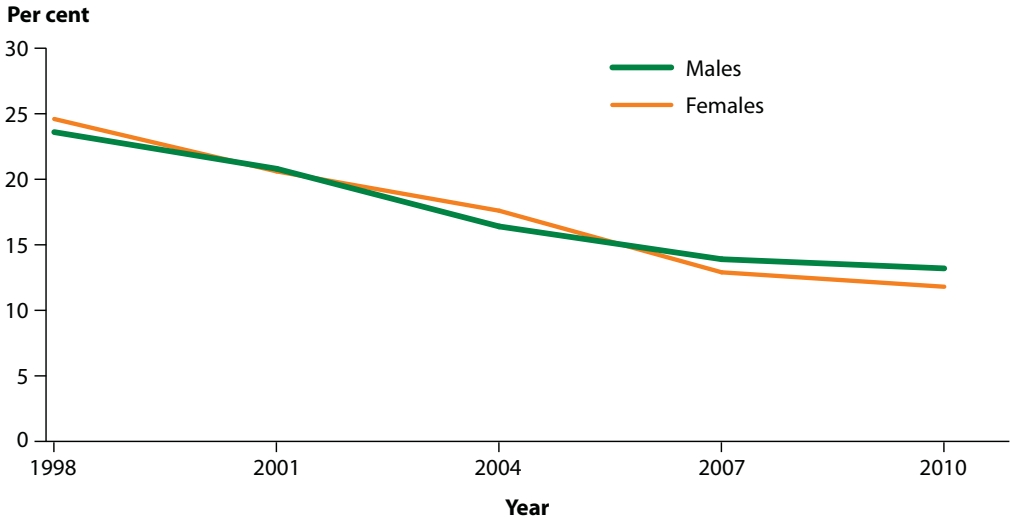
Tobacco smoking

Tobacco smoking is a leading cause of preventable death and disease around the world. It is a major cause of coronary heart disease, chronic obstructive pulmonary disease, stroke, peripheral vascular disease and cancer (AIHW 2008, see also Chapter 5 'Tobacco smoking'). The nicotine in tobacco is highly addictive and, as a result, people who begin smoking tobacco at a young age have a high chance of becoming an adult smoker. In 2010, an estimated 398,463 Australians aged 15–24 (13%) were daily smokers (NDSHS 2010, unpublished data). An additional 4% smoked either weekly or less than weekly, 6% were ex-smokers and 77% had never smoked. In 2012–13, 42% of Indigenous Australians aged 18–24 were daily smokers compared with 16% of non-Indigenous Australians (ABS 2013a).

The number of young people who begin to smoke tobacco is gradually declining every year, with the proportion of young smokers in Australia halving between 1998 and 2010, from 24% to 13%. Rates for males dropped from around 25% in 1998 to around 13% in 2010, and for females from around 25% to 12% (Figure 6.13). Between 2007 and 2010, there was no change in the average age at which young people (aged 15-24) first started smoking tobacco (15 years).

According to results from National Health Surveys conducted in 2001 and 2007–08, and the Australian Health survey conducted in 2011–12, the proportion of young people who had never smoked rose slightly between all 3 surveys. In 2001, less than 60% of people aged 18–24 had never smoked, compared with 64% in 2007–08 and 67% in 2011–12 (ABS 2002, 2010, 2012a).

Figure 6.13



Source: 2010 National Drug Strategy Household Survey, unpublished data.

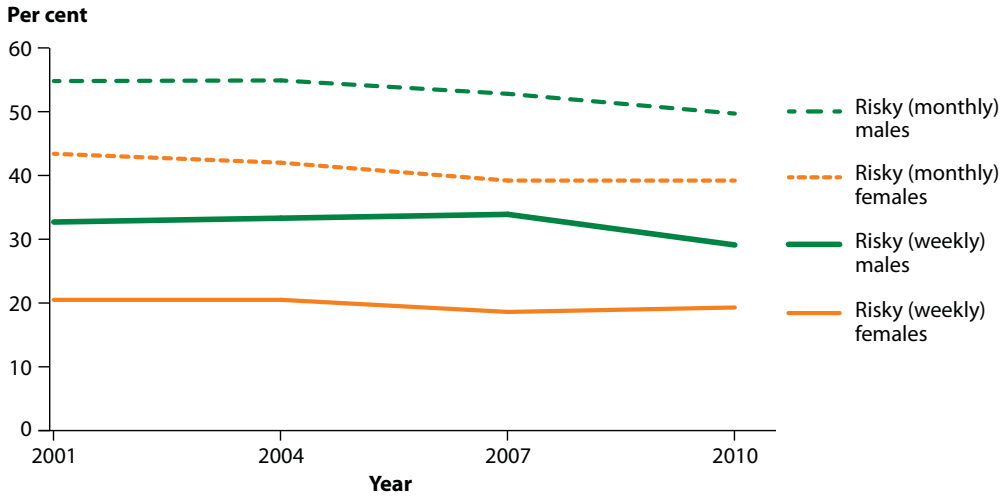
Proportion of daily smokers aged 15–24, 1998 to 2010

Alcohol consumption

The risks of long-term damage to brain and body from drinking are higher for young people than for adults, as youths' brains are still developing. Already more vulnerable to risk-taking behaviour, intoxication with alcohol in young people further lowers inhibitions, impairs decision-making, increases the risk of accidental injury, and increases vulnerability to predators or unsafe situations. In addition, a lack of experience with alcohol, and a propensity to binge drink, makes young people more vulnerable to alcohol poisoning.

In 2010, 24% of young people reported that they were involved in drinking sessions that risked alcohol-related injury (more than 4 drinks on a single occasion) at least once a week. The proportion of people who drink at this level has not changed significantly since 2001 (27%). About 45% of young people reported drinking at levels that risked alcohol-related injury at least once a month (see Figure 6.14) (NDSHS, unpublished data).

Figure 6.14



Source: 2010 National Drug Strategy Household Survey, unpublished data.

Proportion of young people aged 15–24, drinking more than 4 drinks per occasion, males and females, weekly and monthly, 2001 to 2010

The risk of lifetime harm from alcohol-related disease or injury increases when people consume more than 2 standard drinks per day (NHMRC 2009). Young men were almost twice as likely as young women (30% compared with 17%) to have more than 2 drinks a day, on average.

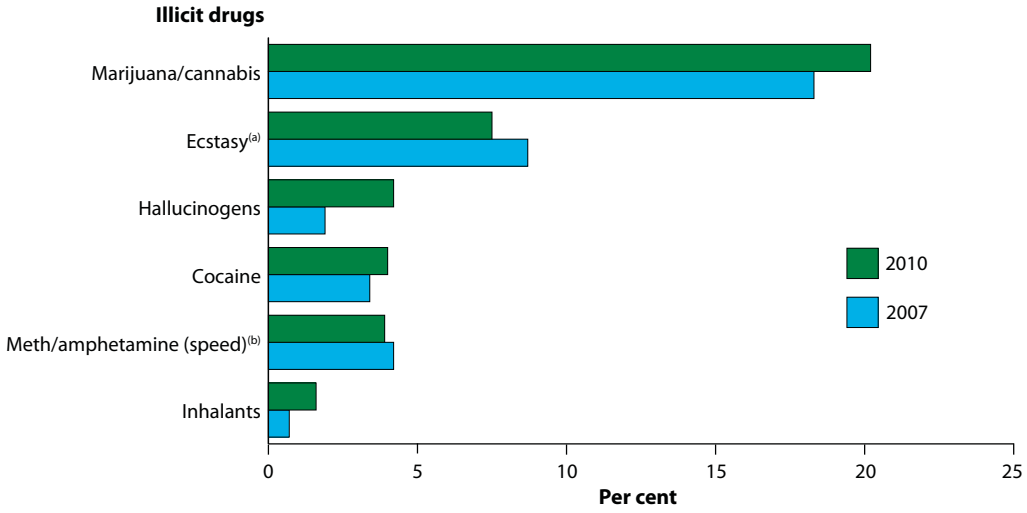
There was little difference between the proportion of Indigenous youths aged 18–24 (in 2012–13) and non-Indigenous youths (2011–12) reporting drinking at risky levels on a single occasion (more than 4 standard drinks) in the week before being surveyed (68.4% compared with 66.6%).

Similarly, there was no significant difference between the proportion of Indigenous youths aged 18–24 (in 2012–13) and non-Indigenous youths (2011–12) reporting drinking at lifetime risky levels in the week before being surveyed (18% compared with 19%) (ABS 2013a).

Illicit drugs

Young people are more likely than adults to experiment with psychotropic drugs. Depending on the type of drug used, users expose themselves to increased risks of HIV infections and hepatitis C virus (if needles are used and shared), malnutrition, infective endocarditis (leading to damage to the heart valves), mental illness, suicide, self-inflicted injury and accidental overdoses (AIHW 2011b). Because illicit drugs are usually illegal (see also Chapter 5 'Illicit drug use—current and future issues'), users also expose themselves to the risks of police charges and a criminal record, which can influence employment opportunities and international travel as an adult.

Figure 6.15



(a) Included 'designer drugs' prior to 2004.

(b) For non-medical purposes.

Source: 2010 National Drug Strategy Household Survey, unpublished data.

Selected illicit drug use (ever used) by young people aged 15–24, 2007 and 2010

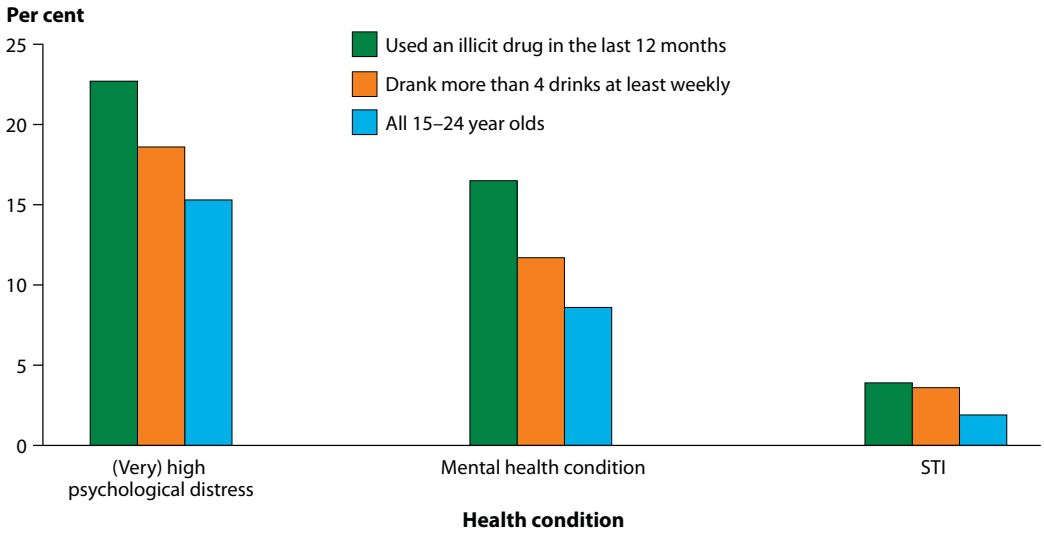
In 2010, more than 1 in 5 young people (23%) aged 15–24 reported they had used a non-pharmaceutical illicit drug at some time in their lives (ever used) (see Figure 6.15). Cannabis use (ever used) increased slightly among younger Australians (15–19 years), from 15% in 2007 to 18% in 2010, though this was still markedly less than in 2001 (27%). Ecstasy use among this younger age group halved between 2007 and 2010 (from 6% to 3%) (NDSHS, unpublished data).

In 2012–13, around 28% of Indigenous 15–24 year olds had used substance(s) in the past 12 months, and a further 15% at some other time in their lives (ABS 2013a). Comparable data for non-Indigenous youth are currently not readily available.

The consequences of alcohol and drug use for youth

In 2010, 23% of youths who had used an illicit drug in the last 12 months and 19% of those who had more than 4 standard alcoholic drinks on 1 occasion at least once a week, reported experiencing 'high' or 'very high' psychological distress in the previous month. This compares with 15% of 15–24 year olds who did not report alcohol or drug use (Figure 6.16).

Figure 6.16



Source: 2010 National Drug Strategy Household Survey, unpublished data.

Proportion of young people aged 15–24 using illicit drugs and alcohol in the last 12 months, by health condition, 2010

Youths who had used an illicit drug in the last 12 months (17%) or who drank more than 4 standard alcoholic drinks on 1 occasion at least once a week (12%), were more likely to have been diagnosed or treated for a mental illness in the previous 12 months than the 15–24 year old population as a whole (9%).

The association between mental health issues and the use of drugs and alcohol is complex. In some cases, alcohol and drug use can cause feelings of anxiety and depression, and in other cases people with mental illness may use alcohol and drugs to improve their mood or to deal with stress (Slade et al. 2013).

Alcohol consumption and drug use may also increase risky behaviours such as unsafe sex and needle sharing. Sexually transmissible infections (STIs) were twice as prevalent among those who had used an illicit drug in the last 12 months or who reported having consumed more than 4 standard drinks on 1 occasion at least once a week (4% respectively compared with 2% of all 15–24 year olds) (Figure 6.16).

Alcohol consumption and drug use may also affect young people's work and education activities. In 2010, over 1 in 10 15–24 year olds (11%) who consumed more than 4 drinks on 1 occasion at least once a month had missed attendance at work, university or school in the previous 3 months because of their alcohol use. Five per cent of those who used an illicit drug in last 12 months had similarly missed attendance at work, university or school because of their drug use in the previous 3 months.

Drinking exposes youths to increased risks of injury or death in a motor vehicle accident, or a drink-driving charge, with 18% of 20–24 year olds and 6% of 15–19 year olds reporting driving a motor vehicle while under the influence of alcohol in 2010. For the same age groups, 8% of 20–24 and 4% of 15–19 year olds had driven while under the influence of an illicit drug. Around 47% of 18–19 year olds were put in fear or were the victims of alcohol-related verbal and physical abuse (AIHW 2011a).

Unsafe sex and sexually transmissible infections

Sexual development is a normal part of young adulthood; however, not all young Australians practise safe sex (Smith et al. 2009). Sexually transmissible infections can cause significant long-term health problems and are a major public health concern (DoHA 2010).

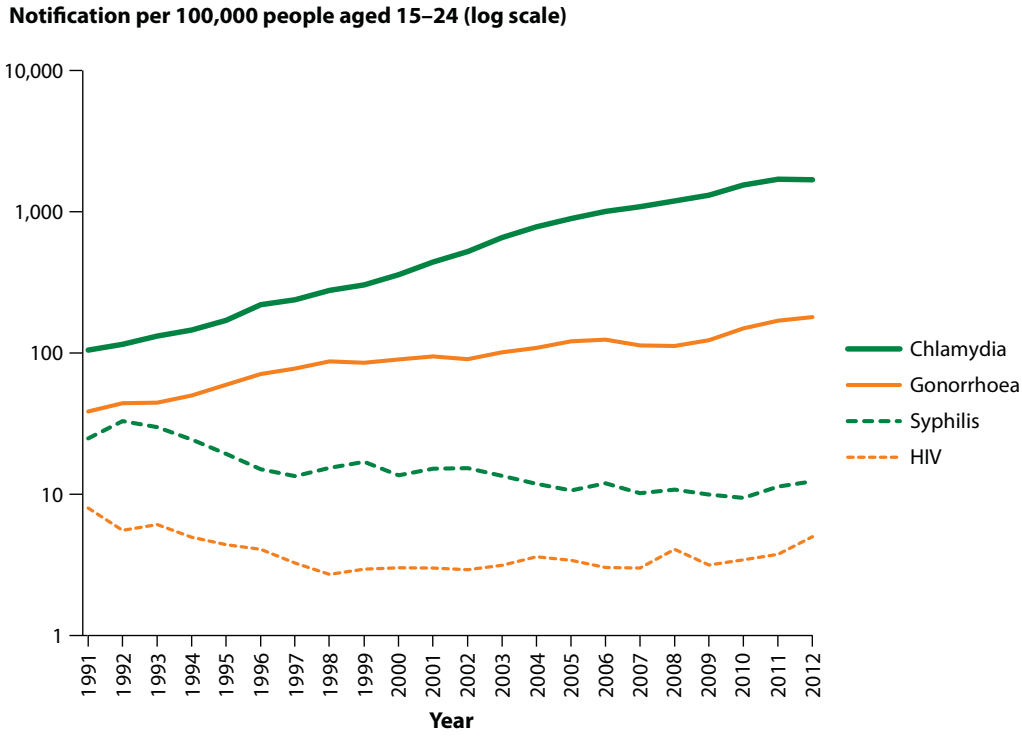
In 2012, there were 57,119 notifications of chlamydia, gonorrhoea, syphilis and donovanosis among 15–24 year olds—a rate of 1,853 notifications per 100,000 young people (Department of Health 2013). More than half (around 57%) of all sexually transmissible infections notified in Australia were among 15–24 year olds. Chlamydia was the most commonly notified infection in this age group, accounting for about 90% of these notifications.

From 1991 to 2012, chlamydia notification rates increased over tenfold from 104 to 1,663 notifications per 100,000 young people. Increased testing may account for some of the increase (AIHW 2011b). Gonorrhoea notification rates also rose (from 38 to 178 per 100,000). In contrast, syphilis notification rates fell between 1991 and 2005 (from 25 to 11 per 100,000), and have remained relatively stable since (12 per 100,000 in 2012) (Figure 6.17).

In 2012, there were 154 HIV notifications for 15–24 year olds, a rate of 5 per 100,000 young people, higher than the 3 per 100,000 in 2001 (AIHW analysis of Australian HIV Public Access Dataset).

One way of avoiding sexually transmitted infections is the use of condoms, which is also effective in preventing unwanted pregnancies. But in 2008, a survey reporting on sexually active students found only an estimated two-thirds of students reported using condoms at their last sexual encounter. Half of students reported using the contraceptive pill, 10% used the withdrawal method to avoid pregnancies, and 8% the morning after pill (some students reporting using more than 1 form of contraceptive). In the same survey, only half (51%) of sexually active young people said they had always used a condom in the previous 12 months, and 43% said they sometimes used one (Smith et al. 2009).

Figure 6.17



Note: Data are presented using a log scale.

Sources: Department of Health 2013; AIHW analysis of Australian HIV Public Access Dataset 2013.

Notification rates of selected sexually transmissible infections in people aged 15–24, Australia, 1991–2012

Over the last 10 years rates of births to teenage girls have remained stable. In 2012, the rate of women aged 15–19 giving birth was 16 births per 1,000 women compared with 17 in 2002 (ABS 2013d). However, little is known nationally about the total number of pregnancies to teenage mothers as the number of pregnancy terminations is not known.

Injuries in youth

In adolescence and early adulthood, young people tend to engage in more risky behaviours, many of which can result in injury. These include risky driving and intentional injuries such as self-harm, suicide and assault (AIHW 2011b). Injuries are often preventable, and can have a major impact on the health of young people. Depending upon their severity, injuries can result in time off school or work, hospitalisation, a long-term condition, disability, or death. Information on the prevalence of injury that does not result in hospitalisation is not collected in Australia, so hospitalisations data must be used to present a picture of injury to Australia's youth.

Hospitalisation usually means an injury is serious; but because some injuries result in more than 1 stay in hospital, hospitalisations probably exceed the number of injuries.

In 2011–12, there were almost 604,000 hospitalisations due to injury within Australia, with 15–24 year olds accounting for 14% of these hospitalisations—equivalent to their proportion of the population (14% at 30 June 2011). Males in this age group were more than twice as likely to be hospitalised as females. Injury hospitalisations related to poisonings by pharmaceuticals and by alcohol, were also high among young people (AIHW: Pointer 2013).

Accidental injury and death

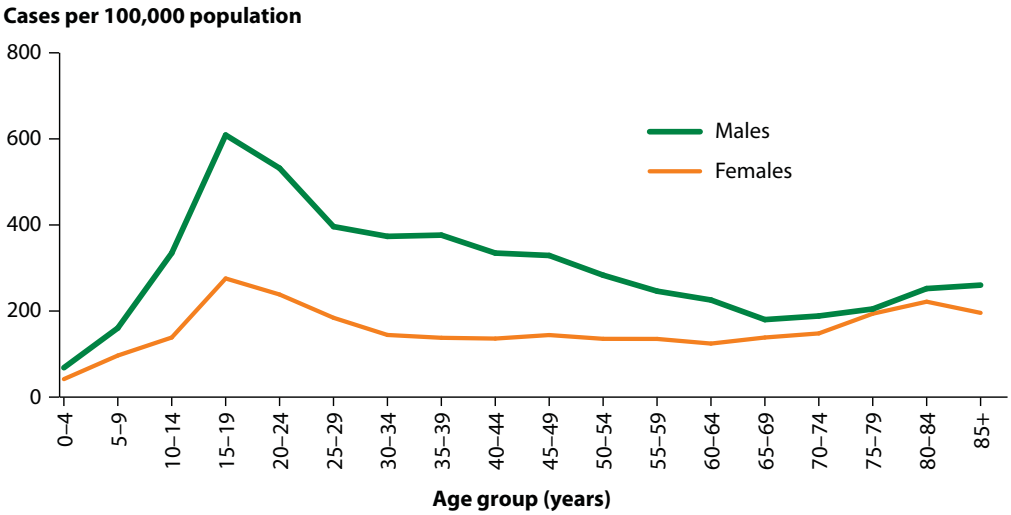
Road traffic accidents

In 2010–11, hospitalised injuries from land transport accidents were more common for males, especially for teenagers and young adults (see Figure 6.18). Injuries for young males aged 15–19 (609 per 100,000) were more than double those for young females (276 per 100,000) and almost double those for 45–49 year old males (329 per 100,000) (AIHW: Pointer 2013). Transport injury rates for Aboriginal and Torres Strait Islander young males (15–19 years) were higher than for non-Indigenous young males (809 and 614 per 100,000 population respectively).

Young men are significantly more likely than the rest of the population, including young women, to be killed or injured in a motor vehicle accident. In 2012, young males accounted for three-quarters of road transport accident deaths involving young people, with death rates over twice as high among males as females (13 and 5 per 100,000 respectively) (Figure 6.19). In 2012, almost half (47%) of 15–24 year olds killed in a vehicle accident were the driver; around 28% were passengers. The rest were motorcycle riders (13%), pedestrians (9%) or cyclists (0.7%) (Department of Infrastructure and Regional Development 2013).

Young people differ from the general population in that their fatal vehicle accidents occur more often at weekends or at night. Age and inexperience separately or combined are associated with the higher death rate as well as risky driving behaviour, including speeding, driving when fatigued, and driving under the influence of alcohol or drugs (AIHW 2011b; BITRE 2013).

Figure 6.18



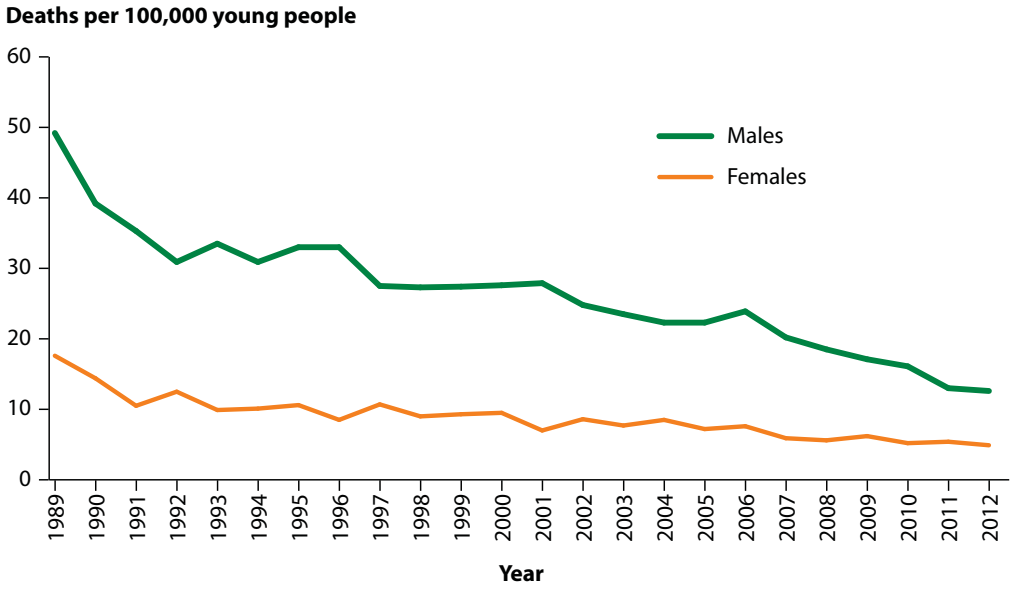
Source: AIHW: Pointer 2013.

Rates of transport injury-related hospitalisations, by age and sex, 2010–11

Overall (all ages) injury and death rates from road accidents are slowly falling and fewer deaths of young people are part of this decline. In 2012, there were 272 road deaths for the 15–24 age group, a rate of 9 per 100,000, which is a substantial fall from 34 per 100,000 rate of 1989 (when there were 928 deaths) (Australian Road Deaths Database). The decline is the collective result of a range of factors, including better roads, safer vehicles, a legal requirement to wear seat belts and random alcohol and drug testing of drivers.

For the period 2005–06 to 2009–10, fatal land transport injury rates for Indigenous young people tended to be higher than for other young people. The greatest disparity between Indigenous and non-Indigenous young people was among 15–19 year old males (35.2 compared with 16.6 per 100,000 population) (AIHW: Henley & Harrison 2013).This may be explained, in part, by the fact that more Indigenous people live in *Remote* and *Very remote* areas where local factors can include greater distances travelled, higher speed limits, lack of public transport, and poor roads (Thomson et al. 2009).

Figure 6.19



Source: AIHW analysis of Australian Road Deaths Database (Department of Infrastructure and Regional Development 2013).

Fatal accident death rates for young people aged 15–24, 1989–2012

Intentional injuries and death

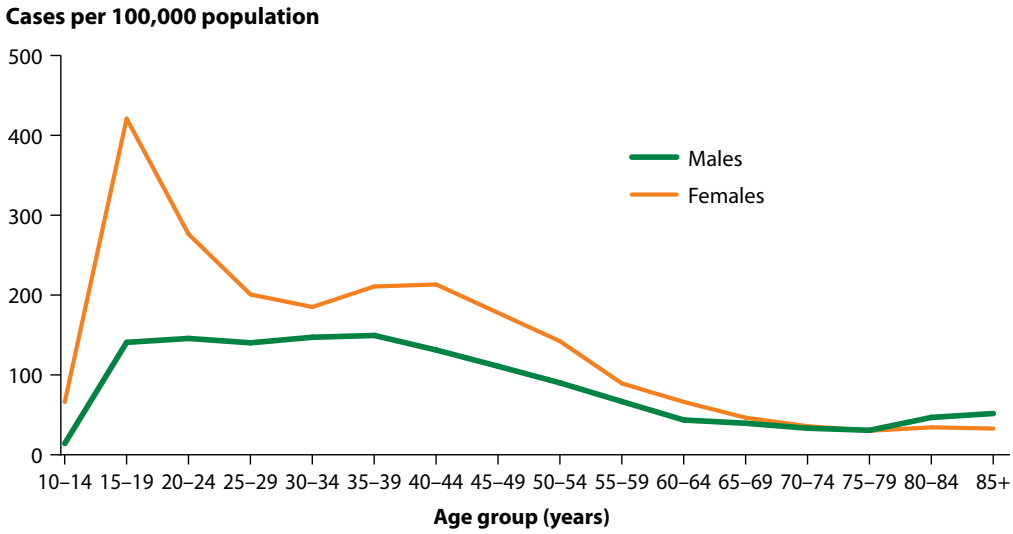
Self-harm

Intentional injury, including attempted suicide, is a substantial cause of hospitalisations in young people. In 2010–11, 26,000 people in Australia were hospitalised for intentional self-harm and, of these, 29% were aged 15–24. Young women aged 15–19 had hospitalisation rates for self-injury almost 3 times those for young men (421 and 141 cases per 100,000 respectively) (AIHW: Pointer 2013) (Figure 6.20).

Suicides

In 2011, suicide was the most common cause of death among young people aged 15–24—there were 321 deaths in that year (26% of deaths in this age group), at a rate of 11 per 100,000 population. Young men committed suicide 2.5 times as often as young women. Suicide rates rose from 1991 to 1997 (from 16.7 to 19.4 per 100,000), then fell to 2004 (9.6 per 100,000) and have remained relatively stable since (Figure 6.21).

Figure 6.20



Note: Excludes data for 0–9 year olds due to small case numbers.

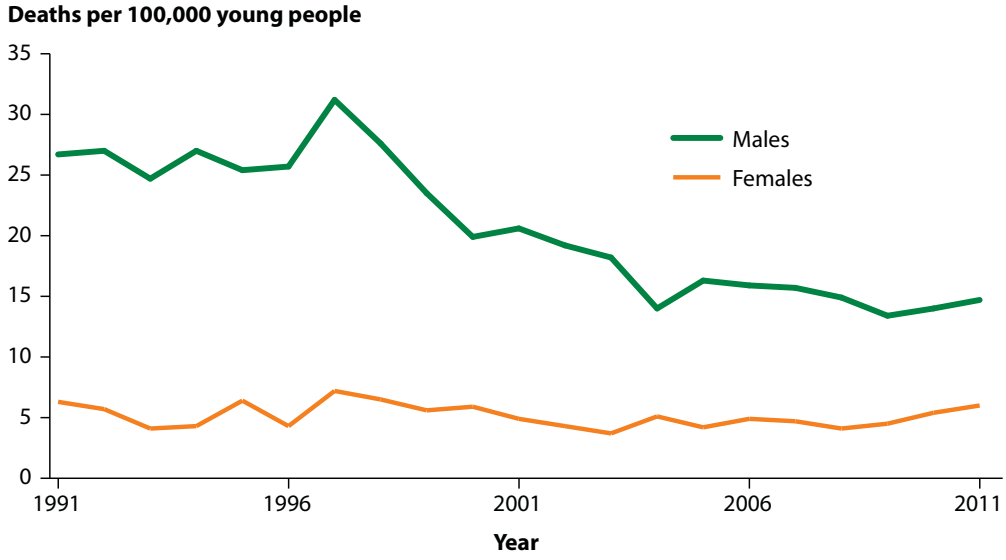
Source: AIHW: Pointer 2013.

Intentional self-harm hospitalisation rates, by age group and sex, Australia, 2010–11

Between 2001 and 2010, suicide rates for Indigenous young people were higher than for non-Indigenous young people, particularly in the 15–19 age group. Rates for Indigenous females in this age group were 5.9 times those of non-Indigenous females, while for males the corresponding rate ratio was 4.4 (ABS 2012b).

Helpline services available to assist young people at risk of suicide include: Lifeline Australia: 13 11 14; Kids Helpline: 1800 55 1800; Suicide Call Back Service: 1300 659 467.

Figure 6.21



Notes

1. Deaths registered in 2009 and earlier are based on the final version of cause of death data; deaths registered in 2010 and 2011 are based on revised and preliminary versions respectively, and are subject to further revision by ABS.
2. Data for 2010 have not been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010.

Source: AIHW National Mortality Database, unpublished.

Suicides of young people, aged 15–24, by sex, 1991 to 2011

Box 6.4

Intentional self-harm and suicide deaths—data issues

Determining intentional self-harm

According to inclusion notes in the International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification (ICD-10-AM), cases should be assigned codes in the range X60–X84 if they were purposely self-inflicted poisoning or injury, suicide, or attempted suicide (NCCH 2010). Determining whether an injury is due to intentional self-harm is not always straightforward. Cases may appear to be intentional self-harm, but inconclusiveness of available information may preclude them being coded as such. In this situation, the case can be coded to an 'undetermined intent' category (for example, 'Y30 Falling, jumping or pushed from a high place, undetermined intent' or 'Y32 Crashing of motor vehicle, undetermined intent').

Some patients may choose not to disclose that their injuries resulted from intentional self-harm, or may be unable to do so due to the nature of the injuries, or because their motives were ambiguous. In very young children, ascertaining whether an injury was due to intentional self-harm can be difficult and may involve a parent or caregiver's perception of the intent. Ability to form an intention to inflict self-harm and to understand the implications of doing so requires a degree of maturation that is absent in infancy and early childhood. The age at which self-inflicted acts can be interpreted as intentional self-harm is not well-defined and is the subject of debate. Such sources of uncertainty about the assignment of intent limit the certainty of any estimates of intentional self-harm based on routine hospital data.

Mortality data and suicide deaths

Since 2006, cause of death mortality data are revised for coroner-certified deaths 12 and 24 months after the initial release of data to include more complete cause of death information. This process results in 3 versions of data for each reference year: a preliminary version (the first release of data), a revised version (with open or recently closed coroner-certified cases revised 12 months after the preliminary release) and a final version (with the remaining open or recently closed coroner-certified cases revised 24 months after the preliminary data release). The revisions process mainly affects deaths due to external causes, and deaths from suicide in particular. The data reported here includes revised data for 2010 and preliminary data for 2011.

Another factor to consider with suicide statistics is how they can be affected by aspects of the coroner system (AIHW 2009). In some instances, it may take a long time for a coroner to decide that a case was suicide, and in the meantime the case is not recorded as such. The revisions process described above was implemented by the ABS to enable cases which took a long time to finalise to be coded using the coroner's final decision. Also, the way that coroners decide a case is suicide, and the way they record it, may also mean that some suicides are not recorded as such in official statistics. For example, if no suicide note was found, one coroner might find that a self-inflicted hanging was of undetermined intent, whereas another coroner might find it to be suicide regardless of the presence of a note. Coroners may also be reluctant to determine that a child or young person intended to commit suicide due to the difficulty in establishing the intent of the action in young people (ABS 2011).

What is missing from the picture?

Adolescence is the stage in life when risk behaviours begin and may continue into adulthood and later life. This period offers opportunities for health gains through prevention and early intervention. However, little is known, for example, about young women's preconception health behaviours. Also, the changing shape of adolescence and early adulthood as a result of influences such as social networking and the digital media is not known.

More comprehensive data on suicides and attempted suicides would enable better planning of support, prevention and early intervention services. The number of suicide-related contacts by ambulance services, mental health crisis teams and the police is not known, nor what services they provided.

The limited data available on eating disorders also highlights the need for regular data monitoring at a national level for these conditions. A recent report sponsored by the Butterfly Foundation recommended that this could be done by including eating disorder questions in the Australian Health Survey, including binge eating disorder as a category in non-hospital treatment data, and including eating disorders as a possible cause for seeking financial support in welfare data (Deloitte Access Economics 2012).

Where do I go for more information?

More information on youth health is available at www.aihw.gov.au/youth-health-and-wellbeing. The reports *Young Australians: their health and wellbeing*, *2010 National Drug Strategy Household Survey* and other recent publications are available for free download.

References

ABS (Australian Bureau of Statistics) 2002. National Health Survey: persons aged 18 years and over: selected risk status by ASGC remoteness area 2001. ABS cat. no. 4364.0. Canberra: ABS.

ABS 2008. National Survey of Mental Health and Wellbeing: summary of results, 2007. ABS cat. no. 4326.0. Canberra: ABS.

ABS 2010. National Health Survey: summary of results, 2007–08 (Reissue). ABS cat. no. 4364.0. Canberra: ABS.

ABS 2011. Causes of death, Australia, 2011. ABS cat. no. 3303.0. Canberra: ABS.

ABS 2012a. Australian Health Survey: first results, 2011–12. ABS cat. no. 4364.0.55.001. Canberra: ABS.

ABS 2012b. Suicides, Australia 2010. ABS cat. no. 3309.0. Canberra: ABS.

ABS 2013. Australian Health Survey: 2011–12. Canberra: ABS.

ABS 2013a. Australian Aboriginal and Torres Strait Islander Health Survey: first results, Australia, 2012–13. ABS cat. no. 4727.0.55.001. Canberra: ABS.

ABS 2013b. Australian Health Survey: physical activity, 2011–12, Australia. ABS cat. no. 4364.0.55.004. Canberra: ABS.

ABS 2013c. Australian Health Survey: updated results, 2011–12. ABS cat. no. 4364.0.55.003. Canberra: ABS.

ABS 2013d. Births, Australia, 2012. ABS cat. no. 3301.0. Canberra: ABS.

AIHW (Australian Institute of Health and Welfare) 2008. Making progress: the health, development and wellbeing of Australia's children and young people. Cat. no. PHE 104. Canberra: AIHW.

AIHW 2011a. 2010 National Drug Strategy Household Survey report. Drug statistics series no. 25. Cat. no. PHE 145. Canberra: AIHW.

AIHW 2011b. Young Australians: their health and wellbeing 2011. Cat. no. PHE 140. Canberra: AIHW.

AIHW 2012a. Australia's food & nutrition. Cat. no. PHE 163. Canberra: AIHW.

AIHW 2012b. Trends in serious injury due to land transport accidents, Australia 2000–01 to 2008–09. Injury research and statistics series no. 66. Cat. no. INJCAT 142. Canberra: AIHW.

AIHW 2013a. Australian hospital statistics 2011–12. Health services series no. 50. Cat. no. HSE 134. Canberra: AIHW.

AIHW 2013b. The health of Australia's males: from birth to young adulthood (0–24 years). Cat. no. PHE 168. Canberra: AIHW.

AIHW 2014a. Incidence of insulin-treated diabetes in Australia, 2000–2011. Cat. no. 66. Canberra: AIHW.

AIHW 2014b. Type 2 diabetes in Australia's children and young people: a working paper. Diabetes series no. 21. Cat. no. CVD 64. Canberra: AIHW.

AIHW: Henley G & Harrison JE 2013. Injury of Aboriginal and Torres Strait Islander people due to transport, 2005–06 to 2009–10. Injury research and statistics series no. 85. Cat. no. INJCAT 161. Canberra: AIHW.

AIHW: Pointer S 2013. Trends in hospitalised injury, Australia: 1999–00 to 2010–11. Injury research and statistics series no. 86. Cat. no. INJCAT162. Canberra: AIHW.

BITRE (Bureau of Infrastructure, Transport and Regional Economics) 2013. Young adult road safety: a statistical picture. Information sheet 51. Canberra: BITRE.

Deloitte Access Economics 2012. Paying the price: the economic and social impact of eating disorders in Australia. Sydney: The Butterfly Foundation.

Department of Health (2013). National Notifiable Diseases Surveillance System, customised report. Canberra: Department of Health.

Department of Infrastructure and Regional Development 2013. Australian Road Deaths Database. Viewed 10 November 2013, <http://www.bitre.gov.au/statistics/safety/fatal_road_crash_database.aspx>.

FYA (Foundation for Young Australians) 2013. How young people are faring 2013: the national report on the learning and earning of young Australians. Melbourne: FYA.

Kirby Institute 2014. 2013 Australian HIV public access dataset. Darlinghurst: Kirby Institute, Viewed 25 November 2013, <http://www.kirby.unsw.edu.au/surveillance/2013-australian-hiv-public-access-dataset>.

NCCH (National Centre for Classification in Health) 2010. The international statistical classification of diseases and related health problems, 10th revision, Australian modification (ICD-10-AM), Australian Classification of Health Interventions (ACHI) and Australian Coding Standards (ACS), 7th edn. Sydney: University of Sydney.

NHMRC (National Health and Medical Research Council) 2009. Australian guidelines to reduce health risks from drinking alcohol. Canberra: NHMRC. Viewed 11 March 2014, <https://www.nhmrc.gov.au/guidelines/publications/ds10>.

NIMH (National Institute of Mental Health) 2001. Teenage brain: a work in progress. NIH publication no. 01–4929. NIMH.

NPHP (National Public Health Partnership) 2004. The National Injury Prevention and Safety Promotion Plan: 2004–2014. Canberra: NPHP.

Sawyer MG, Arney FM, Baghurst PA, Clark JJ, Graetz BW, Kosky RJ et al. 2000. Mental health of young people in Australia. Canberra: Commonwealth Department of Health and Aged Care.

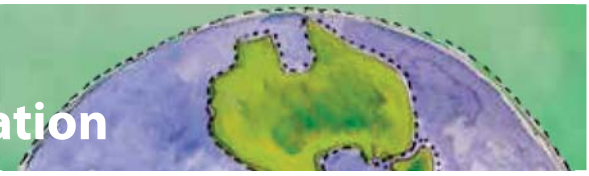
Sawyer S, Patton G 2011. Why adolescent health matters. Health 2011. Albert Park: Future Leaders. Viewed 12 March 2014, <http://www.futureleaders.com.au/publications/index.php>.

Slade T, McEvoy PM, Chapman C, Grove R & Teesson M 2013. Onset and temporal sequencing of lifetime anxiety, mood and substance use disorders in the general population. Epidemiology and Psychiatric Sciences. Available on CJO 2013 doi:10.1017/S2045796013000577.

Smith A, Agius P, Mitchell A, Barrett C, Pitts M 2009. Secondary students and sexual health 2008. Melbourne: Australian Research Centre in Sex, Health & Society.

Thomson N, Krom I, Ride K 2009. Summary of road safety among Indigenous peoples. Mount Lawley, WA: Australian Indigenous HealthInfoNet 2013. Viewed 20 February 2013, <http://www.healthinfonet.ecu.edu.au/related-issues/road-safety/reviews/our-review>.

6.8 The health of our working-age population



Around 53% of Australia's population (12.1 million people) are aged 25–64, and are classified as being of working age. During this life stage, many people experience major life events and transitions such as establishing themselves in the workforce, purchasing a home, raising a family, changing careers and retirement planning. Restrictions to their health can reduce their earning capacity and affect how these life events are experienced. Life events can also impact on health through, for example, stress or workplace injuries. It is also during working age that many long-term health conditions emerge and behaviours and patterns that can influence longevity or health in later years are established.

The aim of this article is to present an overview of the health of Australia's working-age population (aged 25–64) and the factors that influence it. Because health issues faced by the working-age population change between the ages of 25 and 64, this article explores patterns in the health and lifestyles of people aged 25–44 and 45–64 separately. Measures of health, such as long-term health conditions, causes of death and self-assessed health are investigated, along with behavioural risk factors and social and economic factors related to employment, housing and family. The relationship between work and physical and emotional wellbeing is also explored.

The health of people of working age is important because it affects not only them, but their families, workplaces and society in general. Gaining a better understanding of this group's health and lifestyles can lead to improvements in their wellbeing and to overall improvements in productivity and planning for future health needs.

Policy development for, and research into, the health and wellbeing of working-age Australians are sometimes approached from the viewpoints of men's health and women's health, or people studying or in the workforce. Such approaches, however, may miss the long-term conditions, behavioural risk factors and life stressors common to all people at this age. A more holistic approach to this age group integrates the effects of life events and transitions experienced during these ages on physical and emotional wellbeing. It also recognises the diversity of experiences within this age group, and how different life paths can have different effects on health.

Australians aged 25–44

During the ages of 25–44, many Australians are likely to be establishing themselves in the workforce, forming long-term relationships and buying their first home. It is also the age when they may start a family and may adjust their working arrangements to care for their children. Others might be studying while working to extend their skills and improve their employment prospects. At the same time, there are Australians in this age group who face barriers and are unable to find work or afford a home of their own, or they may be under housing stress. This can create a cycle whereby these challenges affect their physical and emotional wellbeing, which in turn can affect their work engagement.

Milestones and transitions

Employment rates are at their highest in this age group. Around 8 in 10 Australians (79%) aged 25–44 were employed according to the 2011 Census, and men in this age group were almost twice as likely as women to work full time (71% compared with 38%). Unemployment for both men and women in this age group was 4%; however, women were less likely to be in the labour force than men (76% compared with 91%) since many women have children at this age and, as outlined later, are more likely to be caring for children than men. As earning capacity increases, another important milestone for people in this age group is the purchase of a home. Six out of 10 people (61%) aged 25–44 in 2011 owned or were purchasing their home. Having a secure home has been found to be beneficial for both physical and mental health (Foster et al. 2011).

Long-term relationships and child rearing are also important aspects of life during this period. In 2011, marriage rates were highest among men and women aged 25–29, but Australians are tending to marry later, as indicated by more men and women marrying in their thirties and early forties in 2011 compared with 1991 (ABS 2012b).

Figures from 2011 indicate that, on average, Australian women were 28 when they had their first baby. However, the proportion of women having children later in life is increasing. The proportion of women aged 35 and over giving birth to their first child increased from 11% in 2001 to 14% in 2011 (Li et al. 2013). In 2011, Australia's fertility rate was 1.92 children per woman (ABS 2013c).

Women aged 25–44 are more likely to be caring for children than men. In the 2 weeks before the 2011 Census, 58% of women spent time caring for a child or children aged under 15 without pay, compared with 43% of men. Of these women, 86% were caring for their own child or children, as were 91% of these men. Women of this age group were also more likely than men to provide care or assistance to family members who have a disability, long-term illness or problems due to old age (12% compared with 8%).

Caring responsibilities can weigh heavily on people's emotional and physical health and wellbeing. Carers often need to reduce their working hours or leave the workforce completely due to their responsibilities and this reduction in income can affect their savings and superannuation, while also limiting their career prospects (Austen 2013; Nepal et al. 2008). In addition to the change in their financial circumstances, about one-third (32%) of informal carers in 2009 reported that their wellbeing had changed due to their caring role, specifying weariness, depression, stress and sleep interruption as some of the adverse effects they experienced (AIHW 2013a).

While this period is characterised by first-time marriages and starting a family, it is also the time when most divorces occur. People aged 40– 44 had the highest percentage of divorces granted in 2011, with about 17% of men and women in this age group being granted a divorce. Almost half of all divorces (48%) in 2011 involved couples with children (ABS 2012b). A long-term Australian study found that the end of marriage, either through separation or widowhood, significantly worsened the mental health of both men and women (Hewitt et al. 2012).

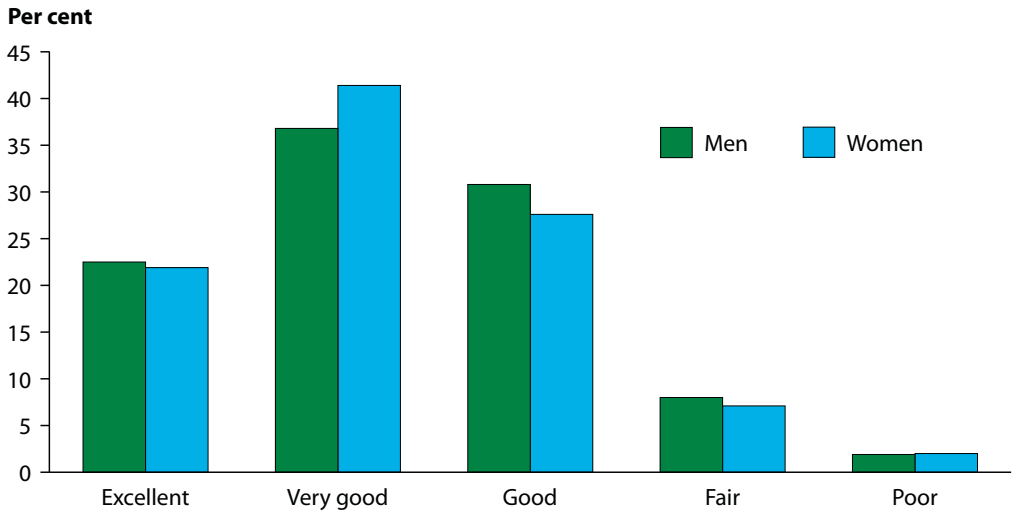
The proportion of lone-person households is also increasing in Australia, which can mean that these people have fewer financial and emotional supports, which could have a negative impact on their health (Kharicha et al. 2007). The ABS has also projected that more men and women between the ages of 25 and 49 will be living alone in 2031 than in 2006 (ABS 2010).

Around 10% of people aged 25–44 reported that they had a disability in the ABS 2012 Survey of Disability, Ageing and Carers, and of these people, around two-thirds (67%) had a disability that restricted their employment participation (ABS 2013d). People with employment restrictions may be restricted in the type of work that they can do or the number of hours they can work. They may also require ongoing assistance at work or modifications to their work environment.

How healthy are Australians aged 25–44?

Around 6 in 10 Australians (61%) aged 25–44 rated their health as excellent or very good in the 2011–12 Australian Health Survey (AHS), and only 10% considered their health to be fair or poor. The remaining 29% rated their health as good. The same proportion of young adults (aged 15–24) rated their health as excellent or very good (61%). Men and women in the 25–44 age group were similar to each other in the way they assessed their health (Figure 6.22). There was a difference, however, between men and women in levels of psychological distress experienced in the 4 weeks before the 2011–12 AHS. About 9% of men aged 25–44 were assessed as having high or very high levels of psychological distress, compared with 13% of women of the same age (ABS 2013a). These levels were similar to those found in the 2007–08 National Health Survey (ABS 2009b).

Figure 6.22



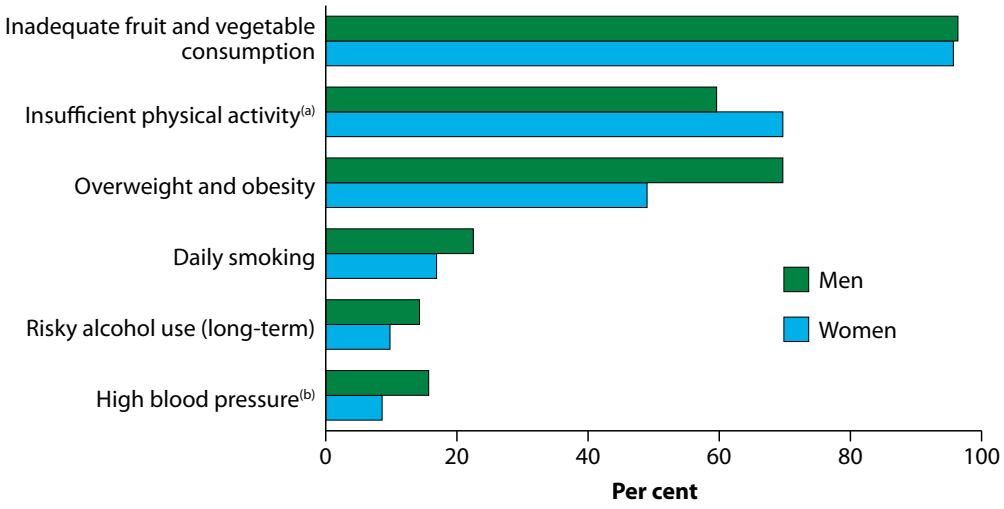
Source: AIHW analysis of ABS 2013b.

Self-assessed health status of Australians aged 25–44, by sex, 2011–12

The most common chronic health conditions reported by this age group in the 2011–12 AHS were vision problems, hay fever and allergic rhinitis, and back pain—the same as in the ABS 2007–08 National Health Survey (ABS 2009b). About 1 in 4 Australians aged 25–44 (25%) were short-sighted and almost 1 in 8 (12%) were long-sighted. Hay fever and allergic rhinitis affected 22% of this age group, and around 15% had back pain, back problems or disc disorders. Mood problems such as depression also affected 12% of this age group and anxiety affected 5% (see Chapter 4 'Chronic disease—Australia's biggest health challenge').

Although people aged 25–44 experience fewer long-term health conditions than older age groups, they can put themselves at a greater risk of developing these conditions later in life if their lifestyles and behaviours are unhealthy (see Chapter 5 ' Behavioural risk factors'). For example, smoking and not exercising can increase their risk of developing high blood pressure, heart disease and some types of cancer. Figure 6.23 shows that key behavioural risk factors are common in men and women aged 25–44 according to the 2011–12 AHS.

Figure 6.23



(a) Includes all people reporting sedentary or low activity.

(b) Defined as blood pressure of 140/90 mmHg or higher.

Sources: AIHW analysis of ABS 2013a, 2013b.

Prevalence of selected health risk factors in people aged 25–44, by sex, 2011–12

Inadequate fruit and vegetable consumption was very common among this age group. The NHMRC recommends that adults consume 2 serves of fruit and 5 serves of vegetables each day. According to the 2011–12 AHS, 96% of men and women aged 25–44 did not meet those requirements. Compared with other age groups, adequate fruit and vegetable consumption improved with age from 4% in people aged 18–24 to 8% in people aged 65–74.

Low levels of exercise were also common in this age group, as 60% of men and 70% of women reported that they were sedentary or undertook low levels of exercise in the week before the survey. Compared with other age groups, men aged 25–44 were less physically active than those aged 24 and under, but more physically active than older age groups. For men, sedentary or low levels of exercise increased with age from 45% in those aged 15–24 to 69% in those aged 65–74. There was a more gradual change for women from 69% in those aged 15–24 to 74% in those aged 65–74.

Poor nutrition and low levels of exercise may have an impact on the high levels of overweight and obesity in this age group, which were 70% for men and 49% for women. Findings from the 2011–12 AHS suggest that most of the increase in men's body mass index (BMI) occurred around the ages of 25–34; however, for women the increase in BMI was more gradual across the decades. Rates of overweight and obesity have increased for men in this age group from 66% in 2007–08 to 70% in 2011–12; however, for women the rates were similar (50% in 2007–08 compared with 49% in 2011–12). On a positive note, rates of smoking have fallen from 2007–08 when 24% of people aged 25–44 were daily smokers, compared with 20% in 2011–12 (ABS 2009b, 2013a).

Risky alcohol use in this age group was more common among men than women. Around 3 in 5 men (61%) reported that they had consumed alcohol at short-term risky levels (more than 6 standard drinks in a single episode) in the 12 months before the 2011–12 AHS, compared with 2 in 5 women (43%). Long-term risky alcohol consumption (regularly drinking more than 4 standard drinks per day) was also more common among men than women aged 25–44 (14% compared with 10%).

Despite the prevalence of risk factors in this age group, the majority of people aged 25–44 are yet to develop the chronic conditions that these risk factors can bring about. This is evident in the leading causes of death seen in this age group. Deaths among people aged 25–44 are predominantly due to injuries resulting from suicide, transport accidents or drug overdoses.

People aged 25–44 made up only 3.5% of all deaths in Australia in 2012 despite making up 29% of the total population (ABS 2013c). Men in this age group were almost twice as likely to die as women (104 deaths per 100,000 in 2012 compared with 54 deaths per 100,000). In 2011, suicide was the most common cause of death for both men and women, and accidental poisoning—from, for example, an overdose or unintentional contact with chemicals—was in the top 3 causes for both sexes (Table 6.1). The leading causes of death for women in this age group have remained similar since 2006; however, for men there has been a significant increase in the proportion of deaths caused by accidental poisoning in the same period (up 69%), and significant falls in the proportion of deaths caused by car accidents (down 30%) and coronary heart disease (down 16%) (AIHW analysis of National Mortality Database).

Table 6.1: Leading causes of death[(a)(b)] in people aged 25–44, by sex, 2011[(c)]

Rank	Men	No.	%	Women	No.	%
1	Suicide (X60–X84)	672	19.9	Suicide (X60–X84)	199	11.0
2	Accidental poisoning (X40–X49)	406	12.0	Breast cancer (C50)	173	9.6
3	Coronary heart disease (I20–I25)	243	7.2	Accidental poisoning (X40–X49)	103	5.7
4	Car accident (V40–V49)	138	4.1	Diseases of the liver (K70–K77)	63	3.5
5	Other forms of heart disease[(d)] (I30–I52)	118	3.5	Car accident (V40–V49)	54	3.0

(a) Based on ICD-10 groupings.

(b) Excludes the category 'Event of undetermined intent' as these deaths are subject to a revision process by the ABS upon further information from the coroner.

(c) Deaths registered in 2011 are based on the preliminary version of cause of death data and are subject to further revision by the ABS.

(d) Includes diseases of the myocardium (heart muscle), endocardium (lining of the heart), heart valves and pericardium (membrane covering the heart).

Source: AIHW National Mortality Database.

Australians aged 45–64

In the second half of their working lives, Australians are likely to be more settled in their family lives and established in their careers. By this age, most women have had their children and may have adjusted their work hours in response. However, both men and women in this age group may be contemplating or embarking on a career change, changing their working hours or planning for retirement. Others may retire from work before the age of 64, while some will elect to continue working beyond 65.

Australians aged 45–64 who have difficulty finding work or are experiencing changes to their family lives due to divorce or remarriage may face challenges such as financial stress or psychological distress that could have a negative effect on their health.

Milestones and transitions

For some people, the range of major life transitions in the second half of working age can be less disruptive than in the first half; however, changes such as children leaving the family home and caring for elderly parents can affect their physical and mental wellbeing.

According to the 2011 Census, the proportion of employed people aged 45–64 was lower than for those aged 25–44 (71% compared with 79%). This is due to more people in this age group leaving the labour force, because of disability or retirement. At the same time, fewer Australians aged 45 and over got married, and fewer divorced as they got older. Around 16 out of 1,000 married men and women, respectively, aged 45–49 were granted a divorce in 2011, compared with 7 out of 1,000 married men and 4 out of 1,000 married women aged 60–64. Older men have higher rates of divorce than older

women because they are more likely than older women to remarry and remarriages tend to be less stable than first marriages (Weston & Qu 2013). It should also be noted that divorce rates do not present the complete picture of relationship breakdowns as they do not capture the number of de facto relationships that dissolve.

Caring responsibilities at 45–64 also differ to those during the ages of 25–44. Around 1 in 4 people aged 45–64 (27%) spent time caring for a child or children without pay in the 2 weeks before the 2011 Census, compared with 1 in 2 people aged 25–44 (51%). However, people in the older age group were more likely to be caring for other children, such as grandchildren, than people aged 25–44 (41% compared with 8%). Research shows that more Australian grandparents are caring for their grandchildren since parents feel more comfortable leaving their children with a trusted relative and find them more flexible and less expensive than formal child care (Jenkins 2010). In some cases, grandparents may look after their grandchildren due to circumstances in their children's lives, such as relationship breakdowns, mental health problems, substance abuse, death or incarceration.

While people aged 45–64 were less likely to be caring for children than those aged 25–44, they were more likely to be providing care or assistance to a partner or family members who had a disability, long-term illness or problems due to old age (17% of people aged 45–64 compared with 10% of people aged 25–44). About 1 in 5 women aged 45–64 (21%) provided this type of assistance compared with about 1 in 8 men (13%). As mentioned earlier, caring responsibilities can have a negative impact on the physical and mental wellbeing of carers.

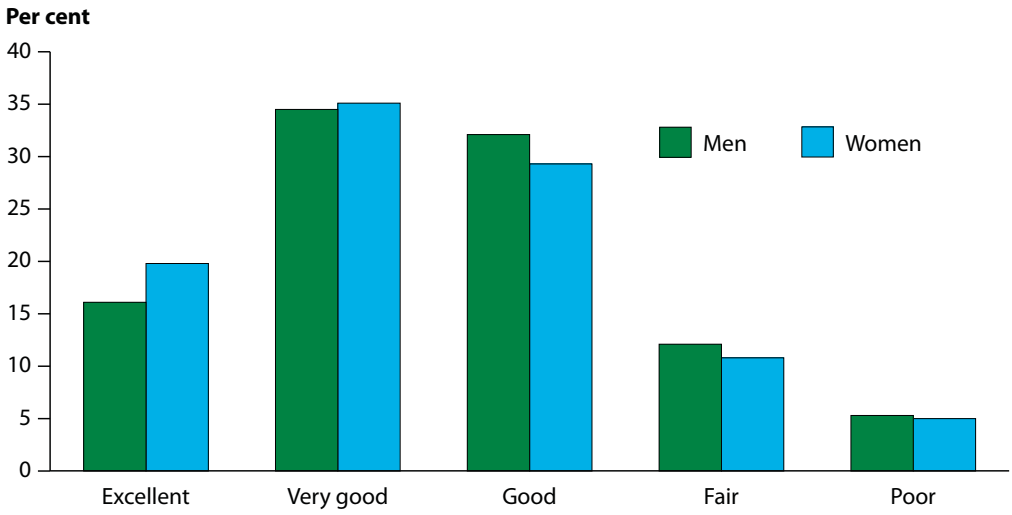
Around 23% of people aged 45–64 reported that they had a disability in the ABS 2012 Survey of Disability, Ageing and Carers, and of these people, 69% had a disability that restricted their employment participation (ABS 2013d).

Another major transition faced by females in this age group is menopause, which is the end of the reproductive years marked by the ending of menstruation. This generally occurs between the ages of 45 and 55. Symptoms may include flushes, aches and pains, headaches, irritability, loss of sex drive and difficulty sleeping.

How healthy are Australians aged 45–64?

Australians aged 45–64 were 1.7 times as likely to rate their health as fair or poor compared with those aged 25–44 in the 2011–12 AHS, suggesting that there is some deterioration of health as people of working age get older. The proportion of this age group assessing their health as fair or poor in 2011–12 was similar to the proportion in 2007–08 (17% compared with 18%). Figure 6.24 shows that there were similarities in the way that men and women aged 45–64 tended to rate their health. Levels of psychological distress were the same for both age groups, with 9% of men and 13% of women having high or very high levels in the 4 weeks before the survey (ABS 2013a). In comparison, 11% of men and 15% of women aged 45–64 had high or very high levels of psychological distress in 2007–08 (ABS 2009).

Figure 6.24



Source: AIHW analysis of ABS 2013b.

Self-assessed health status of Australians aged 45–64, by sex, 2011–12

Although self-assessed physical health tends to decrease with age, self-assessed mental health does not follow this pattern (AIHW 2010)—and both are influenced by socioeconomic status (SES). Data from the Australian Longitudinal Survey of Women's Health (ALSWH) show that among ALSWH participants aged 45–50, *physical health* was poorer among those of low SES at the start of the study and declined more quickly over the following 15 years than among those of higher SES. *Mental health* in this cohort was poorer at the start for women of low SES and improved more slowly in ensuing years among those of low SES compared with women of high SES (Williams et al. 2013).

Chronic diseases are more common in the second half of working life than in the first, and this can have an impact not only on people's health, but also on their working and earning capacity, and ability to care for other family members. As with the younger group, vision problems (90%) and back pain (20%) were in the top 3 most common long-term health conditions experienced by people aged 45–64, according to results from the 2011–12 AHS. The proportion of people who reported long-sightedness was much higher in people aged 45–64 than those aged 25–44 (57% compared with 12%).

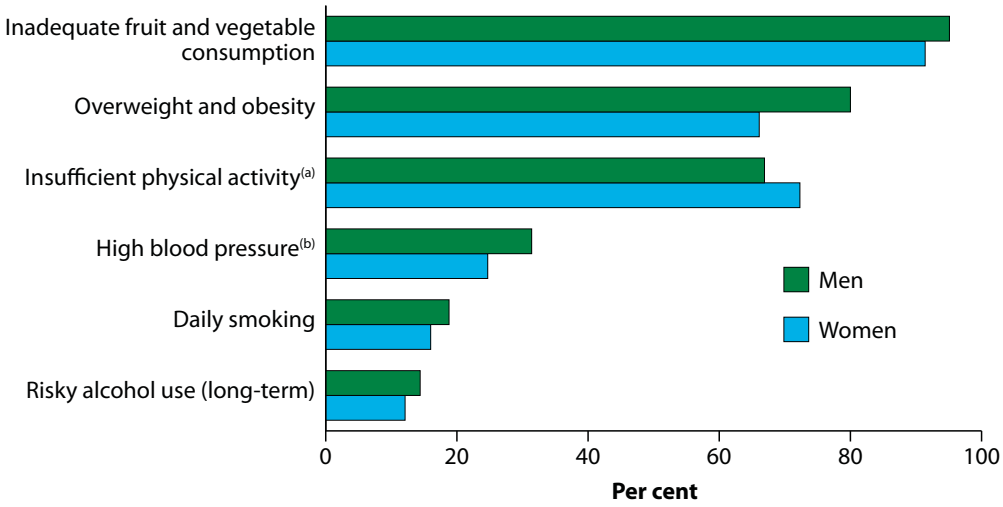
Hay fever and respiratory conditions (such as asthma and sinusitis) were less prominent in this older age group, with high blood pressure (17%) and osteoarthritis (15%) being more prominent.

Vision problems, back pain, high blood pressure and osteoarthritis were also the most commonly reported chronic conditions among people aged 45–64 in the earlier 2007–08 National Health Survey.

About 14% of the 45–64 age group reported mood problems such as depression in 2011–12, and 5% reported experiencing anxiety-related problems.

According to the 2011–12 AHS, the health of people aged 45–64 was at risk due to poor nutrition and lack of exercise. Figure 6.25 shows the proportion of men and women with selected health risk factors.

Figure 6.25



(a) Includes all people reporting sedentary or low activity.

(b) Defined as blood pressure of 140/90 mmHg or higher.

Sources: AIHW analysis of ABS 2013a, 2013b.

Prevalence of selected health risk factors in people aged 45–64, by sex, 2011–12

While more people in this age group met the NHMRC guidelines for fruit and vegetable consumption than in the 25–44 age group, the majority still fell short. In addition, overweight and obesity rates were higher among people aged 45–64, as were rates of physical inactivity. However, the greatest change was seen in the proportion of people with high blood pressure. Men aged 45–64 were twice as likely to have high blood pressure as men aged 25–44, and women were nearly 3 times as likely. In contrast, the proportion of men aged 45–64 who smoked daily was lower than for men aged 25–44 (19% compared with 22%), and the proportion for women was also slightly lower (15% compared with 17%).

Alcohol consumption at short-term risky levels was also lower in this age group than in those aged 25–44. In 2011–12, 40% of men aged 45–64 reported drinking at short-term risky levels in the 12 months before the survey compared with 61% of men aged 25–44. The corresponding proportions for women were 24% compared with 43%. However, there was a different pattern in long-term risky alcohol consumption. The same proportions of men aged 25–44 and 45–64 reported drinking at long-term risky levels (14%), whereas for women, the proportion was higher among those aged 45–64 (12% compared with 9%).

Compared with rates in 2007–08, levels of overweight and obesity among people aged 45–64 have risen from 70% to 73% in 2011–12 (ABS 2009b, 2013a). However, in a similar pattern to those aged 25–44, the proportion of those aged 45–64 who were current daily smokers decreased from 19% in 2007–08 to 17% in 2011–12.

The influence of risk factors on the health of Australians aged 45–64, and their likelihood of developing chronic diseases, begins to show in the leading causes of death among this age group. Compared with the younger age group, people aged 45–64 were more likely to die due to a chronic disease. In 2011, cancer and coronary heart disease (diseases that reduce blood supply to the heart, such as a heart attack) were the predominant conditions causing death in both men and women (Table 6.2).

Table 6.2: Leading causes of death[(a)] in people aged 45–64, by sex, 2011[(b)]

Rank	Men	No.	%	Women	No.	%
1	Coronary heart disease (I20–I25)	1,968	15.5	Breast cancer (C50)	999	13.0
2	Lung cancer (C33–C34)	1,174	9.3	Lung cancer (C33–C34)	818	10.6
3	Suicide (X60–X84)	549	4.3	Coronary heart disease (I20–I25)	457	5.9
4	Diseases of the liver (K70–K77)	541	4.3	Bowel cancer (C18–C20)	348	4.5
5	Bowel cancer (C18–C20)	463	3.7	Chronic lower respiratory diseases (J40–J47)	306	4.0

(a) Based on ICD-10 groupings.

(b) Deaths registered in 2011 are based on the preliminary version of cause of death data and are subject to further revision by the ABS.

Source: AIHW National Mortality Database.

The leading causes of death in this age group were largely unchanged between 2006 and 2011 for women. For men, however, there was a 19% fall in the proportion of deaths caused by bowel cancer, a 10% fall in deaths caused by coronary heart disease and a 6% rise in deaths caused by diseases of the liver (AIHW analysis of National Mortality Database).

The relationship between work and health

The importance of the health of working-age people was recognised in a review presented to the British Secretaries of State for Health and for Work and Pensions in 2008 (Black 2008). This was the first review that measured the economic costs of ill health and its impact on work in Britain, while acknowledging the human and social costs. The review identified risk factors and causes of ill health in the working-age population and recommended interventions to minimise their effects.

Sweden's *National public health report* in 2012 also explored the main causes of death and hospitalisations and the impact of workforce participation and lifestyle factors on the working-age group's wellbeing (Danielsson & Berlin 2012). A Japanese study, which looked at the impact of income on self-assessed health, found that health was better in employed people (Kachi et al. 2013), while a study of the United States working-age population showed that people with higher education levels were more likely to report their health as excellent (Zajacova et al. 2012).

In Australia, this topic has been approached mainly from an economic perspective where data from surveys that track working-age people over time have been used to explore the relationships between health and labour force participation (Cai & Cong 2009; Cai & Kalb 2006, 2005, 2004; Carter et al. 2013) and between health and income (Brown & Nepal 2010; Gunasekara et al. 2013).

Australians who are in good health and have fewer health conditions are more likely to participate in the labour force (Cai & Cong 2009; Cai & Kalb 2006, 2005, 2004; Pit et al. 2012; Schofield et al. 2008). People who are not employed may experience poorer health. A British review of research into the health benefits of work found that, in general, work improves physical and mental health and wellbeing (Waddell & Burton 2006). The research showed that unemployed people had poorer physical and mental health, higher rates of hospitalisation and were more likely to die than those who were employed. However, people in poor health were also unlikely to be employed.

Despite its overall beneficial effects, at times work can also be harmful to health. Workers may be injured or killed while doing their jobs, and some may develop health conditions from their work practices—for example, people who are exposed to asbestos at work may develop mesothelioma. Serious work-related injuries and illnesses, which involved death, permanent incapacity or temporary incapacity requiring absence from work of 1 week or more, were 25% more common in men than in women in 2010–11 (Safe Work Australia 2014). Preliminary compensation claims data indicate that there were 128,050 serious claims in 2011–12 in Australia, or 12.2 serious claims per 1,000 workers. In the same year, 228 workers died from a work injury, which equated to a rate of 2.0 deaths per 100,000 workers. The incidence rates of serious claims and fatalities have fallen since 2003–04, when there were 16.5 serious claims per 1,000 workers and 3.3 deaths per 100,000 workers (SafeWork Australia 2013a).

While Australians work fewer hours a year than the OECD average (1,693 hours a year compared with 1,776 hours), their labour productivity, measured by gross domestic product per hours worked, is above the OECD average, suggesting that Australians are more productive when they are at work (Conway & Meehan 2013). However, the proportion of Australian employees who work very long hours is higher than the OECD average. More than 14% of Australian employees work more than 50 hours a week, compared with the OECD average of 9% (OECD 2013).

Long hours, heavy workload and job insecurity can lead to work-related stress, which may result in long-term absences from work, and has been estimated to cost the Australian economy $14.81 billion a year (Safe Work Australia 2013b). Work stress through high job demands and low job control has also been shown to increase the risk of developing mood and anxiety disorders, coronary heart disease and metabolic syndrome, which can be a precursor to type 2 diabetes, stroke and heart disease (Chandola et al. 2006; Marmot et al. 1997; Rosengren et al. 2004; Szeto & Dobson 2013). Body-stressing, caused by lifting, repetitive movements or awkward postures at work, was responsible for 40% of serious compensation claims and was the most common mechanism of workplace injury or disease in 2010–11.

The relationship between work and health can also have an influence later in life through income security, savings and superannuation contributions, which can affect physical and mental health as well as self-esteem. In 2007, 15% of males and 23% of females aged 45–64 had no superannuation coverage (ABS 2009a). Average retirement savings are generally lower for women, who historically have lower rates of employment participation and are more likely than men to have breaks in employment due to having and caring for children. In addition, divorces can have a negative impact on both men and women's financial status in later life (Caruana 2011). On the other hand, poor health and disability in either males or females may result in decreased workforce participation, loss of earnings and decreased capacity to save for older age. People of lower SES tend to have poorer general and mental health, and fare more poorly in these measures over time compared with people of higher SES.

Research indicates that overall, work is beneficial to physical and mental wellbeing (AFOEM 2011). Working improves people's economic situation, increases their self-esteem and promotes community connectedness. These outcomes benefit not only individuals, but also their families and society as a whole.

What is missing from the picture?

Information on the effects of life events and transitions on Australians' health is limited because not all health-related data sets collect information on aspects such as marital status and employment status. Even if these data were collected for a particular point in time, they may not be useful when looking at how these factors affect the development of long-term health conditions compared with data from long-term studies that collect data at many points in time. Health is also multidimensional and it may not always be clear whether it is a cause or an effect of other aspects of life. For example, people who work may be healthier because work has beneficial effects or because people who have poor health may be less likely to be working.

Further information on the health of working-age Australians will be available when the ABS releases more results from the 2011–12 AHS. In addition, the AIHW is using 2011 data to measure the burden of disease experienced by Australians, which will provide updated information on the effect of disability, long-term conditions and premature death on the working-age population.

Where do I go for more information?

More information on the health and wellbeing of working-age Australians is available at www.aihw.gov.au. Recent AIHW reports and other publications available for free download include: *The health of Australia's males: 25 years and over* and *Young Australians: their health and wellbeing 2011*.

See Chapter 7 for information on the health of Indigenous Australians. Information on the impact of life events and transitions on families can be found on the Australian Institute of Family Studies website: www.aifs.gov.au.

References

ABS (Australian Bureau of Statistics) 2009a. Employment arrangements, retirement and superannuation, Australia, April to July 2007 (Reissue). ABS cat. no. 6361.0. Canberra: ABS.

ABS 2009b. National Health Survey: summary of results, 2007–2008 (Reissue). ABS cat. no. 4364.0. Canberra: ABS.

ABS 2010. Australian social trends, December 2010. ABS cat. no. 4102.0. Canberra: ABS.

ABS 2011. General Social Survey: summary results, Australia, 2010. ABS cat. no. 4159.0. Canberra: ABS.

ABS 2012a. Births, Australia, 2012. ABS cat. no. 3301.0. Canberra: ABS.

ABS 2012b. Marriages and divorces, Australia, 2011. ABS cat. no. 3310.0. Canberra: ABS.

ABS 2013a. Australian Health Survey: first results, 2011–2012. ABS cat. no. 4364.0.55.001. Canberra: ABS.

ABS 2013b. Australian Health Survey: updated results, 2011–2012. ABS cat. no. 4364.0.55.003. Canberra: ABS.

ABS 2013c. Deaths, Australia, 2012. ABS cat. no. 3302.0. Canberra: ABS.

ABS 2013d. Disability, ageing and carers, Australia: summary of findings, 2012. ABS cat. no. 4430.0. Canberra: ABS.

AFOEM (Australasian Faculty of Occupational and Environmental Medicine) 2011. Australian and New Zealand consensus statement on the health benefits of work. Sydney: AFOEM.

AIHW (Australian Institute of Health and Welfare) 2010. Australia's health 2010. Cat. no. AUS 122. Canberra: AIHW.

AIHW 2011. Young Australians: their health and wellbeing 2011. Cat. no. PHE 140. Canberra: AIHW.

AIHW 2013a. Australia's welfare 2013. Cat. no. AUS 174. Canberra: AIHW.

AIHW 2013b. The health of Australia's males: 25 years and over. Cat. no. PHE 169. Canberra: AIHW.

Austen S 2013. The effects of ill health and informal care roles on the employment retention of mid-life women: does the workplace matter? The Journal of Industrial Relations 55:663–80.

Black C 2008. Working for a healthier tomorrow: review of the health of Britain's working age population presented to the Secretary of State for Health and the Secretary of State for Work and Pensions. London: The Stationery Office.

Brown L & Nepal B 2010. Health lies in wealth: health inequalities of Australians of working age. Report no. 1/2010. Canberra: Catholic Health Australia, National Centre for Social and Economic Modelling.

Cai L & Cong C 2009. Effects of health and chronic diseases on labour force participation of older working-age Australians. Australian Economic Papers June:166–82.

Cai L & Kalb G 2004. Health status and labour force participation: evidence from the HILDA data. Melbourne Institute Working Paper no. 4/04. Melbourne: Melbourne Institute of Applied Economic and Social Research.

Cai L & Kalb G 2005. Health status and labour force status of older working-age Australian men. Melbourne Institute Working Paper no. 9/05. Melbourne: Melbourne Institute of Applied Economic and Social Research.

Cai L & Kalb G 2006. Health status and labour force participation: evidence from Australia. Health Economics 15:241–61.

Carter K, Gunasekara F, Blakely T & Richardson K 2013. Health shocks adversely impact participation in the labour force in a working age population: a longitudinal analysis. Australian and New Zealand Journal of Public Health 37:257–63.

Caruana C 2011. Divorce and wellbeing in later life. Family Relationships Quarterly 18:16–18.

Chandola T, Brunner E & Marmot M 2006. Chronic stress at work and the metabolic syndrome: prospective study. British Medical Journal 332:521–25.

Conway P & Meehan L 2013. Productivity by the numbers: the New Zealand experience. Wellington: New Zealand Productivity Commission.

Danielsson M & Berlin M 2012. Health in the working-age population. Health in Sweden: the national public health report 2012. Chapter 4. Scandinavian Journal of Public Health 40(Supplement 9):72–94.

Foster G, Gronda H, Mallett S & Bentley R 2011. Precarious housing and health: research synthesis. Melbourne: Australian Housing and Urban Research Institute, Hanover Welfare Services, University of Melbourne, University of Adelaide & Melbourne City Mission.

Gunasekara F, Carter K, McKenzie S 2013. Income-related health inequalities in working age men and women in Australia and New Zealand. Australian and New Zealand Journal of Public Health 37:211–17.

Hewitt B, Turrell G & Giskes K 2010. Marital loss, mental health and the role of perceived social support: findings from six waves of an Australian population based panel study. Journal of Epidemiology & Community Health 66:308–14.

Kachi Y, Inoue M, Nishikitani M, Tsurugano S, Yano E 2013. Determinants of changes in income-related health inequalities among working-age adults in Japan, 1986–2007: time-trend study. Social Science & Medicine 81:94–101.

Kharicha K, Harari D, Swift C, Gillmann G and Stuck A 2007. Health risk appraisal in older people: are older people living alone an 'at-risk' group? British Journal of General Practice 57:271–76.

Jenkins B 2010. Grandparent childcare in Australia: a literature review. Elder Law Review 6:1–19.

Li Z, Zeki R, Hilder L & Sullivan EA 2013. Australia's mothers and babies 2011. Perinatal statistics series no. 28. Cat. no. PER 59. Canberra: AIHW.

Marmot MG, Bosma H, Hemingway H, Brunner E & Stansfield S 1997. Contribution of job control and other risk factors to social variations in coronary heart disease. Lancet 350:235–40.

Nepal B, Brown L, Ranmuthugala G & Percival R 2008. Women carers in financial stress report: lifetime health and economic consequences of caring: modelling health and economic prospects of female carers in Australia. Canberra: NATSEM.

OECD (Organisation for Economic Co-operation and Development) 2013. Better life index. Paris: OECD. Viewed 4 December 2013, <http://www.oecdbetterlifeindex.org/countries/australia/>.

Pit S & Byles J 2012. The association of health and employment in mature women: a longitudinal study. Journal of Women's Health 21:273–80.

Rosengren A, Hawken S, Ounpuu S, Silwa K, Zubaid M, Almahmeed WA et al. 2004. Association of psychosocial risk factors with risk of acute myocardial infarction in 11,119 cases and 13,648 controls from 52 countries (the INTERHEART study): case-control study. The Lancet 364:953–62.

Safe Work Australia 2013a. Compendium of workers' compensation statistics: Australia 2010–11. Canberra: Safe Work Australia.

Safe Work Australia 2013b. The incidence of accepted workers' compensation claims for mental stress in Australia. Canberra: Safe Work Australia.

Safe Work Australia 2014. Key work health and safety statistics, Australia. Canberra: Safe Work Australia.

Schofield D, Shrestha R, Passey M, Earnest A & Fletcher S 2008. Chronic disease and labour force participation among older Australians. Medical Journal of Australia 189:447–50.

Skinner N, Hutchinson C & Pocock C 2012. The big squeeze: work, home and care in 2012— the Australian Work and Life Index. Adelaide: Centre for Work + Life, University of South Australia.

Szeto ACH & Dobson KS 2013. Mental disorders and their association with perceived work stress: an investigation of the 2010 Canadian Community Health Survey. Journal of Occupational Health Psychology 18:191–97.

Waddell G & Burton K 2006. Is work good for your health and well-being? London: The Stationery Office.

Weston R & Qu L 2013. Working out relationships. Melbourne: Australian Institute of Family Studies.

Williams JS, Cunich M & Byles J 2013. The impact of socioeconomic status on changes in the general and mental health of women over time: evidence from a longitudinal study of Australian women. International Journal for Equity in Health 12:25–35.

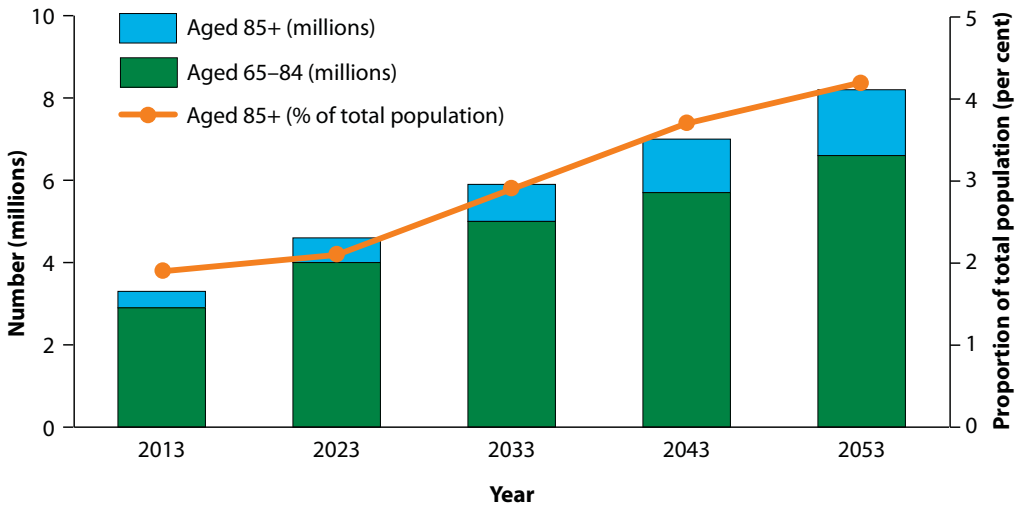
Zajacova A, Hummer R, Rogers R 2012. Education and health among U.S. working-age adults: a detailed portrait across the full educational attainment spectrum. Biodemography and Social Biology 58:40–61.

6.9 Ageing and the health system: challenges, opportunities and adaptations

FEATURE ARTICLE

Older Australians are accounting for an increasing share of the population (see Chapter 1 'Who we are'). In 2013, 14% of the population (3.3 million people) were aged 65 and over and 1.9% were aged 85 and over (439,600 people). By 2053, based on Australian Bureau of Statistics (ABS) medium-level growth assumptions, 21% of the population will be aged 65 and over (8.3 million people) and 4.2% aged 85 and over (1.6 million people) (Figure 6.26).

Figure 6.26



Note: Data are as at 30 June. Data presented for 2023 onwards are based on population projections (series B).

Sources: AIHW analysis of ABS 2013a, 2013j.

Number and proportion of older people, 2013–2053

As well, health and social trends are changing the circumstances of our older population, redefining what it means to be 'old' (see Box 6.5).

There is concern that this ageing of the population will put unsustainable pressure on public spending, with particular concerns about rising health costs and the ability of the health system to serve the increasing numbers of older people needing care. These issues are discussed at some length in this article (see also Chapter 2 'How much does Australia spend on health care?').

Undoubtedly, 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 higher users of health services. However, the majority of Australians consider themselves to be in good health, and manage to live independently—with or without community-based supports—until their final days. Further, good health is itself a resource,

enabling older people to contribute socially, culturally and economically to the community—and evidence suggests that many are.

This article analyses the key areas of challenge for the health system as it adapts to an ageing population. It then sets out ways Australia's health system is adjusting, and can continue to adapt.

Box 6.5

How do we define 'old'?

For population measurement purposes, 'old' is conventionally defined as people aged 65 and over, based on the original qualifying age for the Age Pension. While this article also uses this convention, it is important to stress that at the individual level, a person does not necessarily become frail or 'dependent' at age 65 (or at any other particular age).

Like the broader Australian population, the group of 'older people' is far from uniform. The diversity of the older Australian population, 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. Where possible in this article, data referring to the 65-and-over age group are split into subcategories (for example, 65–74, 75–84 and 85+) since health, and the need for health services, often varies with age.

Ageing and the health system: key challenges

The ageing of the population will have far-reaching implications for society. Direct challenges for the health system will include changing health profiles, increased demand for health service use, and rising health costs.

The challenges are twofold: first, the rapidly growing group of 'old old' (85 and over) people who have a range of typical age-related health problems (for example, arthritis, dementia and cancer); and secondly, the younger cohort entering the '65 and over' age bracket with a larger burden of lifestyle-related diseases (for example, type 2 diabetes) than previous generations.

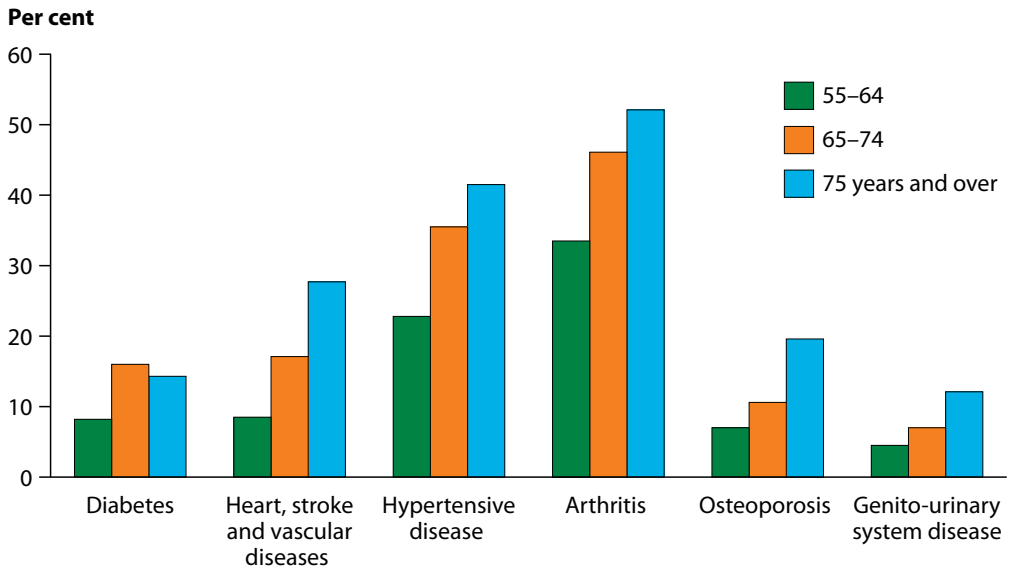
Further, social changes among the next generation of older people—such as greater understanding and awareness of health issues and greater expectations of health services—pose additional challenges. These challenges may influence future models of health-care delivery and engagement.

Changing health profiles

A key challenge for the health system will be how to best meet the health needs of an ageing population and, in particular, how to manage the increasing impact of chronic disease.

The prevalence of many health conditions is higher in older age groups (Figure 6.27). The 2011–12 Australian Health Survey (AHS) shows that, among older Australians living in households, the most common long-term health conditions (excluding short- and long-sightedness) are arthritis (affecting 49% of those aged 65 and over), hypertensive disease (38%) and hearing loss (complete or partial) (35%) (AIHW analysis of ABS 2012a). Just over 1 in 5 older people (22%) reported having heart, stroke and vascular diseases, 15% had diabetes, and 7% had cancer. Age-related vision problems that are likely to be disabling include cataracts (affecting 10% of those aged 65 and over), glaucoma (3%), macular degeneration (5%) and blindness (2%).

Figure 6.27



Source: AIHW analysis of ABS 2012a.

Prevalence of selected self-reported health conditions among people aged 55 and over, by age group, 2011–12

Dementia is a significant health problem among older Australians—an estimated 332,000 Australians had dementia in 2014, of whom 93% were aged 65 and over. Based on projections of population growth and ageing, the number of people with dementia is estimated to reach around 900,000 by 2050 (AIHW 2012). (See Chapter 6 'Dementia, dementia treatment and the future' for more information.)

Older people are also more likely than younger people to have multiple long-term health conditions. For example, in 2009, about 49% of people aged 65–74 had 5 or more long-term health conditions, increasing to 70% of those aged 85 and over (ABS 2010).

Falls are common among older people and often result in fractures or other serious injuries (Bradley & AIHW 2013). In 2009–10, there were an estimated 83,800 hospitalisations due to falls in people aged 65 and over (accounting for 1 in 10 days spent in hospital by older people) (Bradley & AIHW 2013). Older women sustained a greater number of hospitalised fall injuries than men (constituting 69% of cases in 2009–10), and the rate of fall injuries increased with age in both sexes.

Despite the increasing prevalence of many conditions with age, most older people consider themselves to be in good health. The 2011–12 AHS shows that, of older people living in households, 76% of those aged 65–74 and 67% of those aged 75 and over rated their health as excellent, very good, or good (ABS 2013c). In comparison, in the 2004–05 National Health Survey, 69% of people aged 65–74, and 65% of those aged 75 and over rated their health as good, very good, or excellent (ABS 2006). Research indicates that the simple measure of self-rated health has complex determinants, but is consistently associated with major health outcomes such as physical and functional health status, health service use, stroke and death (French et al. 2012).

Broader population trends in chronic disease are also important in the context of the health of the future older population. These trends are mixed. On the positive side, there has been a substantial reduction in deaths due to chronic disease in Australia (see Chapter 4 'Chronic disease—Australia's biggest health challenge'). For example, since 1980, mortality due to coronary heart disease and stroke has declined by 73% and 69% respectively. On the negative side, chronic diseases have been the leading causes of illness and death in Australia for many decades, and risk factors for these conditions have become more common. For example, in 2011–12, 63% of Australian adults (aged 18 and over) were overweight or obese, compared with 56% in 1995 (ABS 2013c). As such, the future older population may have a larger burden of lifestyle-related diseases than in the past.

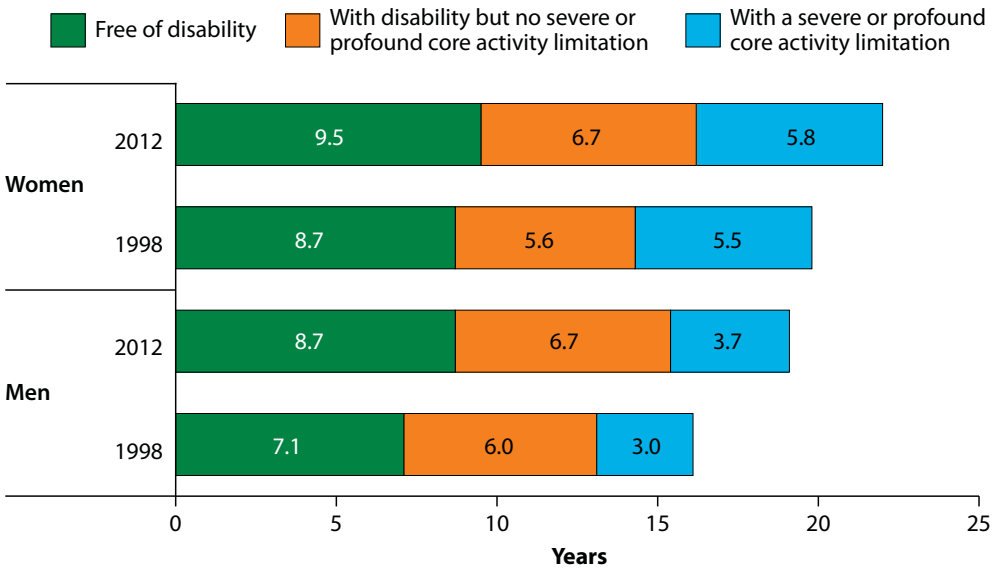
Disability and disability-free life expectancy

Population ageing is expected to result in an increase in the absolute number of people with disability, simply because there are more people in the older age groups and disability becomes more common with age. Data from the ABS 2012 Survey of Disability, Ageing and Carers (SDAC) indicate that just over half (53%, or 1.7 million people) of Australians aged 65 and over had disability; this compares with 16% of those aged 25–64 and 7% of those aged under 25 (AIHW analysis of ABS 2013d).

In 2012, 1 in 5 older Australians (20%, or nearly 663,000 people) had severe or profound core activity limitation, meaning that they sometimes or always needed assistance with at least 1 core activity (self-care, mobility or communication), with higher rates among women than men (ABS 2013d).

However, an important question is whether, as overall life expectancy has lengthened, the number of years lived with disability has fallen or risen. In 2012, women aged 65 could expect to live an additional 22.0 years of life and men an additional 19.1 years, compared with 19.8 and 16.1 in 1998 respectively (Figure 6.28). In 2012, older women could expect to live 9.5 years free of disability, 6.7 years with disability but no severe or profound core activity limitation, and 5.8 years with a severe or profound core activity limitation (8.7, 6.7 and 3.7 years for men).

Figure 6.28



Note: People with a severe or profound core activity limitation always or sometimes require help with communication, mobility and/or self-care.

Sources: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file; ABS unpublished data table of 2012 Survey of Disability, Ageing and Carers; ABS unpublished abridged Australian life tables 1996–1998, 2010–2012.

Expected years of life at age 65, by disability status and sex, 1998 and 2012

AIHW analysis indicates that, between 1998 and 2012, between 37% (females) and 54% (males) of the gains in life expectancy were years free of disability, and between 76% (males) and 89% (females) of the gains were years without severe or profound core activity activity limitation. This suggests that not only are people living longer, but that older people, on average, gained more years of life without severe or profound limitation than with it.

More detailed analyses of changes in life expectancy and disability in Australia will be published by the AIHW in the second half of 2014.

Increasing demand for health services

Demand for health services is affected by many factors, but older people are generally higher users of health services than younger people, and so demand is expected to increase with the ageing population.

Older people are more likely to visit health professionals than younger people. According to the 2011–12 AHS, 98% of people aged 65 and over had consulted at least 1 health professional in the previous 12 months, compared with 90% of those aged under 65 (ABS 2013b). Among people aged 65 and over, 96% had consulted a GP in the previous 12 months, including 38% who had done so in the previous 2 weeks compared with 82% and 18% of those aged under 65, respectively.

In terms of other health services, 57% of older people had consulted a specialist within the last 12 months (compared with 28% of people aged under 65), and around 20% had been admitted to hospital as an inpatient (compared with 11% of younger people) (AIHW analysis of ABS 2013b).

The AHS does not include information about people living in residential aged care. Administrative data provided to the AIHW National Aged Care Data Clearinghouse show that, at 30 June 2013, there were nearly 169,000 people living in permanent residential aged care. Between 2003 and 2013, the number of permanent residents in aged care rose by just over 20%. Within this total increase, the number of residents aged 85 and over rose by 37%, with this group accounting for just over 58% of the total population of permanent aged care residents (up from around 51% in 2003). These rises reflect growth in the older population, as well as associated increases in government-subsidised residential places (which are set to increase further following recent aged care reforms).

Most permanent residents in aged care facilities are highly dependent, with 82% receiving high-level care at 30 June 2013. Information about the health conditions of residents is collected as part of an assessment of their care needs. Up to 3 mental and behavioural disorders (such as dementia) can be recorded, as can up to 3 other medical conditions that impact on care needs. Circulatory disease was the most common main (first listed) condition (22%) followed by musculoskeletal conditions (19%) and endocrine disease (including diabetes) (8%). Fifty-two per cent of permanent residents had diagnosed dementia. About half of all permanent aged care residents had symptoms of depression (52% at 30 June 2012), and about 45% of people who were admitted for the first time to residential aged care from 2008 to 2012 had symptoms of depression (see AIHW 2013b).

Higher use of health services by older people also has implications for the health workforce. The health labour force in Australia is large and diverse, covering many occupations, ranging from highly qualified professionals to support staff and volunteers. An ageing population will require an adequate health workforce—in terms of numbers, distribution, and skill set—to meet changing needs and increased demand (Scott 2009). Future shortages of appropriately skilled workers are also expected to be a particular challenge in the aged care sector (see Productivity Commission 2011).

Funding rising health costs

With older people being high users of the health system, and health costs being higher in older age groups, population ageing has led some to express concerns about unsustainable pressure on expenditure within the health system. The relationship between ageing and health costs is complex, however, and there is considerable debate about the extent to which current and projected growth in health expenditure should be attributed to population ageing (see Chapter 2 'How much does Australia spend on health care?' for details about these issues). Notwithstanding this, there is little doubt that some increased health costs will be attributable to the ageing population and that health systems and policies will need to adapt to this significant demographic shift.

Funding for health goods and services comes from a range of sources, including the Australian Government; state and territory, and local governments; non-government sources such as private health insurers and injury compensation insurers; and out-of-pocket payments by individuals.

Government funding

Governments are the main funders, with about 70% of total health expenditure coming from government sources in 2011–12. As outlined in Chapter 2 ('How much does Australia spend on health care?'), over the last decade increases in government health expenditure have been largely matched by increases in government tax revenue. Whether this will continue in the future is unclear because projecting future tax revenue is complex. At the least, such projections need to take account of the ways that labour supply and productivity patterns may change over time as the economy diversifies and education levels in the population increase (Productivity Commission 2005).

Personal resources to fund health care

In 2011–12, individuals contributed about 17% of health funding. Older people tend to have lower incomes, but are also more likely to have greater wealth (although this is unevenly distributed) (ABS 2013f).

Property constitutes over half the total net worth of 'older' households (AIHW analysis of ABS 2013f). Although these funds can in theory be accessed by means such as reverse mortgages, they are generally not readily accessible to fund health and other costs. Moreover, older people who do not own their homes spend a high proportion of available income on housing (AIHW 2013a), leaving a smaller proportion available for health and other costs.

The next generation of older people—the baby boomer cohort—has on average higher levels of income and wealth than previous generations. However, this is also not evenly distributed (Productivity Commission 2011), with 60% of the group's net worth held by the wealthiest quarter, and only 4% held by the poorest quarter (AMP & NATSEM 2007).

Labour force participation among older people is also increasing (see Chapter 1 'Who we are'), which will help to offset expenditure growth, both directly and through the contribution of a longer working life to superannuation balances.

At 30 June 2013, 51% of people aged 65 and over had private hospital insurance, compared with 40% in June 2003 (AIHW analysis of ABS 2013a; PHIAC 2013). The proportion of older people covered by ancillary or extras (officially known as general treatment) increased from 31% to 44% in the decade to June 2013. Among older people, in 2013, 55% of those aged 65–74 had hospital coverage, compared with 38% of those aged 85 and over. The proportion with ancillary coverage was 50% for those aged 65–74, and 27% for those aged 85 and over. From the age of 65 onwards, higher proportions of the population were covered by hospital insurance than by ancillary.

Superannuation coverage is increasing; in 2010–11, around 64% of people aged 45 and over who were retired from the labour force had made contributions to a superannuation scheme, compared with 56% in 2008–09 (ABS 2009b, 2011a). However, many older Australians have never contributed to a superannuation scheme, or have done so for a relatively short time. Increased superannuation is not expected to significantly reduce the proportion of people receiving a pension, but it is expected to result in a greater shift towards part (rather than full) pensions (Productivity Commission 2013).

Pockets of pressure

The challenges associated with an ageing population are likely to be greater among some groups and geographic regions of Australia, and the demand for health services is likely to differ among locations and service types.

Differences by sex

In 2012, women accounted for 54% of people aged 65 and over, 65% of people aged 85 and over and 81% of all centenarians.

Older women are more likely to need assistance with daily activities and have higher rates of severe disability than men. According to the 2012 SDAC, 37% of women aged 75 and over had a severe or profound core activity limitation, compared with 26% of men (ABS 2013d). Older women were also more likely to report needing assistance with daily activities (for example, housework, health care and property maintenance). In 2012, 49% of women aged 65 and over reported needing assistance with at least 1 activity due to age or disability, compared with 34% of older men (ABS 2013d).

Women's greater life expectancy, together with lifetime differences in earnings and workforce participation, means that many older women experience economic vulnerability. Although superannuation coverage is increasing, there remain large gaps between the retirement savings of Australian men and women. In 2009–10, the average superannuation balance for women aged 60–64 was just over half that of the average balance for men (AIHW analysis of ASFA 2011).

Older Aboriginal and Torres Strait Islander Australians

The Indigenous population still has a relatively young age structure due to their lower life expectancy and higher fertility rate compared with non-Indigenous Australians. At 30 June 2011, there were about 22,700 Indigenous Australians aged 65 and over (constituting 3.4% of the Indigenous population), and 88,200 aged 50 and over (13%) (AIHW analysis of ABS 2013e). The number of older Aboriginal and Torres Strait Islander people is increasing, however, and those aged 50 and over have poorer health and higher rates of disability than non-Indigenous Australians of the same age (AIHW 2011a, 2013a). This, together with the central role that older Indigenous people play in maintaining culture and traditions in their communities (Cotter et al. 2007), means that particular attention needs to be paid to the health care and support needs of older Indigenous Australians (AIHW 2011a). (See Chapter 7 for information about the health and health system use of Indigenous Australians.)

Differences by geography

The age profile of the population varies between different regions of Australia. In 2013, the proportion of people aged 65 and over ranged from 6% in the Northern Territory to just over 17% in Tasmania.

In general, older people are more likely to live outside capital cities—at 30 June 2012, 16% of those living outside capital cities compared with 13% of people living in greater capital cities were aged 65 and over (AIHW analysis of ABS 2013i). Consequently, regional areas—particularly those with high concentrations such as the mid-north coast of New South Wales where one-quarter of the population is aged 65 and over—are likely to require a relatively greater focus of services targeted at older people than cities.

Differences by cultural diversity

Some health characteristics also vary by cultural diversity. For example, after taking into account differences in age structures and response rates of the population groups, 2011 Census data indicate that older people born overseas in non-main English-speaking countries (25% of those aged 65 and over) were somewhat more likely to report needing help with core activities—that is, activities related to mobility, self-care and communication—than those born in Australia (17%) and those born in main-English-speaking countries (15%) (see AIHW 2013a: Table A5.7). ABS data also indicate that people (of all ages) born in non-main English-speaking countries have lower levels of health literacy (ABS 2008).

The overseas-born population has an older age structure than the Australian-born population. At 30 June 2013, more than one-third (37%) of Australians aged 65 and over were born overseas—14% in main English-speaking countries and 23% in other countries (ABS 2013g). Of all people born overseas, 19% were aged 65 and over, compared with 13% of people born in Australia.

Overseas-born older Australians are likely to be from European countries, having migrated after World War II. In 2013, 72% of older overseas-born people were born in Europe (AIHW analysis of ABS 2013g). Since the 1970s, migrants (of all ages) have increasingly come from non-European countries, particularly

Asian countries (ABS 2013g). For example, in 2013, a higher proportion of overseas-born Australians aged 55–64 were born in Asia than those aged 65 and over (26% compared with 14%), while a smaller proportion were born in Europe (50% compared with 72%) (AIHW analysis of ABS 2013g).

Differences by socioeconomic status

Socioeconomic factors, including associated disadvantage, are important determinants of health. In general, overall health tends to improve with each step up the socioeconomic ladder, commonly referred to as the socioeconomic gradient of health. For example, data from the 2011–12 AHS show that people who live in areas of most disadvantage were more likely than those in areas of least disadvantage to report certain long-term health conditions (such as diabetes and heart, stroke or vascular disease) and to be obese or smoke (ABS 2013c). Poor health can itself contribute to disadvantage, through, for example, lack of employment due to ill health (Case et al. 2005).

Health inequalities impose costs on society, both in terms of health care and lost productivity. The very existence of health inequalities implies that there is scope for population health gain.

The future—responses to an ageing population

As outlined above, the ageing of the population presents a number of challenges to Australia's health system. This means that the mix of services required by society, and the ways in which they are funded and delivered, will need to change as the population ages. There are ways—examples are outlined below—in which Australia can adapt to an ageing population and respond to the challenges it presents. The mix and intensity of these strategies will vary in response to the needs of people and local communities with particular characteristics.

Promoting good health across the lifespan

Ageing is associated with increased risk of many health conditions, disability and dependency. Research indicates, however, that the association between health status and age is more variable than often assumed, as many chronic conditions are preventable (or can at least be postponed) and are not an inevitable consequence of ageing (Khaw 1997).

Postponement of disease involves 4 strategies: prevention of risk factors for disease; reduction of the prevalence of risk factors before disease develops; prevention of progression of disease after onset; and reduction of morbidity from disease/complications that have already developed (Fries et al. 2011).

The high prevalence of certain modifiable risk factors for chronic disease among Australians suggests that opportunities for health improvement exist. Compared with other OECD countries, Australia's smoking rates in the general population are low, but rates of drinking alcohol, and being obese and sedentary, are all high (ABS 2012b). Encouraging wellbeing across the lifespan is an important means of improving the health of future generations of older people.

Enabling healthy ageing

Another key response is to maintain and improve the health and quality of life of current cohorts of older people, through better management of chronic conditions and multi-morbidity, and through broader strategies to enable healthy and active ageing.

The terms 'healthy ageing', 'successful ageing', 'active ageing', 'positive ageing' and 'productive ageing' are often used interchangeably with no agreed term or definition (Cosco et al. 2013; Cyarto et al. 2013). Regardless of the term used, there is a growing consensus that ageing well is about more than the absence of disability or disease (Bowling & Iliffe 2011; Bryant et al. 2012; Carstensen et al. 2011; Hung et al. 2010). Healthy ageing is not only a state, but also a process, for example, engaging in health-promoting behaviours and adapting successfully to life's circumstances.

In this vein, research suggests that perceived self-efficacy and optimism are associated with quality of later life (Bowling & Iliffe 2011). The importance of encouraging active lifestyles throughout the lifecycle is indicated by research showing physical activity and sitting time are independently associated with self-rated excellent health and quality of life in men and women aged 45 and over (Rosenkranz et al. 2013).

The primary health care sector plays a vital role in promoting and supporting healthy ageing, with GPs and other allied health professionals instrumental in providing lifestyle advice, managing disease risks and avoiding or averting complications of disease before the onset of old age, as well as during old age.

Aged care programs also provide a setting for preventative health care, given evidence of the high rates of modifiable lifestyle risk factors and health conditions among recipients of such programs (Jorm et al. 2010). Other targets for preventive health care among older people might include programs to prevent falls and fractures, as these are relatively common among older people, and add considerable costs to the health system (Bradley & AIHW 2013).

Enabling healthy ageing is not limited to the health or aged care system. For example, many older Australians express the desire to remain in their own homes for as long as possible (AIHW 2013c). However, this requires that there are appropriate health and social services available in the community setting. A cross-national study found that people who live in more accessible homes, and those who think that external influences are not responsible for their housing situation, have a better sense of wellbeing and are more independent (Oswald et al. 2007).

Supporting socioeconomic participation

Supporting and better enabling the economic and social participation of older people within the community is also likely to be an important means of mitigating the challenges associated with an ageing population.

Health is positively associated with engagement in paid work (Cai 2010; Pit et al. 2010; Schofield et al. 2013). Consequently, promoting good health has the potential to bring health gains to the individuals and increase their ability to participate actively in the workforce and more generally in the community.

Older people are increasingly likely to remain in the workforce beyond the traditional retirement age. In 2013, 12% of people aged 65 and over were in the labour force; this was an increase from 6% in 2003 (AIHW analysis of ABS 2014). Among people aged 65–69, the proportion of women in the labour force was 2.3 times as high in 2013 (20%) as in 2003 (8.5%), and 1.7 times as high for men (33% and 20% respectively).

Removing barriers to labour force participation is an important aspect of enabling older people who want to remain in the workforce to do so. In September 2012, there were about 64,300 people aged 55 and over who wanted, and were available for, work, but were not actively looking for a job because they believed they would not find one (referred to as 'discouraged job seekers'). In September 2012, discouraged job seekers aged 55 and over represented 60% of all discouraged job seekers (ABS 2013h). Of older discouraged job seekers, the most commonly reported main reason for not actively looking for work was that they believed they were considered too old by employers (59%).

As well, many older Australians make indirect economic and other contributions to the community through voluntary work, as carers, and as providers of informal child care. According to the ABS 2010 General Social Survey, 31% of people aged 65 and over had participated in voluntary work in the previous 12 months (AIHW analysis of ABS 2011b). Of those older people who volunteered, 55% did so at least fortnightly, compared with 45% of those aged 18–64.

In 2012, an estimated 579,700 Australians aged 65 and over (19%) were informal carers, providing unpaid support and assistance to relatives and friends who were aged, ill or living with disability (ABS 2013d). In addition, in 2011, grandparents provided care on a regular basis for 26% of children (or 937,000 children) aged 12 or under; this was higher than in 2008 (19%) (AIHW analysis of ABS 2009a, 2012c).

Enhancing productivity in health-care delivery

One way to mitigate increased health costs associated with the ageing population is to improve productivity in health care. Along with broader efforts to improve the efficiency of the health system (see Chapter 2 'How much does Australia spend on health care?'), there is scope for specific efforts focused on the care of older people. For example, with of high rates of chronic conditions and use of multiple medications within the older population (Morgan et al. 2012; Schofield et al. 2013), a focus on efficient coordination of care, and safe and effective use of medicines, can reduce the risk of duplication of tests and medical records not being available at the time of care.

Productivity of the health system can also be enhanced by recognition of its interaction with the aged care system, together with efforts to ensure that relevant care is provided in the most appropriate setting. Interaction between residential aged care and the hospital system is common—1 in 4 residents (25%) had at least 1 admission to hospital in 2011–12. A recent study of movements between hospital and residential aged care in 2008–09 estimated that 9% of hospital admissions involved permanent aged care residents (AIHW 2013d; see also Chapter 6 'Movement between hospitals and residential aged care').

What is missing from the picture?

There are several information gaps relating to the relationship between ageing and health. Firstly, the process of healthy ageing is not well understood. While quality information exists about the health status of older Australians, much less is known about the interaction of different components, such as the interdependent relationships among physical, mental and social wellbeing.

As well, projections of the future health of the ageing population and of health expenditure are particularly sensitive to the choice of underlying assumptions. For example, models may make assumptions about the health profile of older people, use of new health technologies and labour force participation, all of which are likely to change over time. Consequently, modelling needs to be kept up to date with any changes in the factors and assumptions underlying the model.

In addition, there are only limited data available about certain groups of the older population, including Indigenous Australians and people in the oldest age groups (such as those aged 85 and over). Longitudinal studies such as the 45 and Up Study, which involves more than 250,000 people in New South Wales and is the largest ongoing study of health ageing in the Southern Hemisphere (Sax Institute 2013), may help to fill some of these gaps and will contribute to our understanding of ageing and health.

With regard to health service provision, there is a lack of data relating to client outcomes, experiences of care and transitions within and between health and aged care services. Data linkage work has the potential to provide a picture of movements through services. For example, linked data has been used to look at pathways in aged care among a cohort of 105,100 people (see AIHW 2011b).

Where do I go for more information?

More information on ageing and the health of older people in Australia is available at www.aihw.gov.au/ageing/.

References

ABS (Australian Bureau of Statistics) 2006. National Health Survey: summary of results, 2004–05. ABS cat. no. 4364.0. Canberra: ABS.

ABS 2008. Health literacy, Australia, 2006. ABS cat. no. 4233.0. Canberra: ABS.

ABS 2009a. Childhood education and care, Australia, June 2008. ABS cat. no. 4402.0. Canberra: ABS.

ABS 2009b. Retirement and retirement intentions, Australia, July 2008 to June 2009. ABS cat. no. 6238.0. Canberra: ABS.

ABS 2010. Disability, ageing and carers, Australia: summary of findings, 2009. ABS cat. no. 4430.0. Canberra: ABS.

ABS 2011a. Retirement and retirement intentions, Australia, July 2010 to June 2011. ABS cat. no. 6238.0. Canberra: ABS.

ABS 2011b. Voluntary work, Australia, 2010. ABS cat. no. 4441.0. Canberra: ABS.

ABS 2012a. Australian Health Survey: first results, 2011–12. ABS cat. no. 4364.0.55.001. Canberra: ABS.

ABS 2012b. Australian social trends, June 2012. ABS cat. no. 4102.0. Canberra: ABS.

ABS 2012c. Childhood education and care, Australia, June 2011. Data cube. ABS cat. no. 4402.0. Canberra: ABS.

ABS 2013a. Australian demographic statistics, June 2013. ABS cat. no. 3101.0. Canberra: ABS.

ABS 2013b. Australian Health Survey: health service usage and health related actions, 2011–12. ABS cat. no. 4364.0.55.002. Canberra: ABS.

ABS 2013c. Australian Health Survey: updated results, 2011–12. ABS cat. no. 4364.0.55.003. Canberra: ABS.

ABS 2013d. Disability, ageing and carers, Australia: summary of findings, 2012. ABS cat. no. 4430.0. Canberra: ABS.

ABS 2013e. Estimates of Aboriginal and Torres Strait Islander Australians, June 2011. ABS cat. no. 3238.0.55.001. Canberra: ABS.

ABS 2013f. Household wealth and wealth distribution, Australia, 2011–12. ABS cat. no. 6554.0. Canberra: ABS.

ABS 2013g. Migration, Australia, 2012–12 and 2012–13. ABS cat. no. 3412.0. Canberra: ABS.

ABS 2013h. Persons not in the labour force, Australia, September 2012. ABS cat. no. 6220.0. Canberra: ABS.

ABS 2013i. Population by age and sex, regions of Australia, 2012. ABS cat. no. 3235.0. Canberra: ABS.

ABS 2013j. Population projections, Australia, 2012 (base) to 2101. ABS cat. no. 3222.0. Canberra: ABS.

ABS 2014. Labour force, Australia, detailed—electronic delivery, December 2013. ABS cat. no. 6291.0.55.001. Canberra: ABS.

AIHW (Australian Institute of Health and Welfare) 2011a. Older Aboriginal and Torres Strait Islander people. Cat. no. IHW 44. Canberra: AIHW.

AIHW 2011b. Pathways in Aged Care: program use after assessment. Data linkage series no. 10. Cat. no. CSI 10. Canberra: AIHW.

AIHW 2012. Dementia in Australia. Cat. no. AGE 70. Canberra: AIHW.

AIHW 2013a. Australia's welfare 2013. Australia's welfare no. 11. Cat. no. AUS 174. Canberra: AIHW.

AIHW 2013b. Depression in residential aged care 2008–2012. Aged care statistics series no. 39. Cat. no. AGE 73. Canberra: AIHW.

AIHW 2013c. The desire to age in place among older Australians. AIHW bulletin no. 114. Cat. no. AUS 169. Canberra: AIHW.

AIHW 2013d. Movement between hospital and residential aged care 2008–09. Data linkage series no. 16. Cat. no. CSI 16. Canberra: AIHW.

AMP & NATSEM (National Centre for Social and Economic Modelling) 2007. Baby boomers—doing it for themselves. Income and Wealth Report. Issue no. 16. March 2007. Canberra: AMP.

ASFA (Association of Superannuation Funds of Australia) 2011. Developments in the level and distribution of retirement savings. Sydney: ASFA.

Bowling A & Iliffe 2011. Psychological approach to successful ageing predicts future quality of life in older adults. Health and Quality of Life Outcomes 9:13.

Bradley C & AIHW 2013. Hospitalisations due to falls by older people, Australia: 2009–10. Injury research and statistics series 70. Cat. no. INJCAT 146. Canberra: AIHW.

Bryant C, Bei B, Gilson K, Komiti A & Jackson H 2012. The relationship between attitudes to ageing and physical and mental heatlh in older adults. International Pyschogeriatrics 24:1674–83.

Cai 2010. The relationship between health and labour force participation: evidence from a panel data simultaneous equation model. Labour Economics 17:77–90.

Carstensen LL, Turan B, Scheibe S, Ram N, Ersner-Hershfield H, Samanez-Larkin GR et al. 2011. Emotional experience improves with age: evidence based on over 10 years of experience sampling. Psychology and Aging 26:21–33.

Case A, Fertig A & Paxson C 2005. The lasting impact of childhood health and circumstance. Journal of Health Economics 24:365–89.

Cosco T, Prina A, Perales P, Stephan B & Brayne C 2013. Lay perspectives of successful ageing: a systematic review and meta-ethnography. BMJ Open 3:e002710 doi:10.1136/bmjopen-2013-.

Cotter P, Anderson I & Smith L 2007. Indigenous Australians: ageing without longevity? In: Longevity and social change in Australia. Sydney: University of New South Wales Press.

Cyarto E, Dow B, Vrantsidis F & Meyer C 2013. Promoting healthy ageing: development of the healthy ageing quiz. Australasian Journal on Ageing 32:15–20.

French D, Browning C, Kendig H, Luszcz M, Saito Y, Sargent-Cox K et al. 2012. A simple measure with complex determinants: investigation of the correlates of self-rated health in older men and women from three continents. BMC Public Health 12:649.

Fries J, Bruce B & Chakravarty E 2011. Compression of morbidity 1980–2011: a focused review of paradigms and progress. Journal of Aging Research 2011:1–10.

Hung L-W, Kempen G & De Vries N 2010. Cross-cultural comparison between academic and lay views of healthy ageing: a literature review. Ageing and society 30:1373–91.

Jorm L, Walter S, Lujic S, Byles J & Kendig H 2010. Home and community care services: a major opportunity for preventive health care. BMC Geriatrics 10:26.

Khaw K 1997. Epidemiological aspects of ageing. Philosophical Transactions of the Royal Society B 352:1829–35.

Morgan T, Williamson M, Pirotta M, Stewart K, Myers S & Barnes J 2012. A national census of medicines use: a 24-hour snapshot of Australians aged 50 years and older. Medical Journal of Australia 196:50–3.

Oswald F, Wahl H, Schilling O, Nygren C, Fänge A, Sixsmith A et al. 2007. Relationships between housing and healthy aging in very old age. Gerontologist 47:96–107.

PHIAC (Private Health Insurance Administration Council) 2013. Statistical trends in membership and benefits data tables (September 2013 release). Canberra: PHIAC. Viewed 26 November 2013, <http://phiac.gov.au/industry/industry-statistics/statistical-trends/>.

Pit S, Shrestha R, Schofield D & Passey M 2010. Health problems and retirement due to ill-health among Australian retirees aged 45–64 years. Health Policy 94:175–81.

Productivity Commission 2005. Economic implications of an ageing Australia. Research report. Canberra: Productivity Commission.

Productivity Commission 2011. Caring for older Australians. Report no. 53. Final inquiry report. Canberra: Productivity Commission.

Productivity Commission 2013. An ageing Australia: preparing for the future. Productivity commission research paper. Canberra: Productivity Commission.

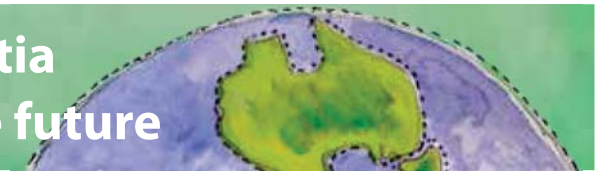
Rosenkranz R, Duncan M, Rosenkranz S & Kolt G 2013. Active lifestyles related to excellent self-rated health and quality of life: cross sectional findings from 194,545 participants in The 45 and Up Study. BMC Public Health 13:1071.

Sax Institute 2013. 45 and Up Study. Sydney: Sax Institute. Viewed 25 November 2013, <https://www.saxinstitute.org.au/our-work/45-up-study/>.

Schofield D, Callander E, Shrestha R, Passey M, Percival R & Kelly S 2013. Multiple chronic health conditions and their link with labour force participation and economic status. PLoS ONE 8:e79108. doi:10.1371/journal.pone.0079108.

Scott I 2009. Health care workforce crisis in Australia: too few or too disabled? Medical Journal of Australia 190:689–92.

6.10 Dementia, dementia treatment and the future



Dementia is a major health problem in Australia. It has profound consequences for the health and quality of life of people with the condition, as well as for their families and friends. Dementia describes a syndrome caused by many different diseases affecting the brain (see next section, 'What is dementia?'). Dementia is generally progressive in nature, and its impact increases with the growing severity of the condition. People with dementia eventually become dependent on their care providers in most, if not all, areas of daily living (unless they die from another condition first).

Although dementia is not an inevitable part of ageing and can affect younger people, it becomes more common with increasing age and primarily affects older people. Thus, one of the expected consequences of the continued growth and ageing of Australia's population is an increase in the number of people with dementia over time.

The increasing number of people with dementia will pose numerous challenges to Australia's health and aged care systems, arising from the increased need for care services, support for carers, training for health professionals and aged care workers, and research into effective treatment and prevention strategies.

What is dementia?

Dementia is not a single specific disease, but an umbrella term describing a syndrome—or group of symptoms—associated with more than 100 different diseases. It is characterised by the impairment of brain functions, including language, memory, perception, social awareness, reasoning and cognition. Although the type and severity of symptoms and their pattern of development varies with the type of dementia, it is usually of gradual onset, progressive in nature, and irreversible.

There is no single or simple test that will definitively diagnose dementia (see Box 6.6), and dementia is often unrecognised and/or undiagnosed until it is in the later stages. There tends to be a substantial gap between when symptoms are first noticed and when assistance is first sought from a health professional, and a further gap before the condition is actually diagnosed.

The most common types of dementia are Alzheimer disease (thought to account for about 50% to 75% of cases worldwide), vascular dementia (20% to 30%), frontotemporal dementia (5% to 10%) and dementia with Lewy bodies (up to 5%) (ADI 2009).

In addition to the 4 most common types of dementia, there are many other less common types, including dementia caused by other diseases (such as Parkinson disease, Huntington disease and Creutzfeldt-Jakob disease), HIV/AIDS-related dementia, and dementia due to metabolic causes or trauma.

The literature is inconsistent in terms of how common the various types of dementia are. Reasons for this may include the lack of distinct borders between the different types of dementia, and that a definitive diagnosis cannot be made unless autopsy evidence is available (which is rarely the case). Also, some studies suggest that mixed forms of dementia (for example, the coexistence of Alzheimer disease and vascular dementia) may be more common than 'pure' forms (ADI 2009).

The course of dementia is often characterised as occurring in 3 stages: mild or early-stage dementia, moderate or middle-stage dementia, and severe or late-stage dementia (see AIHW 2012: Table 1.1). There are overlaps between the stages, and identifying the stage that a person has reached is not always straightforward (Draper 2011).

Box 6.6

Assessment and diagnosis of dementia

The assessment process for dementia may vary according to both the person conducting the assessment and the symptoms the person presents with. In general, the aim of the assessment is to gather sufficient information about changed behaviours, functional capacity, psychosocial issues and relevant medical conditions to allow for a diagnosis to be made and a management plan to be formulated.

Often, the information-gathering process includes input from third parties (for example, carers, family members and service providers) and the use of screening tools. A wide range of screening tools are available, including the Mini-Mental State Examination (MMSE), the General Practitioner assessment of Cognition (GPCOG), the Rowland Universal Dementia Assessment Scale (RUDAS), and the 7-Minute Screen.

If the results from a screening test suggest cognitive impairment, a more comprehensive assessment is required. This may require referral to a medical specialist such as a geriatrician, psychiatrist or neurologist. During this second assessment stage, a number of other tests, such as radiological and laboratory investigations, may be undertaken.

There are many conditions other than dementia that may have cognitive impairment as part of their presentation. Examples are depression, thyroid disease, vitamin deficiency, side effects from medication and age-related cognitive decline. Thus, a key component of the diagnostic process involves determining if dementia or some other condition is the cause of the symptoms.

Sources: AIHW 2012; Draper 2011; Phillips et al. 2011.

Risk and protective factors

The causes of dementia are complex and influenced by many factors acting in combination. The prevention, delay of onset and treatment of dementia depend on an understanding of these determinants. Many risk and protective factors have been identified. However, evidence for many of these is lacking, inconsistent, or only recently starting to emerge.

The main risk factor for most types of dementia is advancing age. Research on other risk factors has focused on the main types of dementia—Alzheimer disease and vascular dementia.

Apart from age, other factors known to increase the risk of dementia include a family history of the condition, Down syndrome, a common genetic polymorphism—the apolipoprotein E (APOE) ε4 gene—and stroke (Seeher et al. 2011; van den Berg & Splaine 2012).

There is growing evidence that suggests that a number of lifestyle and health factors may influence the risk of developing dementia (Seeher et al. 2011; van den Berg & Splaine 2012). However, relatively few of these factors have been definitively established, with most considered either probable determinants or inconclusive (Seeher et al. 2011).

Studies also indicate that a number of other factors—many of which are modifiable—may increase the risk of dementia. These include diabetes, mid-life hypertension, excessive alcohol consumption, smoking, head injury, depression and obesity (Seeher et al. 2011; van den Berg & Splaine 2012).

In addition, many factors that probably protect against developing dementia have been identified, although none of these have been definitively established. These include better cardiovascular health, maintaining physically, socially and cognitively active lifestyles, and higher levels of education (ADI 2009; Seeher et al. 2011).There are numerous other possible protective factors for which evidence is inconclusive, including intake of omega-3 fatty acids, and use of cholesterol-lowering medications, nonsteroidal anti-inflammatory medications and aspirin.

How many people have dementia?

Prevalence refers to the total number of people who have a particular condition at a specified point in time. Common approaches to determining prevalence, such as counting the number of people diagnosed or reporting the condition, are inadequate for dementia, because it is often unrecognised or undiagnosed, especially in the earlier stages. Thus, surveys which rely on respondents reporting the condition cannot be used to accurately describe the prevalence of the condition. The primary Australian survey of this type, the Survey of Disability, Ageing and Carers (SDAC), appears to underestimate milder forms of dementia and so is not appropriate to use for estimating prevalence, although it remains the primary source of information about the characteristics of people with dementia and their carers.

The prevalence estimates presented in this article are based on data from studies that used both screening tools and clinical diagnostic assessments to identify people with dementia. As no national study has been undertaken using these methods, this article uses rates derived from a number of local and international studies. The rates used to estimate the prevalence of dementia among people aged 60 and over are based on rates published in the World Alzheimer Report 2009 (ADI 2009), while the rates for those aged under 60 were based on other sources. More detailed information can be found in *Dementia in Australia* (AIHW 2012: Appendix D, Notes 2.1–2.3).

Applying these rates to the Australian population suggests there are 332,000 people with dementia in Australia in 2014, of whom 62% are women. Among Australians aged 65 and over, almost 1 in 10 (9%) have dementia, and among those aged 85 and over, 3 in 10 (30%) have dementia (Table 6.3).

Table 6.3: Estimated number of people with dementia, by age and sex, 2014

	Age-specific rates[a] (per 100 population)			Number[a][b]			Per cent		
Age	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Under 65	0.1	0.1	0.1	13,000	11,800	24,700	10.2	5.7	7.4
65–74	3.0	3.3	3.2	29,200	33,200	62,400	23.0	16.2	18.8
75–84	8.7	10.3	9.6	42,600	60,100	102,800	33.6	29.3	31.0
85+	24.7	33.1	30.0	42,300	99,900	142,100	33.3	48.7	42.8
Total: 65+	7.0	10.3	8.8	114,100	193,200	307,300	89.8	94.3	92.6
Total all ages	**1.1**	**1.8**	**1.4**	**127,000**	**204,900**	**332,000**	**100.0**	**100.0**	**100.0**

(a) Rates (per 100 population) and numbers were calculated using projected population data (series B) for 30 June 2014 (ABS 2012).

(b) Numbers may not sum to the total due to rounding.

Note: See AIHW 2012 for information about the method used to derive prevalence estimates.

Sources: Calculations by AIHW, using rates based on ADI 2009 and Harvey et al. 2003.

Almost half (49%) of women with dementia were aged 85 and over, compared with one-third of men. The estimated number of women with dementia was higher than the estimated number of men in all age groups 65 and over. Further, in each of the age groups from 85–89 onwards, the estimated number of women with dementia was about double or more the estimated number of men.

Based on projections of population ageing and growth, the number of people with dementia is projected to reach almost 400,000 by 2020, and around 900,000 by 2050 (Figure 6.29).

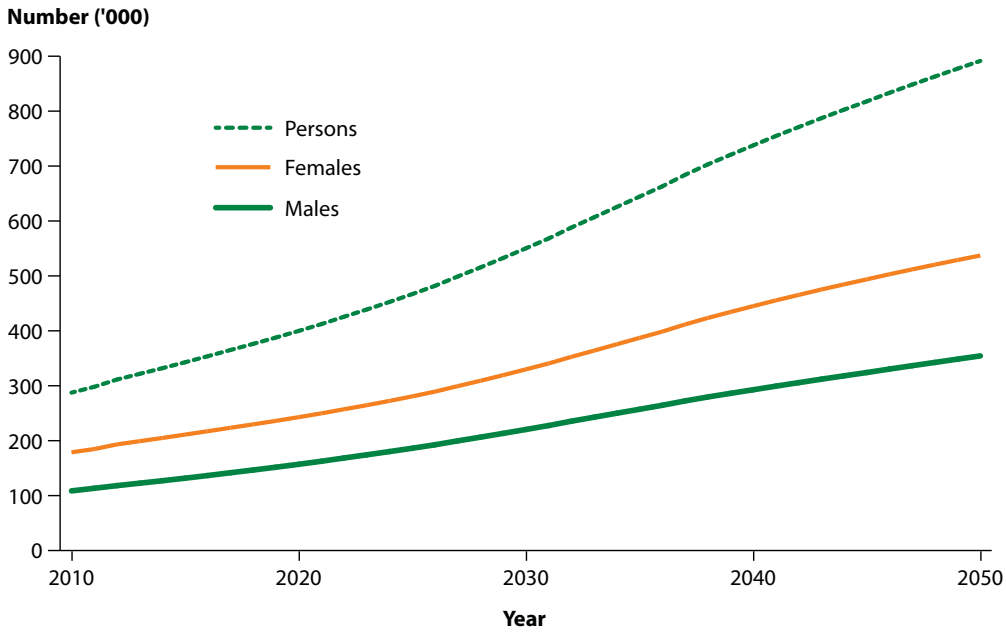
These projections assume that the underlying age and sex-specific rates of dementia will remain constant. As such, the accuracy of the estimates will be affected by changes in the underlying rates, from, for example, changes in risk factors and in the prevention, management and treatment of the condition. These estimates are also sensitive to deviations from projected changes in the age-sex structure or total size of the projected populations.

Younger onset dementia

Younger onset dementia typically refers to the onset of dementia before the age of 65. There were an estimated 24,700 Australians under the age of 65 who had dementia in 2014, with men accounting for just over half (52%). Those under 65 represented 7% of all people with dementia in Australia in 2014.

Younger onset dementia is much less common than dementias occurring at later ages. Further, research suggests that, compared with late onset dementia (that is, dementia with onset at 65 or over), younger onset dementia is more frequently misdiagnosed (Mendez 2006). One reason is said to be the greater variation in the types of dementia diagnosed among those with younger onset dementia. In particular, compared with those with late onset dementia, Alzheimer disease is believed to be less common (although still the most common dementia diagnosis), while dementias attributed to alcohol abuse, head trauma, HIV and a number of other causes are considered to be more common among those with younger onset dementia (McMurtray et al. 2006; Mendez 2006; Werner et al. 2009).

Figure 6.29



Note: See AIHW 2012 for information about the method to derive prevalence estimates.

Sources: Calculations by AIHW using rates based on ADI 2009 and Harvey et al. 2003 and applied to population data for 2010 to 2011 (ABS 2012) and population projections for 2012 to 2050 (ABS 2008).

Estimated number of people with dementia, by sex, 2010 to 2050

Dementia among Aboriginal and Torres Strait Islander Australians

Due to the lack of national data on how common dementia is among Indigenous Australians, most information is drawn from a small number of localised, largely community-based studies. One such study in a remote area of Western Australia was undertaken by Smith et al. (2008). This study, which involved screening 363 Indigenous Australians aged 45 and over, found that 12% of those screened had dementia. Preliminary results from another study, the Koori Growing Old Well Study, involving urban Indigenous communities in New South Wales, suggest a prevalence rate of 13% among 336 Indigenous Australians aged 60 and over (NeuRA 2013). In comparison, among all Australians, an estimated 3.6% of those aged 45 and over, and 7% of those aged 60 and over, had dementia in 2014 (calculations by AIHW using rates based on Harvey et al. 2003 and ADI 2009).

These results suggest that dementia is more common in Indigenous Australians than in the general population. However, further studies with larger sample sizes would be required to confirm the overall prevalence of dementia among Indigenous Australians.

Where do people with dementia live?

Estimates of the number of people with dementia are important for service planning purposes. Estimates vary according to whether or not they live in the community (such as in a private home or a retirement village) or in cared accommodation (such as residential aged care facilities—see Glossary) and the severity of the condition. (For information on the method used to estimate prevalence by residency and severity, see AIHW 2012: Chapter 2.)

In 2013, an estimated 71% of people with dementia lived in the community, while 29% lived in cared accommodation. Men were more likely to live in the community than women (78% compared with 68%).

Of people with dementia in 2013, an estimated 55% had mild dementia (176,900), 30% moderate (96,500), and 15% severe (48,200). People living in cared accommodation were more likely to have more moderate (63%) or severe dementia (31%) than those living in the community (17% and 8% respectively).

Even so, of people with severe dementia, an estimated 40% lived in the community, with men more likely to do so than women (54% compared with 32%).

Deaths due to dementia

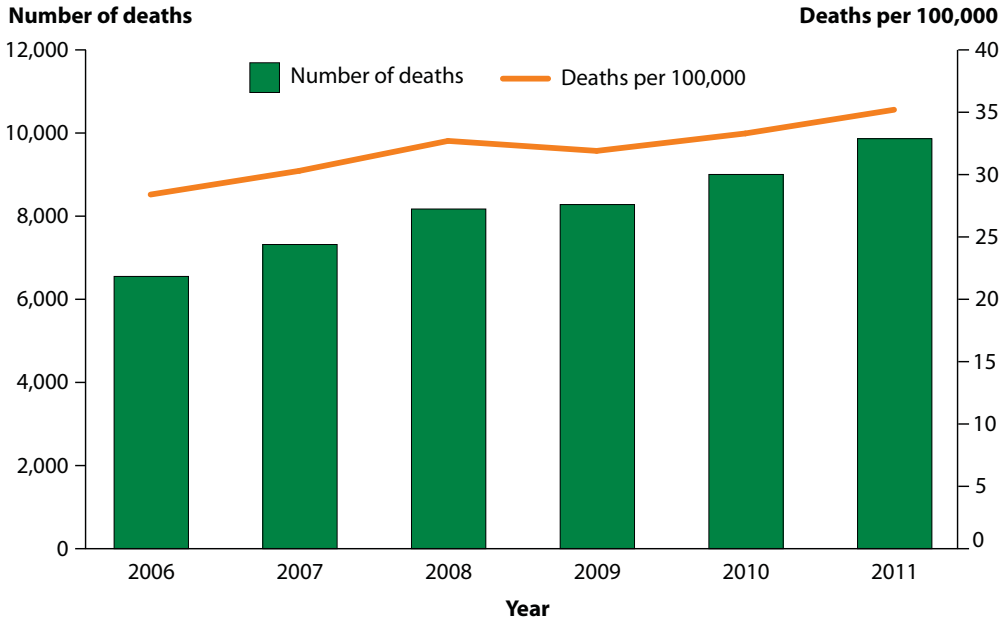
Dementia was the third leading cause of death in 2011, recorded as the underlying cause of 9,864 deaths across Australia—on average, 27 people died from dementia every day. Twice as many women as men died from dementia.

After adjusting for differences in age structures, the death rate due to dementia was 25% higher for women than men (age-standardised rate of 37.9 versus 30.2 per 100,000 population). Overall, deaths due to dementia accounted for 7% of all deaths in 2011 (9% of female deaths and 4% of male deaths).

Overall, the number of deaths attributed to dementia increased by about half (51%) between 2006 and 2011 (from 6,550 to 9,864 deaths) (Figure 6.30). Not all of that change can be attributed to changes in population ageing and growth since the age-standardised rate rose from 28.4 per 100,000 population in 2006 to 35.2 per 100,000 population in 2011. Some of the increase may be due to changes affecting how and the extent to which dementia is recorded on death certificates (see ABS 2013: Explanatory note 84).

The impact of these changes may be spread over a number of years as awareness of the changes increases. Hence, it is unclear if the continued increase in the rate of deaths due to dementia can be explained by these changes or if they represent an actual increase in the number of deaths due to dementia.

Figure 6.30



Note: Deaths registered in 2009 and earlier are final versions of cause of death data; deaths registered in 2010 and 2011 are based on revised and preliminary versions of cause of death data, respectively, and are subject to further revision. Data for 2010 have not been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010. For more detail, please refer to Technical note 3 in ABS 2013.

Source: AIHW National Mortality Database.

Number and age-standardised rate of deaths with an underlying cause of dementia, 2006 to 2011

Treatment of dementia

Current treatments are targeted at the symptoms of dementia rather than the underlying causes. Interventions fall into 2 groups: non-drug and drug.

Non-drug treatments

A wide range of non-drug treatments are used for treating the cognitive symptoms of dementia; however, the evidence base for the effectiveness of many of these is limited.

Some research suggests that engaging more frequently in cognitive activity is associated with a lower risk of developing dementia (Wilson et al. 2007), and a recent review by Alzheimer's Disease International (ADI) found that there is strong evidence that cognitive stimulation is an effective intervention in mild

dementia (Prince et al. 2011). Cognitive stimulation targets cognitive and social function through reality orientation, activities, games and discussions, prioritising information-processing rather than knowledge (Prince et al. 2011). However, the efficacy of cognitive training (which involves guided practice on a set of standard tasks designed to reflect particular cognitive functions such as memory, attention or problem solving) has not been demonstrated for those who already have dementia (Prince et al. 2011, Seeher et al. 2011).

The ADI review also found that there was some evidence that support groups (for quality of life and depression), behavioural treatment (for depression), and cognitive rehabilitation (for goal performance, satisfaction and subjective memory impairment) can be helpful in the early stages of the condition.

For people with mild to moderate dementia, there is strong evidence that caregiver-focused psychosocial interventions, such as care support, counselling and respite, improve the caregiver's mood and quality of life (Prince et al. 2011). These interventions can also delay entry of the person with dementia into institutional care (Prince et al. 2011).

Drug treatments

Drug interventions target cognitive functioning, and behavioural and psychological symptoms of dementia or other co-occurring diseases (Seeher et al. 2011). There are currently no known drugs that can reverse or cure the various forms of dementia, but some medications have been found to reduce some symptoms experienced by those with Alzheimer disease.

Four dementia-specific drugs are subsidised by the Australian Government through the Pharmaceutical Benefits Scheme (PBS) and the Repatriation Pharmaceutical Benefits Scheme (RPBS) for patients who have a diagnosis of Alzheimer disease confirmed by (or in consultation with) a specialist or consultant physician, subject to specific clinical criteria being met (Department of Health 2013). The drugs (and their trade names) are: donepezil (Aricept®); galantamine (Reminyl®, Galantyl®); rivastigmine (Exelon®); memantine (Memanxa®, Ebixa®, APO-Memantine®). Memantine is approved for use in moderate to severe Alzheimer dementia, while the others are approved for use in mild to moderate Alzheimer dementia. Note that people with Alzheimer disease and other types of dementia may use medications other than these (see Prince et al. 2011). For example, there is some evidence that gingko biloba may have some beneficial effects on cognitive function in people with mild to moderate dementia (Prince et al. 2011).

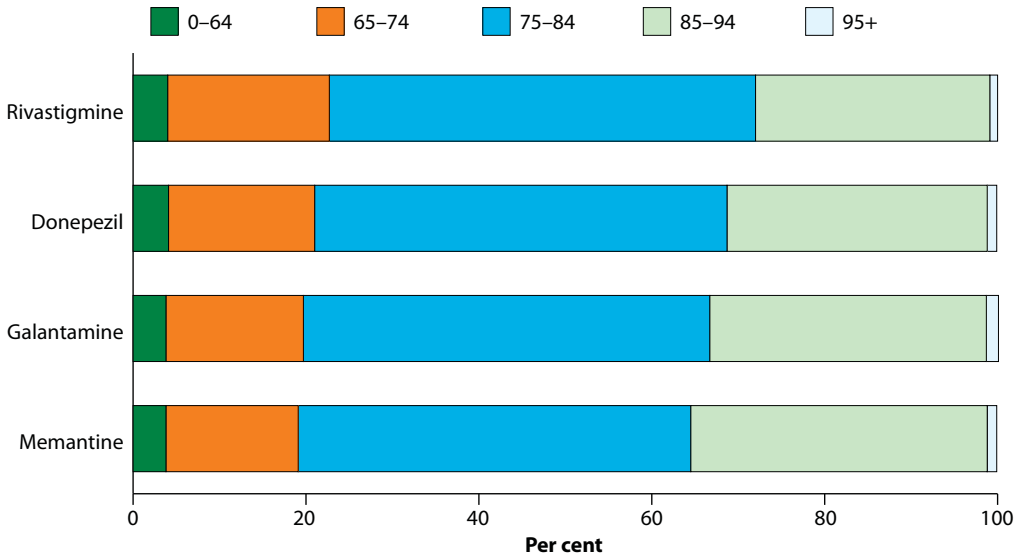
The data presented in this section do not capture non-dementia specific medications received by those with dementia, nor do they capture drugs that may have been prescribed specifically to manage a person's dementia but can also be used to treat other diseases, as these data are not separately available.

In 2012–13, 48,277 people received government-subsidised dementia-specific medications. Based on estimates of the number of people who have dementia, this suggests that about 15% of those with any type of dementia were receiving dementia-specific medications. (Note that the estimate of the number of people with dementia includes those who have not received a diagnosis, and people with forms of dementia other than Alzheimer disease, who would thus not qualify to receive these medications under PBS or RPBS subsidy.) About 60% of people receiving dementia-specific medications in 2012–13 were female.

Donepezil was the most commonly dispensed prescription (received by 64% of people), and memantine the least (7%). However, prescription also varied according to age, with older patients more commonly prescribed memantine—the drug approved for moderate to severe dementia (Figure 6.31).

The number of people who received government-subsidised dementia-specific medications increased by an annual average of 2.4% between 2008–09 and 2012–13, with a greater increase for men (3.2%) than women (1.9%).

Figure 6.31



Note: Some people received more than 1 type of medication over the year. People with unknown age were excluded prior to calculation of proportions.

Source: AIHW analysis of unpublished Pharmaceutical Benefits Scheme data maintained by Department of Health and sourced from Department of Human Services.

Proportion of people receiving each government-subsidised dementia-specific medication, by age, 2012–2013

How will dementia affect us in the future?

Due to the growth and ageing of the population, the number of people with dementia is projected to reach around 900,000 by 2050 (Figure 6.29). Dementia has profound personal and social costs for individuals with the condition, their families, and the community at large. Dementia is already a leading cause of death, disability and overall burden of disease and, on a personal level, a condition feared by many Australians. People with dementia often rely heavily on health and aged care services, and there is also a significant burden on informal carers. There are also substantial challenges for society in supporting people living (and in the mild stages, even working) with the condition. In the absence of effective prevention, treatment or cure options, the impact of dementia is likely to increase with the projected increase in the number of people with the condition.

As mentioned earlier, the projections of dementia prevalence presented here assume that the underlying prevalence rates will remain constant. However, the rates could change in the future, due to, for example, changes in risk factors and in the prevention, management and treatment of the condition.

On the one hand, improved medical and social care may result in a higher prevalence of dementia by allowing more people to survive longer with the condition (Vickland et al. 2010). Increases in the prevalence of dementia risk factors may also result in dementia being more common. On the other hand, computer modelling indicates that medical breakthroughs which delay dementia onset (Vickland et al. 2010) and reduce risk factors such as obesity (Nepal et al. 2010) have the potential to substantially reduce the prevalence of dementia.

Recent international studies have reported reductions in dementia prevalence rates overseas (Matthews et al. 2013). However, due to the lack of Australian data, it is not possible to determine the extent to which there has been any change in Australia.

What is missing from the picture?

Despite the growing body of information available about people with dementia and their carers, there are a number of data gaps and issues that impact on our ability to monitor and report on the condition.

Australia lacks national data which can be used to derive reliable estimates about the prevalence of dementia. Thus, international data and modelling are required to produce estimates. There is also limited information about the prevalence of different types of dementia.

Multistage surveys in which participants are systematically assessed for dementia using both screening tools and clinical diagnostic assessments may be of most value in deriving comprehensive estimates of how common dementia is, because they are more likely to detect mild and moderate cases of dementia, and cases are clinically established. This approach was taken in Canada, for example, where a national study of the prevalence of dementia among those aged 65 and over was conducted in the early 1990s (CSHAWG 1994). In Australia, no such national study has been undertaken. In addition, there is also limited information about the number and characteristics of people with dementia from several important population groups, including people from culturally

and linguistically diverse backgrounds, Aboriginal and Torres Strait Islander people, and people with younger onset dementia. Results from a study (not yet published) in Eastern Sydney will provide some more information about the number and experiences of Australians diagnosed with younger onset dementia (Withall et al., forthcoming), while the Koori Growing Old Well Study (NeuRA 2013; see also earlier section, 'How many people have dementia?') is expected to provide further information about dementia within the Indigenous population.

There are also many other gaps in our knowledge about dementia, including in relation to the underlying mechanisms of the condition (Seeher et al. 2011). For example, the boundaries between 'normal' age-related decline and mild dementia are not clearly defined at either a research or clinical level, particularly in the oldest age groups (Draper 2011). As well, it is difficult to distinguish mild cognitive impairment from early dementia, and the ability of pre-clinical symptoms to predict the development of dementia is currently unclear (Le Couteur 2013). Data from studies such as the Sydney Centenarian Study (Sachdev et al. 2013), the Sydney Memory and Ageing Study (Sachdev et al. 2010), and the CSIRO's Australian Imaging, Biomarker and Lifestyle (AIBL) study of ageing (Ellis et al. 2009; CSIRO 2013) may help fill some of these data gaps.

Further research is also required to identify factors that can reduce a person's risk of developing dementia, as well as those that might slow progression in those who already have the condition. A number of longitudinal studies currently under way may provide further information about dementia and its determinants, for example, the AIBL study of ageing, as mentioned above. This is a large-scale prospective longitudinal study of cognition involving more than 1,100 people aged 60 and over. This study aims to investigate which biomarkers, cognitive characteristics, and health and lifestyle factors determine the development of Alzheimer disease.

In terms of information about the characteristics, service use and care of people with dementia, existing data collections include a wide array of relevant information. However, many of the data sets relating to service use are maintained separately. People with dementia and their carers often access multiple services, which means that on their own these data do not provide a comprehensive picture of the nature and extent of services individuals use. Fragmentation and inconsistency are also evident across data collections in terms of the type of data collected, and there is sometimes limited comparability of definitions. For example, the way in which people with dementia are identified varies in approach and quality across collections. Data linkage projects may fill some of these gaps—for example, the Pathways in Aged Care Project (AIHW 2011) has provided valuable information about the aged care service use pathways of people with dementia.

Where do I go for more information?

For more information about people with dementia see www.aihw.gov.au/dementia/. The report *Dementia in Australia* provides a comprehensive overview of dementia in Australia, including information on prevalence, mortality, characteristics of people with dementia, and their use of aged care services.

Dementia care in hospitals: costs and strategies presents information about the costs of caring for people with dementia in New South Wales hospitals, and reports on strategies and practices being implemented in Australia and internationally that might improve the quality and cost efficiency of dementia care in hospitals. These and other recent publications are available for free download via the link above.

References

ABS (Australian Bureau of Statistics) 2008. Population projections, Australia, 2006 to 2101. ABS cat. no. 3222.0. Canberra: ABS.

ABS 2012. Australian demographic statistics, September 2011. ABS cat. no. 3101.0. Canberra: ABS.

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

ADI (Alzheimer's Disease International) 2009. World Alzheimer report 2009. London: ADI.

AIHW (Australian Institute of Health and Welfare) 2011. Pathways in aged care: program use after assessment. Cat. no. CSI 10. Canberra: AIHW.

AIHW 2012. Dementia in Australia. Cat. no. AGE 70. Canberra: AIHW.

CSHAWG (Canadian Study of Health and Aging Working Group) 1994. Canadian Study of Health and Aging: study methods and prevalence of dementia. Canadian Medical Association Journal 150(6):899–913.

CSIRO (Commonwealth Scientific and Industrial Research Organisation) 2013. The Australian Imaging, Biomarkers and Lifestyle study of ageing. Canberra: CSIRO. Viewed 22 November 2013, <http://www.aibl.csiro.au/>.

Department of Health 2013. Pharmaceutical Benefits Scheme. Canberra: Department of Health. Viewed 20 November 2013, <http://www.pbs.gov.au/browse/publications>.

Draper B 2011. Understanding Alzheimer's & other dementias. Sydney: Longueville Books.

Ellis KA, Bush AI, Darby D, De Fazio D, Foster J, Hudson P et al. 2009. The Australian Imaging, Biomarkers and Lifestyle (AIBL) study of aging: methodology and baseline characteristics of 1112 individuals recruited for a longitudinal study of Alzheimer's disease 2009. International Psychogoeriatrics 21:672–687.

Harvey RJ, Skelton-Robinson M & Rossor MN 2003. The prevalence and causes of dementia in people under the age of 65 years. Journal of Neurology, Neurosurgery and Psychiatry 74(9):1206–9.

Le Couteur DG, Doust J, Creasey H & Brayne C 2013. Political drive to screen for pre-dementia: not evidence based and ignores the harms of diagnosis. British Medical Journal 347:f5125. Doi: http://dx.doi.org/10.1136/bmj.f5125.

Matthews F, Arthur A, Barnes L, Bond J, Jagger C, Robinson L et al. 2013. A two-decade comparison of prevalence of dementia in individuals aged 65 years and older from three geographical areas of England: results of the Cognitive Function and Ageing Study I and II. The Lancet 382:1405–12.

Mendez MF 2006. The accurate diagnosis of early-onset dementia. The International Journal of Psychiatry in Medicine 36(4):401–12.

McMurtray A, Clark DG, Christine D & Mendex MF 2006. Early-onset dementia: frequency and causes compared to late-onset dementia. Dementia and Geriatric Cognitive Disorders 21:59–64.

Nepal B, Brown L & Ranmuthugala G 2010. Modelling the impact of modifying lifestyle risk factors on dementia prevalence in Australian population aged 45 years and over, 2006–2051. Australasian Journal on Ageing 29:111–116.

NeuRA (Neuroscience Research Australia) 2013. NHMRC Koori Growing Old Well Study update—Professor Tony Broe and the KGOWS team—August 2013. Randwick: NeuRA. Viewed 18 November 2013, <http://www.neura.edu.au/aboriginal-ageing/publications-presentations>.

Phillips J, Pond D & Goode S 2011. Timely diagnosis of dementia: can we do better? Alzheimer's Australia Paper 24.

Prince M, Bryce R & Ferri C 2011. World Alzheimer report 2011: the benefits of early diagnosis and intervention. London: Alzheimer's Disease International (ADI).

Sachdev PS, Levitan C, Crawford J, Sidhu M, Slavin M, Richmond R et al. 2013. The Sydney Centenarian Study: methodology and profile of centenarians and near-centenarians. International Psychogeriatrics 25:993–1005.

Sachdev P, Brodaty H, Reppermund S, Kochan N, Trollor J, Draper B et al. 2010. The Sydney Memory and Ageing Study (MAS): methodology and baseline medical and neuropsychiatric characteristics of an elderly epidemiological non-demented cohort of Australians aged 70–90 years. International Psychogeriatrics 22:1248–64.

Seeher K, Withall A & Brodaty H (eds) 2011. The dementia research mapping project, the 2010 update: final report. Sydney: Dementia Collaborative Research Centre, University of New South Wales.

Smith K, Flicker L, Lautenschlager NT, Almeida OP, Atkinson D, Dwyer A et al. 2008. High prevalence of dementia and cognitive impairment in Indigenous Australians. Neurology 71:1470–3.

van den Berg S & Splaine M 2012. Policy brief. Risk factors for dementia. London: Alzheimer's Disease International.

Vickland V, McDonnell G, Werner J, Draper B, Low L & Brodaty H 2010. A computer model of dementia prevalence in Australia: foreseeing outcomes of delaying dementia onset, slowing disease progression, and eradicating dementia types. Dementia and Geriatric Cognitive Discordorders 29:123–130.

Werner P, Stein-Shvachman I & Korczyn AD 2009. Early onset dementia: clinical and social aspects. International Psychogeriatrics 21(4):631–6.

Wilson RS, Scheer PA, Schneier JA, Tang Y & Bennett DA 2007. Relation of cognitive activity to risk of developing Alzheimer disease. Neurology 69:1911–20.

Withall A, Draper B, Seeher K, Brodaty H, forthcoming. The prevalence and causes of younger onset dementia in Eastern Sydney, Australia. International Psychogeriatrics, accepted 9th December 2013.

6.11 Movement between hospitals and residential aged care

SNAPSHOT

Many older Australians need to visit hospital for management of a chronic or acute health condition or to receive treatment for an injury. Many also require the support of a residential aged care facility, either permanently or on a respite basis; hence, there is considerable movement of people between hospital and residential aged care.

In the first study of its kind, the AIHW examined the movements of people aged 65 and over between hospital and residential aged care (permanent and respite), and also looked at use of the Transition Care Program (TCP—see Box 6.7). The study identified transfers among the 3 types of care for hospital episodes in 2008–09.

Box 6.7

The Transition Care Program

The TCP provides short-term care to older Australians directly after discharge from hospital. The program includes at least low-intensity therapy and either nursing support or personal care, and is provided either in people's homes or in a home-like residential setting.

It aims to help older people leaving hospital to return home rather than prematurely enter residential care, by improving their independence and functioning to an optimal level.

How many movements were there?

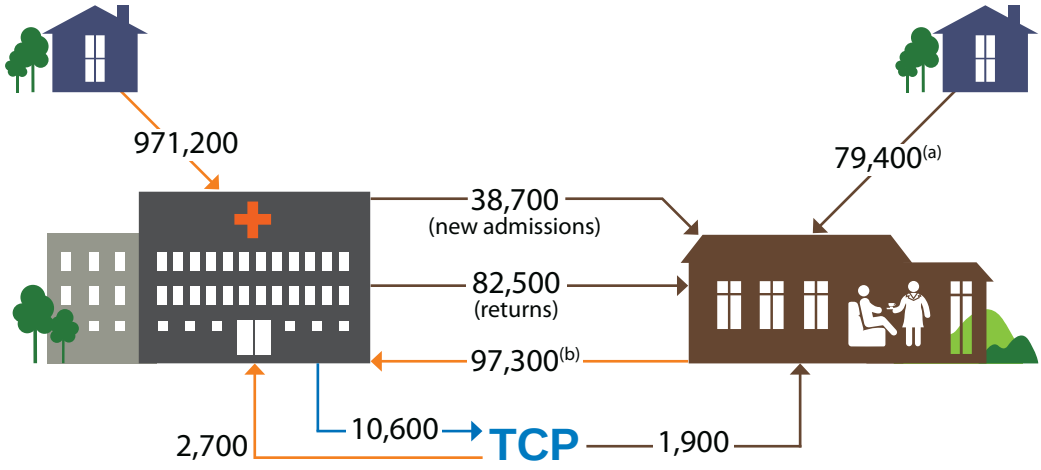
During 2008–09, for people aged 65 and over (Figure 6.32):

- About 9% of hospital admissions were from residential aged care—9 out of 10 of these admissions were for people in permanent residential aged care, most of whom were on leave from the residential aged care facility for the hospital visit (that is, they were not discharged from the residential aged care facility and were expected to return).
- About 1 in 3 admissions to residential aged care were from hospital (of which two-thirds were to permanent aged care); two-thirds of admissions to residential aged care were from people's homes or transfers from other residential facilities.

What were the differences by age and sex?

- As age increased, the likelihood of being discharged from hospital to permanent or respite residential aged care (as a new admission) rose, from less than 1 in 100 among those aged 65–69 to 1 in 10 among those aged 90 or older (Figure 6.33).
- For most age groups, women were more likely than men to be discharged to residential aged care, which may reflect differences in the availability of a suitable carer at home.

Figure 6.32



(a) Comprises people being admitted from their home in the community, and transfers from other residential aged care facilities (either in permanent or respite care).

(b) Comprises people discharged from residential aged care to hospital, and people who were not formally discharged and expected to return (termed 'hospital leave').

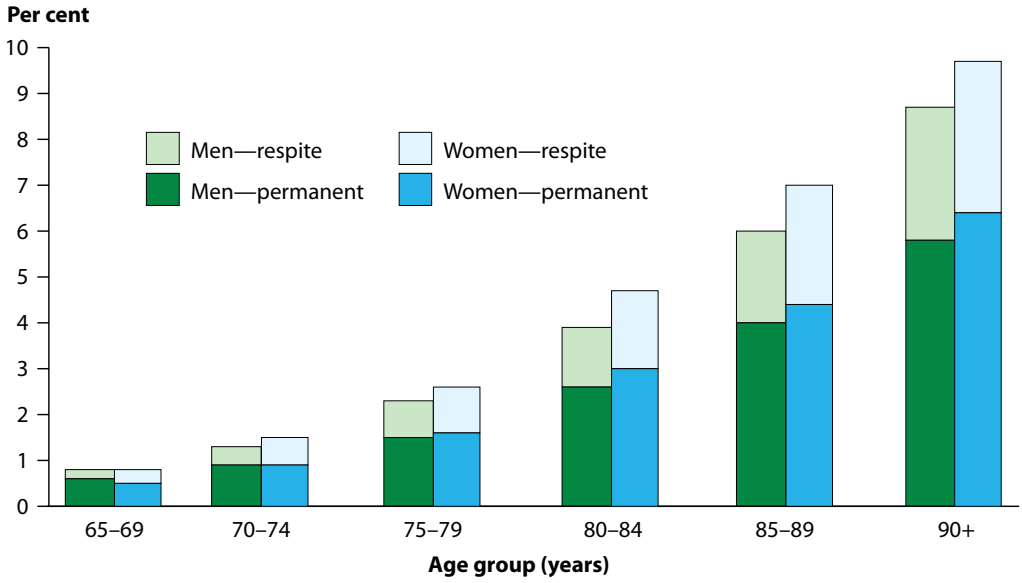
Source: AIHW 2013.

Main movements between hospital and residential aged care (including movements through the Transition Care Program), people aged 65 and over, 2008–09

For what conditions were people admitted to hospital from residential care?

- The main health conditions requiring admission to hospital from either respite or permanent residential care were respiratory and circulatory conditions, and injury due to a fall. The most common conditions for people admitted to hospital from the community were circulatory conditions and cancers.
- People admitted to hospital from residential care (either respite or permanent) were more than twice as likely as people admitted from elsewhere to have *Staphylococcus aureus* (golden staph) or pressure ulcers noted in their hospital record, suggesting that this group is more frail and at higher risk of acquiring these conditions.
- People admitted to hospital from residential care (either respite or permanent) were 6 times more likely than people admitted from the community to have dementia recorded as a diagnosis affecting their hospital care.

Figure 6.33



Source: AIHW 2013.

New admissions to residential aged care from hospital, by age, sex and type of aged care admission, people aged 65 and over, 2008–09

What influenced admission to residential care from hospital?

- People were more likely to be admitted into residential care than return to the community after hospitalisation if they: had a longer stay in hospital; were diagnosed with dementia or stroke; were older; had an unplanned admission to hospital; or were in palliative care before discharge.
- Respite care in residential aged care appears to serve a dual role: as post-hospital care before returning to home (the outcome for 34% of respite admissions), and as a stepping-stone into permanent residential care (40% of respite admissions from hospital).

What is missing from the picture?

The study was limited to the movements between hospital and residential care (via the TCP where relevant), but did not look at movements in and out of community aged care programs. Also, little is known about the health conditions of people in residential care before they were admitted to hospital, and whether they had access to alternative care such as a general practitioner, which may have prevented the hospital admission.

The AIHW is building its capacity in analysis of aged care data both through more detailed data holdings associated with the AIHW National Aged Care Data Clearinghouse and through experience in data integration across health and aged care data sets. For example, the AIHW is currently undertaking an extended study of TCP clients that includes determining whether they are admitted to residential care within 12 months of being in the program. The study will contribute to an understanding of the effectiveness of the program in preventing premature admission to residential care.

Where do I go for more information?

A copy of the full report *Movement between hospital and residential care 2008–09* is available for free download. More information on hospital care in Australia is available at www.aihw.gov.au/hospitals/, and more information on residential and community aged care is available at www.aihw.gov.au/aged-care/. Also available is a detailed report on TCP clients: *Older people leaving hospital: a statistical overview of the transition care program 2009–10 and 2010–11*.

References

AIHW (Australian Institute of Health and Welfare) 2013. Movement between hospital and residential aged care 2008–09. Data linkage series no. 16. Cat. no. CSI 16. Canberra: AIHW.

6.12 Incontinence

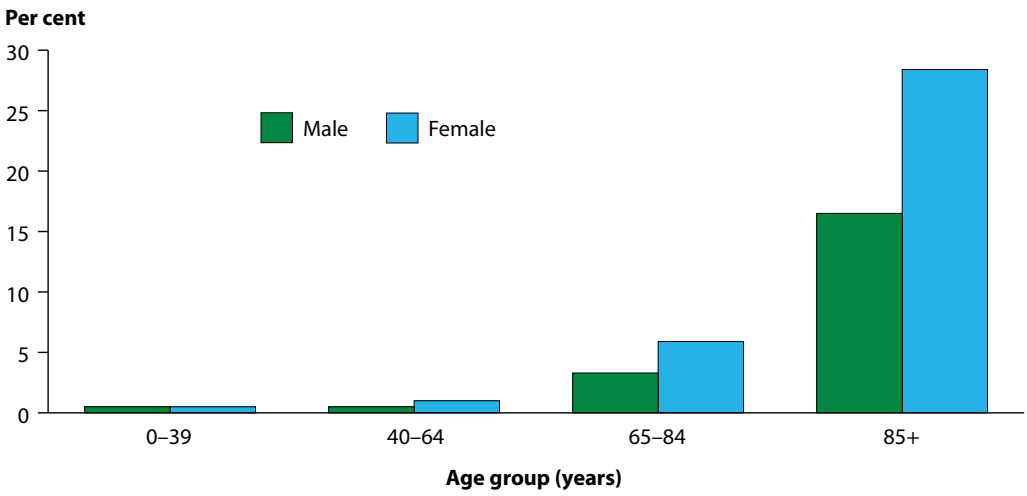
SNAPSHOT

Many people in Australia experience some level of incontinence—the involuntary leakage of urine or fecal matter. Some people experience severe incontinence, meaning they always or sometimes need assistance with bladder or bowel control and/or use continence aids. Severe incontinence affects people of all ages, but is more common among older people. It can have profound consequences on the wellbeing of people with the condition as well as their carers.

Who does it affect?

- In 2009, 1.5% of the Australian population (or 316,500 people) experienced severe incontinence (AIHW 2013).
- Severe incontinence was more common among females (2%) than males (1%).
- People aged 65 and older were 12 times more likely to experience severe incontinence than people aged under 65 (7% versus less than 1%). About 1 in 4 people aged 85 or older (24%) experienced severe incontinence (Figure 6.34).
- About 72,900 primary carers helped with managing someone else's incontinence—4 in 5 were female (81%) and nearly 3 in 4 (73%) spent 40 hours or more per week caring.

Figure 6.34



Source: AIHW analysis of the 2009 ABS Survey of Disability, Ageing and Carers.

Prevalence of severe incontinence in the Australian population, by age and sex, 2009 (per cent)

What risk factors are associated with incontinence?

The most important factors found to be associated with an increased risk of incontinence include being older, being female and past and current pregnancy (particularly the number of vaginal deliveries). Other factors include:

- prostate problems (such as prostate disease, cancer and surgery)
- neurological disorders (such as stroke, Parkinson disease, multiple sclerosis and spinal cord injuries)
- cognitive impairment (including dementia)
- type 2 diabetes mellitus
- obesity.

How are people affected by incontinence?

Many people with incontinence have other health conditions and report other problems for themselves and their carers, including not being able to participate in work or social activities. However, it is hard to determine the extent to which these problems are caused by severe incontinence, or by accompanying limitations and health issues.

- 91% of people with severe incontinence had a severe or profound core activity limitation, indicating they had high-care needs with self-care, mobility or communication.
- People aged 15 or older with severe incontinence were twice as likely to report poor general health as people without severe incontinence (22% versus 10%).
- Just over half (52%) of people with severe incontinence could not go out as often as they would like—two-thirds (68%) said this was because of their disability or condition.
- Primary carers of people with severe incontinence were more likely than other primary carers to report strained relationships with those they care for, to need more respite care, and to report lower labour force participation. This is likely to be due, not just to the tasks involved in managing the effects of incontinence itself but also because most people with severe incontinence (over 90%) also have other limitations that require high levels of care.

How much is spent on incontinence?

- In 2008–09, an estimated $1.6 billion was spent on incontinence. The largest share was spent on residential aged care ($1.3 billion), followed by hospitals ($145.5 million), the Stoma Appliance Scheme ($67.6 million) and the Continence Aids Payment Scheme ($31.6 million).

What is missing from the picture?

Estimates of prevalence and severity of incontinence across studies vary: partly because of differences in definitions and identification, partly because of variations in measurement of incontinence and partly because of the variation in the populations studied. The AIHW has suggested a set of standard questions for collecting information on incontinence in an effort to improve accuracy and comparability of data (see AIHW 2013).

Current research about incontinence in specific populations, such as Aboriginal and Torres Strait Islander peoples, culturally and linguistically diverse people or the sex and gender diverse population, is limited. While some groups have higher risk factors for incontinence, the extent to which this translates to higher occurrence is unknown.

How risk factors for incontinence lead to the development of the condition remains largely unexplained. Understanding these mechanisms may help reduce the number of people who experience incontinence and also help with the treatment of symptoms.

Where do I go for more information?

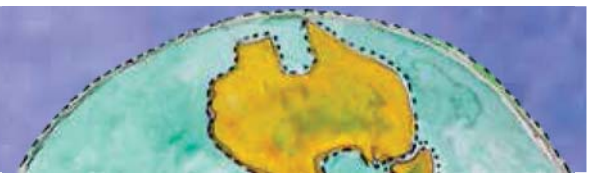
More information on incontinence in Australia is available in the AIHW reports *Incontinence in Australia* and *Incontinence in Australia: prevalence, experience and cost*.

Information about support for people with incontinence and their carers can be found on the Department of Health website or the Continence Foundation of Australia website.

Reference:

AIHW (Australian Institute of Health and Welfare) 2013. Incontinence in Australia. Cat. no. DIS 61. Canberra: AIHW.

6.13 Palliative care in Australia



The goal of palliative care is to improve the quality of life of patients with an active, progressive disease that has little or no prospect of cure (PCA 2003). With the growth and ageing of Australia's population, and an increase of chronic and generally incurable illnesses, the types of patient groups requiring palliative care has widened (AIHW 2010; Murtagh et al. 2013).

Palliative care is delivered in almost all settings where health care is provided, including neonatal units, paediatric services, acute hospitals, general practices, community settings (such as people's own homes) and residential aged care services. Specialist services operate from a variety of settings, including inpatient, hospice and community-based services (DoHA 2010).

Hospitalisations

Available evidence suggests that a substantial proportion of palliative care in Australia is provided in hospitals (PCOC 2010). Data on admitted patient care in Australia's public and private hospitals show that:

- In 2010–11, there were 54,466 palliative care hospitalisations—about half of which (49.5%) were for people aged 75 and over. Between 2001–02 and 2010–11, the number of hospitalisations increased by 49%.
- In 2010–11, 84% of palliative care-related hospitalisations were in public hospitals (45,713 separations), compared with 60% of all hospitalisations being in public hospitals in that year.
- About half (51%) of palliative care hospitalisations in 2010–11 ended with the patient's death.
- Cancer was the most frequently recorded principal diagnosis (58%). More than 70% (16,459) of people with cancer as a principal diagnosis, who died in hospital as admitted patients, had been palliative care patients during their final hospitalisation (Figure 6.35).
- Of patients with a non-cancer diagnosis who died, 71% with a principal diagnosis of motor neurone disease received palliative care (Figure 6.35).

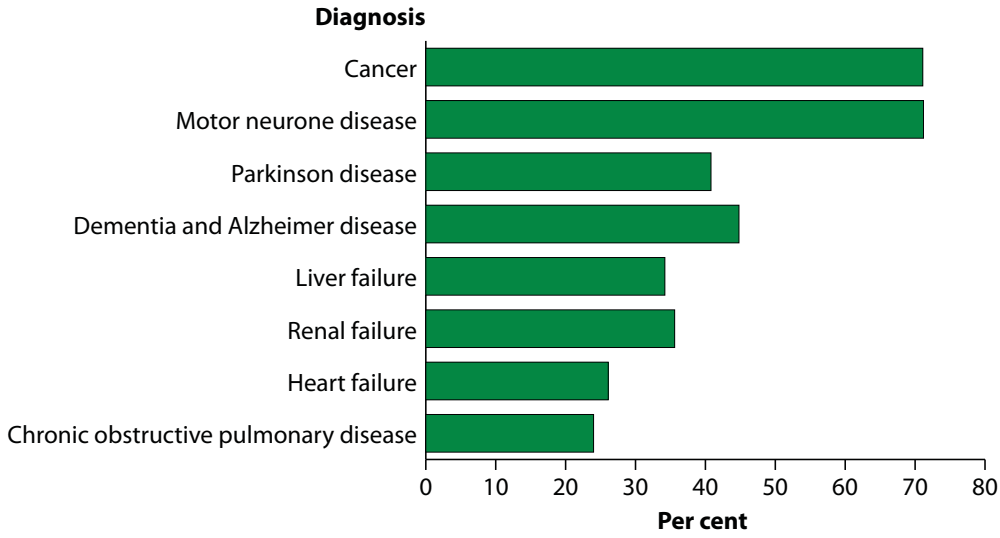
Other services and resources

- More than 30,400 patients accessed specialist palliative care services in calendar year 2012. This was an increase of 12% from 2011 (PCOC 2010).
- In 2011–12, about 9,600 patients received services from a palliative medicine specialist that were subsidised under the Medicare Benefits Schedule (MBS).
- There were 49,600 MBS-subsidised palliative care-related services provided in 2011–12—an average of 5.2 services per patient.
- Between 2007–08 and 2011–12, the number of MBS-subsidised services provided by palliative medicine specialists almost doubled, with a commensurate increase in MBS benefits paid over this period (from $1.7 million to $3.6 million).

Prescription medications are an important component of palliative care. During 2011–12:

- More than 19,000 patients had a subsidised palliative care-related prescription, an increase of 34% from 2010–11 (14,393).
- There were more than 36,000 subsidised palliative care-related prescriptions—laxatives were the most frequently dispensed prescription, followed by analgesics and anti-epileptics (37%, 22% and 15% respectively).

Figure 6.35



Notes

1. Refers to patients for whom palliative care was the principal clinical intent during part or all of the hospitalisation that ended with their death.
2. Disease data are based on principal diagnosis.

Source: National Hospital Morbidity Database, AIHW.

People who died during hospitalisation: proportion who were palliative care patients, selected diagnoses, all hospitals, 2010–11

What is missing from the picture?

Differences among the states and territories in the organisation and delivery of palliative care services and the absence of a national palliative care data set make it difficult to provide a comprehensive overview of service provision in Australia.

Reporting on national palliative care expenditure, community-based palliative care services and palliative care beds is also limited. The AIHW is in discussions with federal and state and territory stakeholders to expand national palliative care information.

Where do I go for more information?

More information on palliative care in Australia is available at www.aihw.gov.au/palliative-care/. The report *Palliative care services in Australia, 2013* and other recent publications are available for free download.

References

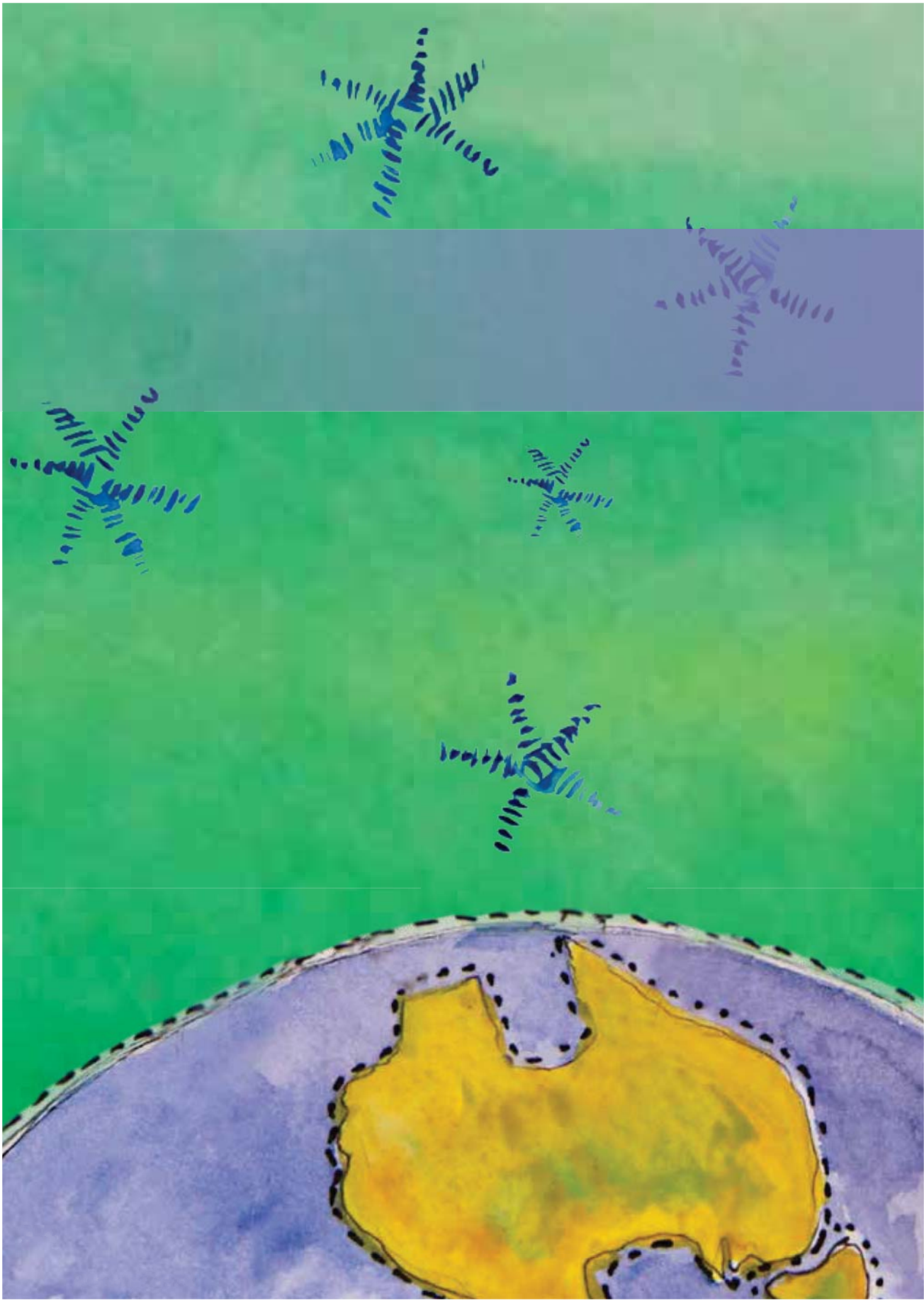
AIHW (Australian Institute of Health and Welfare) 2010. Australia's health 2010. Australia's health series no. 12. Cat. no. AUS 122. Canberra: AIHW.

DoHA (Department of Health and Ageing) 2010. Supporting Australians to live well at the end of life: National Palliative Care Strategy 2010. Canberra: DoHA.

Murtagh FEM, Bausewein C, Verne J, Groeneveld EI, Kaloki YE & Higginson IJ 2013. How many people need palliative care? A study developing and comparing methods for population-based estimates. Palliative Medicine 28(1):49–58 doi: 10.1177/0269216313489367.

PCA (Palliative Care Australia) 2003. Palliative care service provision in Australia: a planning guide. Canberra: PCA.

PCOC (Palliative Care Outcomes Collaboration) 2010. PCOC national report on palliative care in Australia: January to June 2010. Wollongong: University of Wollongong.



Chapter 7

Indigenous health

7.0 Introduction

While there have been improvements in the health and wellbeing of Aboriginal and Torres Strait Islander Australians in recent years, some long-standing challenges remain. (To acknowledge the separate Indigenous peoples of Australia, the term 'Aboriginal and Torres Strait Islander people' is preferred in AIHW publications—however, the term 'Indigenous' is used interchangeably when referring to Indigenous status or when it assists readability.) Across many indicators, Indigenous Australians remain disadvantaged compared with non-Indigenous Australians.

Many factors contribute to the gap between Indigenous and non-Indigenous health. Social disadvantage, such as lower education and employment rates, is a factor, as well as higher smoking rates, poor nutrition, physical inactivity and poor access to health services.

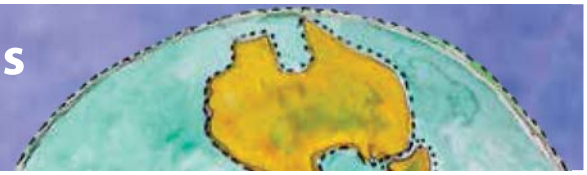
This chapter presents information on the characteristics and health status of the Indigenous population, including their self-assessed health, common long-term health conditions, life expectancy and death rates. Corresponding results for the non-Indigenous population are included.

Information is also presented on health behaviours, social determinants of health and access to health services specific to the Indigenous population.

The feature articles in the chapter focus on interactions among various groups of factors that affect the health of Indigenous Australians:

- 'Remoteness and the health of Indigenous Australians' explores the impact of remoteness on Indigenous health in the context of risk factors, health conditions and service use.
- 'The size and causes of the Indigenous health gap' analyses Indigenous health outcomes to determine the effect of social and behavioural factors on the health gap, and the extent to which individual factors contribute to the gap.

7.1 Profile of Indigenous Australians



SNAPSHOT

Aboriginal and Torres Strait Islander people (Indigenous Australians) are the Indigenous people of Australia. They live in all parts of the nation, from major cities to remote tropical coasts and the fringes of the central deserts. They are not 1 group, but comprise hundreds of groups that have their own distinct set of languages, histories and cultural traditions.

Indigenous Australians can be of Aboriginal origin, Torres Strait Islander origin, or both. The Australian Government defines Indigenous Australians as people who are of Aboriginal or Torres Strait Islander descent, who identify as being of Aboriginal or Torres Strait Islander origin and who are accepted as such in the communities in which they live, or have lived. In most data collections, a person's Indigenous status is based on the first 2 parts of the definition.

SNAPSHOT

How many Indigenous Australians are there?

- Australia's Indigenous population was estimated to be 669,900 people in 2011, which was 3% of the total population (ABS 2013).
- In 2011, 90% of Indigenous Australians identified as being of Aboriginal origin only, 6% as Torres Strait Islander origin only, and 4% as both Aboriginal and Torres Strait Islander origin.

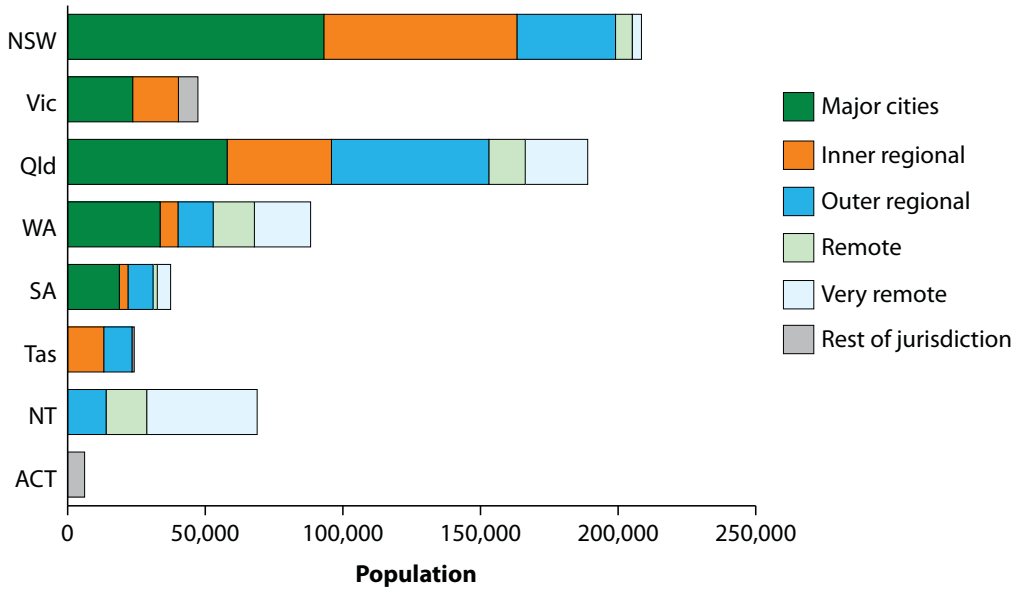
What is the age profile of Indigenous Australians?

- The Indigenous population is much younger than the non-Indigenous population. In 2011, half of the Indigenous population was aged 22 or under compared with 38 or under for the non-Indigenous population.
- Only 3% of the Indigenous population was aged 65 and over.
- The younger age profile of Indigenous Australians is mainly due to their higher fertility rates and higher mortality rates at all ages compared with non-Indigenous Australians. The fertility rate for Indigenous women in 2011 was 2.74 babies per woman compared with 1.92 for all Australian women (ABS 2011).

Where do Indigenous Australians live?

- The majority (79%) of Indigenous Australians live in metropolitan or regional areas. More than one-third live in *Major cities* (35% or 233,100 people); 22% in *Inner regional* areas (147,700 people); 22% in *Outer regional* areas (146,100 people); 8% in *Remote* areas (51,300 people) and around 14% in *Very remote* areas (91,600 people).
- In 2011, most (82%) lived in 4 jurisdictions: New South Wales (31% or 208,500 people); Queensland (28% or 189,000 people); Western Australia (13% or 88,300 people); and the Northern Territory (10% or 68,850 people) (Figure 7.1).
- The Northern Territory has the highest proportion of Indigenous Australians, with 30% of its population identifying as being of Aboriginal or Torres Strait Islander origin in 2011. In most other jurisdictions, Indigenous people made up less than 5% of the population, with the lowest proportion (less than 1%) in Victoria.

Figure 7.1



Source: ABS 2013.

Distribution of Indigenous estimated resident population by remoteness and jurisdiction, 2011

What is missing from the picture?

The Indigenous estimated resident population is determined using information from the Census, birth and death registrations, and migration data. These data collections rely on people identifying themselves and their family members as Indigenous. Changes in identification rates between Censuses can affect population counts and the statistics derived from them (see Box 7.1: Counting on the numbers).

Due to the small Indigenous population in some jurisdictions and remoteness areas, it is not always possible to produce specific, reliable statistics. In these cases, statistics are calculated for larger areas, but this might mask differences within the areas. As Indigenous data improves, it may be possible to use combined data from a number of years to analyse differences specific to areas with small Indigenous populations.

Box 7.1

Counting on the numbers—the Indigenous estimated resident population

Much of what we know about the gap between Indigenous and non-Indigenous outcomes relies on statistics calculated using data from the Australian Bureau of Statistics (ABS) Census, surveys and administrative data from service providers. The Australian Institute of Health and Welfare (AIHW) and the ABS strive to collect and present accurate data, as well as ensure service providers are aware of the importance of collecting accurate Indigenous status information. However, they acknowledge that for various reasons not all Indigenous people are identified in the different data sets, which can lead to an undercount.

The Indigenous estimated resident population (ERP) is derived from the Census counts after adjustments for the undercount and for those records where Indigenous status was unknown. In 2011, the Indigenous undercount was estimated to be 17% (114,000 persons) and about 1 million Census records (5%) had an unknown Indigenous status (ABS 2012). The 2011 Indigenous ERP was 669,881 persons—an increase of 152,838 persons, or 30% from the 2006 ERP. The increase was due to a number of factors, including natural population growth, improved Census estimates and changes in Indigenous identification.

How does Indigenous identification affect health statistics?

The Indigenous ERP is important because it is used to calculate population rates for a feature of interest, for example, deaths rates in terms of number of deaths per 100,000 population. Equally as important are correct numbers from other data sources, which provide the frequency of a feature of interest. As the Indigenous ERP has been adjusted for undercount, data from other sources also need to be adjusted for undercount; otherwise calculated rates for the Indigenous population are likely to appear to be lower than the true rates, resulting in an underestimation of the gap or the difference between Indigenous and non-Indigenous rates.

Caution also needs to be exercised when comparing data from 2 different Censuses. For example, Census data show that in 2006, 4.6% of Indigenous Australians needed help with daily activities due to a disability or health condition compared with 5.7% in 2011. This could suggest that the proportion of Indigenous people who needed help increased since 2006. However, the change could be due to more people with a disability being identified as Indigenous in 2011 or due to the population having aged since 2006. While it is likely that all scenarios have contributed, further analysis is needed to separate these effects.

continued

Box 7.1

Counting on the numbers—the Indigenous estimated resident population (continued)

What is the AIHW doing to improve Indigenous identification?

To ensure that Indigenous status information is consistently and correctly recorded, the AIHW has produced national best practice guidelines for collecting Indigenous status in health data sets and has evaluated their implementation across various settings. The AIHW also continues to measure the proportion of Indigenous people who are correctly identified in the data sets and creates correction factors to adjust the data for under-identification.

The AIHW is also using data linkage to improve reporting on the Indigenous population. For example, its Enhanced Mortality Database project seeks to improve estimates of Indigenous mortality and life expectancy using data linkage. In this project, death registrations obtained from the Registries of Births, Deaths and Marriages in each state and territory are linked to deaths in hospital, residential aged care and perinatal data in order to better estimate the likely Indigenous status of death registrations. This linkage has identified 10% more Indigenous deaths that were missing in the death registration data. Future work on the project will include linkage to other data sets, the use of different methods to derive Indigenous status and an assessment of the feasibility of validating AIHW estimates by comparing the Indigenous status in the Enhanced Mortality Dataset with data sets that contain verified Indigenous status information.

Where do I go for more information?

More information on the composition of the Indigenous population is on the Australian Bureau of Statistics website at www.abs.gov.au/.

More information on the quality of Indigenous data is available at www.aihw.gov.au/indigenous-data. AIHW reports available for free download include *National best practice guidelines for collecting Indigenous status in health data sets*, *Towards better Indigenous health data, Indigenous identification in hospital separations data: quality report* and *An enhanced mortality database for estimating Indigenous life expectancy: a feasibility study*.

References

ABS (Australian Bureau of Statistics) 2011. The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples. ABS cat. no. 4704.0. Canberra: ABS.

ABS 2012. Census of Population and Housing—details of undercount, 2011. ABS cat. no. 2940.0. Canberra: ABS.

ABS 2013. Estimates of Aboriginal and Torres Strait Islander Australians, June 2011. ABS cat. no. 3238.0.55.001. Canberra: ABS.

7.2 Indigenous life expectancy and death rates

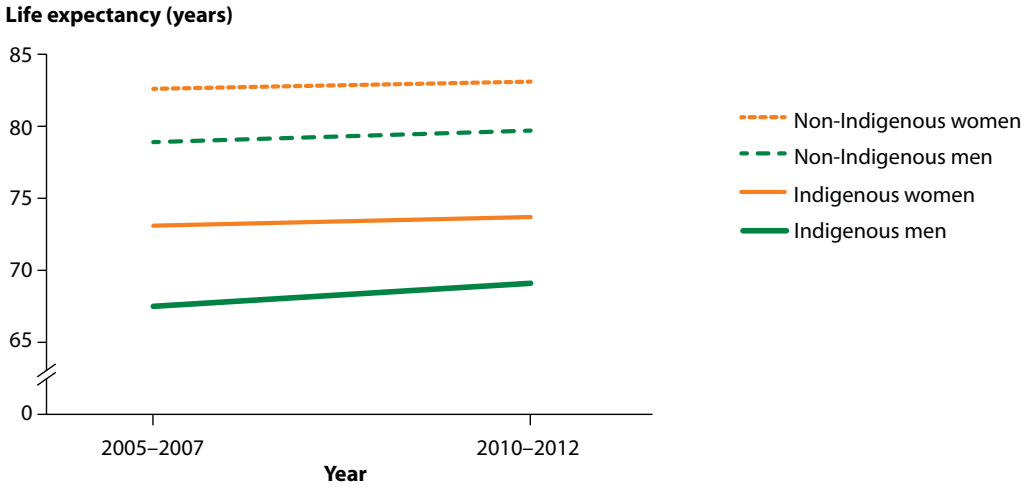
Life expectancy and mortality rates are important measures of the health status of a population (see Chapter 3 'Life expectancy' and 'Leading cause of death in Australia'). Indigenous Australians tend to die earlier than non-Indigenous Australians and their death rates are more than twice those of non-Indigenous Australians.

Information on Indigenous deaths is reported for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined. Other jurisdictions have a small number of Indigenous deaths and identification of Indigenous status in the data is poor, making the data less reliable.

Life expectancy

- Indigenous boys born between 2010 and 2012 can expect to live to 69.1 years and Indigenous girls to 73.7 years compared with 79.7 for non-Indigenous boys and 83.1 for non-Indigenous girls.
- Life expectancy at birth has increased by 1.6 years for Indigenous men and 0.6 years for Indigenous women since 2005–2007 (Figure 7.2). It has also increased by 0.8 years for non-Indigenous men and 0.5 years for non-Indigenous women.

Figure 7.2



Source: ABS 2013b.

Life expectancy of Indigenous and non-Indigenous Australians at birth, 2005–2007 to 2010–2012

Death rates

- Indigenous Australians had higher death rates than non-Indigenous Australians across all age groups during 2007–2011. In the 35–44 age group, Indigenous people died at about 5 times the rate of non-Indigenous people.
- Between 2001 and 2011, there was a 6% fall in the death rate for Indigenous Australians and a narrowing of the gap between Indigenous and non-Indigenous Australians.

Leading causes of death

- Between 2007 and 2011, Indigenous Australians were most likely to die from circulatory conditions (26% of all Indigenous deaths), cancer (19%) and external causes such as suicides, falls, transport accidents and assaults (15%).
- The largest gap in death rates between Indigenous and non-Indigenous Australians was in circulatory disease deaths (22% of the gap) followed by endocrine, metabolic and nutritional disorders (particularly diabetes) (14% of the gap).
- Indigenous Australians were 5 times as likely as non-Indigenous Australians to die from endocrine, nutritional and metabolic conditions (such as diabetes), and 3 times as likely to die of digestive conditions.

Infant and child deaths

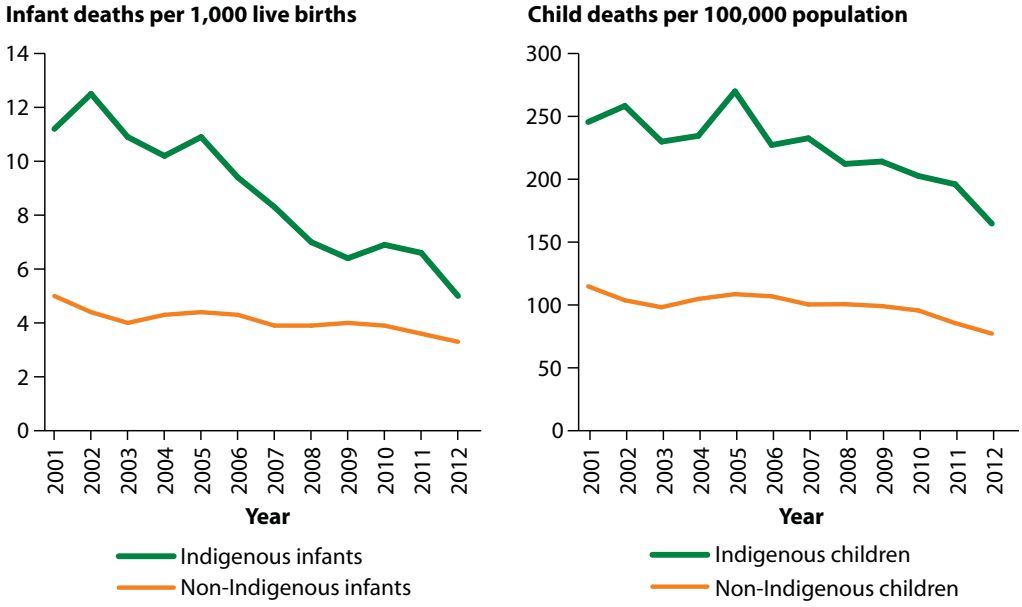
- There were 10,396 infant deaths between 2001 and 2012, of which 1,315 (13%) were Indigenous infants. The rate of Indigenous infant deaths fell by 62% between 2001 and 2012 and by 23% for non-Indigenous infants (Figure 7.3).
- Indigenous children aged 0–4 died at more than twice the rate of non-Indigenous children in 2012 (165 per 100,000 compared with 77 per 100,000 population) (SCRGSP forthcoming). Indigenous child death rates fell by 30% from 2001 to 2012 compared with 22% for non-Indigenous children (Figure 7.3).

What is missing from the picture?

Not all Indigenous deaths are identified as such in death registration data. An Australian Bureau of Statistics study that linked 2011 Census records with death registration records found that about 87% of assumed Indigenous deaths were reported as Indigenous in death registration records (ABS 2013b). The level of Indigenous identification varies across states and territories, as well as by remoteness area (see Chapter 7 'Profile of Indigenous Australians').

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.

Figure 7.3



Sources: ABS 2013a; AIHW National Mortality Database; SCRGSP forthcoming.

Indigenous and non-Indigenous infant and child (aged 0–4) mortality rates (NSW, Qld, WA, SA and NT), 2001–2012

Where do I go for more information?

More information on the life expectancy and death rates of Indigenous Australians is available at www.aihw.gov.au/indigenous-observatory. The report *Aboriginal and Torres Strait Islander Health Performance Framework 2012: detailed analyses* and other recent publications are available for free download.

More information is also available on the ABS website at www.abs.gov.au.

References

ABS (Australian Bureau of Statistics) 2013a. Births, Australia 2012. ABS cat. no. 3301.0. Canberra: ABS.

ABS 2013b. Life tables for Aboriginal and Torres Strait Islander Australians, 2010–2012. ABS cat. no. 3302.0.55.003. Canberra: ABS.

SCRGSP (Steering Committee for the Review of Government Service Provision), forthcoming. National Agreement performance information 2012–13: National Indigenous Reform Agreement. Canberra: Productivity Commission.

7.3 How healthy are Indigenous Australians?

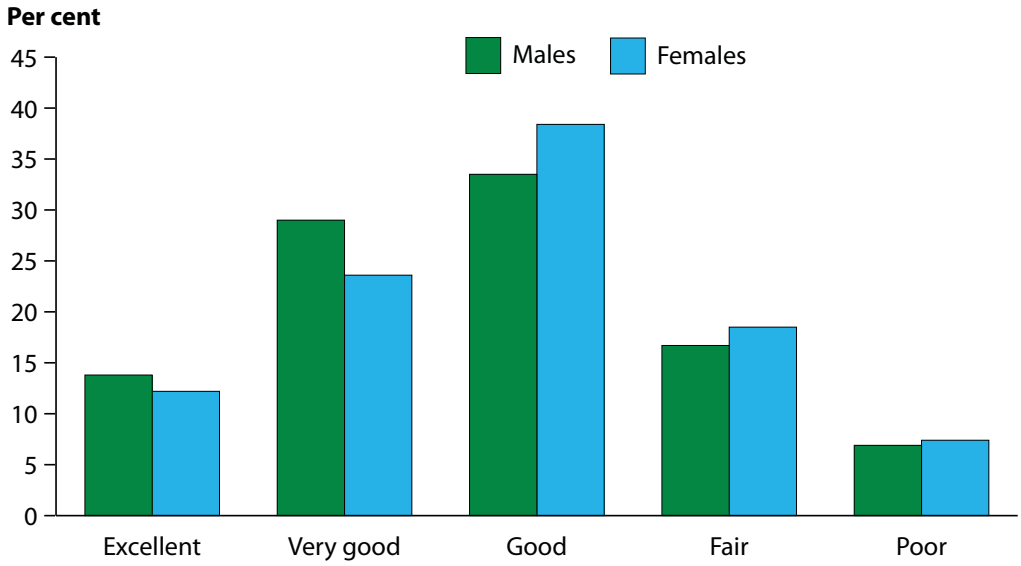
SNAPSHOT

Indigenous Australians have poorer health than other Australians. They are more likely to die at younger ages, experience disability and report their health as fair or poor. The reasons for the differences are explored throughout this chapter and include disparities in social and economic factors, in health behaviours and in access to health services (see Chapter 7 'Social determinants of Indigenous health' and Chapter 7 'The size and causes of the Indigenous health gap').

Self-assessed health

- About 2 in 5 Indigenous Australians aged over 15 (39%) rated their health as excellent or very good, 36% as good and 25% as fair or poor in 2012–13 (Figure 7.4).
- Indigenous Australians were at least twice as likely as non-Indigenous Australians to rate their health as fair or poor, and almost half as likely to rate their health as excellent or very good.
- Compared with 2004–05, Indigenous Australians were 10% less likely to rate their health as excellent or very good in 2012–13 and 13% more likely to rate their health as fair or poor (ABS 2013).

Figure 7.4



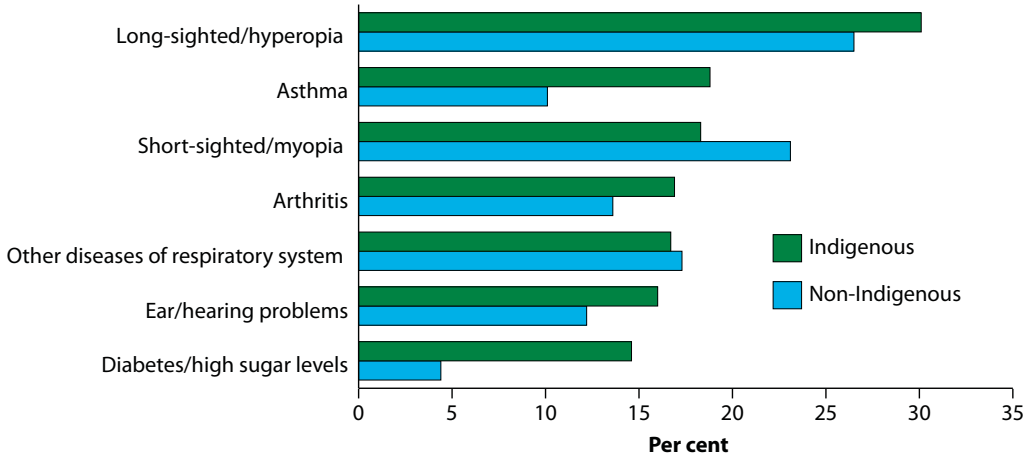
Source: ABS 2013.

Self-assessed health status of Indigenous Australians, by sex, 2012–13

Long-term health conditions

- About 2 in 3 Indigenous Australians (67%) reported that they had at least 1 long-term condition in 2012–13. After adjusting for differences in the age structure of the populations, the rate was similar to that for non-Indigenous Australians in 2011–12.
- One-third (33%) of Indigenous Australians reported having 3 or more long-term conditions.
- The most commonly reported long-term conditions among Indigenous Australians were vision problems, respiratory diseases (including asthma), back pain and arthritis, ear and hearing problems, circulatory disease and diabetes. Indigenous Australians were nearly twice as likely as non-Indigenous Australians to report having asthma and 3.3 times as likely to report having diabetes (Figure 7.5).

Figure 7.5



Source: ABS 2013.

Most common long-term conditions reported by Indigenous Australians, 2012–13, and corresponding proportion among non-Indigenous Australians, 2011–12

Disability

- About 6% of Indigenous Australians reported needing assistance with daily activities in the 2011 Census.
- After adjusting for differences in age structure and response rates, Indigenous Australians aged under 65 were more than twice as likely as non-Indigenous Australians to require assistance with daily activities.
- The difference between Indigenous and non-Indigenous Australians was most pronounced in the 40–59 age group, with Indigenous people almost 3 times as likely to require assistance with daily activities as non-Indigenous people of that age.

What is missing from the picture?

The latest published information on the burden of disease experienced by Indigenous Australians is based on data from 2003. The AIHW is working on a study that uses 2011 data to measure the burden of disease experienced by the Indigenous and total Australian populations. This study will provide updated information on the impact of diseases and injuries on Indigenous Australians, and is expected to be released in early 2016.

Where do I go for more information?

More information on the health status of Indigenous Australians is available at www.aihw.gov.au/indigenous-australians. Recent AIHW reports and publications available for free download include *Aboriginal and Torres Strait Islander Health Performance Framework 2012: detailed analyses* and *Australia's welfare 2013*.

Reference

ABS (Australian Bureau of Statistics) 2013. Australian Aboriginal and Torres Strait Islander Health Survey: first results, Australia, 2012–13. ABS cat. no. 4727.0.55.001. Canberra: ABS.

7.4 Health behaviours of Indigenous Australians

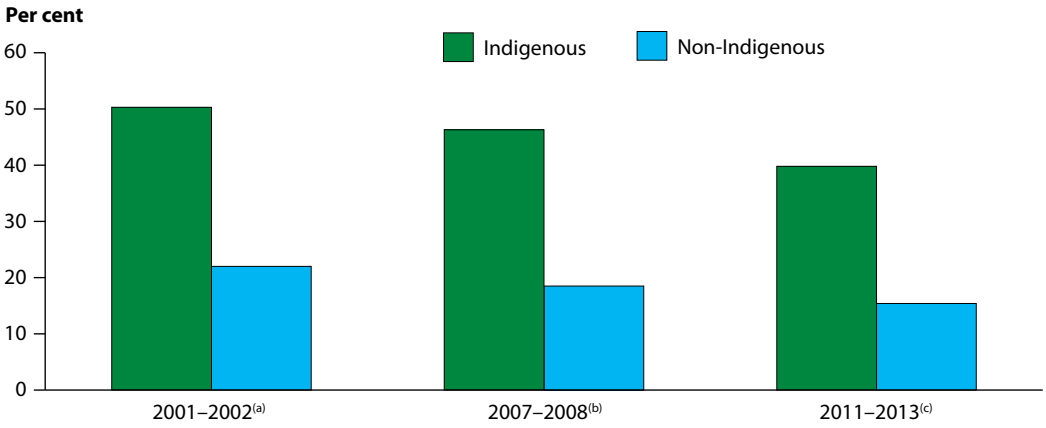
Health risk behaviours, such as smoking, poor nutrition, physical inactivity and alcohol consumption contribute to poorer health status (see Chapter 5 'Behavioural risk factors'). Of the behavioural risk factors covered here, smoking is the most concerning as rates are significantly higher in the Indigenous population than in the non-Indigenous population.

The following information is based on results from the 2012–13 Australian Aboriginal and Torres Strait Islander Health Survey (ABS 2013). Trends over time are available for smoking and long-term risky alcohol consumption; however, they are not available for the other risk factors presented here because of differences in the questions asked in the 2012–13 survey and previous surveys.

Smoking

- Two out of 5 Indigenous Australians aged 15 and over (41%) were current daily smokers in 2012–13, which, after adjusting for age, was more than twice the rate of smoking among non-Indigenous Australians in 2011–12.
- Smoking rates are highest among Indigenous people aged 25–34.
- The proportion of Indigenous adults who smoke daily decreased between 2002 and 2012–13 from 51% to 41% (Figure 7.6).
- For non-Indigenous adults, the proportion fell from 22% in 2001 to 15% in 2011–12.
- After adjusting for age, the difference between the proportion of Indigenous and non-Indigenous smokers has narrowed from 28% in 2002 to 24% in 2012–13.

Figure 7.6



(a) Data from 2001 National Health Survey and 2002 National Aboriginal and Torres Strait Islander Social Survey.
(b) Data from 2008 National Aboriginal and Torres Strait Islander Social Survey and 2007–08 National Health Survey.
(c) Data from 2011–12 Australian Health Survey and 2012–13 National Aboriginal and Torres Strait Islander Health Survey.

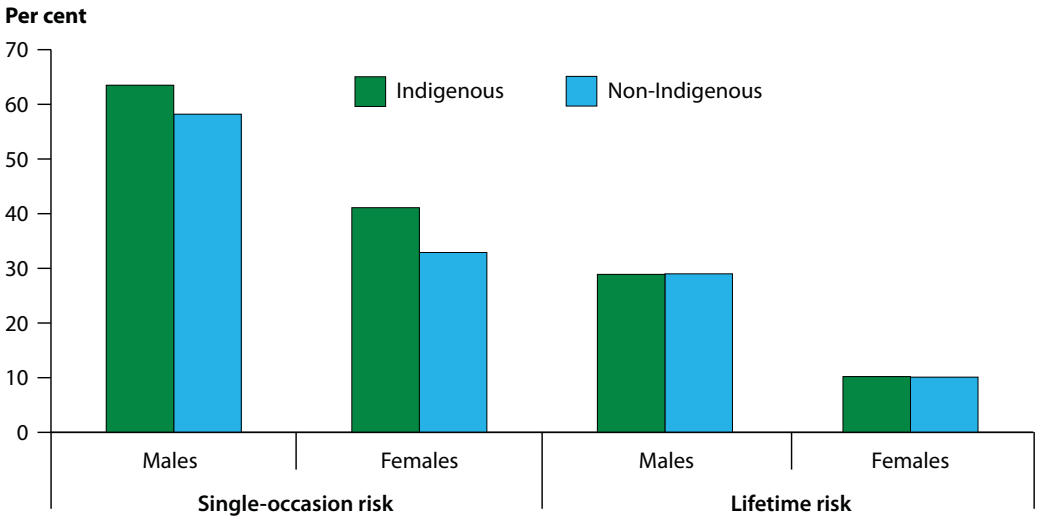
Sources: ABS 2012, 2013; AIHW 2013.

Percentage of current daily smokers in Australia by Indigenous status, people aged 15 and over (age-standardised), 2001–2002 to 2011–2013

Risky alcohol consumption

- A similar proportion of Indigenous Australians (in 2012–13) and non-Indigenous Australians (2011–12) reported drinking at lifetime risky levels in the week before being surveyed (19.2% compared with 19.5%).
- The proportion of Indigenous Australians who reported drinking at lifetime risky levels did not change significantly between 2001 and 2012–13 (19% and 20% respectively).
- Indigenous men reported drinking at levels exceeding the 2009 National Health and Medical Research Council (NHMRC) guidelines in a single occasion (more than 4 standard drinks) at slightly higher rates (10% more) than non-Indigenous men. The rate for Indigenous women was 30% higher than for non-Indigenous women, which was found to be statistically significant (Figure 7.7).

Figure 7.7



Source: ABS 2013.

Proportion of Australians aged 18 and over who exceeded 2009 NHMRC guidelines for alcohol consumption, by risk, sex and Indigenous status, 2011–12 and 2012–13

Illicit substance use

- In 2012–13, more than 1 in 5 Indigenous people aged 15 and over (22%) reported that they had used an illicit substance in the previous 12 months.

Overweight and obesity

- Almost one-third (30%) of Indigenous children aged 2–14 and two-thirds (66%) of Indigenous people aged 15 and over were overweight or obese in 2012–13.
- Combined overweight/obesity rates were similar for Indigenous and non-Indigenous people aged 15 and over; however, the more concerning obesity rates among Indigenous people were 1.5 times higher than among non-Indigenous people.

Nutrition

- Indigenous Australians aged 15 and over were 10% less likely than non-Indigenous Australians to report eating an adequate amount of fruit each day, which was statistically significant. There was no significant difference in vegetable consumption between the 2 groups (7% and 8% respectively consumed 5 or more serves of vegetables daily).

Physical activity

- About 3 in 5 Indigenous Australians aged 18 and over (62%) reported no or low-level physical activity, which was 10% higher than the rate among non-Indigenous Australians.

What is missing from the picture?

The information presented here is based on preliminary data from the 2012–13 Australian Aboriginal and Torres Strait Islander Health Survey. The Australian Bureau of Statistics plans to release further data in the second half of 2014 that will incorporate the results from the sample of respondents who also participated in the 2012–13 National Aboriginal and Torres Strait Islander Nutrition and Physical Activity Survey and the 2012–13 National Aboriginal and Torres Strait Islander Health Measurements Survey. This means that the preliminary data will be revised and the results updated.

Where do I go for more information?

More information on the health behaviours of Indigenous Australians is available at www.aihw.gov.au/indigenous-australians. The report *Aboriginal and Torres Strait Islander Health Performance Framework 2012: detailed analyses* and other recent publications are available for free download.

References

ABS (Australian Bureau of Statistics) 2012. Australian Health Survey: first results, 2011–2012. ABS cat. no. 4364.0.55.001. Canberra: ABS.

ABS 2013. Australian Aboriginal and Torres Strait Islander Health Survey: first results, Australia, 2012–13. ABS cat. no. 4727.0.55.001. Canberra: ABS.

AIHW (Australian Institute of Health and Welfare) 2013. Aboriginal and Torres Strait Islander Health Performance Framework 2012: detailed analyses. Cat. no. IHW 94. Canberra: AIHW.

7.5 Social determinants of Indigenous health

SNAPSHOT

Social determinants of health are social and economic factors that can have a positive or negative effect on the health of individuals and communities by affecting the environment and conditions in which they live. They can also affect people's health by influencing their behaviours and decisions (see Chapter 7 'Health behaviours of Indigenous Australians'). For example, people living in houses without safe drinking water may be at risk of diarrhoeal diseases, and those on low incomes may not eat fresh fruit and vegetables regularly if they cannot afford them. The social disadvantages Indigenous people experience in relation to housing, education, income and employment have contributed to the differences in health outcomes between Indigenous and non-Indigenous Australians.

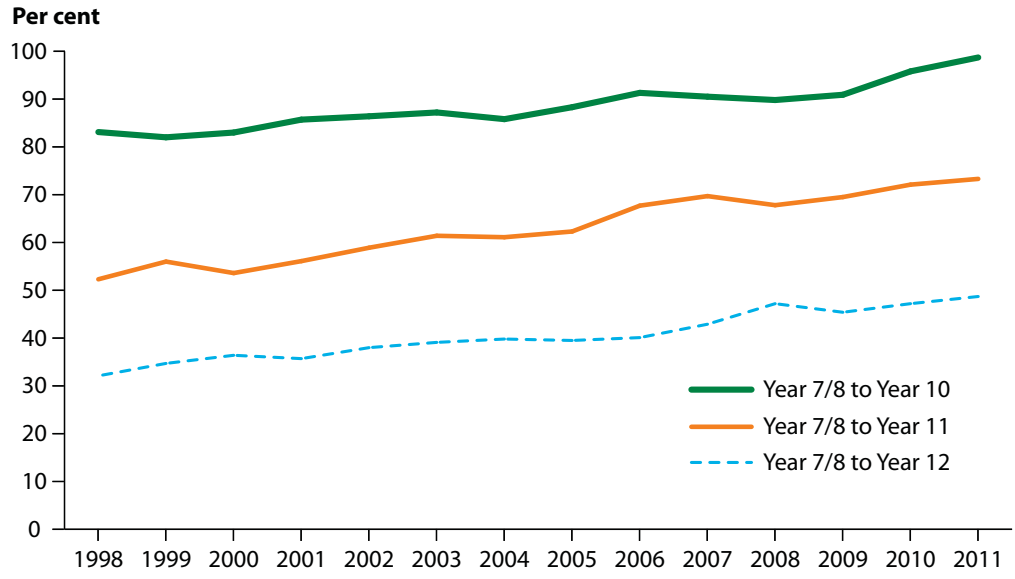
Housing

- The 2011 Census data show that about 36% of Indigenous households were home owners or purchasers and 59% were renters, compared with 68% and 29% of non-Indigenous households respectively.
- About 12% of Indigenous households were considered overcrowded in 2011, compared with 3% of non-Indigenous households. Levels of overcrowding in remote Indigenous households fell from 22% in 2006 to 20% in 2011 (FaHCSIA 2013).
- The rate of homelessness for Indigenous Australians was 14 times as high as the rate for non-Indigenous Australians in 2011 (ABS 2012b).
- Despite making up 3% of the population, Indigenous people represented 22% of people accessing specialist homelessness services in 2012–13.

Education

- In each state and territory, average National Assessment Program—Literacy and Numeracy (NAPLAN) scores for Indigenous students across all learning areas in Years 3, 5, 7 and 9 were substantially lower than those for non-Indigenous students in 2013 (ACARA 2013).
- One area where there has been significant improvement is reading among Year 5 Indigenous students, where the proportion who met or exceeded the national minimum standard increased from 65% in 2012 to 83% in 2013, compared with 93% to 97% for non-Indigenous students (ACARA 2013).
- Almost half (49%) of Year 7/8 Indigenous students stayed at school until Year 12 in 2011, compared with 81% of non-Indigenous students. However, there has been a significant rise in retention rates for Indigenous students from Year 7/8 to Years 10, 11 and 12 between 1998 and 2011 (Figure 7.8).
- The proportion of Indigenous people aged 20–24 with a Year 12 or equivalent qualification increased from 47% in 2006 to 54% in 2011 (COAG Reform Council 2013).

Figure 7.8



Source: AIHW 2013.

Retention rates of Indigenous schoolchildren, Australia, 1998–2011

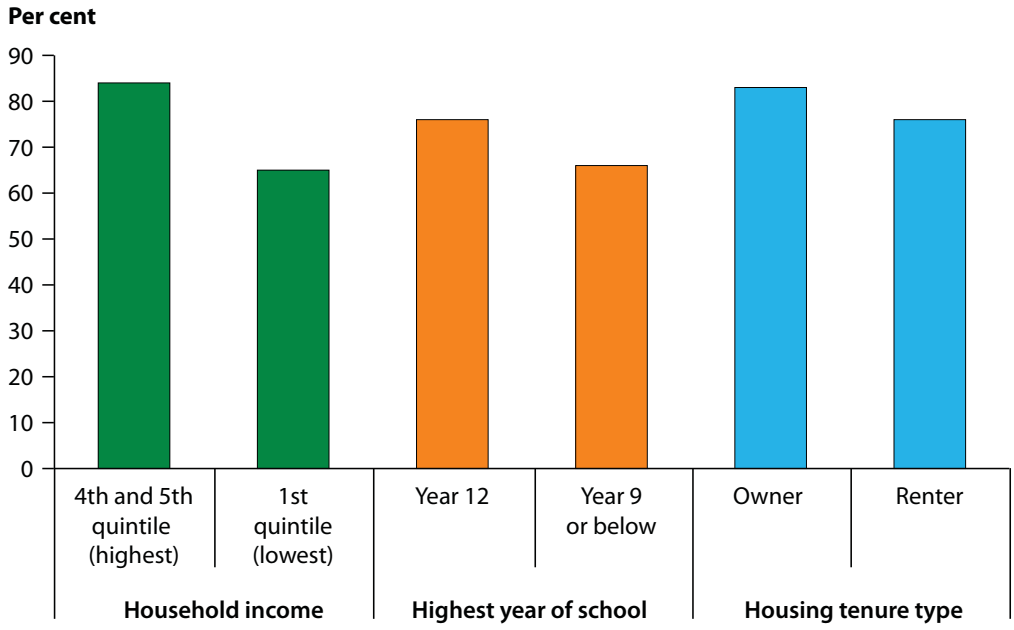
Income and employment

- Half of all Indigenous people aged 15 and over had a personal weekly income of $362 or less in 2011 compared with $582 or less for non-Indigenous people.
- In 2011, 42% of Indigenous Australians aged 15 and over were employed compared with 61% of non-Indigenous people.
- Unemployment rates were 17% for Indigenous Australians and 5% for non-Indigenous Australians (ABS 2012a).

Impact on health

- Indigenous Australians were more likely to assess their health as good or excellent if they had higher incomes and education levels, and owned their home (Figure 7.9).

Figure 7.9



Source: AHMAC 2012.

Relationship between social determinants of health and self-assessed health status of good/excellent, Indigenous Australians, 2008

What is missing from the picture?

The relationship between social determinants and health is complex and can be difficult to measure (see Chapter 7 'The size and causes of the health gap'). For example, several social determinants may interact to create certain health outcomes, so separating the effects of each is not straightforward. Also, the time taken for investments in education, employment and housing to affect a person's health can vary from immediate to many years.

Where do I go for more information?

More information on the social determinants of Indigenous health is available at www.aihw.gov.au/indigenous-observatory. Recent AIHW reports and other publications available for free download include *Aboriginal and Torres Strait Islander Health Performance Framework 2012: detailed analyses*, *The health and welfare of Australia's Aboriginal and Torres Strait Islander people: an overview 2011*, *A profile of homelessness for Aboriginal and Torres Strait Islander people* and *Specialist homelessness services 2012–2013*.

References

ABS (Australian Bureau of Statistics) 2012a. Census of Population and Housing: characteristics of Aboriginal and Torres Strait Islander Australians, 2011. ABS cat. no. 2076.0. Canberra: ABS.

ABS 2012b. Census of Population and Housing: estimating homelessness, 2011. ABS cat. no. 2049.0. Canberra: ABS.

ACARA (Australian Curriculum, Assessment and Reporting Authority) 2013. NAPLAN achievement in reading, persuasive writing, language conventions and numeracy: national report for 2013. Sydney: ACARA.

AHMAC (Australian Health Ministers' Advisory Council) 2012. Aboriginal and Torres Strait Islander Health Performance Framework 2012 Report. Canberra: AHMAC.

AIHW (Australian Institute of Health and Welfare) 2013. Aboriginal and Torres Strait Islander Health Performance Framework 2012: detailed analyses. Cat. no. IHW 94. Canberra: AIHW.

COAG (Council of Australian Governments) Reform Council 2013. Indigenous reform 2011–12: comparing performance across Australia. Sydney: COAG Reform Council.

FaHCSIA (Department of Families, Housing, Community Services and Indigenous Affairs) 2013. National Partnership on Remote Indigenous Housing: progress review (2008–2013). Canberra: FaHCSIA.

7.6 Indigenous Australians' access to health services

SNAPSHOT

Due to their poorer health, Indigenous Australians could be expected to access health services at a much higher rate than non-Indigenous Australians. However, the most recent comparable data suggests that their overall access to health services is only marginally higher (AHMAC 2012). To improve Indigenous health, strategies to increase access to health services are required alongside improvements in behavioural and social factors.

Understanding Indigenous Australians' access to health services is important in evaluating whether the health system is adequately meeting their needs. Indigenous Australians may access mainstream or Indigenous-specific primary health care services, which offer prevention, diagnosis and treatment of ill health in a range of settings (see Chapter 8 'Primary health care in Australia'). Indigenous-specific services are funded by the Australian Government and/or state and territory governments, and are available through hospitals, community clinics, Aboriginal Community Controlled Health Services and other health-care facilities.

Comprehensive data on Indigenous Australians' use of mainstream and Indigenous-specific health services are lacking, which makes it difficult to determine patterns in the use of health services. Service use may be underestimated if consultations are not claimed for on Medicare, or are not funded by the Australian Government (such as when they are funded by state and territory governments). Incomplete identification of Indigenous people in mainstream health services data can also lead to an underestimation of service use.

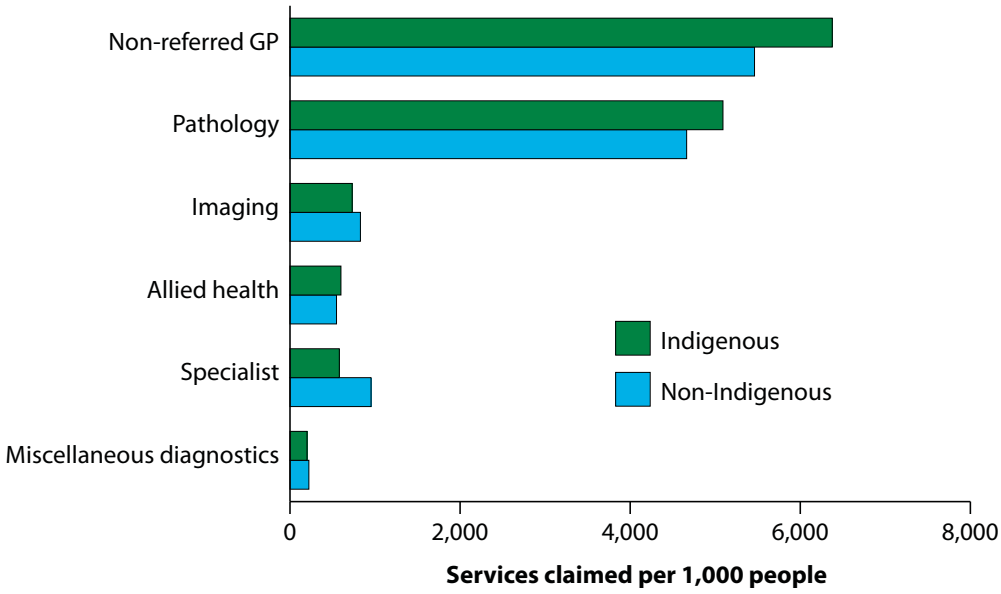
Access to health services

- In 2012–13, more than 1 in 5 Indigenous Australians (22%) accessed a general practitioner (GP) or specialist in the 2 weeks before the Australian Aboriginal and Torres Strait Islander Health Survey.
- About 1 in 4 Indigenous Australians aged 15 and over (26%) reported having problems accessing health services in 2008. Of these, about 20% had problems accessing dentists, 10% accessing doctors and 7% accessing hospitals. The greatest barriers were long waiting times or services being unavailable when required (52%), and cost was a barrier for about 1 in 3 (32%).

Use of selected health services

- Medicare Benefits Schedule (MBS) claim rates for GP visits were 17% higher for Indigenous than non-Indigenous Australians in 2010–11, but claim rates for specialist services were 39% lower (Figure 7.10).
- Rates of MBS Health Checks among Indigenous Australians rose significantly from 2006 to 2011 for all age groups (Figure 7.11).
- In 2010–11, Pharmaceutical Benefits Scheme (PBS) expenditure per Indigenous Australian was around 80% of the level of expenditure per non-Indigenous Australian ($291 compared with $366). In 2001–02, PBS expenditure per Indigenous Australian was around 33% of the amount spent per non-Indigenous Australian, suggesting a narrowing of the gap since then.
- Aboriginal and Torres Strait Islander primary care services provided 2.6 million episodes of health care to about 445,000 clients in 2011–12. Compared with 2010–11, there was a 5% increase in episodes of care and a 3% increase in the number of clients.

Figure 7.10



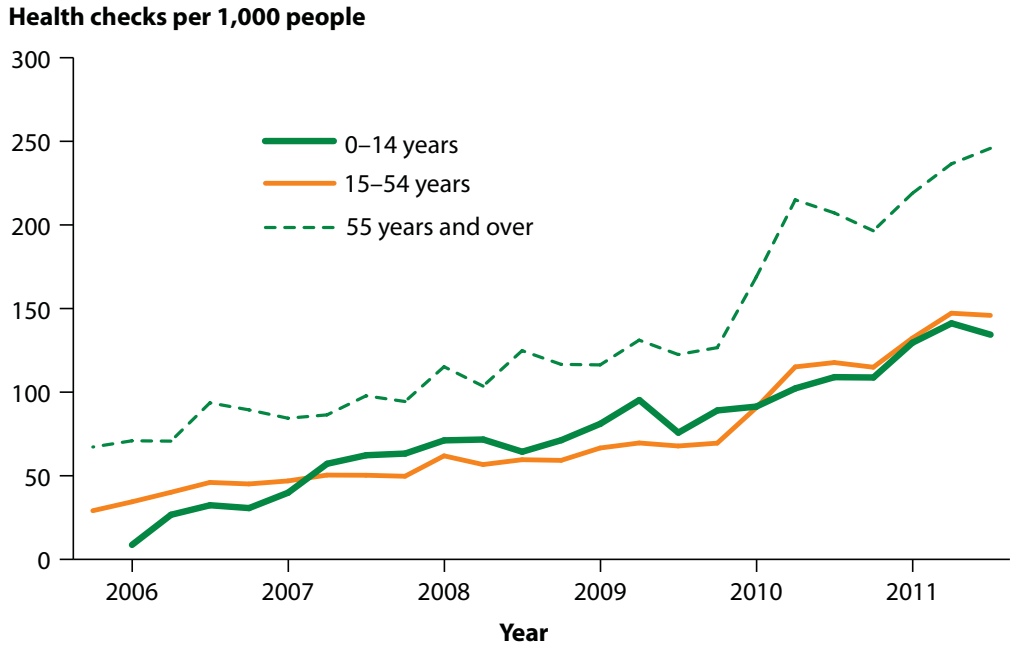
Source: AIHW 2013.

Medicare services claimed per 1,000 people by Indigenous status (age-standardised), 2010–11

Hospitalisations by principal diagnosis

- Indigenous Australians were hospitalised for potentially preventable conditions nearly 4 times as often as non-Indigenous Australians between July 2010 and June 2012.
- Excluding dialysis, the leading cause of hospitalisation for Indigenous Australians was injury, poisoning and certain other consequences of external causes (38 hospitalisations per 1,000 people). Respiratory and digestive conditions were the next most common causes (31 and 26 hospitalisations per 1,000 people, respectively).
- After adjusting for age differences, Indigenous Australians were over twice as likely to be hospitalised for mental and behavioural disorders as non-Indigenous Australians, and nearly 3 times as likely to be hospitalised for respiratory conditions (Figure 7.12).

Figure 7.11



Source: AIHW 2013.

Rate of MBS health checks for Indigenous Australians, by age, 2006–2011

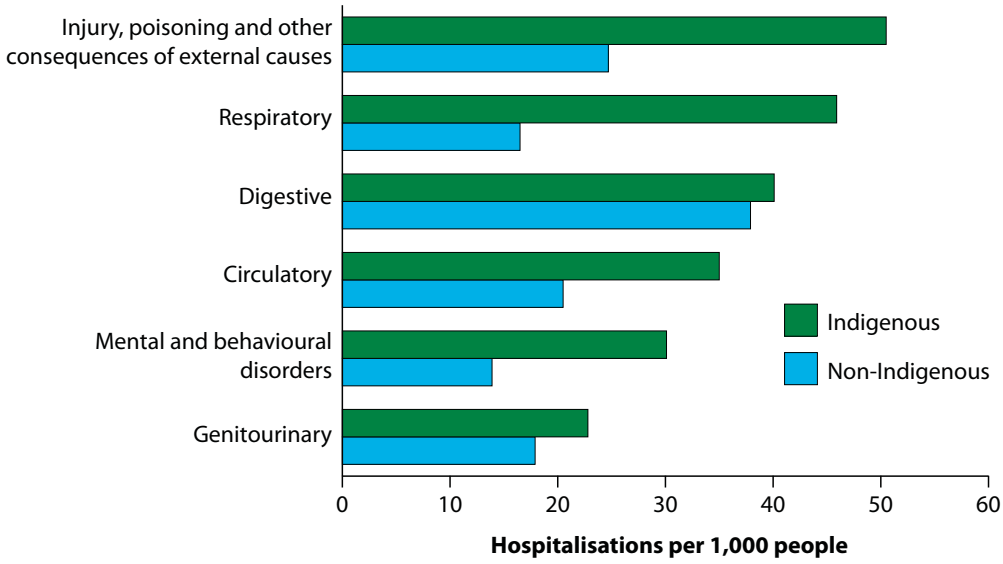
What is missing from the picture?

While service use and spending patterns give some indication of the demand for health services, they do not provide information on whether services are accessible to all who need them, nor do they give a complete picture of whether the health needs of Indigenous Australians are being met. Even though Indigenous Australians may have physical access to a service, financial, social and cultural factors can influence whether they access the service or not. There is also a possibility that the available service may not be the most suitable one for their health needs.

Where do I go for more information?

More information on how Indigenous Australians interact with the health system is available at www.aihw.gov.au/indigenous-observatory. Recent AIHW reports and other publications available for free download include *Aboriginal and Torres Strait Islander Health Performance Framework 2012: detailed analyses*, *Aboriginal and Torres Strait Islander health services report 2011-12* and *Expenditure on health for Aboriginal and Torres Strait Islander people 2010–11*.

Figure 7.12



Source: AIHW analysis of National Hospital Morbidity Database.

Age-standardised rates of the leading causes of hospitalisation (excluding dialysis) for Indigenous Australians and corresponding rates among non-Indigenous Australians, July 2010 to June 2012

References

AHMAC (Australian Health Ministers' Advisory Council) 2012. Aboriginal and Torres Strait Islander Health Performance Framework 2012 Report. Canberra: AHMAC.

AIHW (Australian Institute of Health and Welfare) 2013. Aboriginal and Torres Strait Islander Health Performance Framework 2012: detailed analyses. Cat. no. IHW 94. Canberra: AIHW.

7.7 Remoteness and the health of Indigenous Australians

FEATURE ARTICLE

Numerous studies have demonstrated that Australians living in remote or very remote areas have, on average, higher rates of risky health behaviours such as smoking, poorer access to health services, and worse health than people living in regional or metropolitan areas (AIHW 2012).

Poorer health with increasing remoteness may be influenced by environmental or geographical factors such as long distances to access services (which can also be an issue for urban fringes), communities being cut off on occasion because of flooding, or poorer access to healthy food sources (Harrison et al. 2010; Humphreys & Wakerman 2008) (see Chapter 5 'Health in regional and remote areas'). Evidence also shows higher rates of poor housing and overcrowding in remote areas, which have a negative impact on health (AIHW 2011).

These differences in health may also be due to the characteristics of the populations in more remote areas. For example, there is a strong association between socioeconomic status and health—the lower someone's socioeconomic status, the worse their health is likely to be. Given that a higher proportion of remote residents are disadvantaged compared with those who live in metropolitan or regional areas, their health may be worse as a result of socioeconomic disadvantage rather than just environmental or geographical factors related to remoteness.

The relationship of remoteness to health is particularly important for Indigenous Australians, as they are more likely to live outside metropolitan areas than non-Indigenous Australians. In 2011, just over one-third of Indigenous Australians lived in *Major cities* (34.8%), compared with over 70% of non-Indigenous Australians. Only 1.7% of non-Indigenous Australians lived in *Remote* or *Very remote* areas, compared with about one-fifth of Indigenous Australians (7.7% in *Remote* and 13.7% in *Very remote* areas). Indigenous Australians represent 16% and 45% of all people living in *Remote* and *Very remote* areas respectively.

Indigenous Australians have lower life expectancies, higher rates of chronic and preventable illnesses, poorer self-reported health, and a higher likelihood of being hospitalised than non-Indigenous Australians (AIHW 2013; Bramley et al. 2004; Freemantle et al. 2007). Therefore, differences in health with increasing remoteness could also be explained by the poorer health of the Indigenous population living in these areas.

To summarise the discussion so far, differences in health by remoteness could be due to remoteness factors such as distance or access to services, or the lower socioeconomic status of people who live in remote areas (Indigenous and non-Indigenous), *or* the higher proportions of Indigenous people who live in remote areas—or a combination of all 3.

This article presents available data on how health conditions and risk factors differ by remoteness and Indigenous status, using both self-reported survey data as well as data on hospitalisations. We also focus on access to general practitioner services by remoteness and Indigenous status, and highlight the AIHW's work in developing an area-based index of access to services relative to the health needs of the Indigenous and non-Indigenous populations in those areas.

How do health conditions and risk factors differ by remoteness and Indigenous status?

The most recent data on self-reported health-related behaviours and conditions for Indigenous Australians were collected in the 2012–13 Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS) (ABS 2013a), which is part of the larger 2011–13 Australian Health Survey (AHS) which collected data on all Australians, except those living in *Very remote* areas. Tables 7.1 and 7.2 present data from these surveys by remoteness for all Australians and Indigenous Australians. At this point, the AHS data by remoteness have only been reported for *all* Australians, not for *non-Indigenous* Australians.

Table 7.2 highlights 2 key findings:

1. Across almost every indicator, Indigenous Australians are disadvantaged compared with all Australians. The largest differences are in smoking status, psychological distress, and cardiac/circulatory diseases. The 1 indicator in which the rates are lower for Indigenous Australians is for overweight/obesity in regional and remote areas.
2. While there are differences by remoteness in the indicators for both populations, the impact of remoteness is relatively low. For all Australians, the largest difference between those living in *Outer regional* and *Remote* areas and those in *Major cities* is for smoking, with a ratio of 1.5. For Indigenous Australians, the largest difference between those in *Outer regional* and *Remote* areas and those in *Major cities* is 1.3 for diabetes.

However, while Tables 7.1 and 7.2 allow comparisons across similarly defined outcomes and geographic areas, the aggregation of *Outer regional* with *Remote* areas may mask important differences. The picture is also incomplete because it leaves out those living in *Very remote* areas, since those data were not collected in the AHS.

Table 7.1. Health-related characteristics by remoteness for all Australians (excluding those living in Very remote areas), 2011–13

	% of all Australians (2011–13 AHS)			
Characteristic	**Major cities**	**Inner regional**	**Outer regional & Remote**	**Total**
Risk factors				
Overweight/obese[(a)]	60.2	68.7	69.5	**62.8**
Current daily smoker[(a)]	14.7	18.4	22.4	**16.1**
Health conditions				
High/very high psychological distress (K-10)[(a)(b)]	10.6	11.4	10.8	**10.8**
Diabetes mellitus	4.5	5.1	4.9	**4.6**
Heart, stroke and vascular disease	4.6	5.6	5.9	**5.0**
Health service use				
Consulted GP in last 2 weeks	20.8	19.7	19.5	**20.4**
Admitted to hospital in last 12 months	11.3	13.2	11.7	**11.8**

(a) Aged 18 and over.

(b) From COAG Reform Council 2013.

Source: ABS 2011–13 AHS.

Table 7.2. Health related characteristics by remoteness for Indigenous Australians (excluding those living in Very remote areas), 2012–13

Characteristic	% of Indigenous Australians (2012–13 AATSIHS)			
	Major cities	Inner regional	Outer regional & Remote	Total
Risk factors				
Overweight/obese[a]	65.4	70.1	66.0	**65.6**
Current daily smoker[a]	36.2	40.9	41.9	**41.0**
Health conditions				
High/very high psychological distress (K-10)[b][c]	32.1	30.4	30.8	**30.1**
Diabetes mellitus[d]	6.9	6.5	9.1	**8.2**
Heart, stroke and vascular disease[e]	10.6	11.7	12.4	**12.0**
Health service use				
Consulted GP in last 2 weeks[f]	24.4	21.4	20.8	**21.9**
Admitted to hospital in last 12 months	18.3	17.2	16.6	**18.0**

(a) Aged 15 and over.
(b) Aged 18 and over.
(c) From COAG Reform Council (2013).
(d) The AATSIHS refers to diabetes/high sugar levels.
(e) The AATSIHS refers to heart and circulatory problems.
(f) The AATSIHS includes specialists along with GPs.

Source: ABS 2013a.

Table 7.3 presents more detailed data for Indigenous Australians by remoteness and includes those living in *Very remote* areas.

This shows that smoking rates and the prevalence of diabetes and heart conditions are highest among those living in *Remote* or *Very remote* areas. There is no clear gradient of use of health services across the 5 remoteness categories.

In contrast, the lowest rates of overweight and obesity for Indigenous Australians were found among those living in *Very remote* areas. Levels of high or very high psychological distress and the proportion of Indigenous Australians reporting asthma were also lowest for those living in *Remote* or *Very remote* areas.

Table 7.3. Health-related characteristics by remoteness, Indigenous Australians (2012–13 AATSIHS)

Characteristic	% of Indigenous Australians					
	Major cities	Inner regional	Outer regional	Remote	Very Remote	Total
Risk factors						
Overweight/obese	65.4	70.1	66.2	65.6	58.8	**65.6**
Current daily smoker	36.2	40.9	39.8	47.4	51.1	**41.0**
Health conditions						
High/very high psychological distress (K-10)	32.1	30.4	33.3	24.8	23.0	**30.1**
Asthma	21.1	20.8	15.8	13.7	7.8	**17.5**
Diabetes/high sugar levels	6.9	6.5	8.9	9.7	12.1	**8.2**
Heart and circulatory problems	10.6	11.7	10.0	19.1	15.7	**12.0**
Health service use						
Consulted GP/specialist in last 2 weeks	24.4	21.4	19.9	23.6	18.5	**21.9**
Consulted other health professional in last 2 weeks	20.2	16.5	16.0	14.8	23.7	**18.5**
Admitted to hospital in last 12 months	18.3	17.2	16.6	16.6	21.5	**18.0**

Source: ABS 2013a.

How does access to, and use of, health services vary by remoteness and Indigenous status?

Information on service access and use gleaned from survey data can be limited due to the infrequency in which the surveys are conducted, their sample size, and individuals' imperfect recall and interpretation of survey questions. Another potential source of information is data collected by health service providers. Data sets collected in the course of health service delivery can facilitate comparisons of patterns by remoteness and Indigenous status. Depending upon the data set, the benefits of this type of data are consistency in the measurement of the outcome of interest and large enough numbers to disaggregate the Indigenous and non-Indigenous populations.

An important contributor to population health is the availability and accessibility of health services. For example, high quality primary health care services (see Chapter 8 'Primary health care in Australia') are essential for preventive care and screening, managing acute and chronic illnesses, and providing a link to specialist services. These services are delivered by a range of practitioners (for example, general practitioners, dentists, nurses, Aboriginal Health Workers) across a variety of locations (for example, community health centres, general practices, and allied health practices). A lack of access to primary health care services in areas with geographically dispersed populations (such as *Remote* and *Very remote* areas) may therefore affect the overall health and wellbeing of the populations living in those areas.

General practitioner services

General practitioners (GPs) play an important role in the delivery and coordination of health care in Australia. In 2012–13, 84% of Australians had consulted a GP at least once in the previous year (ABS 2013a). This section presents information on access to general practitioners by Indigenous status and remoteness. It is important to note, however, that there are other types of primary health care services delivered by health professionals other than GPs, particularly in remote Australia, which both Indigenous and non-Indigenous Australians use. Examples include some services delivered by Aboriginal Community Controlled Health Services, and Aboriginal Medical Services.

Recent data show that the proportion of Australians who reported being able to access an 'urgent' appointment with a GP within 4 hours was higher in *Major cities* (66.5%) than in other areas (57.3%). The proportion of Australians who delayed or did not see a general practitioner due to cost was 5.4% in 2012–13, with the lowest rates being in *Major cities* (5.1%) and higher rates of approximately 6.2% across regional and remote areas (ABS 2013b).

Directly comparable results are not available for Indigenous Australians. However, AATSIHS data indicate that 12.3% of Indigenous Australians living in remote areas reported that they have difficulty accessing doctors, compared with 8.6% of Indigenous Australians in non-remote areas (ABS 2013a). In a reverse of the situation for all Australians, cost of health services was more likely to be cited as a problem for Indigenous Australians in non-remote areas (37.5%) compared with those in remote areas (16.5%).

Area-based index of access to GPs relative to needs

The AIHW is developing an index that captures the extent to which the Indigenous, non-Indigenous and total populations of small geographic areas have access to health care relative to their health needs. (The areas are known as Statistical Area Level 1, or SA1s.)

This index applies to access to GP services only at this stage (as noted earlier, there are other types of providers delivering primary health care services, especially in remote areas). The index is based on methodology developed by McGrail and Humphreys (2009), and uses the physical (geospatial) locations of health services and the populations they serve, the number of GPs working at each service location, and the size and specific health needs of the 3 population groups in each SA1 (AIHW 2014).

Access is determined by considering estimated drive times between GP service locations and SA1 centroids (centre points), as well as the number of GPs working at each service location. Access is considered 'unhindered' by distance for travel times up to 10 minutes, gradually declining to 'no access' for travel times greater than 60 minutes.

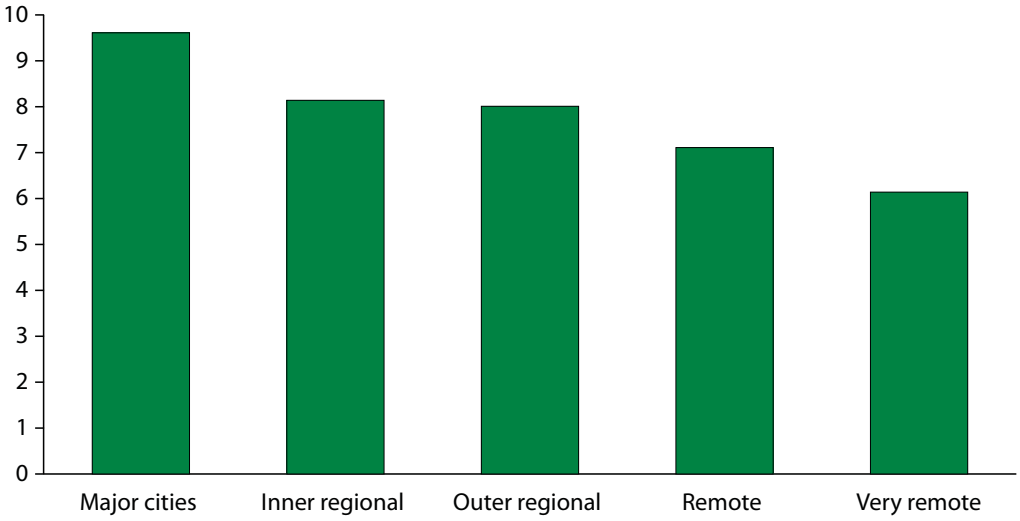
The estimated demand for primary health care in each SA1 population is based on the size of the population and its per capita health needs, the latter determined by known associated demographic and socioeconomic predictors.

It is important to note that service availability is only 1 aspect, albeit a major aspect, of accessibility—the extent to which available services are used is also important, and whether this varies by remoteness and Indigenous status. This in turn can depend on potential barriers to access such as the cultural competence of services or variations in individual access to public transport—which the index does not take into account.

Figure 7.13 presents average scores for access to health-care services provided by GPs for all SA1s in each remoteness area. Higher values represent better access to GP services taking both travel time and competition from other populations using the same GPs into account. The results show that, as expected, the best access is in the *Major cities* and the worst access is in *Very remote* areas.

Figure 7.13

Average access to primary health care score



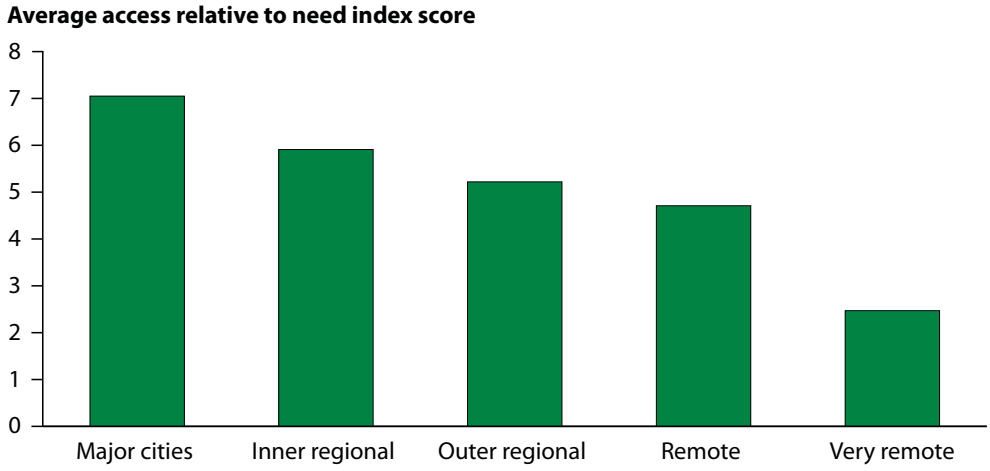
Source: AIHW forthcoming.

Access to health services provided by GPs by remoteness area, total population, Australia, 2011

The access relative to needs index, which incorporates information on need as well as access, as described earlier, can be calculated separately for Indigenous and non-Indigenous populations. Again, higher values represent better access to services relative to health needs.

The average access relative to health needs index scores for Indigenous Australians (see Figure 7.14) are highest in *Major cities* and lowest (by a pronounced margin) in *Very remote* areas. A similar pattern was found for the non-Indigenous population, except for a less pronounced decline in access relative to needs in *Very remote* areas, due to the relatively lower health needs of the non-Indigenous population in these areas.

Figure 7.14



Source: AIHW forthcoming.

Index of access to GPs relative to need, Indigenous Australians, 2011

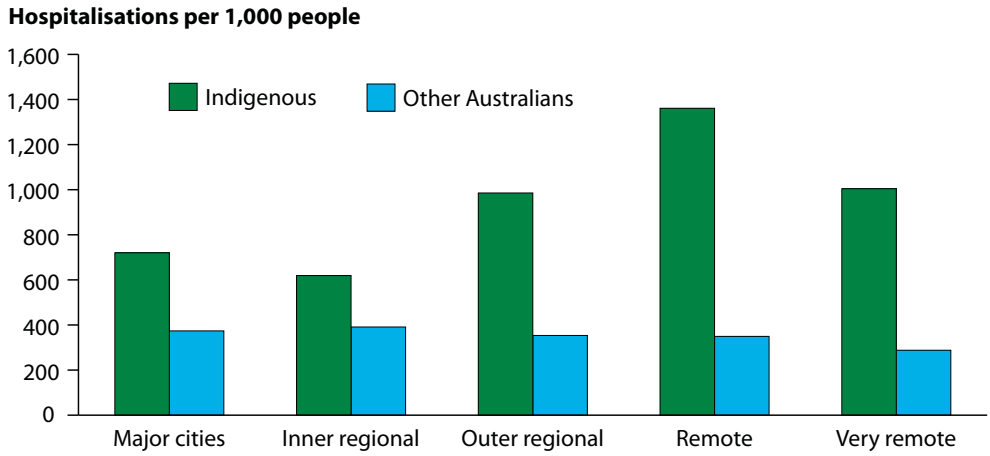
Hospitalisations

The most recent data from the AIHW National Hospital Morbidity Database (see Chapter 8 'Overview of public and private hospitals') show that there is great variation in total hospitalisation rates (including dialysis) by remoteness for the Indigenous population. Between July 2010 and June 2012, after adjusting for differences in Indigenous under-identification in hospital separations data (AIHW 2013), the highest hospitalisation rates for Indigenous Australians were for those living in *Remote* areas, followed by those living in *Very remote* areas and *Outer regional* areas (they may have been hospitalised in *Major cities*, but live in these areas) (Figure 7.15). The rates of hospitalisation for Indigenous Australians living in *Remote* areas were 1.9 as high as for Indigenous Australians living in *Major cities*.

There is much less variation by remoteness for hospitalisation rates for non-Indigenous Australians, and the pattern is different with the lowest rates recorded in *Very remote* and *Remote* areas.

Analyses of hospitalisation rates by principal diagnoses suggest that there are regional differences in the most common conditions for which Indigenous Australians are hospitalised. For example, Indigenous Australians in *Remote* and *Very remote* areas have higher rates of hospitalisation for injuries, infectious diseases, dialysis, respiratory illnesses, circulatory conditions, and skin-related conditions compared with Indigenous Australians living in *Major cities*. Hospitalisation rates are lower for Indigenous Australians in *Remote* and *Very remote* areas for mental and behavioural disorders, cancer, diseases of the nervous system, and congenital anomalies, compared with Indigenous Australians living in *Major cities*.

Figure 7.15



Source: AIHW analysis of National Hospital Morbidity Database.

Adjusted age-standardised hospitalisation rates by Indigenous status and remoteness, July 2010–June 2012

Hospitalisations for potentially preventable conditions

While total hospitalisation rates provide information on service use and are thus a measure of met need for services, a subset of hospitalisations provide an indirect indicator of the lack of access to, or use of, primary care services. Admissions for potentially preventable conditions reflect hospitalisations that might have been prevented through the timely and appropriate provision and use of primary care or other non-hospital services (Li et al. 2009). It is important to note that hospitalisations for potentially preventable conditions are not a direct measure of the effectiveness of primary health care; however, comparisons of this indicator between population groups and geographic areas provide useful information for improvements in factors such as prevention or treatment of conditions.

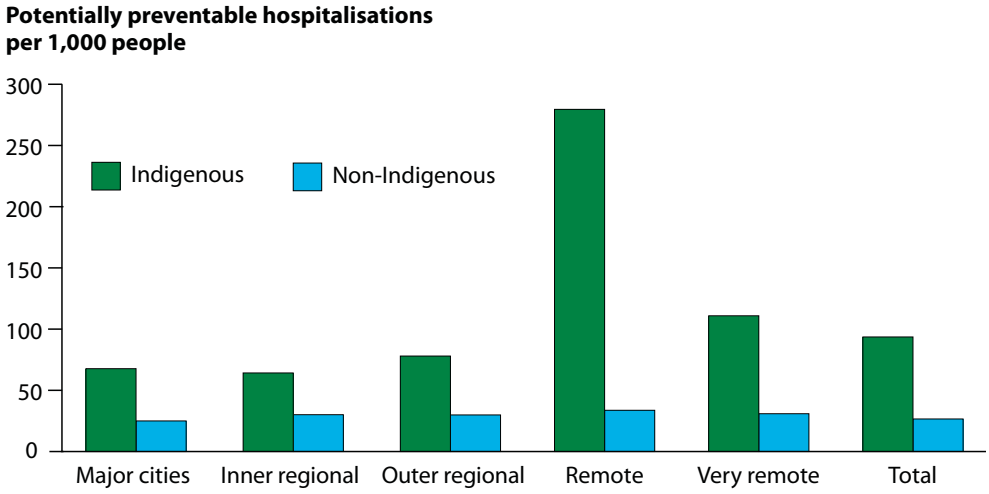
Hospitalisations for potentially preventable conditions include hospitalisations for vaccine-preventable diseases (such as influenza and pneumonia), those for chronic conditions (such as asthma, congestive heart failure and diabetes), and those for acute conditions (such as dehydration and gastroenteritis).

Data from the AIHW National Hospital Morbidity Database show that between July 2010 and June 2012 there were 81,516 hospitalisations for potentially preventable conditions for Indigenous Australians, which equates to 11.7% of all Indigenous hospitalisations. This percentage is 1.6 times that of non-Indigenous Australians (7.2%).

The highest proportion of hospitalisations for potentially preventable conditions for Indigenous Australians was in *Major cities* (23.9%), followed by *Remote* areas (22.6%). The highest proportion of hospitalisations for potentially preventable conditions was also in *Major cities* for non-Indigenous Australians, although the proportion was much higher (65.3%).

Figure 7.16 demonstrates that, overall, the age-standardised hospitalisation rate for potentially preventable conditions is 3.5 times as high for Indigenous Australians as non-Indigenous Australians. The rates vary considerably for the Indigenous population by remoteness, with much higher rates for *Remote* and *Very remote* areas. There is less variation for the non-Indigenous population, but the highest rates are still found in *Remote* areas.

Figure 7.16



Note: These rates are calculated using the 2011 Estimated Resident Population (ERP) by remoteness, and thus differ from previously published hospitalisation rates using the 2006 ERP by remoteness applied to population projections from the 2006 Census of Population and Housing.

Source: AIHW analysis of National Hospital Morbidity Database.

Age-standardised hospitalisation rates for potentially preventable conditions by Indigenous status and remoteness, July 2010–June 2012

For the Indigenous population, the likelihood of a potentially preventable hospitalisation is 4.3 times as high for those in *Remote* areas compared with those in *Major cities*. For the non-Indigenous population, the highest rate is only 1.4 times as high (for those in *Remote* areas compared with those in *Major cities*). Therefore, it appears that remoteness has a stronger impact for the Indigenous population than for the non-Indigenous population, although some of the effect may be due to under-identification of Indigenous status in hospitalisation data in *Major cities*.

The results of an additional statistical analysis by AIHW showed that the odds that a hospitalisation was potentially preventable was 1.5 times as high for Indigenous Australians compared with non-Indigenous Australians (even after controlling for the age, sex, and remoteness of the person who was hospitalised). Indigenous status therefore appears to have a larger effect than remoteness on whether a hospitalisation was for a potentially preventable condition.

What's missing from the picture?

One of the difficulties in examining whether the patterns of Indigenous and non-Indigenous Australians' health behaviours/outcomes by remoteness status are similar is a lack of comparable data. Data on health-related behaviours/risk factors and the prevalence of particular conditions are collected through national surveys, but some questions differ for the populations, the data are not reported by detailed remoteness categories, or results are reported for different age groups.

The AIHW is working on comprehensive analyses to estimate the impact of remoteness on gaps between the Indigenous and non-Indigenous populations in terms of disability prevalence, disability service use, and reasons for hospitalisation. We will also be examining differences within remoteness categories, as not all *Remote* or *Very remote* areas are the same.

Where do I go for more information?

More information on the gap in health status between Indigenous and non-Indigenous Australians is available at www.aihw.gov.au/indigenous-observatory where recent publications are available for free download.

Information on the quality of Indigenous identification in hospitalisation data can be found in the following AIHW report: *Indigenous identification in hospital separations data: quality report*.

References

ABS (Australian Bureau of Statistics) 2013a. Australian Aboriginal and Torres Strait Islander Health Survey: first results, Australia, 2012–13. ABS cat. no. 4727.0.55.001. Canberra: ABS.

ABS 2013b. Patient experiences in Australia: summary of findings, 2012–13. ABS cat. no. 4839.0. Canberra: ABS.

ABS. 2013c. Deaths, Australia, 2012. ABS cat. no. 3302.0. Canberra: ABS.

AHMAC (Australian Health Ministers' Advisory Council) 2012. Aboriginal and Torres Strait Islander Health Performance Framework 2012 Report. Canberra: AHMAC.

AIHW (Australian Institute of Health and Welfare) 2011. The health and welfare of Australia's Aboriginal and Torres Strait Islander people: an overview. Cat. no. IHW 42. Canberra: AIHW.

AIHW 2012. Australia's health 2012. Cat. no. AUS 156. Canberra: AIHW.

AIHW 2013. Indigenous identification in hospital separations data—quality report. Cat. no. IHW 90. Canberra: AIHW.

AIHW forthcoming. Indigenous people's access to health care relative to need in Australia: a geospatial index. Canberra: AIHW.

AIHW: Henley G & Harrison JE 2013. Injury of Aboriginal and Torres Strait Islander people due to transport, 2005–06 to 2009–10. Injury research and statistics series no. 85. Cat. no. INJCAT 161. Canberra: AIHW.

Bramley D, Hebert P, Jackson R & Chassin M 2004. Indigenous disparities in disease-specific mortality, a cross-country comparison: New Zealand, Australia, Canada, and the United States. The New Zealand Medical Journal 117:1207.

COAG (Council of Australian Governments) Reform Council 2013. Healthcare 2011–12: comparing outcomes by remoteness. Supplement to the report to the Council of Australian Governments. Sydney: COAG Reform Council.

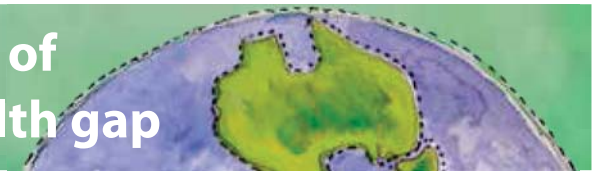
Freemantle J, Officer K, McAullay D & Anderson I 2007. Australian Indigenous health—within an international context. Darwin: Cooperative Research Centre for Aboriginal Health.

Harrison M, Lee A, Findlay M, Nicholls R, Leonard D & Martin C 2010. The increasing cost of healthy food. Australian and New Zealand Journal of Public Health 34:179–86.

Humphreys J & Wakerman J 2008. Primary health care in rural and remote Australia: achieving equity of access and outcomes through national reform: a discussion paper. Canberra: National Health and Hospitals Reform Commission.

Li SQ, Gray NJ, Guthridge S La & Pircher SBLM 2009. Avoidable hospitalisation in Aboriginal and non-Aboriginal people in the Northern Territory. Medical Journal of Australia 2009 190(10):532–36.

7.8 The size and causes of the Indigenous health gap



Indigenous Australians generally experience worse health than non-Indigenous Australians. While this health gap and its likely causes have been well documented, less progress has been made in measuring the effect of particular causes on the size of the gap. There are various statistical techniques that can be used to determine the relative contributions of various influences to the health gap, the results of which are discussed in this article. Before presenting the results, however, it is worthwhile reviewing how large the gap is, and the factors that have been put forward as the main causes.

How large is the gap?

The health gap between Indigenous and non-Indigenous Australians is best illustrated by differences in life expectancy:

- For females, Indigenous life expectancy at birth in 2010–2012 was 73.7 years, compared with 83.1 years for non-Indigenous females, a gap of 9.5 years.
- The difference was slightly greater for males, with Indigenous life expectancy estimated to be 69.1 years compared with 79.7 years for non-Indigenous males, a gap of 10.6 years.

These differences in health start at birth and continue throughout life:

- Babies born to Indigenous mothers are more likely to be underweight than babies born to non-Indigenous mothers.
- Indigenous children die at more than twice the rate of non-Indigenous children. Between 2007 and 2011, 212 out of every 100,000 Indigenous children aged 0–4 died compared with 95 out of every 100,000 non-Indigenous children.

Indigenous adults of all ages also died at higher rates than non-Indigenous Australians:

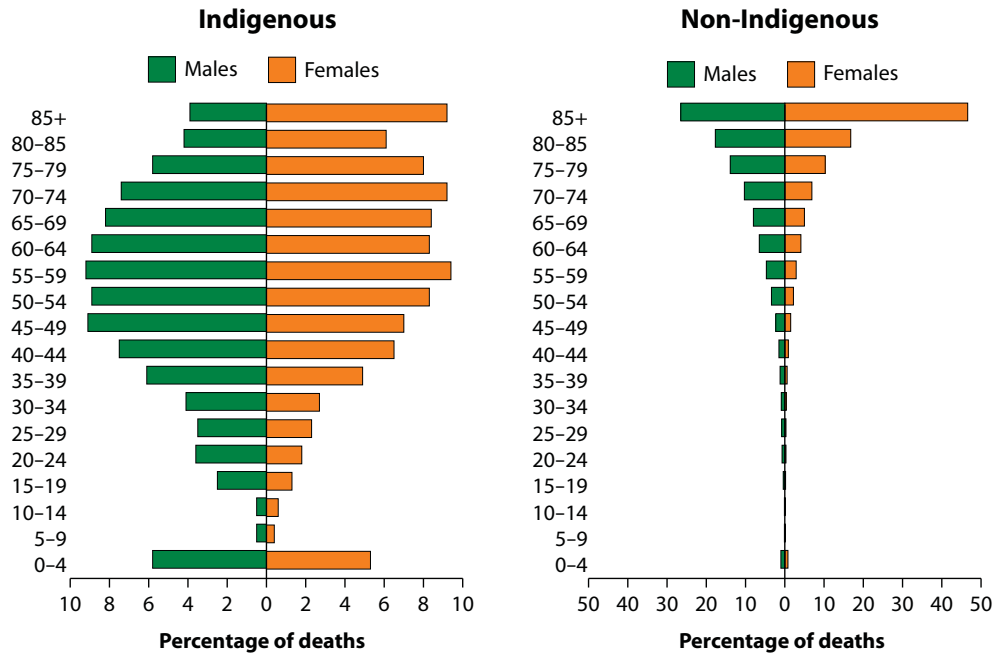
- The difference was greatest in the 35–44 year age group, where Indigenous people died at almost 5 times the rate of non-Indigenous people.
- Among non-Indigenous Australians, 81% of deaths occur after the age of 65, while only 35% of Indigenous deaths occur after that age (Figure 7.17; see also Chapter 7 'Indigenous life expectancy and death rates').

What causes the gap?

Chronic disease

Chronic diseases occur more often and at a much younger age among Indigenous Australians compared with non-Indigenous Australians (see Chapter 7 'How healthy are Indigenous Australians?' and Chapter 4 'Chronic diseases—Australia's biggest health challenge').

Figure 7.17



Note: Indigenous data for Vic, Tas and ACT were of insufficient quality for the reporting period.

Age distribution of proportion of deaths, by age and Indigenous status, NSW, Qld, SA, WA and NT, 2007–2011

Some researchers have attributed about two-thirds of the Indigenous–non-Indigenous health gap to chronic diseases such as cardiovascular disease, diabetes, mental disorders and chronic lung disease (Vos et al. 2007a). The main causes of deaths among Indigenous Australians in the 2007–2011 period were:

- circulatory disease (26%)
- cancer (19%)
- external causes (including suicide and transport accidents) (15%)
- endocrine, metabolic and nutritional disorders (including diabetes) (9%)
- respiratory diseases (8%).

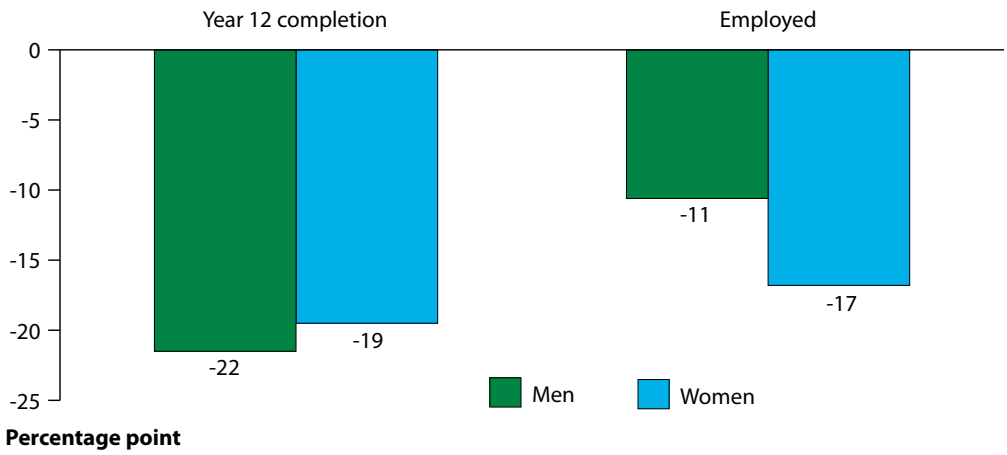
Behavioural risk factors and social determinants

Indigenous Australians have been disadvantaged across many areas of life which continue to affect their health today. Disadvantages such as poor education, unemployment, low income, discrimination and poor quality housing are often referred to as the 'social determinants of health'. Social determinants can affect health outcomes both directly and indirectly. For example, a direct effect might be where a person on a low income is not able to afford, and therefore benefit from, health services with high out-of-pocket costs. Indirectly, social factors may increase a person's likelihood of engaging in risky health behaviours such as smoking and/or excessive alcohol consumption (Thomas et al. 2008).

AIHW analysis of the 2008 National Aboriginal and Torres Strait Islander Social Survey (NATSISS) and the 2004–05 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS) showed that:

- people who had completed Year 12 were significantly less likely to smoke than those who had not completed Year 12 (22 percentage points difference for males and 19 for females)
- people who were employed were also less likely to smoke than those who weren't (11 percentage points difference for males and 17 for females) (Figure 7.18)
- Year 12 completion was associated with lower probability of risky alcohol consumption and sedentary lifestyles.

Figure 7.18



Source: AIHW analysis of 2008 NATSISS (unpublished).

Impact of social determinants on smoking rates, Indigenous Australians aged 20–64

(See Chapter 7 'Social determinants of Indigenous health', Chapter 7 'Health behaviours of Indigenous Australians', and Chapter 7 'How healthy are Indigenous Australians? for more information.)

Access to health services

Poorer access to timely and effective health services is another factor which contributes to the health gap. Reasons commonly given by Indigenous Australians for not being able to access health care include waiting times being too long, care not available at the time requested, lack of services in the area, transport and distance issues, lack of affordable services, and services not culturally appropriate.

Social determinants can restrict an individual's ability to access health services. For example, inadequate formal education can limit peoples' knowledge of their own health needs and their ability to navigate through the health system. Cost is a commonly reported barrier to accessing health services by Indigenous Australians (AHMAC 2012), and low levels of income can discourage people from seeking medical care and paying for ongoing medical costs (Alexander et al. 2003). Analysis of the 2004–05 NATSIHS shows that Indigenous Australians in the lowest income quintiles were less likely than those in the highest income quintiles to visit a doctor or dentist in the last 2 weeks. A similar pattern was found for labour force status, education and housing tenure (AHMAC 2012).

Poorer access to, or use of, non-hospital health care services may underlie relatively high rates of potentially preventable hospitalisations for Indigenous Australians (hospitalisations that could have been prevented by access to appropriate non-hospital health services). During 2010–2012, Indigenous Australians were 3.5 times as likely to have a potentially preventable hospitalisation as non-Indigenous Australians (see Chapter 7 'Remoteness and the health of Indigenous Australians').

Indigenous Australians are also less likely to have a procedure recorded during a hospital episode than other Australians. In the 2 years to June 2012, only 60% of Indigenous hospitalisations were associated with a reported procedure (excluding dialysis), compared with 82% for other Australians. Analysis by principal diagnosis showed that differences in procedure rates between Indigenous and other Australians were greatest for diseases of the nervous, digestive, musculoskeletal, respiratory, and genitourinary systems (AHMAC 2012).

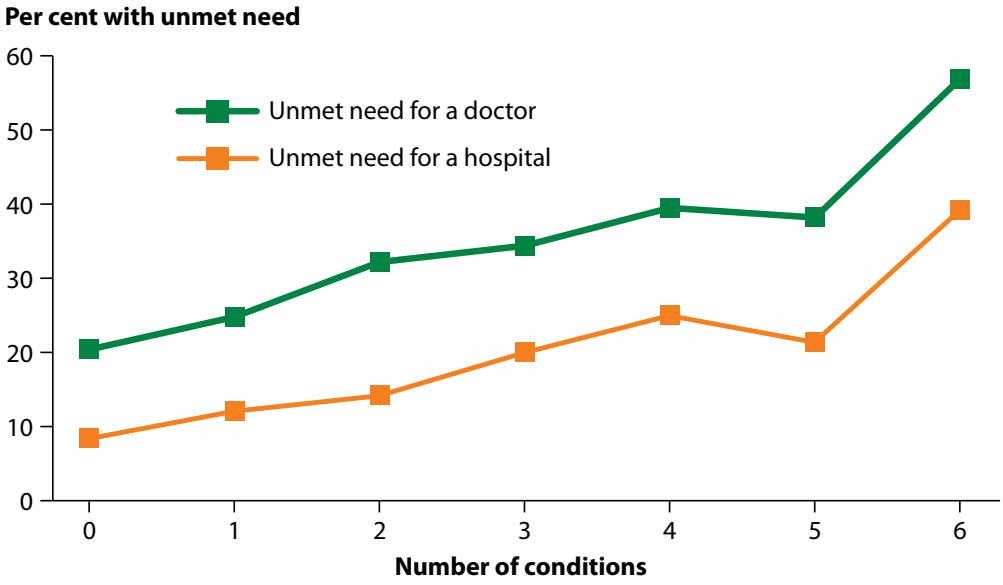
The 2004–05 NATSIHS included questions about unmet need (individuals who felt they needed to visit a health professional but didn't). Analysis of the data for Indigenous Australians showed that individuals with a greater number of health conditions had more unmet need than those with fewer health conditions (Figure 7.19). However, as this information was not available for non-Indigenous Australians, a health gap analysis could not be done.

Estimating the relative contributions to the gap

Previous analyses

Several Australian studies have attempted to measure the contribution of a range of factors to the gap. Booth and Carroll (2005) analysed the contribution of social determinants to the poorer health of Indigenous Australians, measured in terms of self-assessed health status. They concluded that between one-third and one-half of the health gap was due to social determinants. However, the contributions of health risk factors or access to health services to the health gap were not separately calculated.

Figure 7.19



Source: AIHW analysis of 2004–05 NATSIHS.

Unmet need by number of conditions, Indigenous Australians, 2004–05

DSI Consulting Pty Ltd and Benham (2009) also looked at social determinants only, and found that up to one-third of the difference in life expectancy could be attributed to differences in income, school education, employment status and overcrowded housing.

Zhao and others (2013) looked at both social determinants and health behaviours and found that socioeconomic disadvantage explained between 42% and 53% of the gap in life expectancy; however, their study was limited to the Northern Territory.

Studies of indigenous populations in other countries have found similar results. In New Zealand, the gap between Māori and non-Māori life expectancy in 2010–12 was 7.3 years (Statistics New Zealand 2013). One study (Blakely et al. 2006) found that socioeconomic factors accounted for around one-third of the mortality difference between Māori and non-Māori.

The most recent Indigenous Burden of Disease study for Australia (Vos et al. 2007b) found that 49% of the health gap could be explained by 11 behavioural risk factors:

- smoking (17%)
- obesity (16%)
- physical inactivity (12%)
- high blood cholesterol (7%)
- high blood pressure (6%)
- low fruit and vegetable intake (5%)
- alcohol (4%)
- illicit drugs (4%)
- intimate partner violence (3%)
- child sexual abuse (2%)
- unsafe sex.

Some overlap exists between the effects of these risk factors, which is why the sum of the individual risk factor estimates is not the same as the estimate for all the risk factors combined. This work is currently being updated by the AIHW with the first results expected to be published in early 2016.

Many studies have found a strong association between socioeconomic status and health, and longitudinal studies show that low socioeconomic status is a cause of poor health; however, there is still uncertainty as to the magnitude of this impact. This is particularly the case where income is used as a proxy for low socioeconomic status—studies that are able to better control for a larger number and variety of potential causal factors report less evidence of a significant causal relationship between income and health (Gunasekara et al. 2011).

AIHW analysis

Recent AIHW work has aimed to build on the work of others to quantify the relative contributions of behavioural risk factors, access to health services, and social determinants to the health gap. Currently, the AIHW is using national data from the 2004–05 NATSIHS and National Health Survey (NHS). While nearly a decade old, these data remain the best available sources of information on both health determinants and health outcomes. Summary information from the work is presented here. The work will be updated once detailed results from the 2012–13 AATSIHS become available (expected in the second half of 2014).

Measuring 'health'

For the purposes of this study, health was measured using a composite score combining scores for self-assessed health status, self-reported long-term conditions, and emotional wellbeing (see Box 7.2 for more detail). This composite measure reflects the World Health Organization's definition of health, which is 'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity' (WHO 1948).

Box 7.2

Composite health measure

A self-assessed health score forms the base of the 'good health' composite measure. The score ranges between 5 and 1, corresponding to 'excellent', 'very good', 'good', 'fair' and 'poor'.

A morbidity score (developed for use with hospital data) is based on the influential and widely used Charlson Index, and includes 29 conditions of the circulatory, respiratory, nervous, endocrine, urinary and musculoskeletal systems, as well as cancer. All conditions are given a weight of 1 and subtracted from the health score.

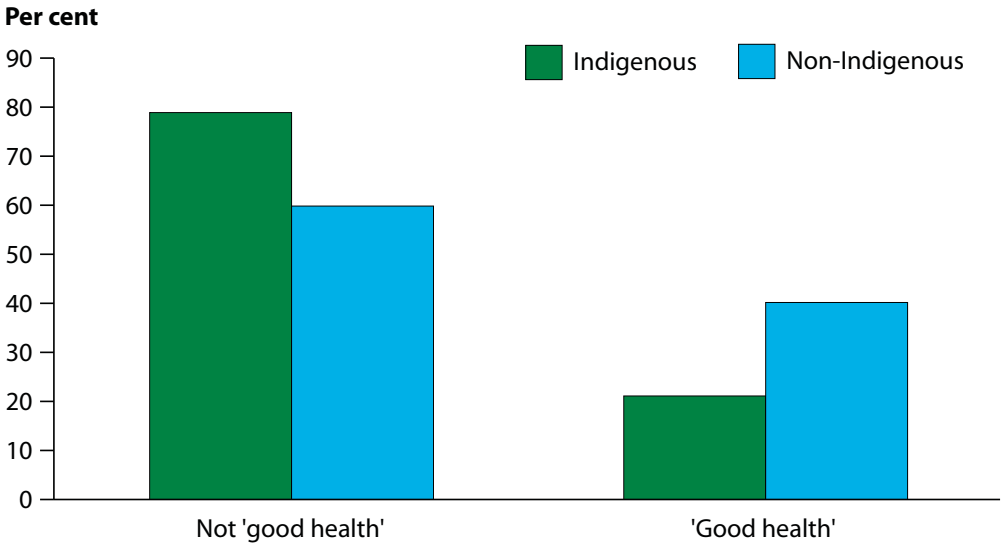
Emotional distress is quantified as the sum of 5 individual Kessler-scores based on how often respondents had the following thoughts in the last 4 weeks: that everything is an effort; nervous; without hope; restless or jumpy; or so sad that nothing could cheer them up. There are 5 response options for each thought, reflecting how often each feeling was experienced over the 4 weeks, ranging from none of the time to all of the time. The resulting emotional distress score ranged from 0 to 20.

In order to combine the emotional distress score with self-assessed health and morbidity, it needed to be transformed to give similar weighting to both the physical and psychological dimensions of health and to allow individuals with lower levels of emotional distress to increase their health measure. A value of 2 is subtracted from the original 0–20 emotional distress score, and this figure is divided by 2. The resulting emotional distress score is subtracted from the health score.

'Good health' was defined as having a combined score of self-assessed health, morbidity and emotional distress of 3 or more.

Using this composite health measure, one-fifth (21%) of Indigenous Australians were estimated to be in 'good health', compared with two-fifths (40%) of non-Indigenous Australians (Figure 7.20). Conversely, about four-fifths of Indigenous Australians and three-fifths of non-Indigenous Australians were estimated to be in 'not good health'.

Figure 7.20



Source: AIHW analysis of 2004–05 NATSIHS.

Distribution of composite health measure by Indigenous status

What are the causes of the health gap?

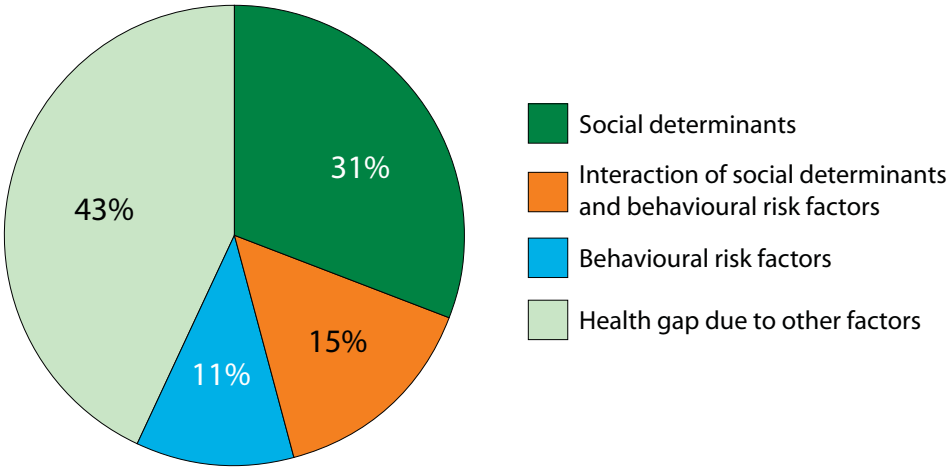
A statistical model was developed to separately estimate the impact of demographic factors, social determinants and behavioural risk factors on the health gap, or in this model, the difference in probability of good health, in percentage points.

The first step was to estimate the impact of key demographic variables on the size of the health gap. This step adjusted the baseline measure for population differences such as age, which might otherwise misrepresent the size of the health gap (as younger populations tend to be healthier). Sex, remoteness and marital status were also adjusted for. The overall result was a reduction in the baseline gap to 15.8 percentage points (the original gap being 19 percentage points, the difference in the proportion of non-Indigenous and Indigenous Australians experiencing 'good health'—40% and 21% respectively).

The core analysis suggested that social determinants explained a larger proportion of the health gap than did behavioural risk factors.

- Individually, social determinants were estimated to be responsible for nearly one-third (31%) of the health gap compared with 11% for behavioural risk factors.
- Interactions between social determinants and behaviours risk factors were estimated to explain an additional 15% of the health gap.
- Together, the factors explained over half (57%) of the gap (Figure 7.21).

Figure 7.21



Source: AIHW analysis of 2004–05 NATSIHS.

Proportion of the health gap explained

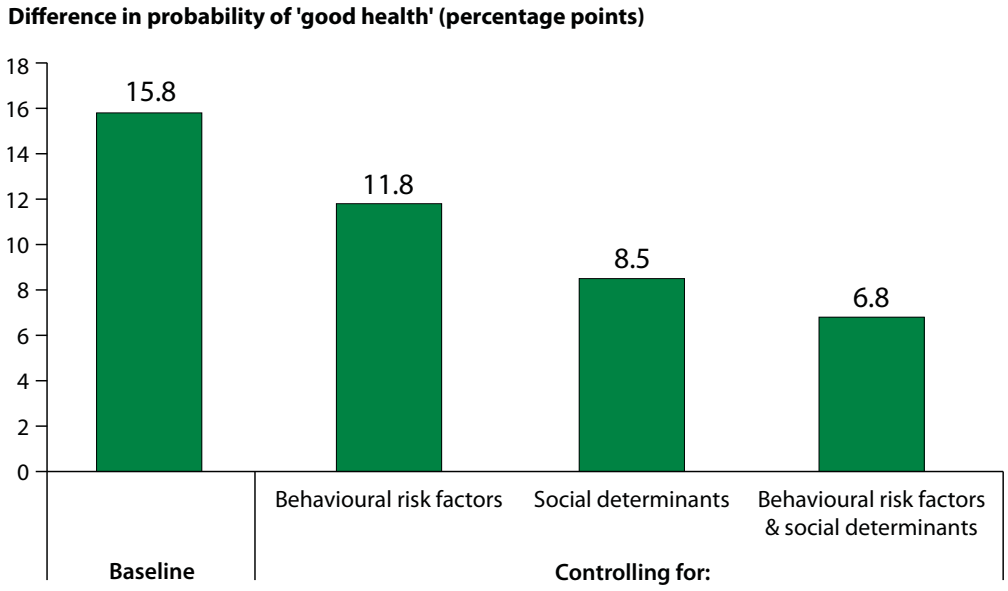
Detailed analysis was undertaken to look at the relative contributions of individual variables within the model. In terms of social determinants, household income, highest level of school, and employment status had the largest estimated impact on the health gap. However, there were significant associations between these individual variables. Smoking status, body mass index, and binge drinking were the most important behavioural risk factors contributing to the health gap.

Another way to look at the impact of social determinants and behavioural risk factors on the health gap is to look at reductions in the size of the health gap after controlling for these factors.

- The baseline health gap, after adjusting for age, sex, remoteness and marital status, was 15.8 percentage points.
- The health gap decreased to 11.8 percentage points when behavioural risk factors were controlled for.
- This decreased even further to 8.5 percentage points when social determinants were added.
- The health gap decreased to 6.8 percentage points after adding interactions between social determinants and behavioural risk factors (Figure 7.22).

Overall, the results highlight the degree of overlap and interaction between social determinants and behavioural risk factors in their impact on the health gap.

Figure 7.22



Source: AIHW analysis of 2004–05 NATSIHS.

Sequential impact of behavioural risk factors and social determinants on the size of the health gap

What is missing from the picture?

It is likely that a lack of access to health services explains a significant proportion of the health gap. As discussed in this article and others in *Australia's health 2014*, many Indigenous Australians experience problems accessing timely and appropriate health services—due in part to a lack of accessible, affordable, or culturally appropriate services. The evidence suggests a complex relationship between health service access, social disadvantage, health behaviours, and health outcomes.

The AIHW is developing an area-based index of access to GPs relative to needs (see Chapter 7 'Remoteness and the health of Indigenous Australians'); however, providing a full picture on the level of access that Indigenous Australians have to health services remains notoriously difficult. Even where there are service-level data on frequency of visits, the extent of overutilisation or underutilisation is often unknown. Survey data can be more useful than service data in that they provide information on the wider population, rather than only those accessing services. (For more information, see Chapter 7 'Indigenous Australians' access to health services', and Chapter 8, which looks at the major types of health services available in Australia.)

Where do I go for more information?

More information on the gap in health status between Indigenous and non-Indigenous Australians is available at www.aihw.gov.au/indigenous-observatory.

References

ABS (Australian Bureau of Statistics) 2013. Life tables for Aboriginal and Torres Strait Islander Australians 2010–2012. ABS cat. no. 3302.0.55.003. Canberra: ABS.

AHMAC (Australian Health Ministers' Advisory Council) 2012. Aboriginal and Torres Strait Islander Health Performance Framework 2012 Report. Canberra: AHMAC.

AIHW (Australian Institute of Health and Welfare) 2011. Contribution of chronic disease to the gap in adult mortality between Aboriginal and Torres Strait Islander and other Australians. Cat. no. IHW 48. Canberra: AIHW.

AIHW 2013. Aboriginal and Torres Strait Islander Health Performance Framework 2012: detailed analyses. Cat. no. IHW 94. Canberra: AIHW.

Alexander GC, Casalino LP & Meltzer DO 2003. Patient-physician communication about out-of-pocket costs. Journal of the American Medical Association 290(7):953–8.

Blakely T, Fawcett J, Hunt D, & Wilson N 2006. What is the contribution of smoking and socioeconomic position to ethnic inequalities in mortality in New Zealand? Lancet 368:44–52.

Booth A & Carroll N 2005. The health status of Indigenous and non-Indigenous Australians. Centre for Economic Policy Research Discussion Paper no. 486. Canberra: Australian National University.

Cade J, Upmeier H, Clavert C & Greenwood D 1999. Costs of a healthy diet: analysis from the UK women's cohort study. Public Health Nutrition 2(4):505–512.

DSI Consulting Pty Ltd & Benham D 2009. An investigation of the effect of socio-economic factors on the Indigenous life expectancy gap. Canberra: DSI Consulting Pty Ltd.

Gunasekara I, Carter K & Blakely T 2011. Change in income and change in self-rated health: systematic review of studies using repeated measures to control for confounding bias. Social Science & Medicine 72:193–201.

Statistics New Zealand 2013. New Zealand period life tables: 2010–12. Wellington: Statistics New Zealand. Viewed 18 February 2014, <http://www.stats.govt.nz/browse_for_stats/health/life_expectancy/NZLifeTables_HOTP10-12.aspx>.

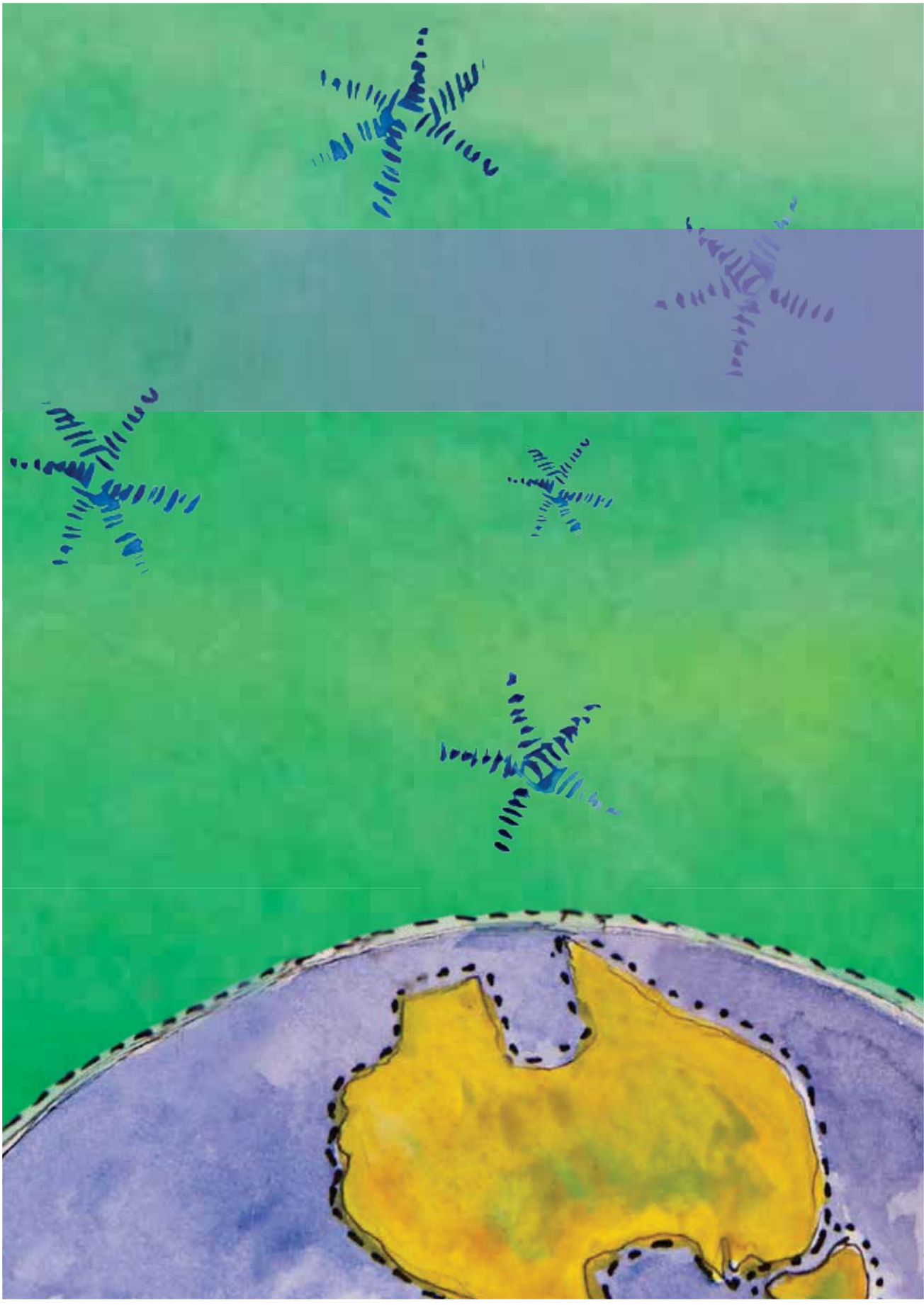
Thomas DP, Briggs V, Anderson IPS & Cunningham J 2008. The social determinants of being an Indigenous non-smoker. Australian and New Zealand Journal of Public Health 32(2):110–16.

Vos T, Barker B, Stanley L & Lopez AD 2007a. The burden of disease and injury in Aboriginal and Torres Strait Islander peoples: 2003. Brisbane: School of Population Health, University of Queensland.

Vos T, Barker B, Stanley L & Lopez AD 2007b. The burden of disease and injury in Aboriginal and Torres Strait Islander peoples: policy brief. Brisbane: School of Population Health, University of Queensland.

WHO (World Health Organization) 2003. Social determinants of health, the solid facts. 2nd edn. Geneva: WHO.

Zhao Y, Wright J, Begg S & Guthridge S 2013. Decomposing Indigenous life expectancy gap by risk factor: a life table analysis. Population Health Metrics 11:1–9.



Chapter 8

Preventing and treating ill health

8.0 Introduction

Optimal health requires a two-pronged approach: prevention and treatment. On the one hand we can seek to reduce the likelihood of a disease or disorder occurring, or at least slow down its advancement. On the other hand we need to treat people as effectively as possible when they do become ill.

Ideally, prevention or treatment programs and services should not only be effective, they should also be affordable to society and accessible, so that they reach the people who need them most. This chapter looks at the range of ways we prevent and treat ill health.

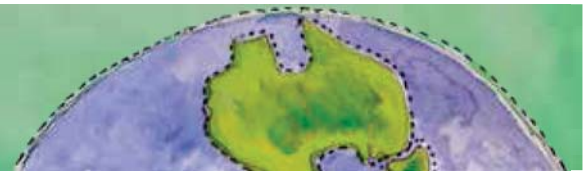
On a global scale, prevention activities can include, for example, better hygiene in the home, safer home and workplace environments, minimisation of harmful pollutants, good sanitation, and better food and water supply. In Australia, most of these measures are well developed. The current focus of prevention, as outlined in a feature article in this chapter, is on chronic diseases through modifying human behaviours that affect health, such as tobacco smoking, unhealthy diet, lack of physical activity, and harmful use of alcohol. There is also a snapshot on cancer screening programs as a major area of prevention activity in Australia.

On the treatment side, primary health care in Australia provides for most needs most of the time, and aims to provide universally available health care for patients, while ensuring accessibility for all people, from all backgrounds, in all situations. It includes a range of providers, from general practitioners and dentists, to pharmacists and allied health workers, to nurses and Aboriginal health workers. Primary health care is featured in this chapter.

Sometimes, primary health care is not enough, and the emergency, surgical, medical and other treatment services provided by public and private hospitals are needed. Information on public and private hospital services and activities are covered in this chapter, with extra attention to emergency department activity, and the role of private hospitals.

Information is also provided on safety and quality in hospitals, elective surgery waiting times, ambulance services, medications, and specialised services such as drug and alcohol treatment services and mental health services.

8.1 Prevention for a healthier future



FEATURE ARTICLE

FEATURE ARTICLE

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. In Australia, prevention as part of advocacy and action in public health has long been a core focus of health authorities (Gruszin et al. 2012).

One hundred years ago, the biggest health challenges were the prevention of infectious diseases, the improvement of maternal and child health and the creation of safer home, work and physical environments. Sanitation, communicable disease surveillance, immunisation, quarantine, workplace health and safety, safe birthing practices, promotion of breastfeeding and ensuring a better food and water supply were key prevention strategies then, and they remain so today.

More recently, changes affecting climate, water, air and other aspects of the physical environment present new risks to population health which will require new prevention strategies (McMichael et al. 2008).

The ongoing need for prevention has also been brought into sharp focus by the increase in chronic diseases, with the large associated health, social and economic burdens (see Chapter 4 'Chronic disease—Australia's biggest health challenge'). This 'overtaking' of the burden of disease by chronic disease has been driven by the decline in infectious disease mortality in combination with unfavourable trends in some health risk factors, as well as by the ageing of the population.

Many of the 14 million annual premature deaths worldwide which result from cardiovascular disease, cancer, chronic respiratory disease, diabetes and other chronic diseases could be prevented by eliminating or reducing common risk factors—mainly tobacco smoking, unhealthy diet, physical inactivity and the harmful use of alcohol (WHO 2013). In turn, these health behaviours and risk factors are affected by the social determinants of health—the conditions into which people are born, grow, live, work and age (see Chapter 1 'Health and illness'). Reduction of these modifiable risk factors and tackling unfavourable social determinants where practicable can reduce illness and the risk of premature death, with the potential for large health gains in the population. Preventing or delaying chronic disease is one of the most important priorities for the Australian health care system today.

Chronic disease is a global concern, with prevention of chronic diseases considered to be a key approach that will ensure that future generations are not at risk of premature death from these diseases (Beaglehole et al. 2011). In 1977, the World Health Organization (WHO) highlighted the importance of promoting health so that all persons had an economically productive level of health. The 1986 Ottawa Charter for Health Promotion added momentum with a goal of 'Health for all' by the year 2000 and beyond through better health promotion.

The World Health Assembly's current vision for prevention is 'a world free of the avoidable burden of noncommunicable diseases', through multisectoral collaboration and cooperation, so that populations achieve the highest attainable standards of health and productivity at every age (WHO 2013). Two important objectives of WHO's action plan include reducing modifiable disease risk factors and underlying social determinants through creating equitable health-promoting environments, and strengthening and orienting health systems through people-centred primary health care.

What is prevention?

The World Health Organization defines prevention as 'approaches and activities aimed at reducing the likelihood that a disease or disorder will affect an individual, interrupting or slowing the progress of the disorder or reducing disability' (WHO 2004).

Within this broad definition there are some more specific characterisations:

- *primary prevention*, which reduces the likelihood of developing a disease or disorder
- *secondary prevention*, which interrupts, prevents or minimises the progress of a disease or disorder at an early stage
- *tertiary prevention*, which halts the progression of damage already done.

An important part of disease prevention is health promotion. This describes activities which help individuals and communities to increase control over the determinants of their health. Health education and social marketing can be used to promote health, as can policy and structural changes such as taxation, legislation and regulation.

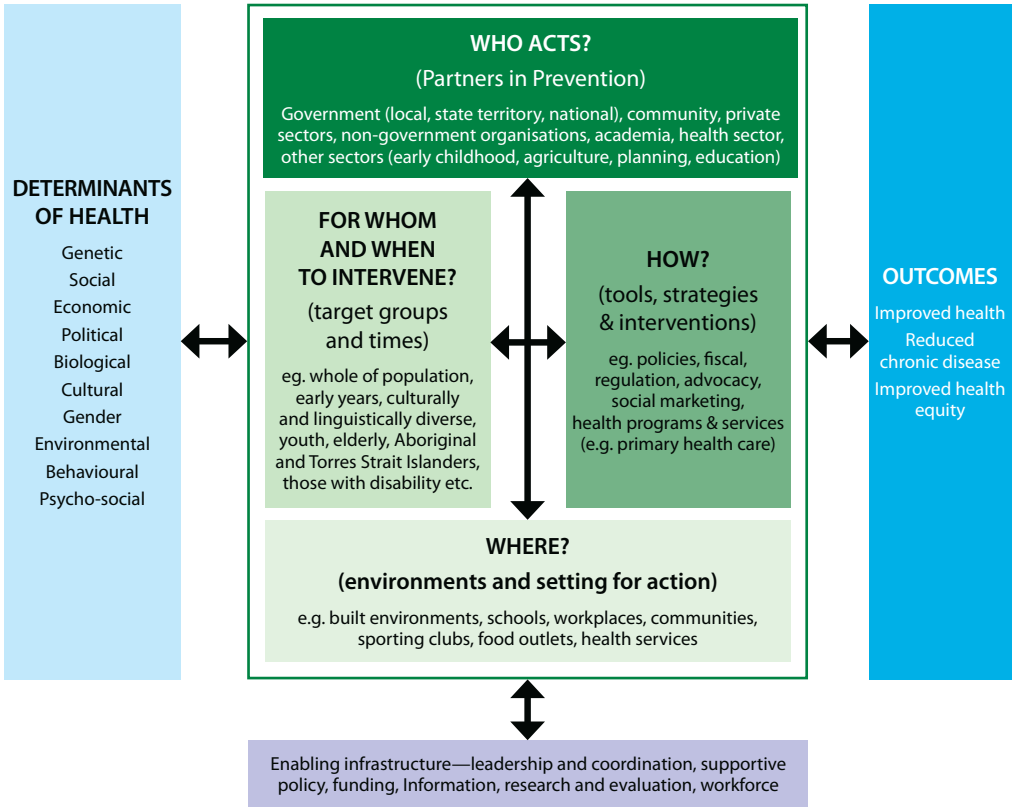
Programs that promote and protect health, and prevent illness, are undertaken by many agencies (Figure 8.1). All 3 levels of government (federal, state and local), along with non-government organisations, academia, the private sector and community groups fund and carry out prevention activities.

Other government sectors besides health—such as education, urban planning, and sport and recreation—have an important role in promoting good health. Although individuals ultimately make the decisions that affect their own health, each of these groups and sectors assist people in making healthy choices and leading healthier lives (ANPHA 2013).

Who needs to act depends largely on which area of prevention is a focus: whether it is modifying health risk factors, or preventing the progression, complications and recurrence of disease. Health promotion through public awareness campaigns and community-based programs largely target risk factor prevention. Prevention through health counselling and the effective management of disease is often undertaken by primary health care providers such as general practitioners, along with specialists and allied health care professionals (RACGP 2012) (see Chapter 8 'Primary health care in Australia').

Decisions to invest in prevention are guided by a number of considerations, including whether the intervention increases community wellbeing, whether it is costly or offers value, and how its benefits can be distributed fairly (Carter et al. 2012).

Figure 8.1



Source: ANPHA 2013.

A framework for prevention

Prevention targets different groups of people, depending on their need:

- **Universal prevention** is desirable for the entire population, or particular age groups such as early childhood, adolescence or the elderly.
- **Selective prevention** is for people with a greater than average risk of developing a disease, such as Aboriginal and Torres Strait Islander people, people from low socioeconomic status groups and refugees.
- **Indicated prevention** is for people at high risk, such as injecting drug users or prisoners.

As people have complex needs, and personal circumstance differ considerably, no single approach works for everyone.

Experience from key approaches suggests that prevention activities appear to work best with a combination of universal and targeted approaches, and with multiple strategies and interventions. Efforts to reduce smoking, for example, have relied on universal approaches incorporating: restrictions on how tobacco products can be promoted and sold; graphic health warnings on packages and in the media; increased tobacco excise; public education programs; support for smokers who are trying to quit; and selective prevention approaches that target at-risk populations such as pregnant women and Indigenous Australians.

Preventive action is undertaken in different settings, from the home to urban spaces, schools and workplaces, with each playing a role in creating healthy, sustainable communities. Effective action also requires an enabling infrastructure, involving research, information, monitoring and evaluation.

Sometimes prevention is a long-term prospect, since behavioural and structural change leading to lower rates of disease or premature death can take time. But long-term investments to address deeply rooted social factors, or issues beyond the control of individuals or specific sectors, are as important as strategies that focus on shorter-term clinical prevention and other direct services.

Prevention activities

Australia has a long history of implementing health promotion campaigns. Some well-known educational and behavioural campaigns from the past include:

- *Life. Be in it*, beginning in the mid-1970s, with the animated character 'Norm' promoting a healthy active lifestyle
- *Slip Slop Slap*, beginning in 1981, protecting against an increased risk of skin cancer
- the *Grim Reaper* campaign, beginning in 1987, to increase HIV/AIDS awareness
- the National Heart Foundation's *Tick* endorsement program, beginning in 1989, to promote healthy eating
- *Every cigarette is doing you damage*, beginning in 1997, as part of the National Tobacco Campaign to reduce smoking
- *Go for 2 & 5*, beginning in 2005, with 'Vegie-Man' encouraging increased consumption of fruit and vegetables.

Notable policy and regulatory activities have included free milk for school children, fluoridated water, polio and other mass vaccinations, fitted seat belts in motor vehicles, addition of folic acid to bread-making flour for the healthy development of babies early in pregnancy, iodised salt to prevent thyroid gland problems and tobacco plain packaging.

There are numerous population-level interventions currently operating which seek to influence health and behaviour. Selected Australian Government campaigns are directed at eye health awareness, sexually transmitted infections, illicit drugs, tobacco, alcohol, cancer screening, mental health, obesity and healthy lifestyles, immunisation, pandemic influenza and HIV/AIDS.

The Indigenous Chronic Disease Package provides funding for preventive health activities including smoking cessation and healthy lifestyle programs for Aboriginal and Torres Strait Islander individuals, families and communities.

A selection of case studies illustrating good practice and promising work can be found in the Australian National Preventive Health Agency's *State of Preventive Health 2013* report.

Spending on prevention

For the financial year 2011–12, $2.23 billion, or 1.7% of total health expenditure, went to public health activities, which include prevention, protection and promotion. This amount does not include spending in non-health sectors such as road safety, the environment, and schools. Immunisation, health promotion activities that encourage a healthy lifestyle and reduce health risk factors, and cancer screening programs, were the major areas of public health spending (AIHW 2011, 2013).

Between 2000–01 and 2010–11, government expenditure on public health activities grew at an average rate of 3.8% per year. Much of the growth resulted from implementing the human papillomavirus vaccination (HPV) program in 2007–08.

While public health expenditure estimates are subject to data quality issues that affect international comparability, comparisons suggest Australia spends less on prevention and public health services than most other Organisation for Economic Co-operation and Development (OECD) countries, ranking in the lowest third in 2010–11. New Zealand led the way, with 7% of total health expenditure, followed by Canada at 5.9% (OECD 2013).

Does prevention work?

Well-planned prevention programs have made contributions to a better quality of life and increased life expectancy. In recent decades there have been major improvements in tobacco control, road trauma and drink-driving, skin cancers, immunisation, cardiovascular disease, childhood infection diseases, and sudden infant death syndrome (SIDS) and HIV/AIDS control (National Preventative Health Taskforce 2009).

Successful prevention reduces the personal, family and community consequences of disease, injury, and disability. It allows for the better use of health system resources, producing a healthier workforce, which in turn boosts economic performance and productivity.

Reductions in smoking rates are a prevention success story in Australia. Health promotion, regulation and increased taxation have each played a role in reducing smoking rates among both males and females; for males from around 70% in the 1950s to 18% today, and for females from around 30% to 14%. Death rates from smoking-related diseases have fallen, with a time lag, from the high levels of the 1970s and 1980s—lung cancer deaths have fallen by 40%, and chronic obstructive pulmonary disease deaths by 60%.

A second notable example is SIDS death rates, which fell by almost three-quarters, from an average of 196 deaths per 100,000 live births during 1980–1990 to 52 during 1997–2002. The fall was largely due to the SIDS Reduce the risk campaign on safe sleeping for babies (d'Espaignet et al. 2008).

An epidemiological and economic analysis of a number of public health programs by the then Australian Government Department of Health and Ageing (DoHA 2003) highlighted further prevention successes. Some specific examples were:

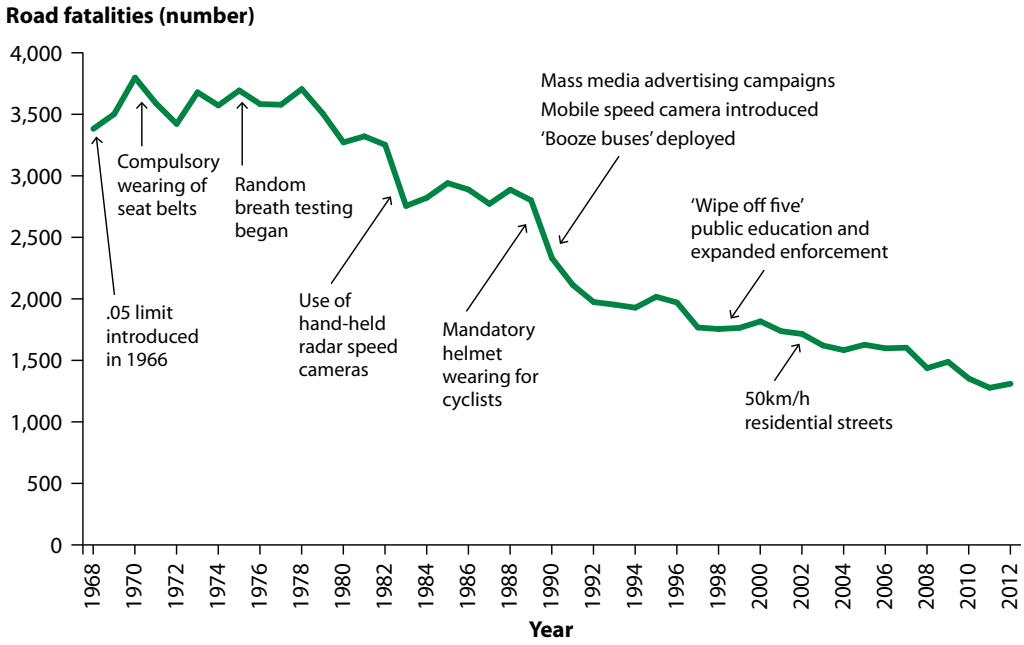
- Road safety initiatives saved 1,000 Australian lives and kept 5,000 people out of hospital every year (Figure 8.2).
- The decline in tobacco consumption attributed to health promotion campaigns had, on the most conservative estimate, net benefits of $2 billion in the 30 years between 1970 and 2000. In 1998 alone, more than 17,000 deaths were averted.
- Subsidised immunisation for measles saved an estimated 95 lives and averted 4 million cases between 1970 and 2003.
- Anti-smoking, physical activity and other programs to reduce coronary heart disease cost $810 million in the 1970s to 1990s, but created benefits worth $9.3 billion.

Finding value for money

Decision makers in health have long been interested in strategies that can reduce morbidity and mortality at a reasonable cost to the public (Tengs et al. 1995). Health promotion and disease prevention activities can be expensive, especially those directed at large population groups rather than, for example, specific target populations or people with specific risk factor profiles. There is a need for a sound business case to assess the evidence for appropriate interventions and demonstrate value for money, as well as economic evaluations of these activities. This will better inform decision-making about which programs are more likely to be successful and where they may best be targeted when considering both effectiveness and cost.

Cost-effectiveness analysis is a method which is often used to compare programs and policies on the basis of their estimated cost and potential to improve health. It is also, however, an area where the costs of implementation and the value of attributed cost savings or benefits are highly contested and often difficult to demonstrate over time. This makes the case for investment more difficult for decision makers.

Figure 8.2



Sources: National Preventative Health Taskforce 2009, BITRE 2013.

Road fatalities and preventive health action in Australia 1968–2012

One Australian study, for example, concluded that taxing nutritionally poor food and using generic drugs to target combined health risk factors were 2 actions that were cost-saving in obesity prevention, while having a high health impact (Vos et al. 2010). However, another study indicated that there was a lack of long-term evaluation to test the veracity of claims for cost-effectiveness, and that in the case of childhood obesity, further evidence on actions which could positively influence children's eating behaviours and levels of physical activity were needed to develop long-term community interventions (Crowle & Turner 2010).

Another example is an international project which examined the economics of chronic disease prevention. It used cost-effectiveness analysis to conclude that interventions aimed at tackling obesity by improving diet and increasing physical activity in areas such as health education and promotion, regulation and fiscal measures, and counselling in primary care, are all effective in improving health and longevity, and are more cost effective than treating chronic diseases once they emerge. The study also found that when multiple interventions were undertaken which targeted different age groups and determinants simultaneously, overall health gains increased, adding years of healthy life to people's health expectancy, without any loss in cost-effectiveness (Sassi 2010).

Based on current evidence, the World Health Organization has suggested a number of 'best buy' policy interventions as well as individual interventions that may assist in the prevention of chronic disease. WHO suggests that these 'best buys' be implemented in primary care settings in all countries to produce rapid results in terms of lives saved, diseases prevented and large costs avoided (WHO 2013). They include:

- protecting people from tobacco smoke and banning smoking in public places
- warning about the dangers of tobacco use
- restricting or enforcing bans on tobacco and alcohol advertising, promotion and sponsorship
- excise tax increases on tobacco and alcohol
- restricting access to retailed alcohol
- reducing salt intake and salt content of food
- replacing trans-fats in food with unsaturated fats
- promoting public awareness about diet and physical activity, including through mass media
- drug therapy and counselling to individuals who have had a heart attack or stroke and to persons with high risk of a cardiovascular event
- acetylsalicylic acid for acute myocardial infarction
- prevention of liver cancer through hepatitis B immunisation
- prevention of cervical cancer through screening, linked with timely treatment of pre-cancerous lesions.

Monitoring and evaluation

Monitoring and evaluation play a critical role in assessing the performance of disease prevention and health promotion programs, and provide the evidence that researchers, policy makers and service providers need on what works.

Successful monitoring and evaluation examines the long-term sustainability of outcomes for target populations. There is an increasing recognition of the importance of assessing activities which focus on the social determinants of health, especially among disadvantaged populations (Commission on Social Determinants of Health 2008).

Monitoring relies on available data to determine who is most affected by a health problem, and whether the situation changes following an intervention.

The Council of Australian Government indicators and benchmarks for smoking, alcohol and obesity are key monitoring tools for prevention-related health risk behaviours (COAG Reform Council 2013). The National Partnership Agreement on Preventive Health has developed a set of performance measures for states and territories.

Specific prevention activities require robust evaluation so that their success or failure can be measured and lessons can be learnt. Successful evaluation depends on determining which benefits to select, their cost and the value assigned to these benefits. Evaluation results and other information can guide future chronic disease prevention activities (Swinburn & Wood 2013). To maximise effects, an appropriately resourced capacity and method for evaluation should be developed as prevention proposals are planned, with baseline data, targets and anticipated outcomes documented before a campaign or program begins (AIHW 2009).

Government agencies have key roles in health data monitoring and the evaluation of health promotion. The 2011–13 Australian Health Survey, funded by the Australian Bureau of Statistics, the Australian Government Department of Health and the National Heart Foundation of Australia, provides valuable information. The AIHW and other reporting agencies can use results from this survey and other data sources to monitor diseases and risk factors, and evaluate preventive activities.

The future for prevention

The challenges presented by an ageing population and the prevalence of overweight and obesity, along with the chronic diseases they initiate, are fertile areas for the attention of prevention research, policy and action for the foreseeable future (see Chapter 4, 'Chronic disease—Australia's biggest health challenge', and Chapter 6 'Ageing and the health system: challenges, opportunities and adaptations'). Besides obesity, health promotion is expected to continue to target risk factors such as physical inactivity, poor nutrition, harmful alcohol use, and smoking, and will also seek to prevent injury, oral conditions, cancers and other chronic diseases.

Mental health research suggests that there is an increasing need to promote psychological wellbeing. Managing biological and reducing psychosocial risk factors will help to prevent debilitating depression and anxiety, reduce suicide risk, and head off harmful behaviours (Jorm & Reavley 2013; National Mental Health Strategy 2009).

Another issue is the potential role of preventive action in redressing health disadvantage across the social gradient. Low socioeconomic groups generally have a higher prevalence of risk factors and greater health needs, and can benefit from targeted prevention activities. Hard-to-reach population groups, whether through distance or other access barriers such as language or culture, present additional challenges which can benefit from community-level action.

Building strong partnerships with industry—food and beverage, fitness, health insurance and others—where government regulation and business interests interact, are important for effective health promotion and disease prevention.

As with other health interventions, preventive health strategies need evaluation of their appropriateness, cost and effectiveness, to help avoid future treatment costs associated with ill-health, and wasted expenditure on what may be poorly designed, ineffective prevention approaches.

Where do I go for more information?

The Australian National Preventive Health Agency's website www.anpha.gov.au is focused on this topic. On 13 May 2014, the Australian Government announced that the Agency's functions would be transferred to the Department of Health from July 2014.

Information on Australian Government disease prevention and health promotion campaigns is available at www.health.gov.au.

References

AIHW (Australian Institute of Health and Welfare) 2009. Prevention of cardiovascular disease, diabetes and chronic kidney disease: targeting risk factors. Cat. no. PHE 118. Canberra: AIHW.

AIHW 2011. Public health expenditure in Australia 2008–09. Cat. no. HWE 52. Canberra: AIHW.

AIHW 2013. Health expenditure Australia 2011–12. Cat. no. HWE 59. Canberra: AIHW.

ANPHA (Australian National Preventive Health Agency) 2013. State of preventive health 2013. Canberra: ANPHA.

Beaglehole R, Bonita R, Horton R, Adams C, Alleyne G, Asaria P et al. 2011. Priority actions for the non-communicable disease crisis. Lancet 377:1438–47.

BITRE (Bureau of Infrastructure, Transport and Regional Economics) 2013. Road deaths Australia, 2012 statistical summary. Canberra: BITRE.

Carter SM, Cribb A & Allegrante JP 2012. How to think about health promotion ethics. Public Health Reviews 34:1–24.

COAG (Council of Australian Governments) Reform Council 2013. Healthcare 2011–12: comparing performance across Australia. Sydney: COAG Reform Council.

Commission on Social Determinants of Health 2008. Closing the gap in a generation: health equity through action on the social determinants of health: Commission on Social Determinants of Health final report. Geneva: WHO.

Crowle J & E Turner 2010. Childhood obesity: an economic perspective. Productivity Commission Staff Working Paper. Melbourne: Productivity Commission.

d'Espaignet E T, Bulsara M, Wolfenden L, Byard RW & Stanley F J 2008. Trends in sudden infant death syndrome in Australia from 1980 to 2002. Forensic Science Medicine and Pathology 4:83–90.

DoHA (Department of Health and Ageing) 2003. Returns on investment in public health: an epidemiological and economic analysis prepared for the Department of Health and Ageing. Canberra: DoHA.

Gruszin S, Hetzel D & Glover J 2012. Advocacy and action in public health: lessons from Australia over the 20th century. Canberra: ANPHA.

Jorm AF & Reavley NJ 2013. Preventing mental disorders: the time is right. Medical Journal of Australia 199:527.

McMichael AJ, Friel S, Nyong A & Corvalan C 2008. Global environmental change and health: impacts, inequalities, and the health sector. British Medical Journal 336:191–4.

National Mental Health Strategy 2009. National mental health policy 2008. Canberra: Commonwealth of Australia.

National Preventative Health Taskforce 2009. Australia: the healthiest country by 2020—National Preventative Health Strategy—the roadmap for action. Canberra: Commonwealth of Australia.

OECD (Organisation for Economic Co-operation and Development) 2013. OECD statistics. Paris: OECD. Viewed 4 December 2013, <www.stats.oecd.org>.

RACGP (Royal Australian College of General Practitioners) 2012. Guidelines for preventive activities in general practice, 8th edn. East Melbourne: RACGP.

Sassi F 2010. Obesity and the economics of prevention: fit not fat. Paris: OECD Publishing.

SCRGSP (Steering Committee for the Review of Government Service Provision) 2011. National agreement performance information 2011–12: National Healthcare Agreement. Productivity Commission: Canberra.

Swinburn B & Wood A 2013. Progress on obesity prevention over 20 years in Australia and New Zealand. Obesity Reviews 14 (Supplement 2):60–8.

Tengs TO, Adams ME, Pliskin JS, Safran DG, Siegel JE, Weinstein MC et al. 1995. Five hundred life-saving interventions and their cost-effectiveness. Risk Analysis 15:369–484.

Vos T, Carter R, Barendreg J, Mihalopoulos C, Veerman L, Magnus A et al. 2010. Assessing cost-effectiveness in prevention (ACE–Prevention): final report. Melbourne: University of Queensland and Deakin University.

WHO (World Health Organization) 2004. Global forum on chronic disease prevention and control (4th, Ottawa, Canada). Geneva: WHO.

WHO 2011. Global status report on noncommunicable diseases 2010. Geneva: WHO.

WHO 2013. Global action plan for the prevention and control of noncommunicable diseases 2013–2020. Geneva: WHO.

8.2 Cancer screening in Australia

SNAPSHOT

Population-based cancer screening is an organised, systematic and integrated process of testing for signs of cancer or pre-cancerous conditions in asymptomatic (see Glossary) populations. In Australia, there are 3 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 invites women aged 50–69 to participate.

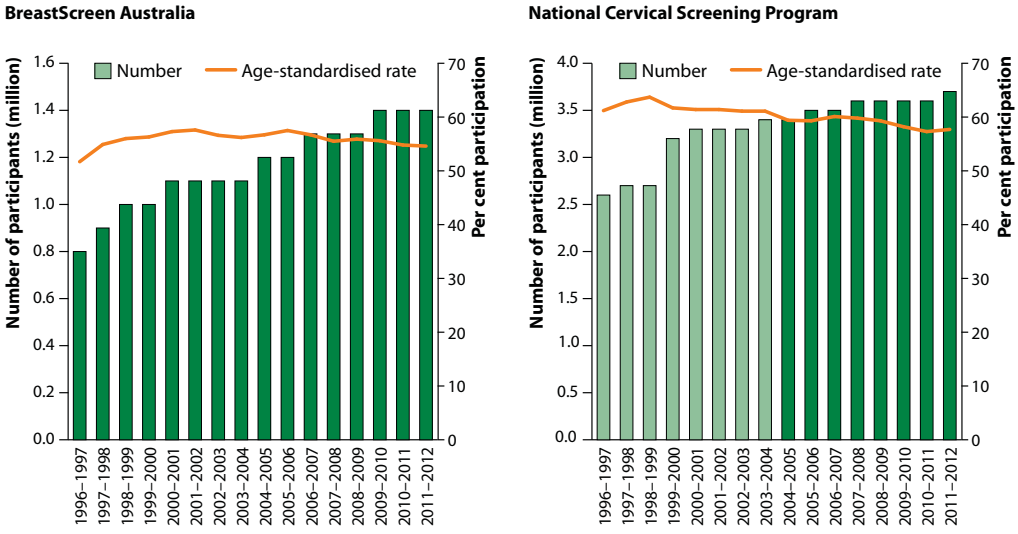
- In 2011–2012, more than 1.4 million women aged 50–69 had a screening mammogram—a participation rate of 55%. Participation rates were highest for women aged 60–64 (60%) and lowest for those aged 50–54 (49%).
- Participation rates were lower among Aboriginal and Torres Strait Islander women (38%), women living in *Very remote* areas (46%) and women who reported speaking a language other than English at home (50%).
- Between 1996–1997 and 2011–2012, the age-standardised participation rate remained steady at 55–57%, although the total number of women participating in screening increased (Figure 8.3).
- In 2011, there were 82 invasive breast cancers and 21 ductal carcinomas in situ (DCIS) (see Glossary) detected for every 10,000 women screened for the first time. The detection rate was lower among women attending a subsequent screening, with 43 invasive breast cancers and 11 DCIS per 10,000.

National Cervical Screening Program

The National Cervical Screening Program, established in 1991, targets women aged 20–69 for a 2-yearly Papanicolau smear, or 'Pap test' (see Glossary).

- In 2011–2012, more than 3.7 million women aged 20–69 had a screening Pap test—a participation rate of 57%. Participation was highest for women aged 45–49 (64%) and lowest for those aged 20–24 (43%).
- Participation was lower among women living in *Very remote* areas compared with other regions, and rose with increasing socioeconomic status—from 52% in areas of lowest socioeconomic status to 64% in areas of highest status.
- The age-standardised participation rate has decreased slightly over time, from 59% in 2004–2005 to 58% in 2011–2012, although the total number of women participating in screening increased during the same period (Figure 8.3).
- In 2011, a high-grade abnormality (pre-cancerous condition) was detected in 16,641 women aged 20–69, at a rate of 8 per 1,000 women screened. Detection presents an opportunity for treatment before possible progression to cancer.

Figure 8.3



Sources: AIHW analysis of BreastScreen Australia data; AIHW analysis of state and territory cervical cytology register data.

Participation number and age-standardised participation rate, BreastScreen Australia and National Cervical Screening Program, Australia, 1996–1997 to 2011–2012

National Bowel Cancer Screening Program

The National Bowel Cancer Screening Program (NBCSP), established in 2006, targets men and women turning 50, 55, 60 or 65 for a free faecal occult blood test (see Glossary). The program will be expanded from 2015, and once fully implemented will offer free 2-yearly screening for all Australians aged 50–74.

Of those people invited to participate in the NBCSP in 2011–12:

- 325,276 returned a completed bowel cancer screening kit for analysis—a participation rate of 35%. Participation was higher among women (37.5%) than men (32.5%).
- 22,472 (7.0%) returned a valid screening test and had a positive screening result and 72% of those (16,190) had a follow-up colonoscopy (see Glossary) recorded.
- 404 participants (1 in 32) who underwent a colonoscopy were diagnosed with a confirmed or suspected bowel cancer, and 857 (1 in 15) were diagnosed with an advanced adenoma (pre-cancerous tumour).

SNAPSHOT

What is missing from the picture?

National cancer data do not include whether a new case of cancer was identified through screening, or if cancers identified through screening are diagnosed at an earlier stage to those that present naturally.

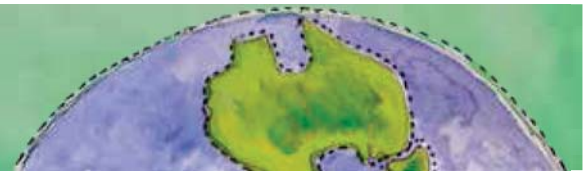
There is no national mechanism for reporting Aboriginal or Torres Strait Islander identification on pathology forms. As a result, state and territory cervical cytology (Pap test) registers are unable to report Indigenous status, so the reporting of cervical screening indicators is not possible nationally for Indigenous women. It is not known how the introduction of the national vaccination program against human papillomavirus (HPV) (see Glossary) in 2007 will affect cervical screening rates among vaccinated women.

Outcome data for the NBCSP is under-reported. The Department of Health is working on a number of steps to improve reporting of outcomes.

Where do I go for more information?

The *BreastScreen Australia monitoring report 2010–2011*, *Cervical screening in Australia 2010–2011* and *National Bowel Cancer Screening Program monitoring report: July 2011–June 2012* are available for free download.

8.3 Primary health care in Australia



FEATURE ARTICLE

FEATURE ARTICLE

Primary health care has been described by health ministers in Australia as 'the frontline of Australia's health care system, encompassing a large range of providers and services across public, private and non-government sectors' (SCoH 2013). The primary health care system sets out to provide equitable, high quality and financially sustainable services that are: universally available; delivered appropriately by a suitably skilled workforce; offered as a first point of contact with the health care system in the community near where people live; part of a long-term relationship with patients and their families; and integral in referring patients on to other health or community services (Department of Health 2011; DoHA 2009; Health Canada 2012; Institute of Medicine 1994; New Zealand Ministry of Health 2001; Starfield 2005; WHO 1978).

Health ministers have also recognised that the primary health care system 'needs to be easy for consumers to access and use, and designed towards actively supporting them to manage their health care needs and stay as healthy as possible' (SCoH 2013).

The financial and other challenges faced by the Australian health care system have led governments to reconsider the way the system is structured, which has indicated the need for an increased focus on primary health care and its central role in improving the health of the population (DoHA 2010).

This article provides a brief overview of primary health care in Australia and the extent to which it meets the objectives and challenges outlined above.

What is primary health care?

In Australia, primary health care is typically the first health service visited by patients with a health concern. It includes most health services not provided by hospitals and involves:

- a range of activities—such as health promotion, prevention, early intervention, treatment of acute conditions and management of chronic conditions
- various health professionals—such as general practitioners (GPs), dentists, nurses, Aboriginal health workers, local pharmacists and other allied health professionals
- services delivered in numerous settings— such as general practices, community health centres, allied health practices including physiotherapy and dietetic practices, and more recently via telecommunications technologies such as health advice telephone services, video consultations and remote monitoring of health metrics through electronic devices.

Funding for primary health care services comes from multiple sources, including:

- Australian Government programs such as Medicare, the Pharmaceutical Benefits Scheme (PBS), Aboriginal and Torres Strait Islander-specific health services, and preventive health and quality improvement programs
- state and territory government programs, including health and community services
- local government programs such as immunisation

- fees charged directly to patients and clients
- private health insurers and workers' compensation insurers
- non-government funding sources such as private charities focused on specific issues.

Figure 8.4 illustrates the central role of primary health care in the Australian health care system and the key health, community and aged care services with which it interacts.

Australia's primary health care service delivery system has been described as complex, fragmented and often uncoordinated, with implications for the services people receive and how they are paid for (DoHA 2009). Given this complexity, navigating through this system can be difficult for some people, particularly those with poor health, disability, lower English proficiency or other socioeconomic barriers (see Chapter 2 'Australia's health system' and AIHW 2012a, Section 7.1 'Navigating the health system').

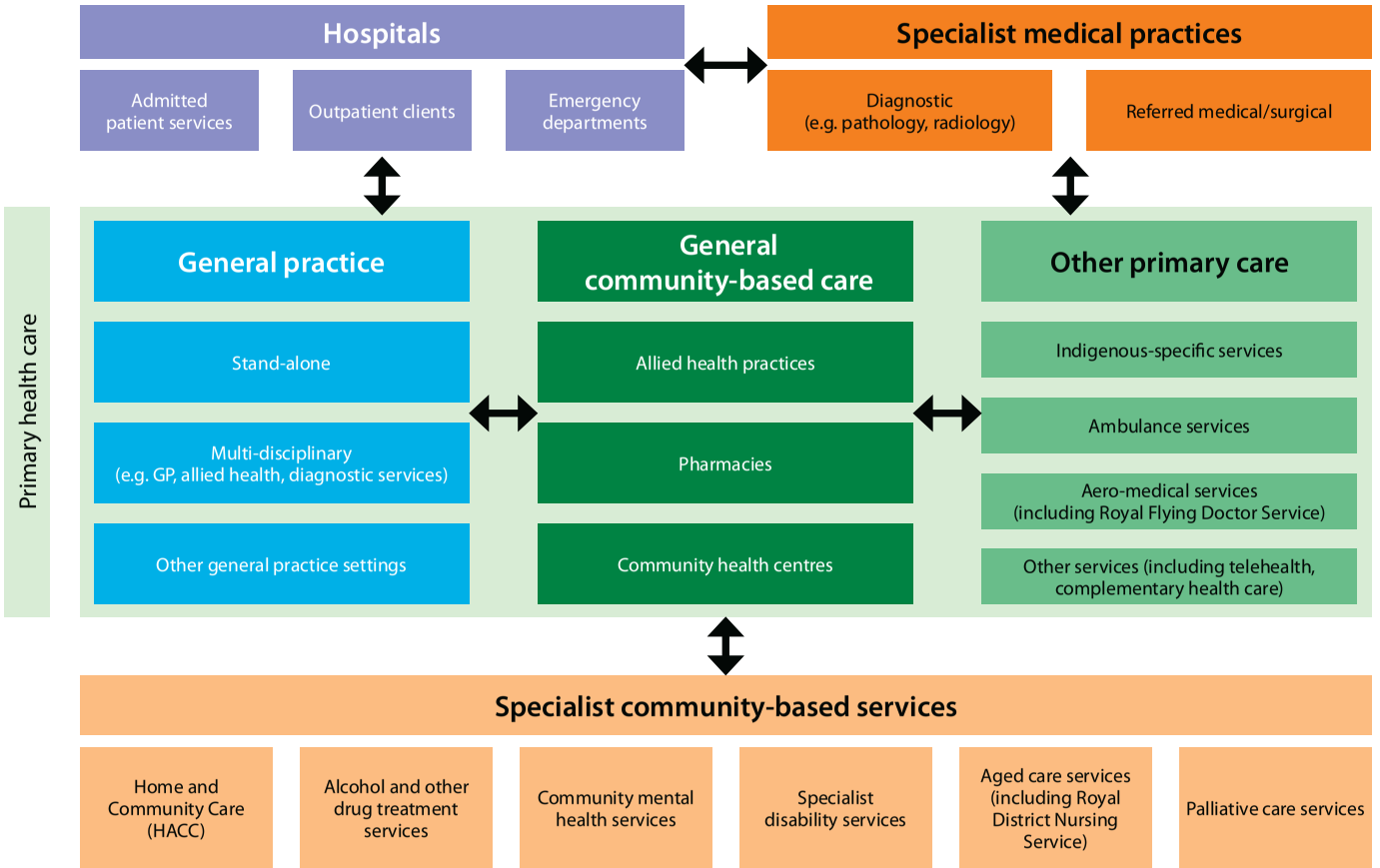
Challenges facing primary health care

The Australian health care system overall faces a number of challenges in providing effective, timely, coordinated health care now and into the future. Some of these challenges are listed below, with most covered in some detail elsewhere in this *Australia's health 2014* report, as indicated:

- an ageing population which is changing the nature of demand for health care services (see Chapter 6)
- rising levels of risk factors such as obesity and physical inactivity (see chapters 5 and 6)
- increasing prevalence of chronic disease and multiple chronic diseases (comorbidity) (see Chapter 4)
- increasing patient expectations for high quality health care and involvement in their care
- disparity in access and outcomes for people in various population groups such as those living in areas of lower socioeconomic status (SES), people living in more remote areas, and Aboriginal and Torres Strait Islander Australians (see chapters 5 and 7)
- ensuring access to an appropriate mix of skilled workforce across all Australian regions (see Chapter 2)
- an uncertain economic climate, which may influence choices of governments and individuals as to how much they spend on health (see Chapter 2).

These factors increase the importance of the health system delivering cost-effective outcomes (see Chapter 2 'How much does Australia spend on health care?'). As a result, there has been a renewed focus on the importance of primary health care and its role in delivering better health outcomes at lower cost (Australian Government 2013; DoHA 2009). This has included a range of strategies to improve access to services, for example, through increased access to after-hours primary health care services and multidisciplinary clinics where patients can access GP, allied health and diagnostic services (DoHA 2013a).

Figure 8.4



Primary health care and its interactions with the broader health care and community service sectors

There have also been structural reforms designed to better integrate and coordinate the range of organisations and service providers operating within and beyond the primary health care system. For example, Medicare Locals were established in 2011 to provide an integrated model of care at the local level (see Box 8.1) (DoHA 2010).

A strong and readily accessible primary health care system is also considered vital in reducing pressure on public hospitals through access to advice and services in the early stages of disease and a broader geographic distribution of suitably skilled health professionals compared to the concentration of specialists in urban areas (Australian Government 2013).

Box 8.1

Medicare Locals

In 2011, the Australian Government established 61 new primary health care organisations known as Medicare Locals, to plan and fund extra health services in communities across Australia and to ensure that decisions about health services could be made by local communities in line with their local needs (DoHA 2013b).

Building on the pre-existing divisions of general practice networks, key priority areas for Medicare Locals are improving access and reducing inequity, better management of chronic conditions, an increased focus on disease prevention and improving quality, safety, performance and accountability (Pearce et al. 2012).

Medicare Locals are also subject to performance monitoring and reporting requirements, including a Needs Assessment Report, which is used to inform their planning and decision-making (DoHA 2012).

In December 2013, Australia's former Chief Medical Officer, Professor John Horvath AO, was appointed to oversee a review of Medicare Locals to ensure that Commonwealth health funding is used as productively as possible (Dutton 2013). Following the release of the report in May 2014, the Australian Government announced that Medicare Locals would be replaced with a smaller number of primary health networks.

Similar challenges have been faced internationally in terms of reorienting health systems towards primary care. Also important is developing suitable primary health care information systems to yield performance information and describe the sector's achievements (see Box 8.2 for an example of information development in Canada).

In this article we present a range of available information to illustrate what we know about how Australia is meeting these primary health care objectives and challenges.

Box 8.2

Canadian primary health care information

The Canadian primary health care experience is of particular relevance to Australia given some similarities in terms of our federated systems. The Canadian primary health care information program highlights the benefits of having an overarching performance indicator framework in combination with both primary care patient experience surveying at the population level and administrative extract data from clinical care systems. It covers:

- a primary health care Electronic Medical Record (EMR) content standard
- a primary health care voluntary reporting system
- two sets of primary health care indicators (for policy makers and health system managers)
- a Canadian Survey of Experiences with Primary Health Care (CIHI 2013).

What is the scale and nature of primary health care in Australia?

How much is spent on primary health care?

Primary health care accounts for almost as much health spending as hospital services. In 2011–12, primary health care accounted for 36% (or $51 billion) of total health expenditure compared with 38% ($54 billion) for hospital services (see Chapter 2 'How much does Australia spend on health care?').

Which primary health care services are most commonly used?

In 2011–12, 84% of Australians had consulted a GP at least once in the previous 12 months (ABS 2013a). Most had multiple consultations—67% made at least 2 visits in the last 12 months, 37% made at least 4 visits and 10% made at least 12 visits (ABS 2013b).

Over the same period, 47% of Australians had visited a dentist and 21% had consulted another health professional (ABS 2013a). Of these other health professionals, people most commonly reported consulting physiotherapists or hydrotherapists (6.4%), opticians or optometrists (5.8%), chemists for advice only (5.8%) and chiropractors (4.5%).

By comparison, in the same period, 12% of the population were admitted to hospital, 8% visited a hospital outpatient clinic, 12% an emergency department and 6% a day clinic.

How many primary health care services are delivered?

The vast majority of health care services are delivered in primary health care settings. For example, in 2011–12:

	304 million out-of-hospital Medicare services were claimed, of which 123 million were for non-referred encounters with GPs (DoH 2014).	↑ **19%** from 256 million out-of-hospital services in 2007–08.
	208 million prescriptions were subsidised by the PBS and Repatriation Pharmaceutical Benefits Scheme (RPBS) (DHS 2013).	↑ **12%** from 185 million prescriptions in 2007–08.
	73 million general treatment (ancillary) services were reimbursed through private health insurance – including 9.5 million physiotherapy services, 9.6 million optical services and 30.7 million dental services (PHIAC 2013).	↑ **23%** from 59 million services in 2007–08.
	1.6 million patients were transported to public hospital emergency departments by ambulance services (ambulance, air ambulance, helicopter rescue services) (AIHW 2012b).	↑ **22%** from 1.3 million patients in 2007–08.
	2.6 million episodes of care were delivered by Aboriginal and Torres Strait Islander-specific services.	↑ **25%** from 2.1 million episodes of care in 2008–09.
	273,731 patient contacts were made with the Royal Flying Doctor Service (Royal Flying Doctor Service 2012).	↑ **4.6%** from 261,801 patient contacts in 2007–08.

In the same year (2011–12), Australian hospitals:

- treated admitted patients during 9.3 million hospitalisations
- responded to 7.8 million emergency department presentations in public hospitals
- delivered 16.9 million specialist outpatient services in public hospitals
- provided 19.3 million outpatient services relating to pharmacy, pathology, radiology and organ imaging in public hospitals (AIHW 2013b).

Why do people seek primary health care services?

There is limited information about the reasons people present for primary health care, and the health actions recommended. The Bettering the Evaluation and Care of Health (BEACH) ongoing survey of GPs shows that in 2012–13 patients presented to GPs with an average of 1.6 reasons for the visit, and that requests for prescriptions, general check-ups and test results were the most frequently recorded reasons (Britt et al. 2013a).

For every 100 GP–patient encounters, GPs provided, on average, 83 prescriptions, 37 clinical treatments, undertook 17 procedures, made 9 referrals to specialists and 5 referrals to allied health services, and placed 47 pathology test and 10 imaging test orders (Britt et al. 2013a).

What does primary health care achieve?

Evidence suggests that a strong primary health care system is associated with reduced costs and increased efficiency, lower rates of potentially preventable hospitalisations, reduced health inequities, increased patient satisfaction with care, and better health outcomes, including lower rates of potentially avoidable mortality (DoHA 2009; Macinko et al. 2003; Mosquera et al 2012; Starfield & Shi 2002). In Australia, primary health care aims to achieve these objectives through the provision of accessible and well-delivered services that are effective and appropriate. What do we know about the extent to which we achieve these objectives?

Is it accessible?

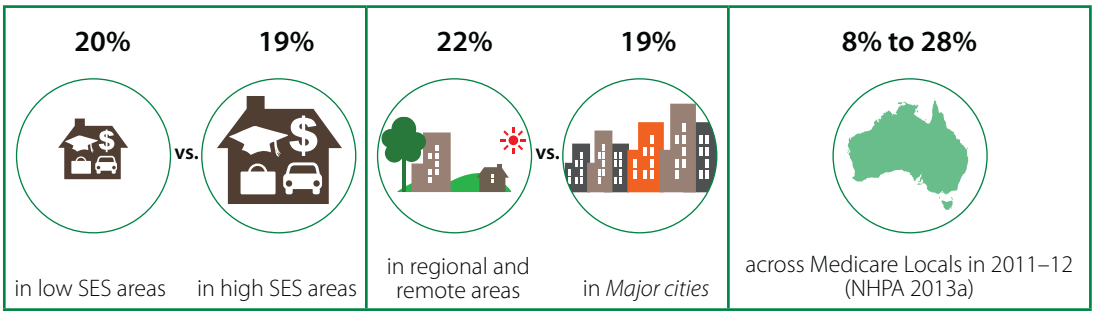
Primary health care is intended to be universally accessible regardless of an individual's health, socioeconomic or other circumstances. A primary health care system that provides access according to health need will target services to those in greatest need.

However, there is some evidence that this is not the case. Analysis of GP attendances across Medicare Locals shows that there are some metropolitan areas where healthier populations (as indicated by the proportion of adults with long-term health conditions) receive higher than average GP services and some regional areas where less healthy populations receive lower than average GP services (NHPA 2013b). It is difficult to fully gauge the meaning of these differences without examining the distribution of GPs and the extent to which a shortfall in GP services is met by alternative primary health care services such as community health and Indigenous-specific health services.

What else do we know about the accessibility of primary health care? In this section we examine this question by presenting a selection of information—on waiting times for GPs, cost barriers, bulk-billing, after-hours services, Indigenous-specific health services and workforce distribution—examining variation by population groups and over time wherever possible.

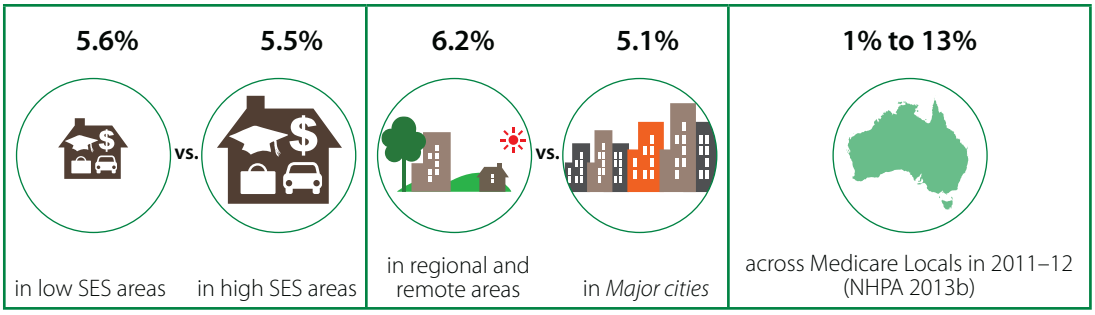
Waiting times for GPs

Most of the population (80%) believe that waiting times to see a GP are appropriate (ABS 2013b). In 2012–13, 20% of people believed they waited an unacceptable time to see a GP in the previous 12 months, a rate which fell midway between 2010–11 (15%) and 2011–12 (27%). The proportion of people waiting an unacceptable time to see a GP was:

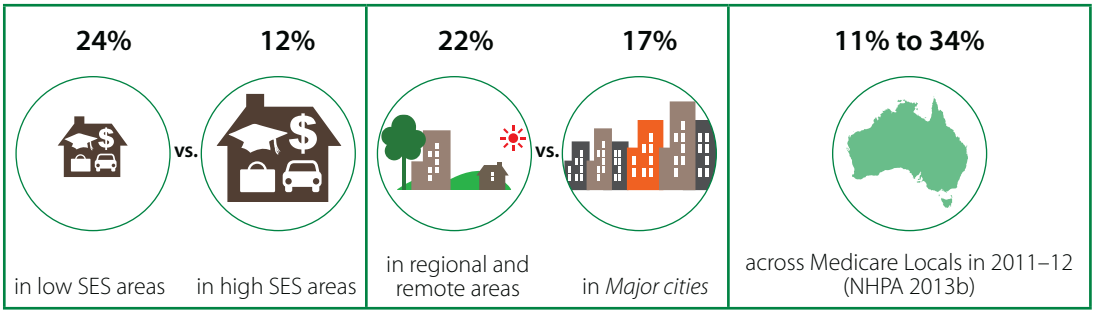


Cost barriers

Most of the population (over 94%) do not report cost as a barrier to accessing GP services (ABS 2013b). In 2012–13, 5.4% of people who needed to see a GP in the previous 12 months delayed seeing or did not see a GP at least once because of the cost, a rate which was down from 6.8% in 2011–12. The proportion of people who reported cost as a barrier to seeing a GP was:

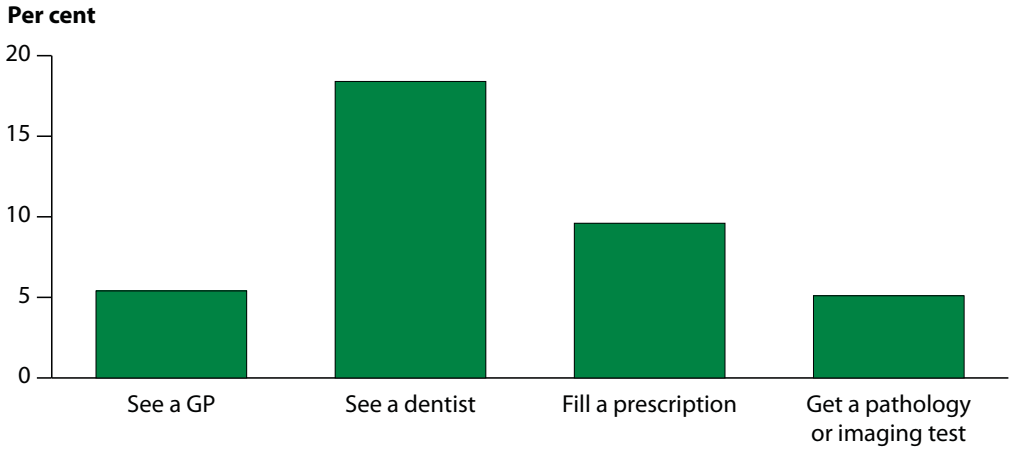


In contrast, around one-fifth of the population reports cost as a barrier to accessing dental services (ABS 2013b). In 2012–13, 18% of people delayed or did not see a dentist due to cost, a rate which was down from 21% in 2011–12. The proportion of people who reported cost as a barrier to seeing a dentist was:



In 2011–12, 9.6% of Australians reported delaying or not getting a prescription filled in the previous 12 months due to cost, and 5.1% deferred getting pathology or imaging tests. There was no statistically significant difference across remoteness areas (COAG Reform Council 2013a) (Figure 8.5).

Figure 8.5



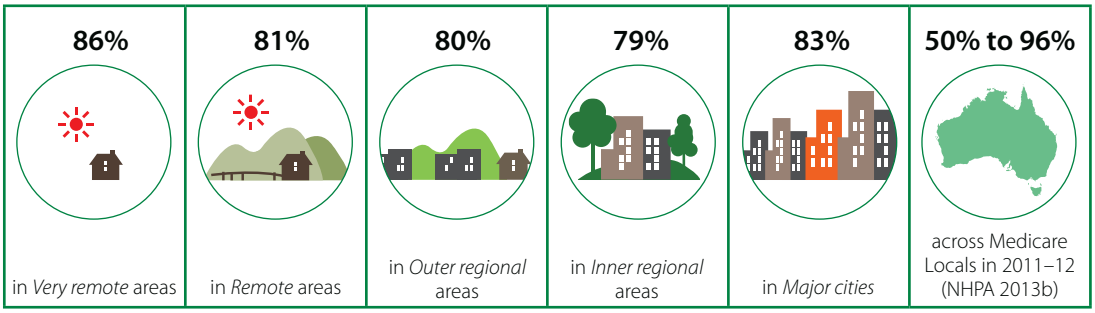
Note: Data for 'See a GP' and 'See a dentist' taken from ABS 2012–13 Patient Experience Survey. Data for 'Fill a prescription' and 'Pathology imaging test' taken from ABS 2011–12 Patient Experience Survey.

Sources: ABS 2013b; COAG Reform Council 2013a.

Proportion of people who reported cost barriers to accessing primary health care services

Bulk-billing

Access to bulk-billed GP attendances (that is, GP visits for which no co-payment is charged to the patient) is a component of Australia's Medicare system (DHS 2014a). In 2012–13, 82% of GP attendances were bulk–billed. The bulk-billing rate was the highest since 1990–91, with the lowest rate recorded in 2003–04. The rate was:



After-hours services

There has been substantial policy interest in recent years in improving access to after-hours primary health care services, particularly to reduce the pressure on public hospital emergency departments (DoHA 2010). In 2012–13, 360 after-hours GP visits per 1,000 population were reimbursed by Medicare (DHS 2013), a rate which:

- gradually increased from 230 per 1,000 population in 2005–06
- ranged from 30 to 710 visits per 1,000 population across Medicare Locals in 2011–12 (NHPA 2013a).

Some evidence links the availability of after-hours GP services to reduced rates of emergency department presentations in the same area (Buckley et al. 2010; Gafforini & Carson 2013; Hossain & Laditka 2009; O'Malley 2012). However, other factors contribute to emergency department presentations, including patient perception of urgency and/or seriousness of the problem (Masso et al. 2007), the availability of a preferred primary care physician, and distance to hospital (Gunther et al. 2013; NMML 2013). There is also a range of interpretation and data quality issues that makes it difficult to fully assess whether rates of emergency department presentations are falling and what this says about primary health care accessibility (COAG Reform Council 2013b; Nagree et al. 2013). (See Chapter 8 'Emergency departments: at the front line' and Chapter 9 'Indicators of Australia's health' for further information.)

Uptake of telephone health services also provides an indicator of access to services outside business hours. These services provide a substantial and growing volume of health advice to the public (Ng et al. 2012). Healthdirect Australia, established to provide round-the-clock online and telephone advice has responded to:

- 4.5 million calls to nurses since the inception of this service in 2007
- 450,000 calls to the after-hours GP helpline since its inception in 2011
- 130,000 calls to the Pregnancy, Birth and Baby service since its inception in 2010

(Department of Health unpublished data, February 2014).

In the first quarter of 2013 (January to March), there were over 208,000 calls to Healthdirect Australia, of which call frequencies were highest after 8pm and on weekends. The most frequent types of advice given by triage nurses were 'self care at home' (20%) and 'refer to after-hours GP helpline' (17%). Of the more than 40,000 calls received by the after-hours GP helpline, approximately 60% of patients were provided with self-care advice by telephone GPs (Healthdirect Australia 2013), thereby potentially preventing unnecessary visits to emergency departments and after-hours services.

Aboriginal and Torres Strait Islander primary health care services

In addition to mainstream services, the Australian Government directly funds about 300 organisations to deliver comprehensive primary health care and other health services to Aboriginal and Torres Strait Islander people, of which around 60% are Aboriginal and Torres Strait Islander community-controlled or managed. These services are designed to enhance access to comprehensive primary health care for Indigenous Australians through access to doctors, nurses, allied health professionals, social and emotional wellbeing staff, and medical specialists. In addition, some receive funding to provide substance use services.

In 2011–12, these services provided 2.6 million episodes of health care to about 445,000 clients. This was a 5% increase in episodes of care compared with 2010–11 and a 3% increase in the number of clients reported. About 4 in 5 clients (79% or 350,000) were Indigenous (AIHW 2013d).

Distribution of health workforce

Access to primary health care services is dependent on there being enough primary health care practitioners to meet the needs of the population. There were nearly 26,000 GPs in Australia in 2012 (AIHW 2013c), or 112 full-time equivalent (FTE) GPs per 100,000 population. The supply of GPs:

- increased slightly from 109 FTE per 100,000 in 2008
- was greater with increasing remoteness, from 108 FTE per 100,000 population in *Major cities* to 134 in *Remote/Very remote* areas.

The increasing supply of GPs by remoteness does not necessarily mean there are enough GPs to meet demand in rural areas for medical care. The supply of all medical practitioners decreased with remoteness, with non-GP specialists tending to be concentrated in urban areas. This can mean that GPs in rural areas are called upon to perform a wider scope of services than in urban areas. Other factors that influence whether there is adequate supply of medical practitioners to meet demand include health seeking behaviour, professional scopes of practice and differing health system efficiencies.

The supply of nurses was also higher in regional and remote areas compared with *Major cities* (AIHW 2013f). Nurses and their interactions with other health professionals play a vital role in these areas.

In contrast, the supply of dentists, psychologists, pharmacists and other allied health practitioners decreased with increasing remoteness (AIHW 2013a, 2014a). Efforts to remedy these shortfalls in regional and remote areas include expanding or changing the scope of practice for the existing health workforce in these areas and promoting emerging health disciplines better suited to primary health care in regional and remote areas (HWA 2011).

There has also been a shift from standalone general practices to larger practices (AIHW 2012c, 2013e, 2014b; Britt et al. 2013b) and development of multidisciplinary clinics, all of which have the potential to enhance access to care.

How well is it delivered?

In addition to being accessible, the primary health care system strives to deliver care that is effective, coordinated, safe, of high quality, and responsive to patient needs (see Chapter 9, 'Indicators of Australia's health'). In the following sections we present selected information on these aspects of primary care in Australia, including variation by population groups and trends where possible.

Effective care

It is not possible to routinely assess the broad concepts of effectiveness or appropriateness of primary health care in Australia—for example, whether care adheres to clinical guidelines—using currently available primary health care data (Runciman et al. 2012).

One commonly used indicator of the effectiveness of primary health care is 'potentially preventable hospitalisations'—hospital admissions that could potentially have been prevented through the timely and effective use of non-hospital care (AIHW 2013b; COAG Reform Council 2013b; Jorm et al. 2012; OECD 2013; Rosano et al. 2013). Higher rates of potentially preventable hospitalisations may, however, not be a direct reflection of effectiveness of primary care. They may be a result of: an increased prevalence of particular health conditions in the community; consumer choice; poorer access to the non-hospital care system; or an appropriate use of the hospital system to respond to greater need.

In 2011–12, the rate of potentially preventable hospitalisations was higher for patients from low SES areas compared with high SES areas and increased with increasing remoteness (see Chapter 9 'Indicators of Australia's health'— 'Selected potentially preventable hospitalisations' performance indicator).

Primary health care has a vital role in preventing risk factors and disease through provision of early intervention, prevention and screening programs. Another important indicator of effectiveness of primary health care, therefore, is the extent to which these activities—such as immunisation programs, early childhood development checks and cancer screening—are being delivered across all population groups. Evidence is mixed. For example:

- *Immunisation* rates for children have been steady or improving over the last decade (see Chapter 4 'Immunisations and vaccine preventable disease') but Australia still has slightly lower rates than other developed countries, ranking 31 out of 34 OECD countries in 2009 (see Chapter 9 'International comparisons'). In contrast, Australia was placed third highest among the OECD countries in terms of influenza vaccination among people aged 65 and older, when this was last assessed in 2009 (OECD 2013).

- Regular *child health checks* are important for monitoring how children are developing and to identify and implement early intervention and treatment if required. While 22% of children had received a Medicare Benefits Schedule (MBS) reimbursed child health check in 2010–11, these data are considered flawed because they exclude the considerable volume of health checks delivered outside the Medicare system, such as through state and territory preschool and community health programs (COAG Reform Council 2013b).
- *Cancer screening* programs for breast, cervical and bowel cancer had participation rates of 55%, 57% and 35% respectively, among target groups in 2011–12 (see Chapter 8 'Cancer screening in Australia').

Information is not available about most other health promotion or prevention activities delivered to patients by primary health care professionals (AIHW 2009) . For example, GPs are encouraged to routinely assess patients' smoking status, and while this information is often recorded in general practice records, it is not routinely consolidated.

Coordinated care

Improved coordination of health care, particularly management of chronic diseases, is a key goal of the primary health care system in Australia. This is especially important where patient care involves multiple health professionals (Harris et al. 2011).

In 2012–13, 16% of the population aged 15 and over (or 3 million people) saw 3 or more health professionals for the same condition (ABS 2013b). Of these patients, 69% reported that a health professional helped coordinate their care—most likely a GP (54%), medical specialist (30%) or nurse (6%)—the majority of whom (69%) reported that the coordination helped to a large extent. The proportion of people with coordinated care was higher in low SES areas (73%) compared with high SES areas (64%) but they were less likely to report that coordination helped to a large extent (67% compared with 74% respectively).

Another indicator of chronic disease management is use of specific chronic disease management plans, which are available under various arrangements (for example, MBS GP Management Plans and Team Care Arrangements). For a small number of chronic conditions (such as asthma, diabetes and mental illness) some information on the uptake of coordinated care plans can be derived using MBS data. However, there are various limitations when using this information to assess the effectiveness of care coordination, including that care may be coordinated through alternative non-MBS arrangements (for example, by a community or Indigenous-specific health service) and that the presence of a plan alone does not necessarily ensure care is effectively coordinated (see Chapter 9 'Indicators of Australia's health'—'Proportion of people with diabetes with a GP annual cycle of care'; 'Proportion of people with asthma with a written asthma plan'; and 'Proportion of people with mental illness with a GP care plan').

'Continuity of care' is a feature of coordinated care and involves continuity of: information (where patient information from past consultations is available and used in making decisions about current care); management (including adherence to standards and protocols); and relationships between the provider and the patient (Health Quality Ontario 2013). Effective continuity of care is associated with improved patient outcomes, reduced health service use and improved patient satisfaction (Bankart et al. 2011; Browne & Taylor 2013; Freeman et al. 2007; Gunther et al. 2013; Health Quality Ontario 2013; Kemp et al. 2013). The importance of continuity of care is recognised in Australian standards for general practitioners (RACGP 2010).

One indicator of continuity of care is the extent to which the population can access a preferred GP. In 2010–11, among adults who saw a GP in the previous 12 months there were marked differences across Medicare Locals, including:

- 64% to 95% of the population reporting having a preferred GP
- 23% to 54% of the population reporting they could not access their preferred GP in the preceding 12 months (NHPA 2013a).

There may also be opportunities to improve understanding of communication between hospitals and GPs through use of electronic discharge summaries developed under e-Health arrangements, but these data are not yet available.

Safety and quality of primary health care

There are several mechanisms through which high quality primary health care is pursued, including through health professional registration and accreditation processes, and through government payments to GPs and pharmacists as incentives for particular quality improvements (for example, the Practice Incentives Program for GPs). There are measures in place to promote and improve understanding of safety and quality in primary health care (see ACSQHC 2011; RACGP 2010) but there is currently no related national statistical reporting on this subject. This is in contrast to the situation in Australian hospitals, where there is regular reporting of some (albeit limited) safety and quality indicators such as serious adverse events (for example, see SCRGSP 2014).

We do, however, have some (again, limited) quality-related information on 2 of the most common high cost primary care activities—medication prescribing and ordering of diagnostic tests.

With medication prescribing, variation (over time or location) in prescription rates for specific conditions can indicate either differences in disease prevalence and/or differences in prescribing practices, with definitive conclusions being difficult to reach. For example, while there is some evidence that prescription rates for antidepressants in Australia are both increasing and high by international standards (OECD 2013), it is not clear whether this is being driven by over-prescribing, or treatment of previously undiagnosed untreated cases.

And while there is substantial evidence to support judicious prescribing of antibiotics because of the advent of antibiotic resistance issues (McKenzie et al. 2013; NPS 2012), it is not clear why the volume of antibiotics prescribed in Australia is higher than the OECD average (OECD 2013). There are a number of programs aimed at tackling antibiotic resistance and reducing infections in primary health care (NPS 2013) as well as in Australian hospitals (ACSQHC 2012) , but there is currently no systematic monitoring of the prescribing of antibiotics in primary health care settings. Opportunities may be explored for comprehensive monitoring of these and other medications as electronic prescribing is rolled out and matures.

The number of Medicare services claimed per person for imaging and pathology tests have increased in the past decade by 38% and 46% respectively (DHS 2014b). There is some limited evidence that some of this testing may not be necessary, either according to clinical management guidelines or where results are not accessible to health professionals in a timely manner. For example, one study showed that about 1 in 4 Australians presenting at primary health care for low back pain are sent for imaging tests and 5% are sent for pathology although clinical management guidelines discourage the use of these tests (Williams et al. 2010). However, there is no comprehensive authoritative statistical information on this subject.

New features of the national e-Health system, designed to support sharing of pathology and imaging results between health-care providers, may reduce the need for doctors to locate test results or unnecessarily repeat tests (Australian Ageing Agenda 2013), thereby saving time and money, and potentially improving safety and quality in patient care.

Responsiveness

In 2012–13, 90% of ABS patient experience survey respondents who saw a GP in the previous 12 months reported that the GP always or often listened carefully to them, while 93% reported that the GP always or often showed them respect (ABS 2013b).

The proportion of patients with positive experiences in Australia has increased in recent years (Commonwealth Fund 2004, 2007, 2010). In 2010, Australia was at about the OECD average in terms of patient ratings of regular doctors spending enough time with them, providing easy-to-understand explanations, giving opportunities to ask questions, and involving them in decisions about care and treatment (OECD 2013).

There is little national information about patient experiences with non-GP primary health care, with one exception being patient perceptions of waiting times for dental services. In 2011–12, among people who had seen a dental professional for urgent care in the previous 12 months, 20% were seen within 4 hours and 43% waited 2 or more days between making the appointment and seeing the dental professional (ABS 2012).

What are the outcomes?

As noted previously, international evidence suggests that a strong primary health care orientation within the health service system exerts a positive effect on both population health outcomes and overall health system costs. For this reason, various countries, including Canada, the United Kingdom and New Zealand, have embarked on health system reforms to reorient their health systems towards primary health care. For example, reforms in Canada (with similar objectives to those in Australia) over the last decade have been linked to the higher levels of health among Canadians compared to their US neighbours (Hutchinson et al. 2011; Starfield 2010).

The primary health care system in Australia is broad and complex and it is difficult to consistently define what services and health professionals it encompasses, and describe in detail the nature of the services delivered to patients. It is therefore not surprising that there are challenges in describing its contribution to improved population health outcomes and health system financial sustainability. What can we say about these high-level outcomes?

Improved health outcomes

There is great interest in better understanding health outcomes to ensure that people are receiving the best available care, and in order to invest in interventions that offer the greatest benefit. Primary health care is expected to improve overall health outcomes through strong contributions to reductions in tobacco smoking, excessive alcohol consumption and obesity, and by identifying and managing diseases early, thereby reducing disease incidence, prevalence and death.

Australia's health 2014 provides many examples of where health outcomes are improving (for example, increased cancer survival, reduced smoking levels) and deteriorating (for example, rising obesity levels). Ongoing monitoring of these outcomes will provide information about further progress. In addition, limited population health information is currently available at the Medicare Local level (see, for example, NHPA 2013c; PHIDU 2013).

Of more critical importance is the challenge of attributing improvements in health outcomes to the primary health care system or to the health system more broadly when responsibility for outcomes is shared across governments, non-government entities and individuals. In addition, the lag time between health interventions and improved health outcomes (for example, a reduction in deaths due to lung cancer) can be considerable. For this reason, there is often interest in measuring improvements in processes, such as the delivery of anti-smoking advice during GP consultations, where evidence demonstrates a given intervention is linked to improved outcomes. Australia's limited data on the activities of primary health care practitioners currently limits our capacity to describe this activity.

Improved financial sustainability of the health system

Ideally, a well-functioning primary health care system will deliver effective care at least cost, and avoid progression to more serious illnesses and more costly hospital care, with associated risks such as hospital-acquired infections, or the risks associated with surgery. While this makes intuitive sense, we currently have limited information about the efficiency of the Australian primary care system and the extent to which it is contributing to improved financial sustainability of the health system as a whole.

Much of hospital financing in Australia is moving toward a relatively sophisticated activity-based funding model, with significant effort being dedicated to determining a national 'efficient price' and cost-weighting for services based on their complexity and costliness. This has been possible because of the relatively high quality data that has been collected over a long time from hospitals on their activities and expenditure. This type of data is not collected from primary health care providers. General practice and some other primary health care services are funded on a less sophisticated activity-based model than applies in hospitals, with government funding (through Medicare) largely determined by the reported length of the consultation. Other areas of primary health care are funded through block payments or at a program or service level.

As a result of poor primary health care data quality in Australia, it is difficult to gauge the cost-effectiveness of different types of primary care providers, or to compare the primary health care sector generally with other parts of the health system, or to other countries. For example, if a patient cannot or will not use a particular type of primary health care service due to, say, lack of availability or cost, they may attempt to access alternative hospital or community health services that may be available free of charge—for example, hospital outpatient services, or nutrition advice from a state-funded community health centre. Or they may seek other private services, perhaps partly reimbursed through private health insurance. Gaps in primary health care information make it difficult to assess the extent of substitution between these services and thereby readily understand the extent to which the system is cost-effective.

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:

- little or no information about why someone went to a primary health care professional, what occurred during the consultation, what actions were recommended and taken, and with what outcome and cost
- very limited national data (broad counts of patient contacts only) for ambulance, aero-medical services and allied health services (including those privately insured)
- no national data about state-funded community health activity
- great difficulty in routinely assessing the appropriateness of care with respect to clinical guidelines (see for example, Runciman et al. 2012) or assessing the effectiveness of care.

The statistical information that may be derived from Australia's emerging e-Health system may improve our understanding of primary health care. However, with the current participation arrangements, and legislative restrictions on the use of data, the contribution of e-Health to an improved understanding of population health and health care is not yet clear.

There are several opportunities to improve primary care information, including:

- **improving GP surveying arrangements**—for example, evaluate and update current survey methods to ensure they align with current information needs, use electronic collection methods, involve standardisation of data, and support production of Medicare Locals estimates
- **extracting and compiling core GP data**—as a by-product of information already held by many general practices in their electronic patient records (using agreed definitions and agreed privacy, confidentiality and data sharing arrangements)
- **making better use of existing data** in which Australia has already invested—for example, packaging existing administrative data such as MBS, PBS, Indigenous-specific health services, homelessness and disability data, at the Medicare Local level
- **assessing the benefits of data linkage** between existing data sources—to answer questions about patient journeys across settings
- **filling remaining gaps**—by exploring the feasibility of improved national use of existing private health insurance, state and territory, community health, and ambulance data
- **exploring other ways of measuring progress** towards key Medicare Local and national objectives—for example, through surveys and sentinel practice reporting.

Local and international experiences in primary health care information show that information improvement is possible. A number of Medicare Locals, through collaborative efforts, have used existing data to effectively support their needs assessment and quality improvement processes. This has been possible through the cooperation of member GPs and extraction of selected de-identified data from GP computerised electronic patient records (Monash University 2013).

Several other countries, such as Canada, the United States of America, the United Kingdom and New Zealand, have made significant progress in primary health care information development, which Australia could adopt or adapt (see, for example, CIHI 2013 Box 8.2).

Where do I go for more information?

See previous editions of *Australia's health* and *Review and evaluation of Australian information about primary health care: a focus on general practice* (AIHW 2008) at www.aihw.gov.au.

Search for 'primary health care' on the Australian Government Department of Health website at www.health.gov.au.

References

ABS (Australian Bureau of Statistics) 2012. Patient experiences in Australia: summary of findings, 2011–12. ABS cat. no. 4839.0. Canberra: ABS.

ABS 2013a. Australian Health Survey: health service usage and health related actions, 2011–12. ABS cat. no. 4364.0.55.00. Canberra: ABS.

ABS 2013b. Patient experiences in Australia: summary of findings, 2012–13. ABS cat. no. 4839.0. Canberra: ABS.

ACSQHC (Australian Commission on Safety and Quality of Health Care) 2011. Practice-level indicators of safety and quality for primary health care: consultation paper. Sydney: ACSQHC.

ACSQHC 2012. Antibiotics Awareness Week 12–18 November 2012 Preserve the miracle of antibiotics. Sydney: ACSQHC. Viewed 27 February 2014, <http://www.safetyandquality.gov.au/wp-content/uploads/2012/10/PRESERVE-THE-MIRACLE_Antibiotic-awareness-week-2012_POWERPOINT_FINAL.ppt>.

AIHW (Australian Institute of Health and Welfare) 2009. Prevention of cardiovascular disease, diabetes and chronic kidney disease: targeting risk factors. Cat. no. PHE 118. Canberra: AIHW.

AIHW 2012a. Australia's health 2012. Cat. no. AUS 156. Canberra: AIHW.

AIHW 2012b. Australian hospital statistics 2011–12: emergency department care. Cat. no. HSE 126. Canberra: AIHW.

AIHW 2012c. Medical workforce 2010. National health workforce series no. 1. Cat. no. HWL 47. Canberra: AIHW.

AIHW 2013a. Allied health workforce 2012. National health workforce series no. 5. Cat. no. HWL 51. Canberra: AIHW.

AIHW 2013b. Australian hospital statistics 2011–12. Health services series no. 50. Cat. no. HSE 134. Canberra: AIHW.

AIHW 2013c. Medical workforce 2012. National health workforce series no.8. Cat. no. HWL 54. Canberra: AIHW.

AIHW 2013d. Aboriginal and Torres Strait Islander health services report 2011–12: online services report—key results. Cat. no. IHW 104 Canberra: AIHW.

AIHW 2013e. Medical workforce 2011. National health workforce series no. 3. Cat. no. HWL 49. Canberra: AIHW.

AIHW 2013f. Nursing and midwifery workforce 2012. National health workforce series no. 6. Cat. no. HWL 52. Canberra: AIHW.

AIHW 2014a , forthcoming. Dental workforce 2012. National health workforce series no. 7. Cat. no. HWL 53. Canberra: AIHW.

AIHW 2014b. Medical workforce 2012. National health workforce series no. 8. Cat. no. HWL 54. Canberra: AIHW.

Australian Ageing Agenda 2013. Pathology and imaging next for PCEHR. Sydney: Australian Ageing Agenda. Viewed 21 January 2014, <http://www.australianageingagenda.com.au/2013/07/18/pathology-and-imaging-next-for-pcehr/>.

Australian Government 2013. The Coalition's policy to support the Australian health system. Canberra: Australian Government.

Bankart MJ, Baker R, Rashid A, Habiba M, Banerjee J, Hsu R et al. 2011. Characteristics of general practices associated with emergency admission rates to hospital: a cross-sectional study. Emergency Medicine Journal 28:558–63.

Britt H, Miller G, Henderson J, Bayram C, Valenti L, Harrison C et al. 2013a. General practice activity in Australia 2012–13. General practice series no.33. Sydney: Sydney University Press.

Britt H, Miller GC, Henderson J, Bayram C, Valenti L, Harrison C et al. 2013b. A decade of Australian general practice activity 2003–04 to 2012–13. General practice series no. 34. Sydney: Sydney University Press.

Browne J & Taylor J 2013. 'It's a good thing…': women's views on their continuity experiences with midwifery students from one Australian region. Midwifery doi: 10.1016/j.midw.2013.11.006.

Buckley D, Curtis P & McGirr J 2010. The effect of a general practice after-hour clinic on emergency department presentations: a regression time series analysis. Medical Journal of Australia 192:448–51.

CIHI (Canadian Institute of Health Information) 2013. Primary health care. Ottawa: CIHI. Viewed 4 November 2013, <http://www.cihi.ca/cihi-ext-portal/internet/en/tabbedcontent/types+of+care/primary+health/cihi006583#_Reports_and_Analyses>.

COAG (Council of Australian Governments) Reform Council 2013a. Healthcare 2011–12: comparing performance across Australia—statistical supplement. Sydney: COAG Reform Council.

COAG Reform Council 2013b. Healthcare 2011–12: comparing performance across Australia: report to the Council of Australian Governments: 30 April 2013. Sydney: COAG Reform Council.

Commonwealth Fund 2004. Commonwealth Fund international health policy survey of adults' experience with primary care. New York: Commonwealth Fund.

Commonwealth Fund 2007. International health policy survey in seven countries, chartpack. New York: Commonwealth Fund.

Commonwealth Fund 2010. International health policy survey in eleven countries, chartpack. New York: Commonwealth Fund.

Department of Health 2011. Background—the need for change. Dublin: Department of Health. Viewed 4 November 2013, <http://www.dohc.ie/publications/fulltext/primary_care_new_direction/part_one.html>.

Department of Health 2014. Annual Medicare statistics. Canberra: Department of Health. Viewed 30 January 2014, <http://www.health.gov.au/internet/main/publishing.nsf/Content/Annual-Medicare-Statistics >.

DHS (Department of Human Services) 2013. Medicare Australia statistics. Canberra: DHS. Viewed 5 December 2013, <https://www.medicareaustralia.gov.au/statistics/mbs_group.shtml>.

DHS 2014a. Bulk-billing frequently asked questions. Canberra: DHS. Viewed 21 January 2014, <http://www.medicareaustralia.gov.au/provider/medicare/bulk-billing.jsp>.

DHS 2014b. Monthly and quarterly standard reports. Canberra: DHS. Viewed 9 January 2014, <https://www.medicareaustralia.gov.au/statistics/mth_qtr_std_report.shtml>.

DoHA (Department of Health and Ageing) 2009. Primary health care reform in Australia—report to support Australia's first national primary health care strategy. Canberra: DoHA.

DoHA 2010. Building a 21st century primary health care system; Australia's first national primary health care strategy. Canberra: DoHA.

DoHA 2012. Background paper: Medicare Locals health needs assessment and planning. Canberra: DoHA.

DoHA 2013a. Annual report 2012–13. Canberra: DoHA.

DoHA 2013b. Medicare Local. Canberra: DoHA. Viewed 28 November 2013, <http://www.medicarelocals.gov.au/internet/medicarelocals/publishing.nsf>.

Dutton, the Hon. P 2013. Medicare Locals review. Media release by Minister for Health and Minister for Sport. 16 December 2013. Canberra.

Freeman GK, Wolosynowych M, Baker R, Boulton M, Guthrie B, Car J et al. 2007. Continuity of care 2006; what have we learned since 2000 and where are the policy imperatives now? Report for the National Co-ordinating Centre for NHS Service Delivery and Organisation R & D. London: National Co-ordinating Centre for NHS Service Delivery and Organisation R & D.

Gafforini S & Carson N 2013. Primary-care type presentations to public hospitals. A local in-hours and after-hours population comparison. Final report. Melbourne: Inner North West Melbourne Medicare Local.

Gunther S, Taub N, Rogers S & Baker R 2013. What aspects of primary care predict emergency admission rates? A cross sectional study. BMC Health Services Research 13:11.

Harris M, Jayasinghe U, J T, Christl B, Proudfoot J, Crookes P et al. 2011. Multidisciplinary Team Care Arrangements in the management of patients with chronic disease in Australian general practice. Medical Journal of Australia 194(5):236–9.

Health Canada 2012. What is primary health care? Ottawa: Health Canada. Viewed 4 November 2013, <http://www.hc-sc.gc.ca/hcs-sss/prim/about-apropos-eng.php>.

Health Quality Ontario 2013. Continuity of care to optimize chronic disease management in the community setting: an evidence-based analysis. Ontario Health Technology Assessment Series 13:1–41. Ottawa: Health Quality Ontario.

Healthdirect Australia 2013. Quarterly report, Quarter 1, January to March 2013. Sydney: Healthdirect Australia.

Hossain M & Laditka J 2009. Using hospitalization for ambulatory care sensitive conditions to measure access to primary healthcare: an application of spatial structural equation modelling. International Journal of Health Geographics 8:51–65.

Hutchison B, Levesque J-F, Strumpf E & Coyle N 2011. Primary health care in Canada: systems in motion. The Milbank Quarterly 89:256–88.

HWA (Health Workforce Australia) 2011. National health workforce innovation and reform strategic framework for action 2011–2015. Adelaide: HWA.

Institute of Medicine 1994. Defining primary care: an interim report. Washington: National Academy of Sciences.

Jorm LR, Leyland AH, Blyth FM, Elliott RF, Douglas KMA & Redman S 2012. Assessing preventable hospitalisation indicators (APHID): protocol for a data-linkage study using cohort study and administrative data. BMJ Open 2: doi:10.1136/bmjopen-2012-002344.

Kemp L, Harris E, McMahon C, Matthey S, Vimpani G, Anderson T et al. 2013. Benefits of psychosocial intervention and continuity of care by child and family health nurses in the pre- and postnatal period: process evaluation. Journal of Advanced Nursing 69:1850–61.

Macinko J, Starfield B & Shi L 2003. The contribution of primary care systems to health outcomes within Organisation for Economic Co-operation and Development (OECD) countries, 1970–1998. Health Services Research 38:831–865.

Masso M, Bezzina AJ, Siminski P, Middleton R & Eagar K 2007. Why patients attend emergency departments for conditions potentially appropriate for primary care: Reasons given by patients and clinicians differ. Emergency Medicine Australasia 19:333–40.

McKenzie D, Rawlins M & Del Mar C 2013. Antimicrobial stewardship: what's it all about? Australian Prescriber 36:116–20.

Monash University 2013. MAGNET (Melbourne East Monash GeNeral PracticE DaTabase). Clayton: Monash University. Viewed 28 November 2013, <http://med.monash.edu.au/general-practice/magnet/index.html>.

Mosquera PA, Hernández J, Vega R, Martínez J, Labonte R, Sanders D et al. 2012. Primary health care contribution to improve health outcomes in Bogota-Colombia: a longitudinal ecological analysis. BMC Family Practice 13:1–8.

Nagree Y, Gosbell A, McCarthy C, Moore K & Mountain D 2013. Determining the true burden of general practice patients in the emergency department: getting closer. Emergency Medicine Australia 25:487–90.

New Zealand Ministry of Health 2001. The primary health care strategy. Wellington: New Zealand Ministry of Health.

Ng JY, Fatovich DM, Turner VF, Wurmel JA, Skevington SA & Phillips MR 2012. Appropriateness of healthdirect referrals to the emergency department compared with self-referrals and GP referrals. Medical Journal of Australia 197(9):498–502.

NHPA (National Health Performance Authority) 2013a. Healthy communities: Australians' experience with primary health care in 2010–11. Sydney: NHPA.

NHPA 2013b. Healthy communities: Australians' experiences with access to health care in 2011–12. Sydney: NHPA.

NHPA 2013c. Healthy communities: overweight and obesity rates across Australia, 2011–12. Sydney: NHPA.

NMML (Northern Melbourne Medical Local) 2013. Challenging myths and perceptions: understanding primary care patients in the emergency department. Summary report. Melbourne: NMML.

NPS (National Prescribing Service) 2012. Antibiotic resistance and respiratory tract infections. Sydney: NPS. Viewed 17 February 2014, <http://www.nps.org.au/__data/assets/pdf_file/0003/138585/PPR_57_antibioitic_resistance_0212.pdf>.

NPS 2013. NPS Medicinewise: join the fight against antibiotic resistance. Sydney: NPS. Viewed 10 February 2014, <http://www.nps.org.au/about-us/what-we-do/campaigns-events/antibiotic-resistance-fighter>.

O'Malley A 2012. After-hours access to primary care practices linked with lower emergency department use and less unmet medical need. Health Affairs, December. doi: 10.1377/hlthaff.2012.0494.

OECD (Organisation for Economic Co-operation and Development) 2013. Health at a glance 2013: OECD indicators. Paris: OECD Publishing.

Pearce C, Shearer M, Gardner K, Kelly J & Xu TB 2012. GP Network as enablers of quality of care: implementing a practice engagement framework in a General Practice Network. Australian Journal of Primary Health 18(2):101–4.

PHIAC (Private Health Insurance Administration Council) 2013. PHIAC A Report. Canberra: PHIAC.

PHIDU (Public Health Information Development Unit) 2013. Social health atlases of Australia. Adelaide: PHIDU. Viewed 8 November 2013, <http://www.publichealth.gov.au/sha/social-health-atlases.html>.

RACGP (Royal Australian College of General Practitioners) 2010. Standards for general practices (4th edn) including interpretive guide for Aboriginal and Torres Strait Islander health services. East Melbourne: RACGP.

Rosano A, Loha CA, Falvo R, van der Zee J, Ricciardi W, Guasticchi G et al. 2013. The relationship between avoidable hospitalization and accessibility to primary care: a systematic review. European Journal of Public Health 23:356–60.

Royal Flying Doctor Service 2012. Annual report 11/12. Sydney: Royal Flying Doctor Service.

Runciman WB, Coiera EW, Day RO, Hannaford NA, Hibbert PD, Hunt TD et al. 2012. Towards the delivery of appropriate health care in Australia. Medical Journal of Australia 197:78–81.

SCoH (Standing Council on Health) 2013. National primary health care strategic framework. Canberra: Commonwealth of Australia.

SCRGSP (Steering Committee for the Review of Government Service Provision) 2014. Report on government services 2014. Canberra: Productivity Commission.

Starfield B 2005. Primary care in the context of health services system. Montreal: University of Montreal. Viewed 4 November 2013, <http://www.greas.ca/publication/pdf/starfield.pdf>.

Starfield B 2010. Reinventing primary care: lessons from Canada for the United States. Health Affairs 29:1030–36.

Starfield B & Shi L 2002. Policy relevant determinants of health: an international perspective. Health Policy 60:201–18.

WHO (World Health Organization) 1978. Declaration of alma-ata—international conference on primary health care. USSR: WHO.

Williams C, Maher C, Hancock M, McAuley J, McLachlan A & Britt H 2010. Low back pain and best practice care. Archives of Internal Medicine 170:271–7.

FEATURE ARTICLE

8.4 Alcohol and other drug treatment services

SNAPSHOT

SNAPSHOT

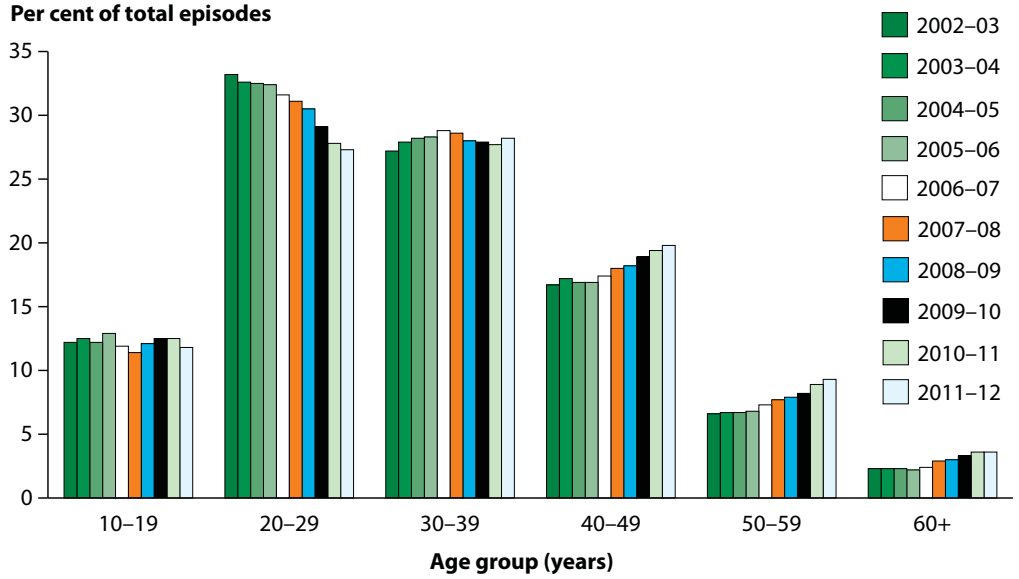
The Australian Government and state and territory governments fund a range of alcohol and other drug treatment services provided by non-government and government organisations. Services are delivered in residential and non-residential settings and include detoxification and rehabilitation programs, information and education courses, counselling, and pharmacotherapy, which involves long-acting medicines to manage opioid dependence.

The Alcohol and Other Drug Treatment Services National Minimum Data Set (AODTS NMDS) contains information on a large subset of publicly funded alcohol and other drug treatment agencies. These agencies provide services to people seeking assistance for their own drug use, people diverted from the criminal justice system and those seeking assistance for someone else's drug use.

Who uses treatment services?

- Of the 153,688 treatment episodes completed in 2011–12, two-thirds were for male clients. Nearly all (96%) people received treatment for their own drug use and most were aged 20–29 (27%) and 30–39 (28%).
- The age profile of people using services shows clients are ageing. Over the decade to 2011–12, the proportion of treatment for people aged 20–29 fell from 33% to 27% while the proportion for those aged 40 and over rose from 26% to 33%. The proportions for those aged 10–19 and 30–39 remained steady (Figure 8.6).

Figure 8.6



Note: These data include episodes relating to clients seeking treatment for their own drug use and clients seeking treatment for someone else's drug use.

Alcohol and other drug treatment episodes by age group, 2002–03 to 2011–12

The ageing profile of clients is particularly apparent for those using heroin and other opioids. The National Opioid Pharmacotherapy Statistics Annual Data Collection reveals that, from 2006 to 2013, the proportion of clients aged under 30 more than halved (from 28% to 11%) and the proportion of those aged 50 and over more than doubled (from 8% to 19%).

Illicit Drug Reporting System data also show a rise in the age of injecting drug users, with the average age rising from about 30 to 39 over the decade to 2012 (Stafford & Burns 2013).

Possible reasons for these trends include fewer premature deaths as a result of treatment availability, and a group of long-term recipients now moving into older age while continuing treatment. The 2010 National Drug Strategy Household Survey (NDSHS) showed a fall in the proportion of younger people using illicit drugs, suggesting these trends seem likely to continue.

Which drugs do people seek treatment for?

- Consistent with previous years, alcohol (46%) was the most common principal drug of concern in 2011–12, followed by cannabis (22%), amphetamines (11%) and heroin (9%) (Figure 8.7).
- Drugs of concern varied considerably with age. People in older age groups were more likely to have sought treatment for alcohol than those in younger age groups.
- For people aged 10–19, alcohol was the principal drug of concern in 31% of treatment episodes, while for those aged 60 and over it was the principal drug in 84% of episodes.
- For people aged 60 and over, cannabis was the principal drug of concern in only 3% of episodes, while for people aged 10–19 it was the principal drug in 50% of episodes.

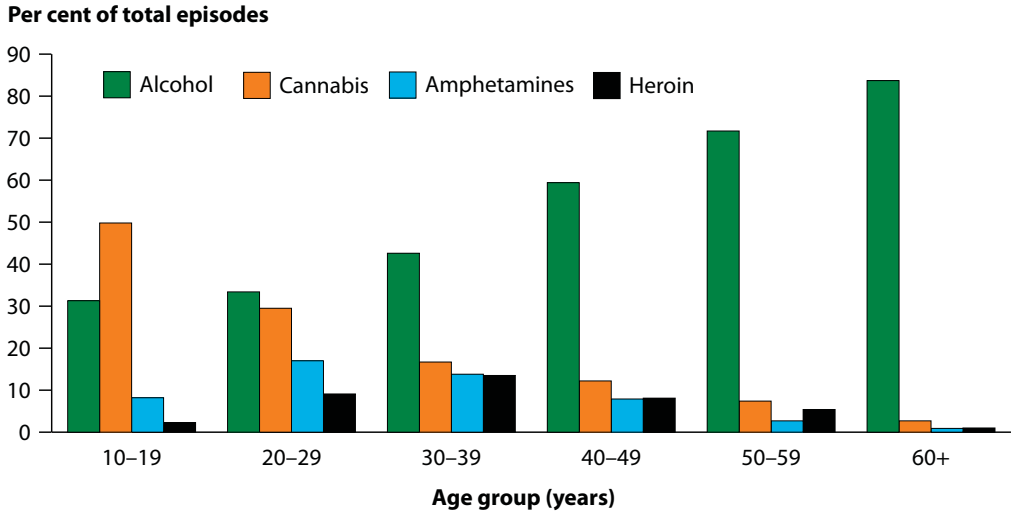
What is missing from the picture?

The 2013 NDSHS, due for release in the second half of 2014, will provide up-to-date information on population-level drug use patterns, which will help us to better understand the ageing trends.

To date, the AODTS NMDS has contained data only on *completed treatment episodes* rather than on people seeking treatment. However, from the 2012–13 collection onwards, a unique person identifier included in the collection will make it possible to count client numbers and analyse treatment patterns within and across service providers.

While the majority of drug and alcohol treatment is reported through the AODTS NMDS, consolidated data on the diversion of drug offenders from the criminal justice system into treatment could be improved through development of a National Minimum Data Set.

Figure 8.7



Note: These data only include episodes relating to clients seeking treatment for their own drug use.

Alcohol and other drug treatment episodes, selected principal drug of concern, by age group, 2011–12

Where do I go for more information?

For more information on alcohol and other drug use and treatment services in Australia, see AIHW reports available online at www.aihw.gov.au/alcohol-and-other-drugs.

For more information on issues related to alcohol and other drug treatment services, see Chapter 5 'Tobacco smoking', 'Alcohol risk and harm' and 'Illicit drug use—current and future issues'.

Reference

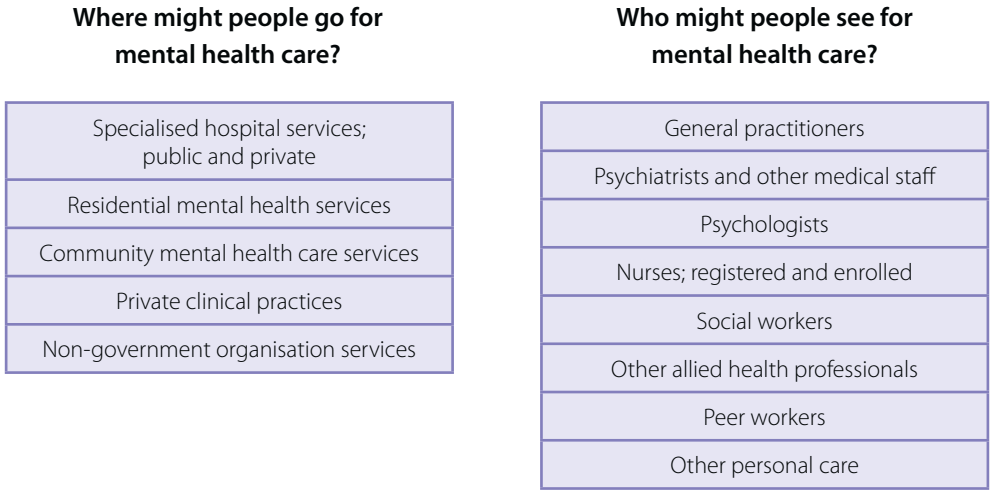
Stafford J & Burns L 2013. Australian drug trends 2012. Findings from the Illicit Drug Reporting System (IDRS). Australian drug trend series no. 91. Sydney: National Drug and Alcohol Research Centre, University of New South Wales.

8.5 Mental health services at a glance

SNAPSHOT

Mental illness contributes substantially to the burden of disease in the community (see Chapter 4 'Mental health in Australia'). 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 8.8).

Figure 8.8



Overview of mental health services and workforce

Service use

A large number of support services are provided to people with a mental illness each year. For example, community mental health care services provided more than 7 million contacts in 2011–12 (Table 8.1).

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—in hospitals, consulting rooms, home visits and over the phone.

Table 8.1: Selected mental health-related services provided (latest available data ranging from 2010–11 to 2011–12)

Service type	Volume	Interesting fact
Medicare-subsidised mental health-related services[(a)]	7.9 million services	Psychologists (43.5%) provided the majority of these services.
People accessing Medicare-subsidised mental health-related services[(a)]	1.6 million people	More females (980,000) than males (620,000) used these services.
PBS/RPBS subsidised prescriptions	23 million prescriptions	Antidepressant medication accounted for over 60% of all subsidised mental health-related prescriptions.
Patients dispensed with mental health-related prescriptions[(b)]	2.5 million people	General practitioners (86%) provided the majority of the subsidised prescriptions.
Community mental health care service contacts	7.1 million contacts	About one-quarter of all contacts were provided to patients with a principal diagnosis of schizophrenia.
Emergency department services	240,000 services	2 in 5 visits were for people aged 15–34.
Admitted patient hospitalisations	200,000 separations	Rates of seclusion[(c)] (in acute public hospital services) decreased from 15.6 events per 1,000 beds days to 9.6 between 2008–09 and 2012–13.

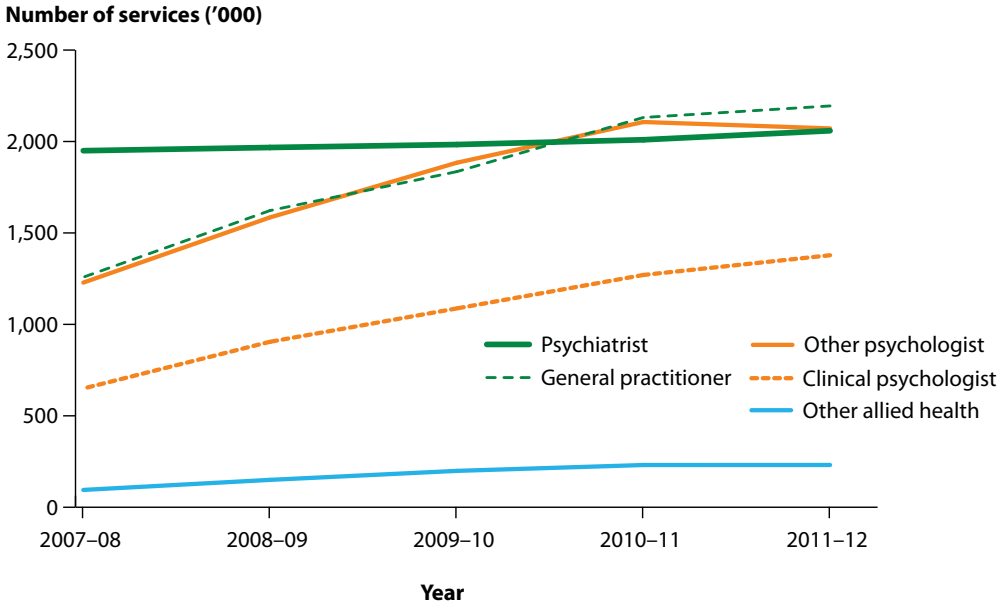
(a) Includes only those services billed as mental health-related items, which underestimates the total mental health-related activity, especially for services provided by general practitioners.

(b) The higher number of people receiving Pharmaceutical Benefits Scheme/Repatriation Pharmaceutical Benefits Scheme (PBS/RPBS) subsidised prescriptions than Medicare-subsidised services relates to several factors, including that people prescribed with mental health medications during a Medicare-subsidised service may not be billed using a mental health item number and that a component of mental health medications are dispensed for conditions other than mental disorders.

(c) Seclusion is defined as the confinement of the consumer at any time of the day or night alone in a room or area from which free exit is prevented.

There was an average annual increase of 11.2% in the number of Medicare-subsidised mental health-related services over the 5-year period to 2011–12 (Figure 8.9). This can be mainly attributed to the uptake of the Better Access initiative (implemented in November 2006) which gave patients Medicare-subsidised access to psychologists and other allied health providers after the preparation of a Mental Health Treatment Plan by a GP.

Figure 8.9



Source: Medicare Benefits Schedule data (Department of Health and Ageing).

Medicare-subsidised mental health-related services, by provider type, 2007–08 to 2011–12

Mental health-related prescriptions

There were an estimated 32.7 million prescriptions for mental health-related medications dispensed in 2011–12, of which 72.3% (23.4 million) were subsidised by the Australian Government under the Pharmaceutical Benefits Scheme (PBS). Of these, the majority (86.1%) were prescribed by GPs, with another 8.1% prescribed by psychiatrists and 5.8% by non-psychiatrist specialists. Most of the prescriptions were for antidepressant medications (61.7%, or 14.4 million), followed by anxiolytics (13.1%), antipsychotics (13.0%) and hypnotics and sedatives (9.7%) (Figure 8.10).

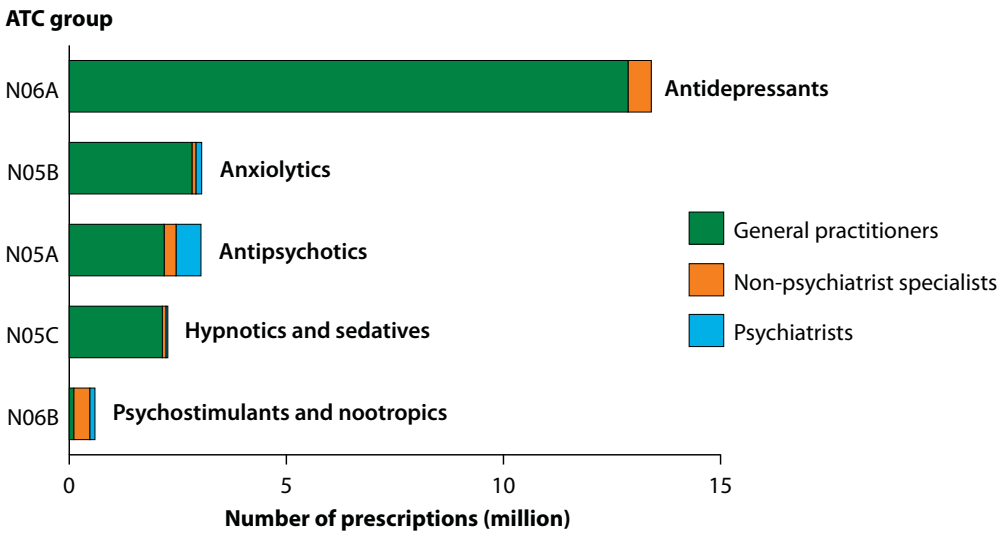
Workforce

It is not possible to definitively count the total number of people delivering care and support to those with a mental illness; however, we do know that:

- Nearly 3,000 full-time-equivalent (FTE) psychiatrists, about 20,000 FTE mental health nurses and 20,000 FTE psychologists were employed in 2011 across the range of services described in Figure 8.8.

- About 3,000 FTE mental health professionals, excluding GPs, provided services through Australian Government-funded primary mental health-care initiatives (for example, Medicare-subsidised services) (DoHA 2013).
- State and territory specialised mental health services employed more than 24,000 direct care FTE staff in 2010–11 in the staffing categories described in Figure 8.8 (excluding GPs).
- Private hospitals employed about 2,300 staff in specialised mental health services in 2010–11.

Figure 8.10



Note: ATC = Anatomical Therapeutic Chemical classification system (WHO 2011).

Source: Pharmaceutical Benefits Scheme and Repatriation Pharmaceutical Benefits Scheme data (Department of Health and Ageing).

Mental health-related subsidised prescriptions, by group of medication prescribed and prescribing medical practitioner, 2011–12

Spending

- $6.9 billion, or $309 per Australian, was spent on mental health-related services in 2010–11. This increased by almost 6% per Australian per year in the 5 years to 2010–11.
- $4.2 billion, or $190 per Australian, was spent on state and territory specialised mental health services in 2010–11, including $1.8 billion on public hospital services and $1.6 billion on community mental health care.
- $851 million, or $38 per Australian, was spent on Medicare-subsidised services in 2011–12. This spending increased by 9% per Australian over the 5 years to 2011–12.
- $854 million, or $38 per Australian was spent on mental health-related PBS/RPBS-subsidised prescriptions in 2011–12, mostly for subsidy of antipsychotic (55%) and antidepressant (39%) drugs.

What is missing from the picture?

Outcome measures for consumers, such as changes in symptoms, and experiences of care, are essential to quality improvement for mental health services. National level data for a set of measures for public services is already collected through the Mental Health National Outcomes and Casemix Collection, and services in both the public and private sectors are investing in an expanded range of measures as a priority.

It is anticipated that the National Disability Insurance Scheme (NDIS) will change the way some services are delivered, including those described here and specialised community support services provided by non-government organisations. The latter are not well described in current data collections.

Where do I go for more information?

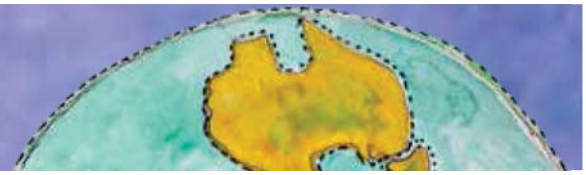
More information on mental health and mental health services is available at mhsa.aihw.gov.au/home/.

References

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

WHO (World Health Organization) 2011. ATC: structure and principles. Oslo: WHO Collaborating Centre for Drug Statistics Methodology. Viewed March 2013, < http://www.whocc.no/atc/structure_and_principles/>.

8.6 Ambulance services



SNAPSHOT

Ambulance services are often critical to a person's chances of surviving an acute illness or trauma. They provide emergency pre-hospital patient care, offer transport in response to sudden illness or injury, transport patients between hospitals, conduct specialised rescue services and coordinate patient services in multi-casualty events.

What resources are available?

- In 2012–13, Australian ambulance services had a salaried workforce of 15,220 full-time equivalent (FTE) personnel and a volunteer workforce of 7,456 FTE personnel.
- About 82% of the salaried workforce and 92% of the volunteer personnel were operational (such as patient transport officers, base-level ambulance officers, qualified ambulance officers, other clinical personnel and communications operatives).
- Services operated from 1,161 locations using 5,219 vehicles (including 3,137 general purpose ambulances) (SCRGSP 2014).

How many ambulance services are provided?

An incident is an event that results in a response by an ambulance service. A response is where an ambulance vehicle or vehicles are sent to an incident. There can be multiple responses to a single incident.

Incidents

- There were 2.9 million incidents in 2008-09 rising to 3.3 million in 2012–13.
- The number of incidents per 1,000 people rose from 136 in 2008–09 to 144 in 2012–13.
- In 2012–13, 44% were classified as emergency (immediate response under lights and sirens required). Others were classified as urgent (undelayed response required without lights and sirens, 24%) or non-emergency (non-urgent response required, including patient transport 32%).
- The proportion of emergency incidents increased by 5 percentage points from 39% in 2008–09 and non-emergency incidents fell by 3 percentage points from 34%.

Responses

- The number of responses increased from 3.4 million in 2008–09 to 4.1 million in 2012–13. The number of responses per 1,000 people increased from 160 to 179.
- In 2011–12, the time taken to respond to 90% of emergency incidents ranged from 14.8 minutes for the Australian Capital Territory to 22.5 minutes for New South Wales and the Northern Territory (Figure 8.11).

Figure 8.11

Source: SCRGSP 2014.

Time taken to respond to 90% of emergency incidents, states and territories, 2012–13

How many patients receive ambulance services?

An ambulance patient is a person who has been assessed, treated or transported by an ambulance service.

- The number of ambulance patients grew from 2.7 million to 3.2 million and the number of patients per 1,000 people rose from 127 to 138 between 2008–09 and 2012–13.
- In 2012–13, the number of patients per 1,000 people ranged from 97 for the Australian Capital Territory to 200 for the Northern Territory.
- About 1 in 4 (24%) of all emergency department patients (or 1.6 million patients) arrived at the emergency department by ambulance, air ambulance or helicopter in 2012–13.

Aero-medical health services

Aero-medical health services include services using helicopters and aeroplanes. In Australia these services are provided by many different organisations, including the Royal Flying Doctor Service, CareFlight Australia, the Newborn and Paediatric Emergency Transport Service and the Australian Defence Force.

- There were 45 aeroplane and 35 helicopter ambulance aircraft available in Australia in 2012–13, similar to the 43 and 35 available, respectively, in 2008–09.
- During 2012–13, aero-medical services involved around 15,300 aeroplane and 10,700 helicopter flying hours (SCRGSP 2014).

What is missing from this picture?

The Steering Committee for the Review of Government Service Provision, with the assistance of the Australasian Fire and Emergency Services Authorities Council, the Australian Council of State Emergency Services and the Council of Ambulance Authorities, is working to improve the comparability and accuracy of ambulance services data and to expand the scope of performance reporting.

Where do I go for more information?

More information on ambulance services in Australia is available at the Council of Ambulance Authorities website www.caa.net.au. More information on the Royal Doctor Flying Service is available at Royal Flying Doctor Service.

Reference

SCRGSP (Steering Committee for the Review of Government Service Provision) 2014. Report on Government Services 2014. Vol. D, emergency management, Chapter 9, fire and ambulance services. Canberra: Productivity Commission. Viewed 30 January 2014, <http://www.pc.gov.au/__data/assets/pdf_file/0013/132331/rogs-2014-volumed-chapter9.pdf>.

8.7 Overview of public and private hospitals

SNAPSHOT

Australia's hospital services are provided by public and private hospitals in all states and territories. This snapshot provides an overview of public and private hospitals and the services they provide. For more information on private hospitals, see Chapter 8 'The rise of private hospitals', and for information on hospital funding and spending, see Chapter 2 'How much does Australia spend on health care?'.

Hospitals and beds

- Public hospitals are mainly owned and managed by state and territory governments. Eleven private hospitals that are contracted by governments to provide public hospital services are included here as public hospitals.
- In 2011–12, there were 753 public and 592 private hospitals in Australia.
- There were 56,582 beds in public acute hospitals, 1,838 beds in public psychiatric hospitals, 24,326 beds in private acute hospitals and 1,705 beds in private psychiatric hospitals. Acute hospitals are those focused on curing a condition, alleviating symptoms or managing childbirth.
- The number of beds in public hospitals rose by 3.9% between 2007–08 and 2011–12, but the number of beds per 1,000 population fell from 2.7 to 2.6.
- The number of beds for public psychiatric hospitals fell by 21% over this period, reflecting the continuing change towards provision of specialist psychiatric services through public acute care hospitals and community-based mental health services.

How diverse are public hospitals?

Australian public hospitals range from very large principal referral hospitals found predominantly in metropolitan areas to small hospitals typically located in regional and remote areas. The numbers of beds varies markedly—principal referral hospitals, the largest hospitals, had on average 417 beds; however, more than 70% of hospitals had 50 or fewer beds. Some hospitals perform a specialised role, such as psychiatric and rehabilitation hospitals, and have longer average lengths of stay than others, reflecting a greater focus on longer-stay sub-acute and non-acute care (see Chapter 8 'Sub-acute and non-acute care') than the predominantly shorter-stay acute care provided by larger hospitals (Table 8.2).

Specialised services

In 2011–12, the most common specialised services offered in public hospitals were domiciliary care (403 hospitals), services provided by nursing home care units (265) and obstetric/maternity services (231). These services are mainly located in smaller regional and large metropolitan hospitals. Principal referral and large hospitals typically operate 24-hour emergency departments and intensive care units, though these facilities are also provided in some other larger hospitals. Principal referral hospitals also typically have specialised service units for cardiac surgery, neurosurgery, infectious diseases and organ transplantation.

In 2011–12, there were 396 private hospitals with operating theatres. These hospitals contained a total of 1,372 operating theatres (ABS 2013). For more information on specialised services provided by private hospitals, see Chapter 8 'The rise of private hospitals'.

Table 8.2: The diversity of public hospitals, 2011–12

Hospital type	Number of hospitals				Beds (average)	Hospitalisations (average)	Average length of stay (days)
	Major cities	Regional	Remote	Total			
Principal referral	53	26	1	80	417	45,673	3.3
Specialist women's and children's	11	0	0	11	210	21,956	3.0
Large	23	16	1	40	138	16,871	2.8
Medium	20	63	0	83	69	6,534	3.0
Small acute	0	114	41	155	22	1,307	2.8
Psychiatric	11	6	0	17	108	600	69.1
Rehabilitation	6	2	0	8	74	1,170	18.5
Mothercraft	8	0	0	8	28	1,839	3.6
Small non-acute	14	50	11	75	33	929	9.7
Multipurpose services	0	45	33	78	12	349	3.9
Other	34	95	69	198	11	298	9.0
Total	180	417	156	753	78	7,311	3.4

Source: Australian hospital statistics 2011–12.

Public and private hospital services

Australia's hospitals provide a range of services for admitted and non-admitted patients. These services vary, depending on the patients, the reasons for the hospital care and the type of care provided. Admitted patient services are provided either on the same day or involve an overnight stay of 1 or more nights in hospital. Services for non-admitted patients include those provided by emergency departments (see Chapter 8 'Emergency departments: at the front line') and outpatient clinics.

Public and private hospitals provide somewhat different services. In 2011–12, public hospitals provided most emergency department (94%) and outpatient (97%) services, while private hospitals accounted for 2 out of 3 hospitalisations involving elective surgery.

How much activity was there in 2011–12? Has this changed over time?

- Of the 9.3 million hospitalisations in 2011–12, 60% were in public hospitals (5.5 million) and 40% in private hospitals (3.7 million).
- A total of 27.7 million days of patient care were provided, with about 68% in public hospitals (19 million).
- Most hospitalisations (95%) were for acute care, rather than for sub-acute or non-acute care such as rehabilitation (see Chapter 8 'Sub-acute and non-acute care').
- Between 2007–08 and 2011–12, the average annual rate of growth in hospitalisations was higher for private hospitals (4.6%) than for public hospitals (3.8%).
- Growth was higher for hospitalisations that did not involve an operating room procedure (termed *Medical* hospitalisations, 4.9%) than those that did involve an operating room procedure (*Surgical*, 3.3%). Sub-acute and non-acute care (12.4%) grew faster than acute care (3.8%) (see Chapter 8 'Sub-acute and non-acute hospital care').

Overnight acute care

- In 2011–12, 40% of hospitalisations (3.7 million) were for overnight acute care (2.6 million in public hospitals and 1.1 million in private hospitals).
- In 2011–12, more than half (54%) of overnight acute separations were reported as *Medical*, almost a third (31%) were *Surgical* and about 4% were *Other* care (involved a non-operating room procedure, such as endoscopy) (Figure 8.12).
- The average length of stay in 2011–12 was 5.0 days for public hospitals and 4.6 days for private hospitals, less than the 6.5 days and 5.4 days respectively in 2007–08.

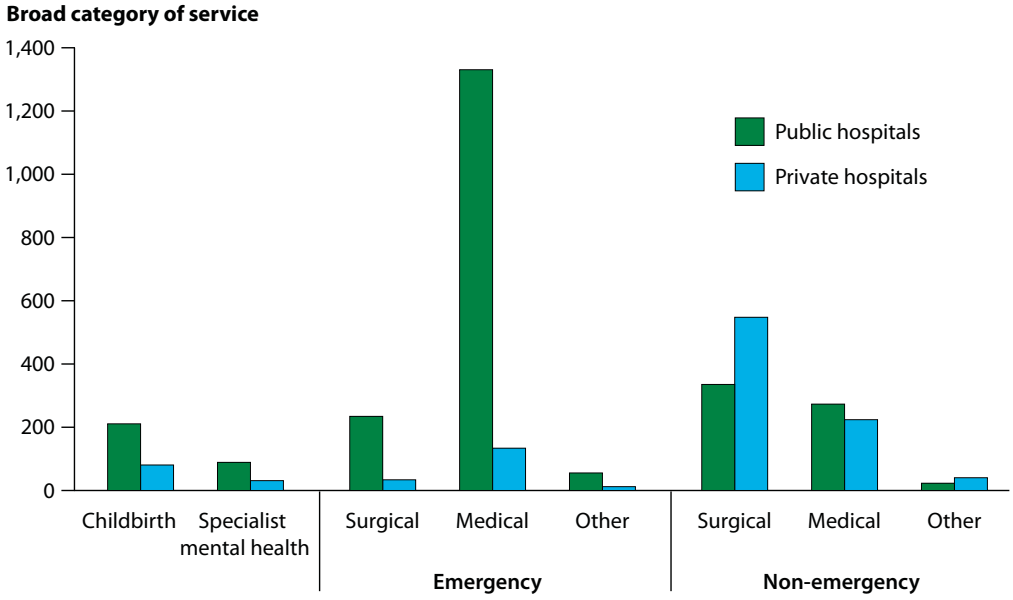
Same-day acute care

- In 2011–12, 56% of hospitalisations (5.2 million) were for same-day acute care (2.8 million in public hospitals and 2.4 million in private hospitals).
- On average, the number of same-day hospitalisations rose by 4.3% per year for public hospitals and 4.9% for private hospitals between 2007–08 and 2011–12.
- The most common principal diagnosis categories were care involving dialysis (more than 1.2 million hospitalisations), other medical care (about 376,000; includes chemotherapy), other cataract (about 173,000) and abdominal and pelvic pain (about 92,000).

What is missing from the picture?

Although well-developed hospitalisation data are available, there are variations in how hospital services are defined and counted. The data are based on each admission, and it is not possible to link records for a single patient's care—for example, to analyse care patterns in patients hospitalised several times or to count the number of individual patients. 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).

Figure 8.12



Overnight acute separations by broad category of service and urgency of admission, public and private hospitals, 2011–12

Data on hospital services for outpatients and other non-admitted patients are less well-developed, with current data collections mainly consisting of basic service counts and some demographic information about the patients. National work is currently under way to collect more detailed information on the type of care received in these settings.

Where do I go for more information?

More information on hospitals in Australia is available on the AIHW website at www.aihw.gov.au/hospitals. The reports *Australian hospital statistics 2011–12* and *Australia's hospitals 2011–12: at a glance* are available for free download.

Reference

ABS (Australian Bureau of Statistics) 2013. Private hospitals, Australia, 2011–12. ABS cat. no. 4390.0. Canberra: ABS. Viewed 11 December 2013, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/DF6290E7036AE6ACCA256F15007B1F51?opendocument >.

8.8 Emergency departments: at the front line

FEATURE ARTICLE

Emergency departments are a critical component of the health system because they provide care for patients who have life-threatening or other conditions that require urgent medical care. For some patients, they serve as the first or only point of contact with the health system, due to combinations of patient preference, unavailability of other services, and lack of need for ongoing care after the care provided in the emergency department. For some patients, they serve as a gateway to care as an admitted patient in a hospital, or to other specialised or ongoing health care.

Because of their important front-line role, the role and performance of emergency departments is under constant public scrutiny, and is the subject of a range of public performance reporting.

Lengthy waiting times have caused concern for patients and the Australian community more generally. Accordingly, emergency department waiting times are key performance indicators under a number of national health agreements with a focus on improving accessibility of health services. The quality of emergency department care is an emerging area of interest, with a measure of unplanned re-attendances at emergency departments having been agreed as a first step towards better information being available on this important topic.

The performance of emergency departments is influenced by other components of the health-care system. People sometimes attend emergency departments for reasons that could be addressed by non-hospital services such as general practitioners. Similarly, many presentations involve an admission of a patient to hospital and are dependent on the hospital's capacity to admit the patient. Hence, information on these types of interfaces between emergency departments and other health-care providers is important to understanding the role and performance of emergency departments.

This article highlights the activities of emergency departments in Australia and the changes in these activities over time. It also presents information on waiting times for emergency department care and describes work under way on other indicators of emergency department performance.

Emergency department services

How many presentations were there?

There were more than 6.7 million emergency department presentations (see Box 8.3) reported in Australian public hospitals in 2012–13, equivalent to just over 18,000 presentations each day. About 86% of these occurred in *Principal referral and specialist women's and children's* hospitals and *Large* hospitals.

Between 2008–09 and 2012–13, the number of emergency department presentations increased by 16.9%, with an average annual increase of 4.0% (Figure 8.13). However, over this period the coverage of the National Non-Admitted Emergency Department Care Database (NNAPEDCD) collection also increased, with the number of hospitals reporting rising from 184 to 204. This coverage change should be taken into account in interpreting changes over time. After adjusting for coverage changes, the number of presentations increased by an average of 2.9% each year.

Box 8.3

Terms and definitions relating to emergency department presentations

Most larger Australian public hospitals have a formal emergency department. Smaller public hospitals do not, but can provide emergency services through more informal arrangements.

The data presented in this article apply to care in the 204 formal emergency departments in public hospitals in Australia. These data are provided to the AIHW's National Non-Admitted Emergency Department Care Database (NNAPEDCD). For information on emergency department services in private hospitals, see Chapter 8 'The rise of private hospitals'.

Patients can present to an emergency department for an emergency, a return or planned visit, or a pre-arranged admission. Patients can also be provided with care while in transit, or may be dead on arrival.

A patient presentation at an emergency department is regarded as occurring following the arrival of the patient at the emergency department and is the earliest occasion of being registered clerically or triaged.

The triage category assigned to a patient indicates the urgency of the patient's need for medical and nursing care. It is usually assigned by an experienced registered nurse or medical practitioner at, or shortly after, the time of presentation to the emergency department. The National Health Data Dictionary (AIHW 2012a) defines 5 categories— based on the Australasian Triage Scale (ACEM 2013)—that incorporate the time by which the patient should receive care:

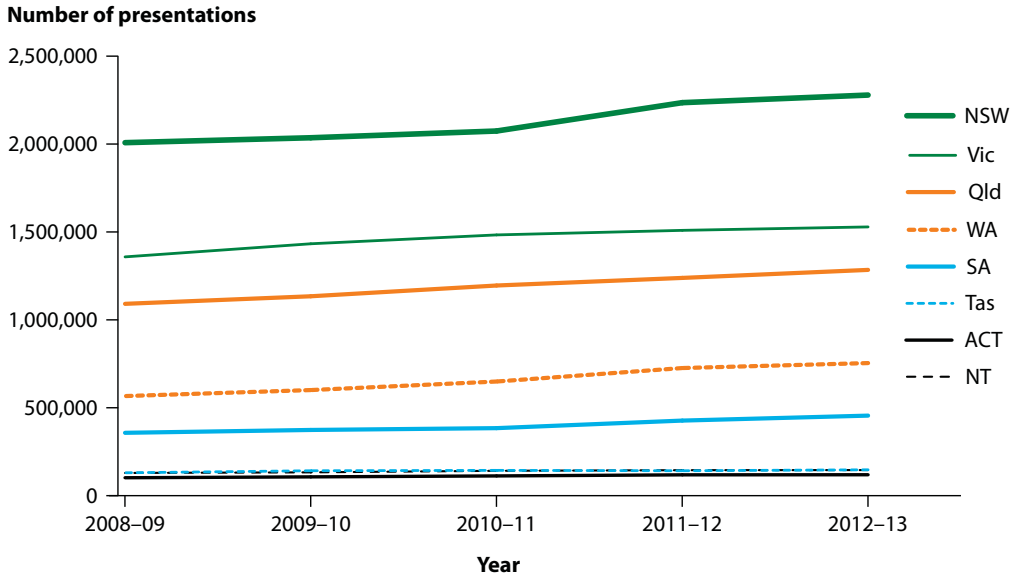
- *Category 1 Resuscitation:* immediate (within seconds)
- *Category 2 Emergency:* within 10 minutes
- *Category 3 Urgent:* within 30 minutes
- *Category 4 Semi-urgent:* within 60 minutes
- *Category 5 Non-urgent:* within 120 minutes.

How did people access emergency departments?

In 2012–13, the majority (almost 75%) of people presenting to emergency departments arrived by private transport, public transport, community transport or taxis (Table 8.3). Ambulance and aero-medical transport services made up 24% of arrivals.

The means of arrival to the emergency department varied with the triage category (see Box 8.3). For example, the proportion of presentations where the patient arrived by ambulance and aero-medical transport services ranged from 4% for *Non-urgent* patients to 85% for *Resuscitation* patients.

Figure 8.13



Source: AIHW 2013a.

Note: The number of public hospital emergency department presentations for the Northern Territory is very similar to Tasmania and is partially obscured in the above figure.

Public hospital emergency department presentations, by state and territory, 2008–09 to 2012–13

Who used emergency departments?

Males accounted for just over half of emergency department presentations, and there were more presentations for males than females in each age group, except those aged 15–34 and those aged over 74 (Figure 8.14).

People in the 15–24 year age group accounted for 15% of emergency department presentations. This group was consistently responsible for the highest numbers between 2008–09 and 2012–13. This age group represents just under 14% of the total population so is slightly over-represented in emergency department presentations.

People aged under 5 years and those aged 75 and over were also over-represented. They accounted for 12% and 11% of emergency department presentations, respectively, and 7% and 6% of the total population, respectively.

In 2012–13, there were more than 260,000 emergency department presentations in public hospitals — over 5% of the total— for Indigenous Australians, who represent 3% of the total Australian population. An AIHW study showed that the actual number of hospital admissions for Indigenous Australians was estimated at about 9% higher than currently recorded (AIHW 2013b); it is possible that presentations to emergency departments are similarly underestimated for Indigenous patients. In addition, because most of the data available relate to formal emergency departments in hospitals in major cities, emergency presentations may not all be captured in regional and remote areas where the proportion of Indigenous people (compared with other Australians) is higher than average.

Table 8.3: Emergency department presentations, by arrival mode and triage category, public hospital emergency departments, 2012–13

	Triage category					
Arrival mode	**Resuscitation**	**Emergency**	**Urgent**	**Semi-urgent**	**Non-urgent**	**Total[(a)]**
Ambulance, air ambulance or helicopter rescue service	38,363	331,751	786,988	454,299	28,695	1,640,415
Police/correctional services vehicle	284	8,091	22,869	14,856	5,100	51,227
Other[(b)]	6,578	373,745	1,498,908	2,499,134	634,314	5,018,113
Not stated/unknown	45	205	571	1,178	423	2,469
Total	**45,270**	**713,792**	**2,309,336**	**2,969,467**	**668,532**	**6,712,224**

(a) Includes presentations for which the triage category was not reported.

(b) *Other* includes presentations where patients either walked into the emergency department or came by private transport, public transport, community transport or taxi.

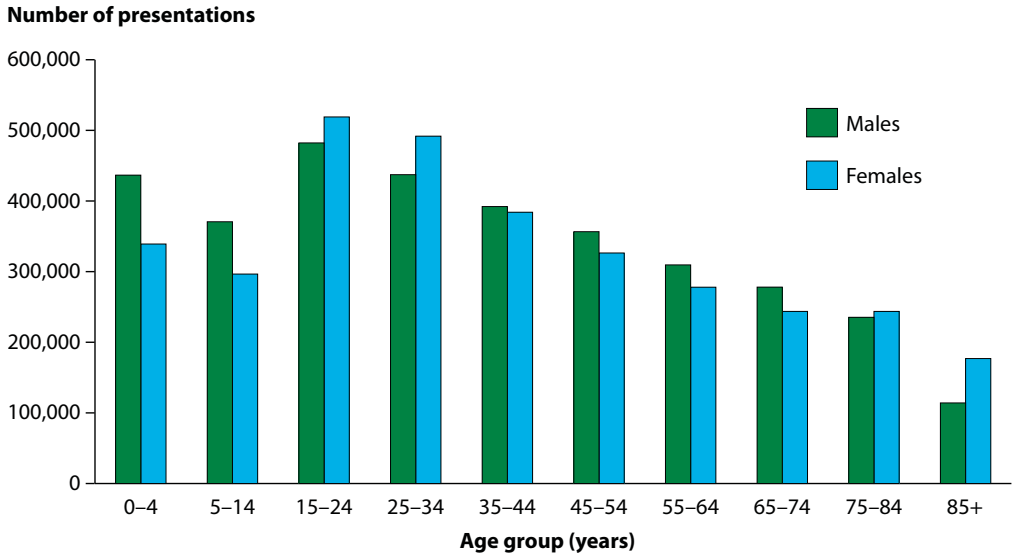
Source: AIHW 2013a.

More information on ambulance services is in Chapter 8 'Ambulance services'.

When did people go to emergency departments?

Emergency department services are available 24 hours a day 7 days a week. In 2012–13, a higher number of presentations occurred over weekends and on Mondays than on other days. On average, over two-thirds (69%) of patients arrived between the hours of 8 am and 8 pm. (Figure 8.15).

Figure 8.14



Source: AIHW 2013a.

Public hospital emergency department presentations, by age and sex, 2012–13

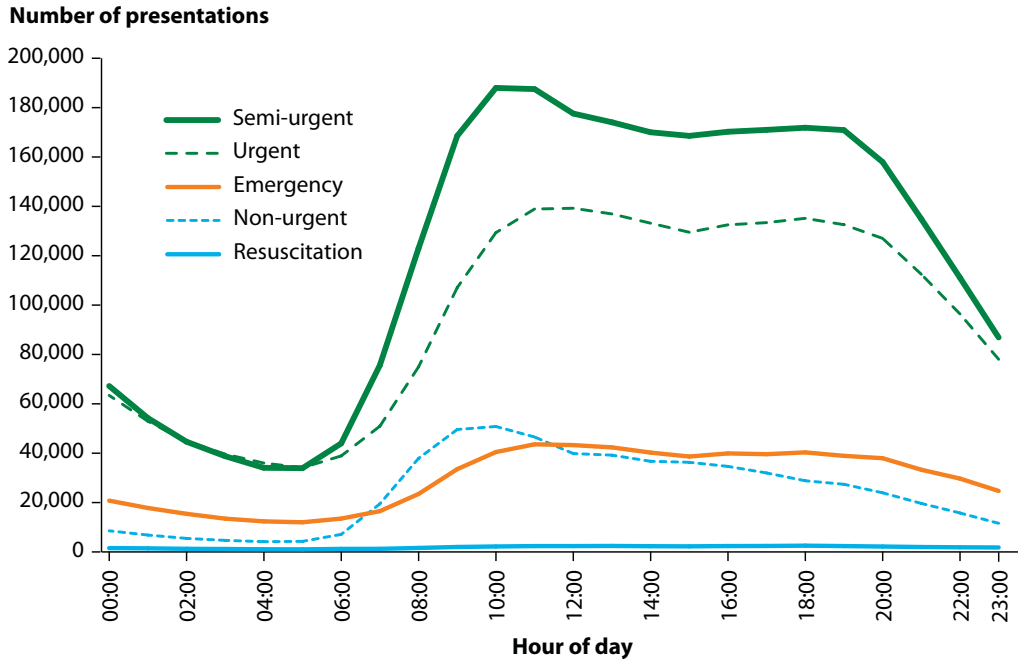
How urgent was the care?

The triage category indicates the urgency of the patient's need for medical and nursing care (see Box 8.3). In 2012–13:

- fewer than 1% of presentations were in the *Resuscitation* triage category
- 11% of presentations were in the *Emergency* category
- 35% of presentations were in the *Urgent* category
- 44% of presentations were in the *Semi-urgent* category
- 9% of presentations were in the *Non-urgent* category.

Since 2007–08, the number of emergency department presentations has increased every year for all triage categories with the exception of *Non-urgent* presentations, which have steadily decreased (AIHW 2012b).

Figure 8.15



Source: AIHW 2013a.

Emergency department presentations, by hour of presentation and triage category, public hospital emergency departments, 2012–13

Waiting times for emergency department care

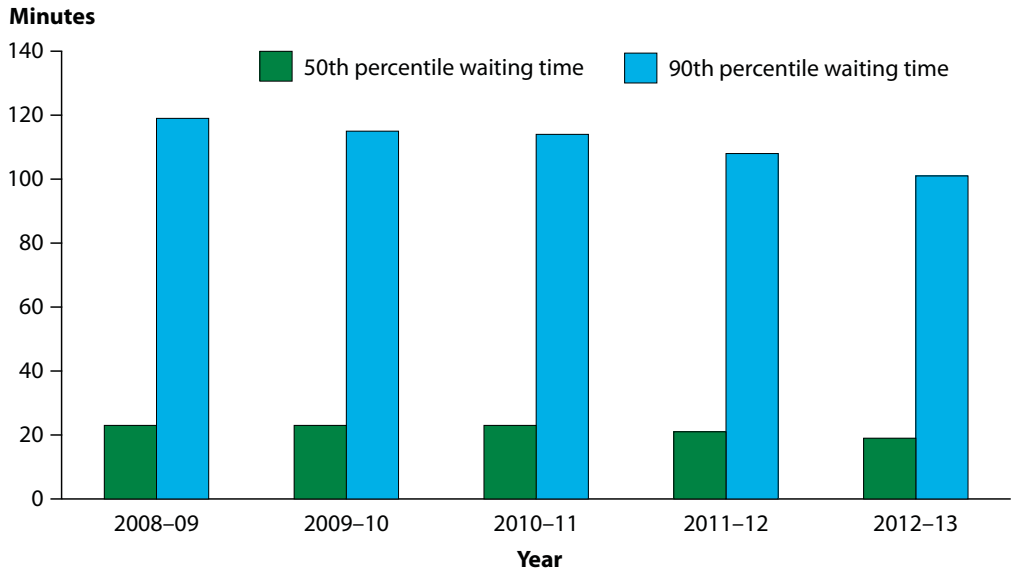
Emergency department waiting time is the time elapsed for each patient from presentation in the emergency department to commencement of clinical care. Information is presented in this section on the time elapsed during which half and 90% of emergency department patients were seen, and on the proportion of patients seen within the time specified for their triage category. The time elapsed during which half the patients were seen is also known as the 50th percentile or *median waiting time*.

How long did people wait?

Patients who present to an emergency department with a visit type of *Return visit*, *Planned*, *Pre-arranged admission* or *Patient in transit* (see Box 8.3) do not necessarily undergo the same processes as those for *Emergency presentations*, and their waiting times may rely on factors outside the control of the emergency department. Therefore, waiting time statistics are presented for *Emergency presentations* only.

In 2012–13, 50% of patients received treatment by a medical officer or a nurse within 19 minutes of presenting to the emergency department (the median waiting time) and 90% received treatment within 101 minutes of presentation. From 2008–09 to 2012–13, the median waiting time decreased from 23 minutes to 19 minutes and the waiting time for 90% of patients reduced by 18 minutes from 119 to 101 minutes (Figure 8.16).

Figure 8.16



Source: AIHW 2013a.

Emergency presentation waiting times, public hospital emergency departments, 2008–09 to 2012–13

Were people 'seen on time'?

Waiting times for emergency department care: proportion seen on time is a National Healthcare Agreement (NHA) performance indicator in the outcome area of 'hospital and related care' (COAG Reform Council 2012). Its scope is emergency departments in public hospitals classified as *Principal referral and specialist women's and children's* hospitals and *Large* hospitals.

The proportion of patients 'seen on time' is the proportion of presentations for which the waiting time to commencement of clinical care was within the time specified in the definition of the triage category, usually represented as a percentage. From 2008–09 to 2012–13, the overall proportion of emergency patients 'seen on time' increased from 70% to 72%.

In 2012–13, this proportion varied across the states and territories, from 50% in the Northern Territory, to 76% in New South Wales. The proportion of presentations seen on time also varied by triage category, with the more urgent presentations generally more likely to be seen on time. Almost 100% of *Resuscitation* patients and 82% of *Emergency* patients were seen on time.

Of emergency department presentations for Indigenous Australians, 70% were seen on time, compared with 72% for other Australians. (*Note:* The quality of the Indigenous status data has not been formally assessed and so should be interpreted with caution.)

See Chapter 9 'Indicators of Australia's health' for more information on the proportions of patients seen on time.

Time spent in the emergency department

Targets can be important tools to drive process and system improvements in health care delivery, and are used in monitoring emergency department activity. The National Emergency Access Target (NEAT), agreed by all jurisdictions under the National Partnership Agreement on Improving Public Hospital Services (NPA IHPS), sets an overall target that, by 2015, 90% of people attending an emergency department will be admitted to hospital, referred to another hospital, or discharged home within 4 hours of their initial presentation.

This target was based on advice from the Council of Australian Governments (COAG) Expert Panel established to review targets under the NPA IPHS to ensure clinical appropriateness and safety. The target is incorporated in the NHA financial year indicator *Waiting time for emergency hospital care: proportion completed within four hours*. The COAG Reform Council measures progress against this indicator, as well as progress for each state and territory against their own calendar year annual targets and against baseline data for 2010 (COAG Reform Council 2013b).

The calculation of this performance indicator includes all presentations to emergency departments (not just *Emergency presentations*). As stated previously, patients are considered to have started their visit to the emergency department when they are registered clerically or triaged, whichever happens first, and completed when they physically leave the department (regardless of whether they were admitted to the hospital, referred to another hospital, were discharged or left at their own risk).

During 2012–13, 67% of presentations nationally were completed in 4 hours or less. This was a small increase from 2011–12 (64%) (AIHW 2012b). Western Australia achieved the highest proportion (77%) of emergency department visits completed in 4 hours or less and the Australian Capital Territory had the lowest (57%).

Presentations for patients who required more urgent treatment were not as likely to be completed in 4 hours or less. For example, 53% of *Resuscitation* visits and 49% of *Emergency* visits were completed in 4 hours or less, compared with 75% of *Semi-urgent* visits and 90% of *Non-urgent* visits.

The COAG Reform Council's assessment of performance for calendar year 2012 was that in Western Australia the proportion of patients admitted from the emergency department to hospital, referred on, or discharged, within 4 hours, was 78.5% and exceeded the 76.0% target for that state. Four jurisdictions partially achieved their targets—Queensland met 49.8% of its 2012 target, South Australia met 86.3%, Tasmania met 16.0% and the Australian Capital Territory met 11.2%. Performance in New South Wales, Victoria and the Northern Territory was below the 2010 baseline (COAG Reform Council 2013b).

How was care completed?

The episode end status describes the status of the patient at the conclusion of the non-admitted patient episode in the emergency department. The episode end status can be reported as:

- *Admitted to this hospital* (including to units or beds within the emergency department)
- Non-admitted patient emergency department service episode completed—*departed without being admitted or referred* to another hospital
- Non-admitted patient emergency department service episode completed—*referred to another hospital for admission*
- *Did not wait* to be attended by a health-care professional
- *Left at own risk* after being attended by a health-care professional but before the non-admitted patient emergency department service episode was complete
- *Died in emergency department* as a non-admitted patient
- *Dead on arrival*, not treated in emergency department.

For 2012–13, almost two-thirds of presentations (for all types of visit) reported an episode end status of *Departed without being admitted or referred*, and this proportion was higher for less urgent triage categories (Table 8.4). About 27% of all presentations were *Admitted to this hospital* at the conclusion of treatment in the emergency department, and this proportion was lower for less urgent triage categories—76% for *Resuscitation* patients and less than 5% for *Non-urgent* patients.

About 4% of emergency department presentations had an episode end status of *Did not wait*. This proportion varied by triage category, and was highest for *Non-urgent* patients.

Admission to hospital from emergency departments

A key issue for hospitals is 'access block', the term for when a person has presented to an emergency department and has been judged by the attending doctor to require admission for further care, but cannot be admitted promptly because of lack of beds available in wards (National Health and Hospitals Reform Commission 2009).

In 2011, the COAG Expert Panel noted that 'access block is associated with increased mortality, along with medical errors and adverse events, time delays and discomfort for patients, increased staff turnover, staff burnout and ambulance diversion' (Commonwealth of Australia 2011).

Table 8.4: Emergency department presentations by triage category and episode end status, public hospital emergency departments, 2012–13

	Triage category					
Episode end status	**Resuscitation**	**Emergency**	**Urgent**	**Semi-urgent**	**Non-urgent**	**Total[a]**
Admitted to this hospital	34,263	411,587	886,250	450,635	32,342	1,815,209
Departed without being admitted or referred	4,883	263,798	1,283,104	2,241,537	547,068	4,341,593
Referred to another hospital for admission	2,612	25,501	45,779	22,042	1,979	97,918
Did not wait	10	1,405	49,998	180,558	60,320	294,045
Left at own risk	300	8,463	37,878	57,239	11,867	115,776
Died in emergency department	3,060	1,136	532	109	18	4,855
Total[b]	**45,270**	**713,792**	**2,309,336**	**2,969,467**	**668,532**	**6,712,224**

(a) Includes presentations for which the triage category was *Not reported*.

(b) Includes presentations for which the episode end status was *Dead on arrival* or *Not reported*.

Source: AIHW 2013a.

Nationally in 2012–13, 36% of emergency department presentations resulting in admission were completed within 4 hours. The proportion ranged from 24% in the Northern Territory to 46% in Western Australia.

The percentage of emergency department stays completed within 4 hours varied by triage category. For patients subsequently admitted, resuscitation and non-urgent patients were more likely to be admitted within 4 hours than those in other triage categories.

Nationally, 90% of emergency department visits for patients subsequently admitted were completed within 13 hours and 41 minutes, ranging from 9 hours and 42 minutes in Western Australia to 20 hours and 47 minutes in Tasmania.

Potentially avoidable emergency department presentations

Potentially avoidable GP-type presentations to emergency departments indicate the number of attendances at public hospital emergency departments that potentially could have been avoided through the provision of non-hospital health services. This is an NHA performance indicator in the outcome area of 'Australians receive appropriate high quality and affordable primary and community health services' (COAG Reform Council 2013b); it is not an indicator of hospital performance.

Such service use may reflect the availability and ease-of-access to primary and community health, and the lack of cost to the patient for emergency department attendance. This type of service use has important resource implications for hospitals.

Potentially avoidable GP-type presentations are defined for NHA reporting purposes as presentations to public hospital emergency departments in *Principal referral and specialist women's and children's* hospitals (peer group A) and *Large* hospitals (peer group B) with a type of visit of *Emergency presentation* where the patient:

- was allocated a triage category of *Semi-urgent* or *Non-urgent*, and
- did not arrive by ambulance or by police or correctional vehicle, and
- at the end of the presentation, was not admitted to the hospital, was not referred to another hospital, and did not die.

It should be noted that this is an interim specification and the definition of potentially avoidable GP-type presentations is presently under review (see 'What is missing from this picture?' below).

In 2012–13, potentially avoidable GP-type presentations were estimated to account for almost 2.2 million emergency department presentations: over 1.6 million in *Principal referral and specialist women's and children's* hospitals and almost 570,000 in *Large* hospitals (see Chapter 9 'Indicators of Australia's health' for more information).

When the Australian Bureau of Statistics (ABS) asked respondents to the 2012–13 Patient Experience Survey if they had been to a hospital emergency department for their own health in the last 12 months, 23% of people aged 15 and over who had visited an emergency department felt that a GP could have provided the care received instead (ABS 2013a).

What is missing from the picture?

As the scope of the NNAPEDCD includes all public hospitals with a formal emergency department, most of the data received relates to hospitals in capital cities or major centres. As noted in Box 8.3, smaller public hospitals, including those in more remote regions, provide some levels of emergency care for patients. Data on these services are not included in this article. For 2012–13, it is estimated that the emergency department presentations data reported to the NNAPEDCD captured 84% of all emergency occasions of service.

At present, the NNAPEDCD does not include information on the reason for presenting to an emergency department. From late 2014, national diagnosis information will be available as part of the NNAPEDCD, and work will commence on how best to use it to describe why patients attend emergency departments.

The AIHW is developing a number of new performance indicators to support the priorities agreed by the Australian Government and state and territory governments under the NPA IPHS. A performance indicator to measure unplanned re-attendances to emergency departments has been agreed. Indicators on the use of emergency department short-stay units, and patient access to

emergency surgery, are under development. The AIHW is also leading work to revise the existing NHA performance indicator, *Selected potentially avoidable GP-type presentations to emergency departments*. This work is being undertaken in consultation with a range of stakeholders, including representatives from primary care and emergency department services, and is due for implementation in 2014.

Where do I go for more information?

More information on elective surgery in Australia is available on the AIHW website www.aihw.gov.au/hospitals. The report *Australian hospital statistics 2012-13: emergency department care* and other recent publications are available for free download.

Information on emergency departments in individual hospitals is available on myhospitals.gov.au.

References

ABS (Australian Bureau of Statistics) 2013a. Patient experiences in Australia: summary of findings, 2012–13. ABS cat. no. 4839.0. Canberra: ABS. Viewed 25 November 2013, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4839.0Main+Features12012-13?OpenDocument>.

ABS 2013b. Private hospitals, Australia, 2011–12. ABS cat. no. 4839.0. Canberra: ABS. Viewed 28 November 2013, <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/5C1BFBFEA4B101FBCA257BB8007FDCD9?opendocument>.

ACEM (Australasian College for Emergency Medicine) 2013. P06 Policy on the Australasian triage scale. Melbourne: ACEM.

AIHW (Australian Institute of Health and Welfare) 2013a. Australian hospital statistics 2012–13: emergency department care. Health services series no. 52. Cat. no. HSE 142. Canberra: AIHW.

AIHW 2013b. Indigenous identification in hospital separations data: quality report. Cat. no. IHW 90. Canberra: AIHW.

AIHW 2012a. National health data dictionary, version 16. Cat. no. HWI 119. Canberra: AIHW.

AIHW 2012b. Australian hospital statistics 2011–12: emergency department care. Health services series no. 45. Cat. no. HSE 126. Canberra: AIHW.

AIHW 2010. Australian hospital statistics 2008–09. Health services series no. 34. Cat. no. HSE 84. Canberra: AIHW.

COAG (Council of Australian Governments) Reform Council 2012. National Healthcare Agreement review report July 2012. Sydney: COAG Reform Council. Viewed 18 November 2013, <http://www.coag.gov.au/node/439>.

COAG Reform Council 2013a. Healthcare 2011–12: comparing performance across Australia. Report to the Council of Australian Governments. Sydney: COAG Reform Council. Viewed 11 November 2013, <http://www.coagreformcouncil.gov.au/sites/default/files/files/Health%202011-12(1).pdf>.

COAG Reform Council 2013b. National Partnership Agreement on Improving Public Hospital Services: performance report for 2012. Sydney: COAG Reform Council.

Commonwealth of Australia 2011. Expert panel review of elective surgery and emergency access targets under the National Partnership Agreement on Improving Public Hospital Services. Canberra: Department of Health. Viewed 11 November 2013, <http://www.yourhealth.gov.au/internet/yourhealth/publishing.nsf/Content/Expert-Panel-Report/$File/Expert%20Panel%20Report-D0490.pdf>.

National Health and Hospitals Reform Commission 2009. A healthier future for all Australians—final report of the National Health and Hospitals Reform Commission. Canberra: Department of Health. Viewed 20 November 2013, <http://www.health.gov.au/internet/nhhrc/publishing.nsf/content/nhhrc-report>.

8.9 Sub-acute and non-acute hospital care

SNAPSHOT

Hospital care is often characterised as acute care, where the aim is to cure a condition, alleviate symptoms or manage childbirth. While acute care dominates hospital care, many hospitals also provide sub-acute or non-acute care, which aim to optimise a patient's functioning and quality of life. There were about 424,000 hospitalisations for sub-acute and non-acute admitted patient care in 2011–12, accounting for about 4.6% of all hospitalisations and 16.5% of days of patient care in public and private hospitals.

What is sub-acute and non-acute care?

Sub-acute care includes services with a primary clinical purpose or treatment goal of:

- Rehabilitation—care to improve the functioning of a patient with an impairment, activity limitation or participation restriction due to a health condition.
- Palliative care—care to optimise the quality of life of a patient with an active and advanced life-limiting illness.
- Geriatric evaluation and management—care to improve the functioning of a patient with multi-dimensional needs associated with medical conditions related to ageing, such as tendency to fall, incontinence, reduced mobility and cognitive impairment.
- Psychogeriatric care—care to improve the functional status, behaviour and/or quality of life for an older patient with significant psychiatric or behavioural disturbance, caused by mental illness, an age-related organic brain impairment or a physical condition.

Non-acute care is where the primary clinical purpose or treatment goal is support for a patient with impairment, activity limitation or participation restriction due to a health condition. This is also known as 'maintenance care'.

How much activity was there in 2011–12?

- Rehabilitation care was the most commonly provided sub-acute care type. For public hospitals in 2011–12 it accounted for about 96,000 hospitalisations (1.7% of the total) and 1.6 million days of patient care (8.6% of the total). In private hospitals it accounted for about 230,000 hospitalisations (6.1% of the total) and 2.7 million days of patient care (12.0% of the total).
- Allied health services were commonly reported for episodes of rehabilitation care. Most frequently reported were physiotherapy, occupational therapy, hydrotherapy, social work and dietetics interventions.
- There were also:
  - 37,000 hospitalisations for palliative care (84% in public hospitals)
  - 31,000 for geriatric evaluation and management (almost all in public hospitals)
  - 9,000 for psychogeriatric care (28% in public hospitals)
  - 25,000 for maintenance care (89% in public hospitals).

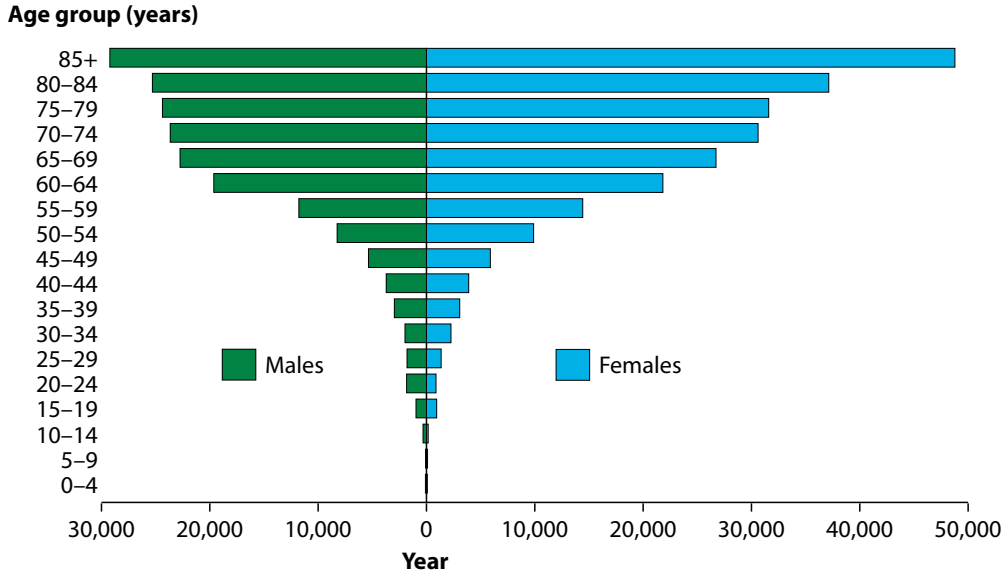
How has activity changed over time?

- Between 2007–08 and 2011–12, the number of admissions for sub-acute and non-acute care rose from about 265,000 to about 424,000, an average of 12.4% per year.
- Over this period, the average rate of increase was highest for geriatric evaluation and management in public hospitals (19.7% per year) and for rehabilitation in private hospitals (18.3% per year).

Who used these services?

- About 56% of sub-acute and non-acute hospitalisations were for females and more than 70% were for people aged over 65 (Figure 8.17).
- Sub-acute and non-acute hospitalisation rates were highest for patients living in the least socioeconomically disadvantaged areas and lowest for those in the most disadvantaged areas (26 and 13 hospitalisations per 1,000 population respectively).

Figure 8.17



Source: Australian hospital statistics 2011–12.

Sub-acute and non-acute hospitalisations, by sex and age group, all hospitals, 2011–12

How long did patients stay?

Patients receiving sub-acute and non-acute care usually stay in hospital for longer than those receiving acute care.

- Maintenance care (32 days) had the longest average length of stay of all sub-acute and non-acute care types, and rehabilitation care (8 days) the shortest in 2011–12.
- Average length of stay for sub-acute and non-acute care was longer overall in public hospitals (18 days) than in private hospitals (5). This was the case for all types of sub-acute and non-acute care except palliative care (11 and 12 days respectively) and geriatric evaluation and management (18 and 35 days respectively).

What is missing from the picture?

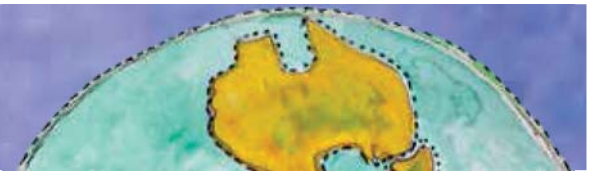
Data on admitted patient sub-acute and non-acute care are based on the overall nature of the clinical service provided to the patient during their episode of care. This might not capture all the types of care involved. For example, palliative care can be provided during episodes of care where the overall nature of the care is not palliative care. Chapter 6 'Palliative care in Australia' includes more information on this broader range of 'palliative care' services.

Sub-acute and non-acute services can also be delivered to non-admitted patients, for which very limited data are currently available. Work is under way to develop a patient-level non-admitted patient data collection for national reporting.

Where do I go for more information?

More information on sub-acute and non-acute hospital care in Australia is available on the AIHW website www.aihw.gov.au. The reports *Australian hospital statistics 2011–12* and *Trends in palliative care in Australian hospitals* and other recent publications are available for free download.

8.10 Elective surgery waiting times



Elective surgery is a term used for non-emergency surgery that is medically necessary, but for which admission can be delayed for at least 24 hours. Prioritising and scheduling patients for elective surgery is an important consideration for Australian hospitals, with the larger public hospitals managing waiting lists for this type of surgery.

Although private hospitals perform about two-thirds of elective surgery in Australia (1.3 million admissions for private hospitals compared with 673,000 for public hospitals in 2012–13), waiting time information is only collected for public hospitals.

How much elective surgery was performed in public hospitals in 2012–13?

- In 2012–13, 673,000 patients were admitted to public hospitals from elective surgery waiting lists (as elective or emergency hospitalisations).
- These hospitalisations increased by an average of 2.9% each year between 2008–09 and 2012–13, and admissions per 1,000 population increased by an average of 1.2% per year, from 28.0 to 29.4.
- At the same time, however, there was an overall increase in the estimated coverage of the data collection, from 88% to 93% of admissions, mostly due to an increase in the number of reporting hospitals.
- Almost 1 in 4 people who had elective surgery were admitted for general surgery (that focuses on organs of the abdomen) and about 1 in 7 for orthopaedic surgery.

How long did people wait for surgery?

- In 2012–13, 50% of patients (the median) were admitted within 36 days of being placed on the waiting list and 90% were admitted within 265 days. Just 2.7% waited more than 1 year.
- The shortest median waiting time was in Queensland (27 days) and the longest in the Australian Capital Territory (51 days).
- The median waiting time was 35 days for *Principal referral and specialist women's and children's* hospitals, 38 days for *Large* hospitals and 45 days for *Medium* hospitals.
- In 2011–12, there were shorter waiting times for admissions with a principal diagnosis of cancer (median of 19 days) compared with other admissions (43 days) and for most surgical specialties.

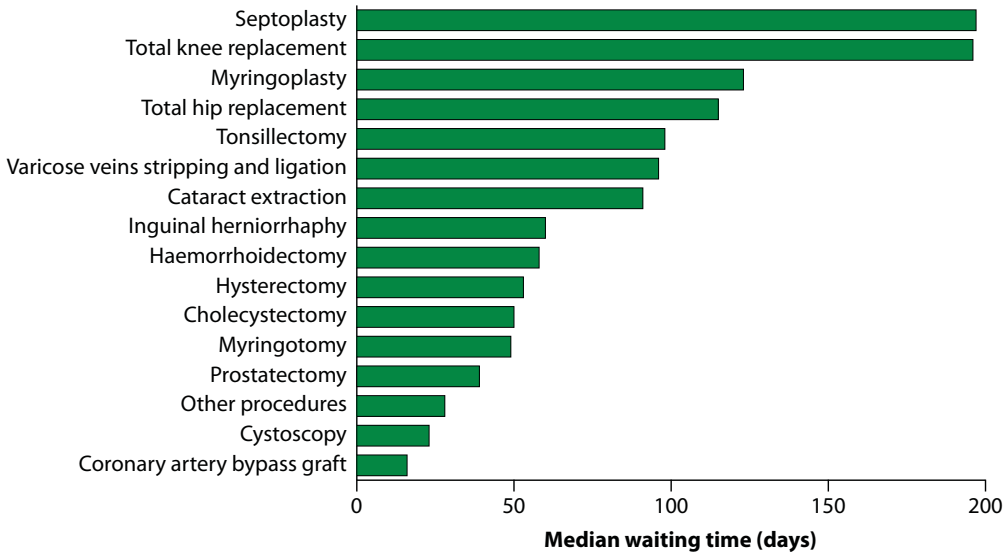
Surgical specialties and specific procedures

- The longest median waiting times by surgical specialty were for ophthalmology; ear, nose and throat surgery and orthopaedic surgery (76, 68, and 65 days respectively). Cardiothoracic surgery had the shortest median waiting time (17 days).
- Between 2008–09 and 2012–13, the median waiting time increased for all surgical specialties except urology and vascular surgery. The largest increase in median waiting time was for orthopaedic surgery, from 52 days to 65 days.

SNAPSHOT

- Since 2008–09, ear, nose and throat surgery, and orthopaedic surgery, have been the 2 surgical specialties with the highest proportion of patients who waited more than 365 days to be admitted. Cardio-thoracic surgery has been the specialty with the lowest proportion.
- In 2012–13, about one-third of patients admitted for elective surgery had been waiting for 1 of 15 high-volume procedures (Figure 8.18). Surgery to straighten the cartilage and bone between the nostrils (septoplasty) and total knee replacement had the longest median waiting times in 2012–13, at 197 days and 196 days respectively.

Figure 8.18



Source: AIHW 2013a.

Median waiting times, for high-volume procedures, 2012–13

How have waiting times changed over time?

During the 5 years from 2008–09 to 2012–13, median waiting times for elective surgery in public hospitals increased from 33 to 36 days and the number of days within which 90% of patients were admitted rose from 219 to 265. However, the proportion of patients who were admitted after a year or more remained at about 3%. Median waiting times rose for the surgical specialties of: cardio-thoracic surgery; ear, nose and throat surgery; gynaecological surgery; ophthalmic surgery; and orthopaedic surgery. Median waiting times fluctuated or remained fairly steady for other specialties.

The National Elective Surgery Target

The National Elective Surgery Target (NEST) is a performance measure required to be reported under the National Partnership Agreement on Improving Public Hospital Services (NPA IHPS). The aim of the NEST is to increase the proportion of people seen within the clinically recommended time, to reduce overdue wait times, and to treat those who have waited longest beyond the clinically recommended time. The Council of Australian Governments (COAG) Reform Council reports progress towards specific state and territory targets, and against baseline performance in 2010. The first report covered the 2012 calendar year (COAG Reform Council 2013).

There are 2 parts to the NEST covering 3 requirements. Part 1 sets targets for the proportion of patients seen within clinically recommended times. Part 2 sets targets for the average number of days waiting, for patients who waited longer than clinically recommended times. Part 2 also requires governments to ensure that, in a given year, of all the patients who have waited longer than clinically recommended, the 10% who have waited the longest are seen in that year.

Each of these 3 requirements is assessed with regard to the 3 clinical urgency categories that determine clinically recommended times for procedures—surgery required within 30, 90 and 365 days. Hence, there are 9 specific targets for each state and territory. Variations in the assignment of clinical urgency categories mean that the measures based on these categories are not comparable between jurisdictions.

For 2012, the COAG Reform Council assessed that:

- New South Wales, Victoria, Queensland, the Australian Capital Territory and the Northern Territory achieved their targets for people seen within clinically recommended times for at least 1 clinical urgency category. The remaining states partially achieved their targets for at least 1 clinical urgency category.
- New South Wales, Victoria, Western Australia, the Australian Capital Territory and the Northern Territory achieved their targets to reduce average overdue waiting times for at least 1 clinical urgency category.
- New South Wales, Victoria, Western Australia, South Australia and the Australian Capital Territory had provided surgery, or appropriate treatment options had been identified, for the 10% of longest waiting patients (those who had waited longest at 31 December 2011).
- Tasmania and the Northern Territory had provided treatment or referral for all patients who had been assessed as requiring surgery within 30 days.

SNAPSHOT

What is missing from the picture?

For 2012–13, the National Elective Surgery Waiting Times Data Collection (NESWTDC) covered most public hospitals that undertook elective surgery and about 93% of public hospital elective surgery. Private hospitals do not report to the NESWTDC.

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 a package of integrated reforms for national definitions for elective surgery urgency categories (AIHW 2013b). Health ministers have agreed with these recommendations, which are being implemented. Once this has occurred, waiting times can be meaningfully compared for each state and territory for each urgency category; the same will apply to proportions of patients who had their surgery within the clinically recommended time.

Where do I go for more information?

More information on elective surgery in Australia is available on the AIHW website www.aihw.gov.au/hospitals. The report *Australian hospital statistics 2012-13: elective surgery waiting times* and other recent publications are available for free download.

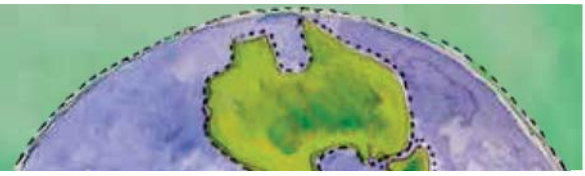
References

AIHW (Australian Institute of Health and Welfare) 2013a. Australian hospital statistics 2012–13: elective surgery waiting times. Health services series no. 51. Cat. no. HSE 140. Canberra: AIHW.

AIHW 2013b. National definitions for elective surgery urgency categories: proposal for the Standing Council on Health. Cat. no. HSE 138. Canberra: AIHW.

COAG (Council of Australian Governments) Reform Council 2013. National Partnership Agreement on Improving Public Hospital Services: performance report for 2012. Sydney: COAG Reform Council.

8.11 The rise of private hospitals



FEATURE ARTICLE

FEATURE ARTICLE

Private hospitals are a long-standing and important part of Australia's health-care delivery arrangements. In 2011–12, the 592 private hospitals in Australia accounted for 44% of Australia's 1,345 hospitals and 33% of all available hospital beds (ABS 2013; AIHW 2013). More than 40% of all hospitalisations occurred in private hospitals, including 2 out of every 3 hospitalisations involving elective surgery.

The volume of private hospital hospitalisations increased over the 10 years to 2011–12 by 47%—a faster rate than public hospitals (35%). The shift toward same-day hospital care contributed to this, with same-day hospitalisations accounting for 69% of private hospital hospitalisations in 2011–12, compared with 60% 10 years previously.

The growing role for private hospitals in Australia's health system has been supported by the Australian Government through measures such as the Private Health Insurance Rebate, and reflected in the inclusion of private hospitals in national performance monitoring initiatives such as those of the National Healthcare Agreement, and in the Performance and Accountability Framework of the National Health Reform Agreement (COAG 2012; NHPA 2013).

This article highlights the role that private hospitals play in the provision of hospital services in Australia and recent changes in the nature of the services that they deliver.

Structure of the private hospital industry

Private hospitals are generally grouped into those hospitals that provide services on a day-only basis (free-standing day hospital facilities, or 'day hospitals') and those that provide overnight care (referred to here as 'overnight hospitals'). This distinction reflects that, under state and territory regulatory arrangements, overnight care requires the provision of 24-hour qualified nursing care that permits a broader range of medical and surgical procedures to be undertaken. Some hospitals offering overnight care also provide same-day services.

Private hospital ownership

Private hospitals are those that are owned and managed by private organisations, whether for-profit or not-for-profit. They exclude privately owned hospitals contracted by governments to provide public hospital services (11 hospitals in 2011–12). Private hospitals generally fall into 5 main 'ownership' types:

- for-profit group (that is a group of hospitals owned and/or operated by 1 company)
- for-profit independent
- not-for-profit religious/charitable group
- not-for-profit religious/charitable independent
- other not-for-profit hospitals (comprising bush nursing, community, and memorial hospitals).

Not-for-profit hospitals are those that qualify as non-profit organisations with either the Australian Taxation Office or the Australian Securities and Investments Commission.

Nearly 60% of private overnight hospitals in Australia in 2011–12 operated on a for-profit basis. A further 30% were religious or charitable not-for-profit hospitals, with the remainder considered other not-for-profit hospitals (ABS 2013).

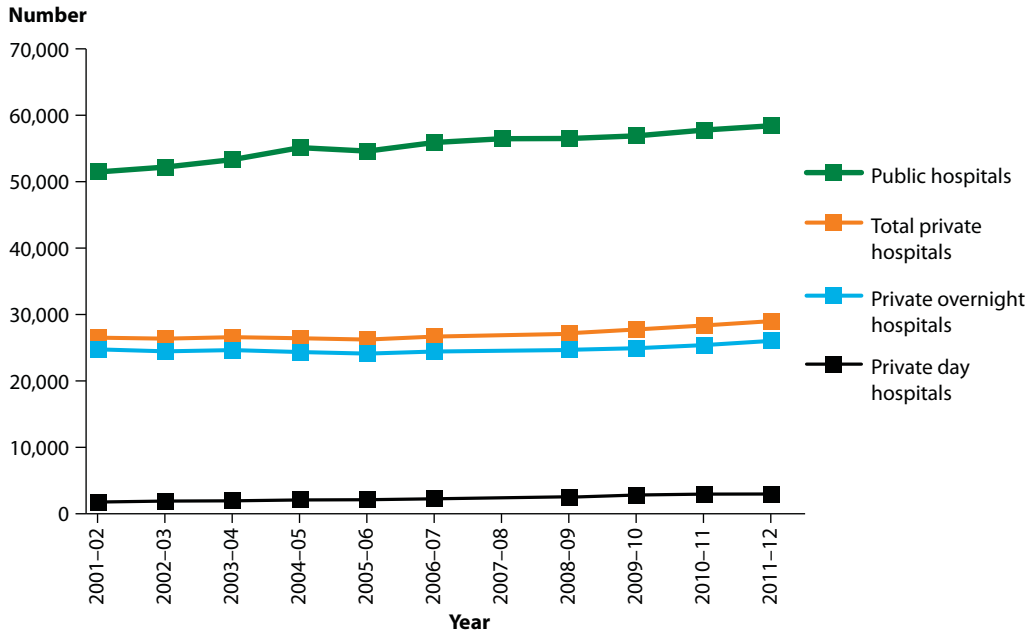
Numbers of private hospitals and beds

The number of private day hospitals increased from 236 to 311 between 2001–02 and 2011–12, a 32% increase. There were 2,973 beds or chairs available in private day hospitals in 2011–12, up 69% from 2001–02 (Figure 8.19).

In 2011–12, there were 281 private overnight hospitals operating in Australia, 7% fewer than the 301 hospitals reported for 2001–02 (ABS 2013). However, the number of available beds or chairs in private overnight hospitals rose by 5% over this period, from 24,748 to 26,031.

As a point of comparison, the number of public hospitals rose by 1% and the number of public hospital beds rose by about 14% over the same decade.

Figure 8.19



Note: Data on private hospitals are not available for 2007–08, and have been estimated. Small numbers of hospitals may be re-categorised as public or private between or within years.

Sources: ABS 2003, 2004, 2005, 2006, 2007, 2009, 2010, 2011, 2012, 2013.

Numbers of private and public hospital beds, 2001–02 to 2011–12

Private hospital size

On average, day hospitals had about 10 beds and chairs in 2011–12 and overnight hospitals, 93 beds. For day hospitals, 35% had 5 or fewer beds and chairs and 41% had 9 or more beds and chairs. About 18% of overnight hospitals had 25 or fewer beds and 10% had over 200 beds (ABS 2013).

Specialist facilities provided by private hospitals

Over recent years, there have been shifts in the patterns of specialised services and facilities offered at both day hospitals and overnight hospitals.

In 2011–12, there were 198 overnight hospitals with operating theatres, similar to the 201 in 2001–02. However, these hospitals had a total of 1,051 operating theatres, 268 more than in 2001–02 (ABS 2003, ABS 2013).

The profile of the specialised services provided by private hospitals has changed markedly in the last decade. Among the most commonly reported specialist services in 2011–12, the following had risen in number since 2001–02:

- rehabilitation units (82 units compared with 42 reported in 2001–02)
- sleep centres (96 compared with 49 reported in 2001–02)
- specialised paediatric services (70 compared with 28 reported in 2001–02)
- residential aged care services (65 compared with 7 reported in 2001–02)
- high dependency units (59 compared with 53 reported in 2001–02).

The following decreased in number:

- dedicated day surgery units (126, compared with 139 reported in 2001–02)
- labour wards (69 compared with 89 reported in 2001–02)
- neonatal intensive care units (57 compared with 67 reported in 2001–02)
- emergency departments (23 compared with 28 in 2001–02).

Private day hospitals often specialise in a select group of procedures to a greater extent than overnight hospitals (Productivity Commission 2009). In 2011–12, specialised day hospitals included:

- 11 chemotherapy clinics
- 14 dialysis clinics
- 39 eye surgery hospitals
- 22 plastic and reconstructive surgery hospitals
- 51 endoscopy clinics
- 8 fertility clinics
- 10 oral and maxillofacial surgery hospitals (AIHW forthcoming).

In line with the 69% increase in day hospital beds between 2001–02 and 2011–12, the number of operating theatres in day hospitals increased by 49% to 321. In the same period the number of procedure rooms increased by 45% to 260 rooms.

Private hospital care

Private hospitals—both day hospitals and overnight hospitals—mainly provide care to admitted patients. Some overnight private hospitals also provide emergency department and outpatient services.

Admitted patient care

In 2011-12, there were 3.7 million hospitalisations in private hospitals (AIHW 2013). As mentioned earlier, the volume of private hospital hospitalisations increased in Australia between 2001–02 and 2011–12 by 47%, which was a faster rate than the increase in hospitalisations in public hospitals (35%). The proportion of all hospitalisations provided by private hospitals rose 2 percentage points to 40% between 2001–02 and 2011–12 (AIHW 2007, 2013).

Same-day hospitalisations are accounting for an increasing proportion of private hospital activity. As mentioned earlier, in 2011–12, same-day hospitalisations accounted for 69% of private hospital hospitalisations, compared with 60% in 2001–02 (Figure 8.20).

In 2011–12, private hospitals provided more than 30% of all days of patient care for admitted patients in hospital, with a 4% increase in the number of days provided from 2001–02 (compared with an increase of 3% for public hospitals). So, even though the number of private hospitalisations rose markedly between 2001–02 and 2011–12 (by 47%), the total number of days of patient care did not rise to the same extent, reflecting the increasing proportion of same-day hospitalisations in private hospital activity.

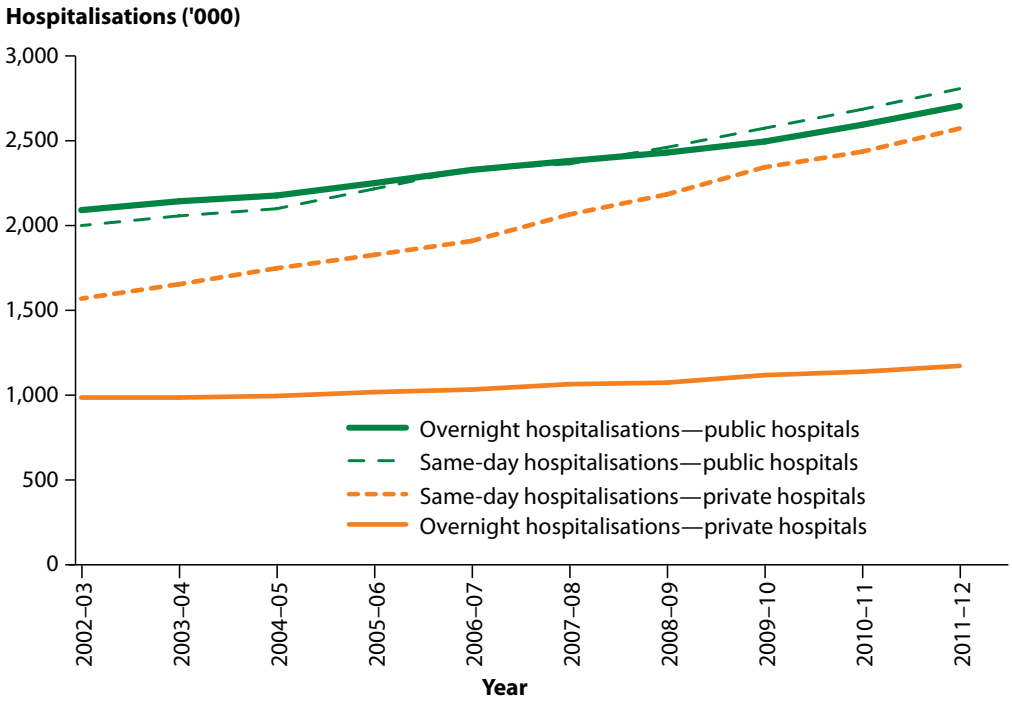
Principal diagnoses

For each hospitalisation, a principal diagnosis is reported. This describes the chief reason for the patient's hospitalisation and is usually a disease, injury or poisoning. The most common principal diagnoses for private hospital hospitalisations related to *Factors influencing health status and contact with health services*, which includes care involving dialysis and chemotherapy (around a million hospitalisations), *Diseases of the digestive system* (around 500,000 hospitalisations) and *Neoplasms* (malignant or benign tumours) (around 320,000 hospitalisations).

Compared with public hospitals, a greater proportion of hospitalisations in private hospitals were for *Neoplasms* (8% of all hospitalisations in private hospitals compared with 5% of all hospitalisations in public hospitals), *Diseases of the eye and adnexa* (6% and 2% respectively), *Diseases of the digestive system* (13% and 8% respectively) and *Diseases of the musculoskeletal system and connective tissue* (8% and 3% respectively).

Between 2007–08 and 2011–12, the largest increases in the numbers of hospitalisations in private hospitals were for chemotherapy (by 32% to 217,246 hospitalisations) and haemodialysis (by 29% to 226,998 hospitalisations).

Figure 8.20



Note: Not all private hospitalisations are included in the National Hospital Morbidity Database across this time period, so counts presented here may be under-estimates.

Sources: AIHW 2008, 2013.

Same-day and overnight hospitalisations ('000), public and private hospitals, 2002–03 to 2011–12

Care provided

In 2011–12, more than one-third of hospitalisations (37%) were reported as *Medical* (did not involve an operating room procedure), more than one-third (37%) were *Surgical* (involved an operating room procedure) and about 20% were *Other* care (involved a non-operating room procedure, such as endoscopy). *Childbirth* admissions accounted for 2% of hospitalisations and *Specialist mental health* for 4%.

A larger proportion of private hospital admissions involved *Surgical* care than in public hospitals (37% compared with 21%), and a smaller proportion involved *Medical* care (37% compared with 77%). Private hospitals accounted for 1 out of every 4 admissions for childbirth. They also provided 61% of same-day hospitalisations for chemotherapy (AIHW 2013).

The complexity of hospital care provided to admitted patients can be estimated using average *cost weights*. The cost weight for a hospital is the ratio of the average cost of its hospitalisations compared with the average cost for all acute hospitalisations. Where a hospital has a cost weight above 1.0, on average its hospitalisations have an above-average cost, and the hospital is likely to provide more complex care than average.

In 2011–12, public hospitals and private overnight hospitals had similar average cost weights (0.99 and 1.01 respectively). Private day hospitals had a much lower average cost weight (0.47), suggesting that private day hospitals generally provide less complex care (AIHW 2013).

Sub-acute and non-acute care

Between 2007–08 and 2011–12, private hospital admissions for sub-acute and non-acute care rose by an average of 17% per year, from about 130,000 admissions to about 242,000. In 2011–12, almost 6% of private hospital admissions were for sub-acute and non-acute care compared with 3% for public hospitals.

Of the different types of sub-acute and non-acute care, private hospitals provided about:

- 227,000 hospitalisations for rehabilitation care (70% of all such hospitalisations)
- 6,200 hospitalisations for psychogeriatric care (72%)
- 5,900 hospitalisations for palliative care (16%)
- 2,700 hospitalisations for maintenance care (11%)
- 100 hospitalisations for geriatric evaluation and management (<1%) (AIHW 2013).

More information on these types of care is in Chapter 8 'Sub-acute and non-acute hospital care'.

Elective care

Hospitalisations can be categorised as *Emergency* (required within 24 hours), or *Elective* (required at some stage beyond 24 hours). Some hospitalisations, for example obstetric care and planned care such as dialysis, are not assigned an emergency/elective status. In 2011–12, 5% of private hospital hospitalisations were *Emergency* admissions, whereas, for public hospitals, 40% were *Emergency* admissions. In 2011–12, 89% of private hospital hospitalisations were *Elective* (or other planned care), rising from 86% in 2001–02 (AIHW 2013).

Private hospitals accounted for 2 out of every 3 elective hospitalisations involving surgery, with lens procedures being the most common procedure (144,300 private hospital admissions).

Length of hospital stay

The average length of hospital stay (including same-day hospitalisations) was longer in public hospitals, at 3.4 days, than in private hospitals, at 2.3 days in 2011–12. Excluding same-day hospitalisations (so overnight patients only), the average length of stay was 6.0 days in public hospitals and 5.3 days for private hospitals (AIHW 2013). The average length of stay for overnight patients in private hospitals remained stable over the 5 years to 2011–12.

Relative stay indexes (RSIs) summarise the length of stay for admitted patients, with adjustments for casemix (the types of patient treated and the type of treatment provided). An RSI greater than 1.0 indicates that an average patient's length of stay is higher than expected, given the casemix for the hospital. Conversely, an RSI less than 1.0 indicates that the length of stay was less than expected. The directly standardised RSI for private hospitals was 1.1 compared with 1.0 for public hospitals in 2011–12, indicating comparatively slightly longer lengths of stay for the private sector overall. There were relatively longer lengths of stay for medical admissions in private hospitals (RSI of 1.24 compared with 0.96 in public hospitals), and relatively shorter lengths of stay for surgical admissions in private hospitals (RSI of 0.98 compared with 1.04 in public hospitals) (AIHW 2013).

Non-admitted patient care

There were 2.1 million non-admitted patient occasions of service in overnight hospitals in 2011–12, an increase of 18% from 2001–02. The main driver of this increase was allied health services, which rose by 47% from 2001–02, to 602,300 occasions of service in 2011–12.

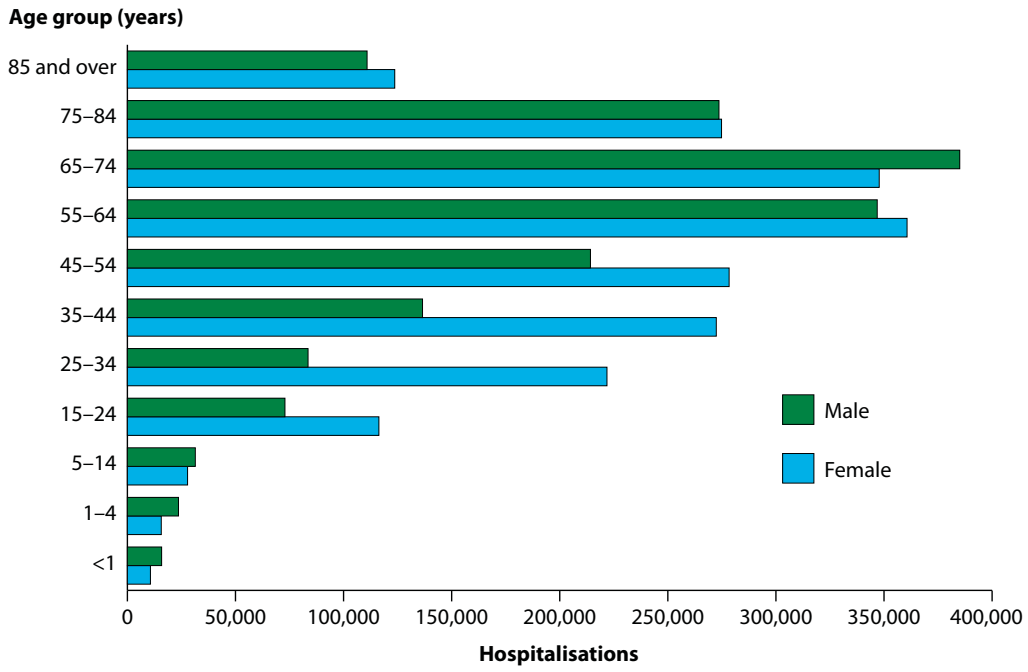
The other most commonly provided non-admitted patient services were accident and emergency (530,600 in 2011–12, an increase of 11% from 2001–02), and pathology (249,800, an increase of 24% from 2001–02) (ABS 2013).

Who uses private hospitals?

There is no national information on patient characteristics for people receiving emergency department and outpatient care from private hospitals. However, this information is available for people admitted to private hospitals.

In 2011–12, females accounted for 55% of all private hospital admissions. By age group, the highest proportion of female admissions was for those aged 55–64 (18%) (Figure 8.21). There were more female patients than male patients in almost all age groups, with the differences being most marked where women were of child-bearing age.

Figure 8.21



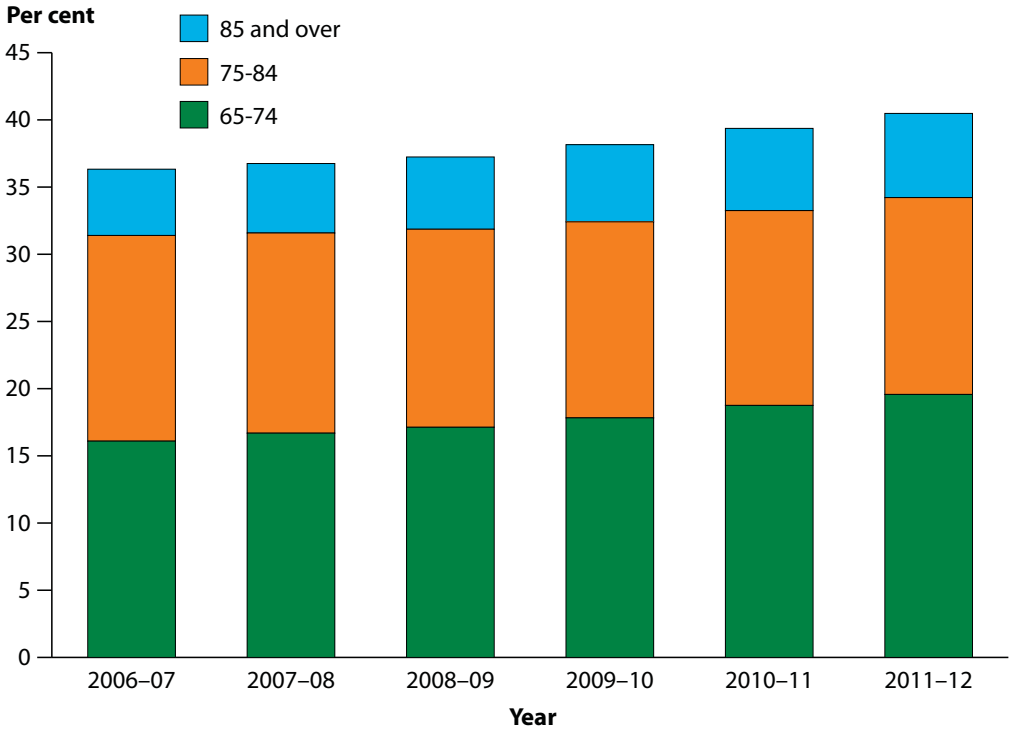
Source: AIHW 2013.

Hospitalisations, by age and sex, private hospitals, Australia, 2011–12

In 2011–12, more than 1.5 million admissions in private hospitals were for patients aged 65 and over, representing 41% of all private hospital admissions (AIHW 2013). The proportion of private hospitalisations for patients aged 65 and over rose steadily between 2006–07 and 2011–12, from 36% to 41% (Figure 8.22). The proportion for patients aged 85 and over rose from 5% to 6%.

Private hospitalisation rates vary across remoteness areas and socioeconomic groups. Access to private hospital care is highest for those living in *Major cities* (175 hospitalisations per 1,000 population, compared with 70 hospitalisations per 1,000 in *Very remote* areas). People living in areas of least socioeconomic disadvantage are much more likely to use private hospitals than those living in areas of most socioeconomic disadvantage (227 hospitalisations per 1,000 compared with 103) (AIHW 2013).

Figure 8.22



Source: AIHW 2013.

Proportion of private hospitalisations for patients aged 65 and over, by age group, 2006–07 to 2011–12

Private hospital income and funding

In 2011–12, total income for private hospitals was estimated to be $11.2 billion, with day hospitals accounting for $876 million (8%) and overnight hospitals accounting for $10.4 billion (92%) (ABS 2013). When income is adjusted to remove the effects of price changes, the average annual increase over the 5 years from 2006–07 was 11% for day hospitals and 5% for overnight hospitals, reflecting the relative growth in activity of the 2 hospital types (ABS 2008, 2013).

Private hospitals are mainly funded by private health insurance and compensation schemes. More than three-quarters of private hospitalisations were funded by private health insurance, with most of the rest funded by the Department of Veterans' Affairs or under compensation scheme arrangements, with a small proportion self-funded. Between 2001–02 and 2011–12, the proportion of hospitalisations covered by private health insurance increased from 63% to 67% for private day hospitals and from 80% to 87% for overnight hospitals (ABS 2003, 2013).

Private hospitals provided care for 84% of hospitalisations funded by private health insurance and 80% of self-funded hospitalisations in 2011–12. They also provided care for 63% of hospitalisations for Department of Veterans' Affairs patients (AIHW 2013).

Relationships with public hospitals

In many instances, public and private hospitals do not operate in isolation from each other, but instead provide health-care services in a coordinated manner. Interactions between public and private hospitals include contracted care arrangements, co-location and resource sharing, and private sector involvement in hospital infrastructure development for public patients. More details on these arrangements are provided below.

Contracted admitted patient care

In some circumstances, hospitals provide care to admitted patients through inter-hospital contracted care arrangements, in which the care is organised and paid for by 1 hospital but provided by another. In 2011–12, about 62,000 hospitalisations were contracted by public hospitals to private hospitals—that is, the public hospitals paid for the care and the private hospitals provided the care. This represented 78% of all inter-hospital contracted patients, up from 66% (33,500 hospitalisations) in 2007–08 (AIHW 2009, 2013).

The remaining contracts were either between public hospitals, or by private hospitals to public hospitals.

Co-location and resource sharing

Co-locating a private hospital with a public hospital allows for the sharing of facilities, equipment and staff, provides greater convenience for doctors, and enhances patient choice, allowing them access to a wider range of services. In 2011–12 there were 9 private day hospitals and 41 overnight hospitals co-located with public hospitals in Australia (ABS 2013).

Hospital infrastructure development

Another form of public–private relationship is 'build, own, operate and transfer' arrangements. Under these arrangements, the private sector finances and builds new hospital facilities to treat public patients in return for the right to operate the facilities and receive funding from state and territory governments. In 2011–12, there were 11 hospitals that were privately owned and/or operated that provided public hospital services predominantly or substantially funded by state governments (AIHW 2013).

What is missing from the picture?

Private hospital data are collected, analysed and disseminated through multiple reporting pathways including the Australian Bureau of Statistics' Private Health Establishments Collection, the Australian Government Department of Health's Private Hospital Data Bureau and the Hospital Casemix Protocol, and the AIHW's National Hospital Morbidity Database. This diversity of data sources creates the risk that private hospital data could be inconsistent across the various collections and possibly inconsistent with data for public hospitals. Because data on financial and establishment characteristics are collected separately from hospital activity data, it can be difficult to link the data and so analyse relationships between financial and activity trends. That type of analysis would be important for the improved assessment of the relative performance of public and private hospitals that is a priority reform area identified in the National Healthcare Agreement.

As with public hospitals, work is under way to improve the measurement and public reporting of private hospital safety and quality indicators.

Where do I go for more information?

More information on private hospital activity in Australia is available on the AIHW and ABS websites at www.aihw.gov.au/australias-hospitals-at-a-glance-2011-12/ and www.abs.gov.au, respectively. Other AIHW publications on hospitals are at www.aihw.gov.au/hospitals-publications/.

References

ABS (Australian Bureau of Statistics) 2003. Private hospitals, Australia, 2001–02. ABS cat. no. 4390.0. Canberra: ABS. Viewed 11 December 2013, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/DF6290E7036AE6ACCA256F15007B1F51?opendocument >.

ABS 2004. Private hospitals, Australia, 2002–03. ABS cat. no. 4390.0. Canberra: ABS. Viewed 28 November 2013, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/04A2D804BFCF23E0CA25704C0078E8E9?opendocument >.

ABS 2005. Private hospitals, Australia, 2003–04. ABS cat. no. 4390.0. Canberra: ABS. Viewed 28 November 2013, <http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/4DA816FBC3C35E46CA25704C0078EC9C/$File/43900_2003-04.pdf >.

ABS 2006. Private hospitals, Australia, 2004–05. ABS cat. no. 4390.0. Canberra: ABS. Viewed 28 November 2013, <http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/9D89E9312133BE1ACA2571AA001850DF/$File/43900_2004-05.pdf>.

ABS 2007. Private hospitals, Australia, 2005-06. ABS cat. no. 4390.0. Canberra: ABS. Viewed 28 November 2013, <http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/78D3A2AE0D94AFBDCA2572EB00764753/$File/43900_2005-06.pdf >.

ABS 2009. Private hospitals, Australia, 2006–07. ABS cat. no. 4390.0. Canberra: ABS. Viewed 28 November 2013, <http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/29CE8A3AB4BA4527CA25745700181957/$File/43900_2006-07.pdf >.

ABS 2010. Private hospitals, Australia, 2008–09. ABS cat. no. 4390.0. Canberra: ABS. Viewed 28 November 2013, <http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/E042EA3BCD510E84CA257731001AC4AD/$File/43900_2008-09.pdf >.

ABS 2011. Private hospitals, Australia, 2009–10. ABS cat. no. 4390.0. Canberra: ABS. Viewed 28 November 2013, <http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/7D6C5E0CD618D655CA2578B100186062/$File/43900_2009-10.pdf >.

ABS 2012. Private hospitals, Australia, 2010–11. ABS cat. no. 4390.0. Canberra: ABS. Viewed 28 November 2013, <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/BB102E8B1E0AA5EECA257A7100152183?opendocument>.

ABS 2013. Private hospitals, Australia, 2011–12. ABS cat. no. 4390.0. Canberra: ABS. Viewed 28 November 2013, <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/5C1BFBFEA4B101FBCA257BB8007FDCD9?opendocument>.

AIHW (Australian Institute of Health and Welfare) 2008. Australian hospital statistics 2006–07. Health services series no. 31. Cat. no. HSE 55. Canberra: AIHW.

AIHW 2009. Australian hospital statistics 2007–08. Health services series no. 33. Cat. no. HSE 71. Canberra: AIHW.

AIHW 2013. Australian hospital statistics 2011–12. Health services series no. 50. Cat. no. HSE 134. Canberra: AIHW.

AIHW, forthcoming. Australian hospital peer groups. Canberra: AIHW.

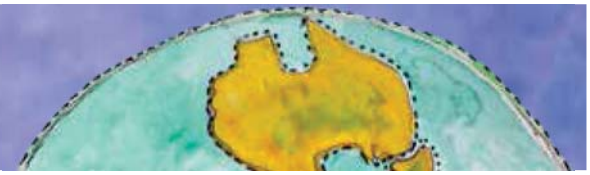
COAG (Council of Australian Governments) 2012. National Healthcare Agreement. Canberra: Treasury. Viewed 4 February 2014, <http://www.federalfinancialrelations.gov.au/content/npa/healthcare/national-agreement.pdf>.

NHPA (National Health Performance Authority) 2013. Our work. Sydney: NHPA. Viewed 18 November 2013, <http://www.nhpa.gov.au/internet/nhpa/publishing.nsf/Content/Our-work>.

Productivity Commission 2009. Public and private hospitals. Research report. Canberra: Productivity Commission.

FEATURE ARTICLE

8.12 Safety and quality of hospital care



SNAPSHOT

SNAPSHOT

The safety and quality of our hospital services is often under public scrutiny. Safety is defined 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. Quality is a broad concept about whether health care achieved the desired effect for the patient and whether it was delivered in line with standards or guidelines. Both relate to the broader concept of health service performance in the National Health Performance Framework (NHPF), as outlined in Chapter 9, 'Indicators of Australia's health'.

There are several indicators of the safety and quality of hospital care being implemented nationally, under the following arrangements: to monitor the performance of jurisdictions under the National Healthcare Agreement; indicators specified in the Performance and Accountability Framework for monitoring the performance of hospitals under the National Health Reform Agreement (NHPA 2013); indicators being developed by the Australian Commission for Safety and Quality in Health Care to support its various hospital safety and quality initiatives (ACSQHC 2013); and as set out in the National Health Performance Framework and reported by AIHW (see Chapter 9 'Indicators of Australia's Health'—'Adverse events in hospitals' and 'Falls resulting in patient harm').

Two indicators with nationally consistent data are reported in this snapshot: *Staphylococcus aureus* bacteraemia ('SAB' or 'golden staph') in hospitals; and readmissions to hospitals after surgery.

Staphylococcus aureus bacteraemia

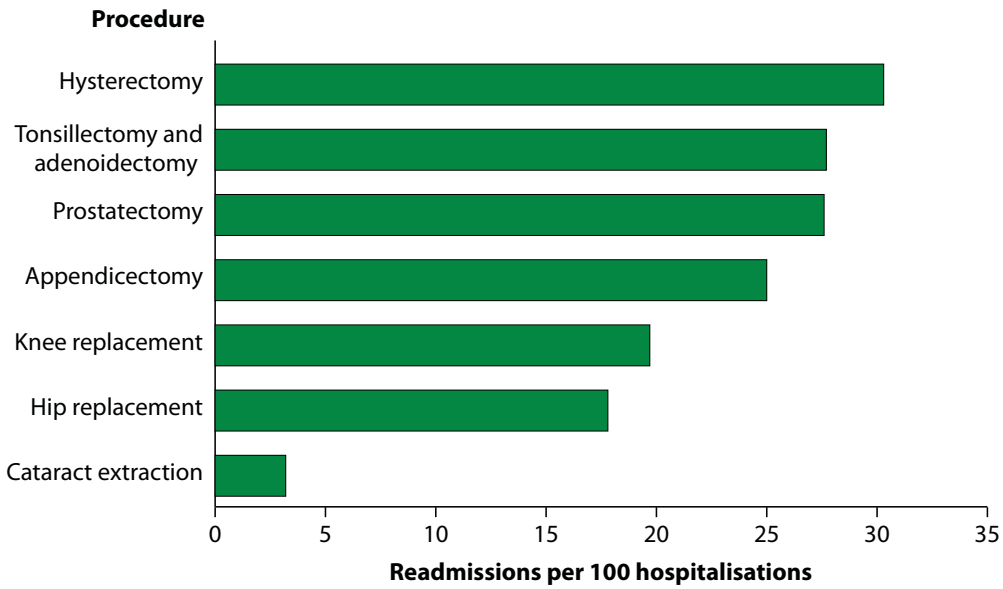
Staphylococcus aureus is a cause of health-care-associated bloodstream infection (bacteraemia), which can cause significant illness and death. Hospitals aim to have as few cases as possible.

- In 2012–13, all states and territories had rates of SAB in public hospitals below the national benchmark of 2.0 cases per 10,000 days spent by patients in hospital. The rates ranged from 0.7 per 10,000 patient days in Northern Territory to 1.3 in the Australian Capital Territory. The national rate was 0.9 cases per 10,000 days of patient care, down from 1.1 in 2010–11.
- Of the 283 private hospitals reporting SAB data to the *MyHospitals* website, 78 reported 2011–12 SAB data. All private hospitals reporting to *MyHospitals* were below the national benchmark (NHPA 2013).
- There were 1,724 cases of SAB reported for public hospitals overall in 2012–13 compared with 1,734 in 2011–12. Of these, 77% were methicillin sensitive and treatable with commonly used antibiotics. The rest were methicillin resistant so would have been more difficult to treat.
- The reported SAB cases occurred during 18.8 million days of patient care under SAB surveillance during 2012–13.
- A key approach to minimising the risk of SAB is compliance with hand hygiene protocols by health-care workers. The national compliance rate was 79% for public hospitals in the 4 months to October 2013 and 78% for private hospitals. The national compliance rate was 73% in the 4 months to October 2011 (HHA 2013).

Readmissions after surgery

The proportion of hospitalisations for selected types of surgery that result in readmission to hospital within 28 days is regarded as an indicator of the safety and quality of admitted patient care in hospitals. In 2011–12, rates of readmission to the same public hospital for selected surgeries were highest for hysterectomy (3 per 100 hospitalisations) and lowest for cataract extractions (0.3 per 100 hospitalisations) (see Figure 8.23).

Figure 8.23



Source: Australian hospital statistics 2011–12.

Readmissions within 28 days to the same public hospital after selected types of surgery, 2011–12

What is missing from the picture?

SAB rates are not available for some private hospitals as the data are provided voluntarily.

The readmission rates reported here are based on readmissions to the same hospital in which the surgery was performed. As readmissions to other hospitals are not included, the rates are likely to be underestimated. Methodology for calculating rates of readmission to any hospital is being developed by the AIHW in collaboration with national stakeholders; records from different hospitals (public and private, and across state boundaries) will need to be linked under appropriate privacy protections (such as those used by AIHW for other national data linkage work). There is also national work under way on developing indicators for hospital-associated mortality and infections other than SAB (ACSQHC 2013).

Where do I go for more information?

More information on safety and quality in public hospitals in Australia is available on the AIHW website at www.aihw.gov.au/hospitals.

Information about SAB rates in public hospitals is in the report *Australian hospital statistics 2012–13: Staphylococcus aureus bacteraemia in Australian public hospitals*. Information on readmission rates and other safety and quality indicators is in the report *Australian hospital statistics 2011–12*. Both reports are available for free download.

Safety and quality information for individual hospitals is available at www.myhospitals.gov.au.

References

ACSQHC (Australian Commission on Safety and Quality in Health Care) 2013. Indicators of safety and quality. Sydney: ACSQHC. Viewed 18 November 2013, <http://www.safetyandquality.gov.au/our-work/information-strategy/indicators/>.

HHA (Hand Hygiene Australia) 2013. Hand hygiene Australia 2013. Melbourne: HHA. Viewed 13 December 2013, <http://www.hha.org.au/LatestNationalData/national-data-for-2013.aspx>.

NHPA (National Health Performance Authority) 2013. Our work. Sydney: NHPA. Viewed 18 November 2013, <http://www.nhpa.gov.au/internet/nhpa/publishing.nsf/Content/Our-work>.

8.13 Medicines in the health system

SNAPSHOT

Medicines are used to prevent and manage a wide range of health conditions. Some can be bought over the counter at a pharmacy or other retail outlet without a prescription. Prescription medicines are provided largely through community pharmacies and hospitals. There is little information collected nationally regarding the medications provided to patients by hospitals. Data on medicines dispensed through community pharmacies comes from government subsidy schemes and the Pharmacy Guild of Australia.

The Pharmaceutical Benefits Scheme (PBS) and the Repatriation Pharmaceutical Benefits Scheme (RPBS) are the 2 main government subsidy schemes for medicines dispensed through community-based pharmacies (see Box 8.4). Some medicines can be very expensive and/or very commonly used. The Australian Government places no cap on the amount of money spent through the PBS, so the introduction of new expensive or highly used medicines can drive expenditure up significantly. The removal of medicines, or the listing of 'generic' (non-branded) versions can have the reverse effect on overall expenditure.

Box 8.4

Pharmaceutical Benefits Scheme and the Repatriation Pharmaceutical Benefits Scheme

The PBS subsidises the cost of a wide range of prescription medicines. The RPBS provides assistance to eligible war veterans and their dependants. It is similar to the PBS but covers a broader range of medicines.

Before a medicine can be subsidised by the PBS, it is assessed by the Pharmaceutical Benefits Advisory Committee, which includes medical practitioners, other health professionals and a consumer representative. Once the committee has recommended a medicine it is considered by the Pharmaceutical Benefits Pricing Authority. The price is negotiated between the manufacturer and the Australian Government Department of Health.

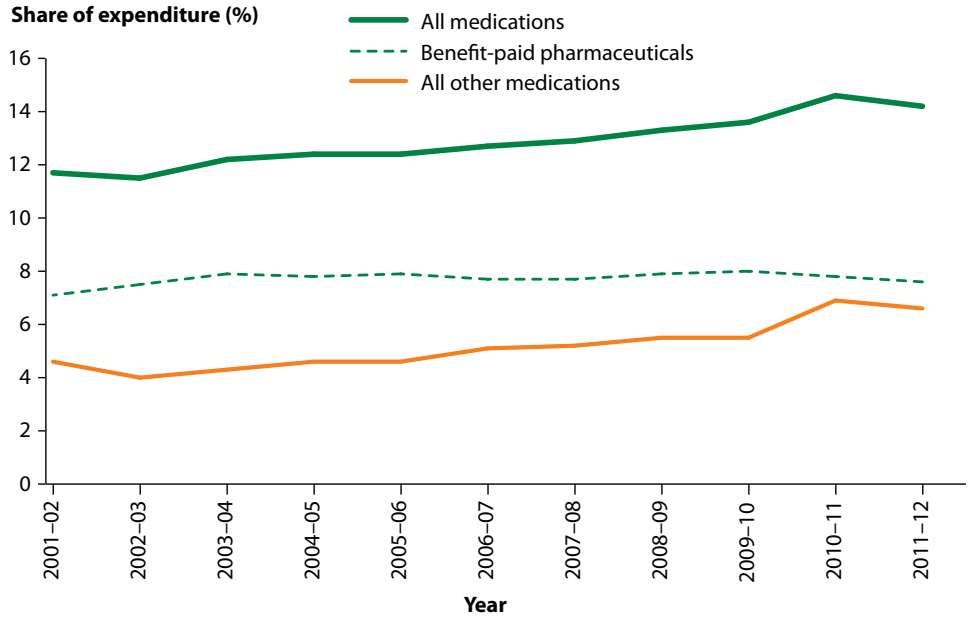
Broadly speaking, patients are grouped into 2 classes: general and concessional. Concessional patients receive a greater subsidy and pay less for medicines than general patients.

How many prescriptions and at what cost?

- In 2011–12, there were more than 207 million pharmacy services subsidised through the PBS and RPBS. About 80% of these services were provided to concessional patients.
- More than 50% of the medicines subsidised through the PBS and RPBS affected the cardiovascular system (33.9%) or the nervous system (20.6%) (based on Anatomical Therapeutic Chemical classification).
- Government subsidies for medicines totalled about $10.1 billion in expenditure in 2011–12. This equated to 54% of expenditure on medicines delivered by community pharmacies. About $8.7 billion was spent on medicines for which there was no subsidy.

- Expenditure on medicines has grown in absolute terms, and as a proportion of total health expenditure. The proportion of total recurrent health expenditure for medicines increased from 11.7% in 2001–02 to 14.2% in 2011–12 (Figure 8.24). This growth was mostly related to medicines for which no government subsidy was paid, which rose from 4.6% of total expenditure to 6.6%. Government subsidies for medicines have remained relatively stable over the past decade, varying from 7.1% of recurrent expenditure in 2001–02 to 7.6% in 2011–12 (see Figure 8.24).

Figure 8.24



Source: AIHW health expenditure database.

Proportion of total recurrent health expenditure on medications, constant prices, 2001–02 to 2011–12

General practitioners (GPs) play a critical role in prescribing medicines, and providing advice on purchasing over-the-counter medicines. The Bettering the Evaluation and Care of Health (BEACH) survey of general practice collects information on medicines prescribed by GPs (Britt et al. 2013). According to this survey, the most frequently prescribed medicines are antibiotics, and medicines used for pain management. Amoxicillin, paracetamol and cephalexin have been the 3 most commonly prescribed medications for more than a decade. Amoxicillin and cephalexin are both antibiotics. The BEACH survey also suggests that between 2003–04 and 2012–13, the number of medications recommended or prescribed per 100 GP encounters did not change, however, the number of problems managed in each GP encounter increased. This suggests that the frequency with which medications were used as a management tool for problems presented to a GP decreased over the decade.

SNAPSHOT

What is missing from the picture?

In most cases where a medicine is prescribed, 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.

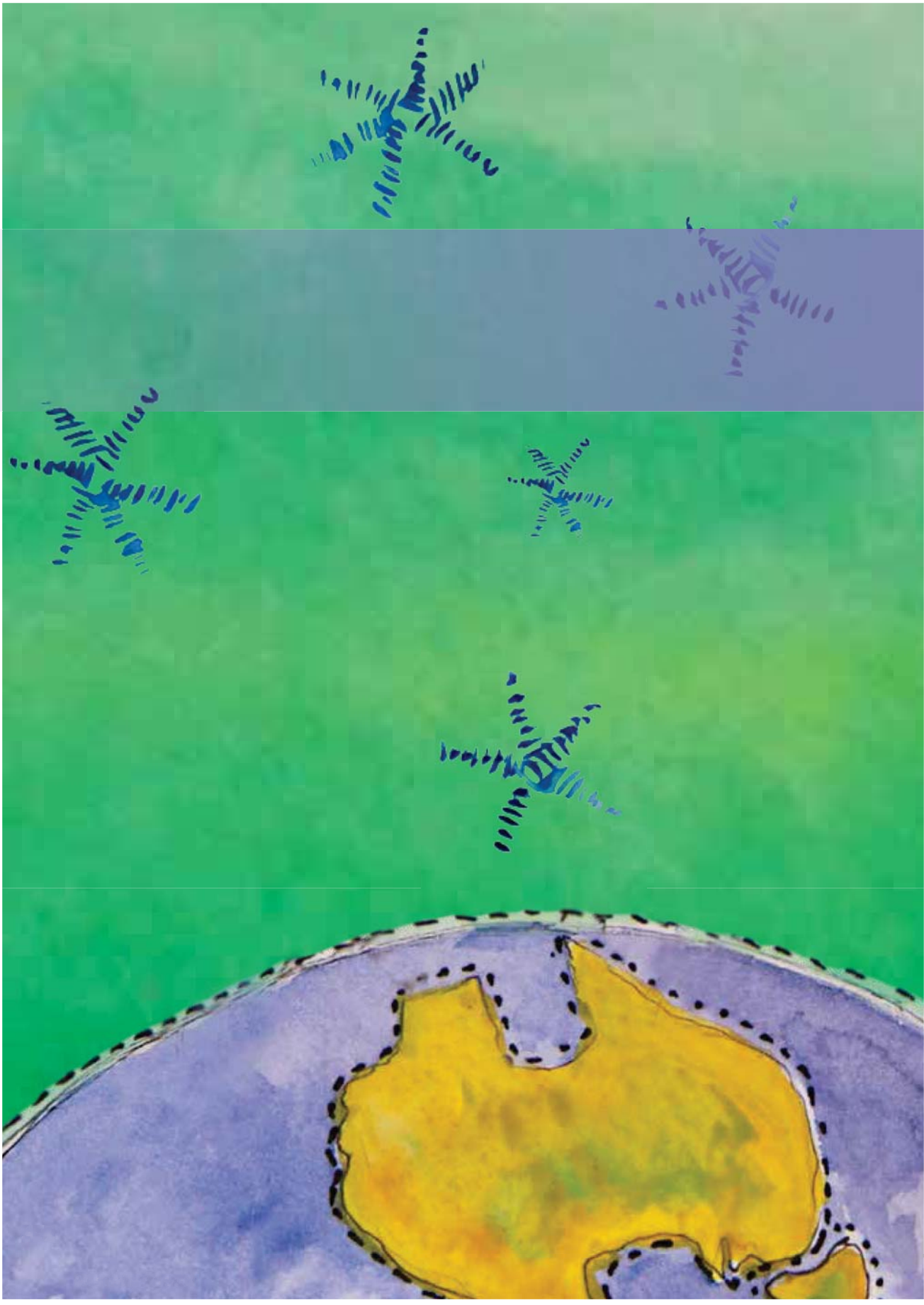
Nationally collected information on medicines dispensed through hospitals would add extra clarity on the use of medicines in Australia.

Where do I go for more information?

For more information on medicines in Australia, visit the Medicare website at www.medicareaustralia.gov.au/about/stats/index.jsp.

Reference

Britt H, Miller GC, Henderson J, Bayram C, Valenti L, Harrison C et al. 2013. General practice activity in Australia 2012–13. General practice series no. 33. Sydney: Sydney University Press.



Chapter 9

Indicators of Australia's health

9.0 Introduction

We think that Australians generally enjoy good health and that our health system is doing well—but how can we be sure?

Performance measurement is essential to assessing the population's health and the success of health services and the health system more broadly, as well as highlighting where improvements need to be made.

This is important information for governments and policy makers, as well as service providers themselves. It also enables transparency and accountability for those who fund the services, including taxpayers, and for all of us who use the services.

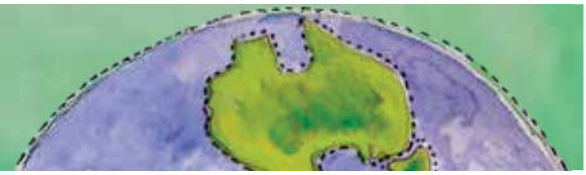
Performance measurement and reporting in health in Australia, using performance indicators, is undertaken by the Australian Government and the state and territory governments, as well as some private health-care providers.

This chapter briefly outlines the history and development of the major health performance reporting regimes in Australia. The main content of the chapter, however, is our presentation of data on how Australia performs against the current 40 health indicators of the National Health Performance Framework (NHPF).

This Framework was originally developed in 2001 under the auspices of the Australian Health Ministers' Advisory Council, and covers the domains of health status, determinants of health and health system performance. At the request of Health Ministers, the AIHW has reported on the NHPF indicators in our biennial *Australia's health* reports since 2008.

This chapter also shows how Australia compares with member countries of the Organisation for Economic Co-operation and Development (OECD) using various internationally comparable health indicators. While Australia performs well in most aspects of health, comparisons of this sort are important for ensuring that we are 'keeping up' and delivering consistently favourable health outcomes for all Australians.

9.1 Indicators of Australia's health



FEATURE ARTICLE

Measuring performance to improve health

Performance measurement is integral to improving services provided by governments and other providers. What is measured reflects what is important to governments, to service providers, to the funders of the services (including taxpayers), as well as to consumers and other stakeholders. Benefits of performance measurement include:

- It improves accountability and transparency of service provision and can be used to create incentives for improved service delivery
- Using the same measures over time can provide information on the effectiveness of changes to policies or new practices or programs
- It can encourage ongoing performance improvements in service delivery by highlighting quality improvements and innovation and examples of poor performance that can be improved
- It provides the community with an understanding of their health and the quality of their health system.

National health performance reporting

In Australia, national public reporting of measured performance of various components of the health system is undertaken by a number of organisations under nationally agreed arrangements.

The arrangements, outlined here, are accompanied by:

- reporting on state and territory performance by state and territory governments and others
- reporting by private organisations such as private hospital groups and organisations involved in accrediting health service providers
- international reporting, such as by the Organisation for Economic Co-operation and Development.

The Australian Bureau of Statistics (ABS) also reports on health-related national performance in its *Measures of Australia's progress* series of reports (ABS 2013i).

The national arrangements 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. These activities are related to, but not considered to be, performance reporting, and in recent years have been supported by the Australian Commission on Safety and Quality in Health Care (ACSQHC). As part of its work to lead and coordinate improvements 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. For example, it has supported the development of outcomes indicators for hospital and day procedure services (ACSQHC 2013a).

FEATURE ARTICLE

The national arrangements for health performance reporting in Australia comprise the National Healthcare Agreement, National Partnership Agreements, the Review of Government Service Provision, the National Health Reform Agreement and associated Performance and Accountability Framework, and the National Health Performance Framework. These reporting arrangements focus on particular purposes and use specific indicator frameworks and performance indicators, which have been developed to support the implementation or monitoring of each of the national agreements.

National Healthcare Agreement

The overall aim of the National Healthcare Agreement (NHA) is to improve health outcomes for all Australians and the sustainability of the health system. It also defines the objectives and the roles and responsibilities of the Australian Government and the states and territories in delivering health services. The NHA was agreed by the Council of Australian Governments (COAG) in 2008 and last updated in 2012.

The NHA sets out performance indicators and benchmarks to provide evidence of how governments are progressing against their commitments (COAG Reform Council 2013a). In 2012, the NHA performance indicator framework was updated and now contains 33 performance indicators and 7 performance benchmarks across 4 outcome areas (better health, better health services, social inclusion and Indigenous health, and sustainability of the health system).

The COAG Reform Council* reports annually to COAG on governments' performance using the agreed performance indicators and benchmarks (COAG Reform Council 2013b).

National Partnership Agreements

There are 2 health-related National Partnership Agreements between the Commonwealth and the states and territories that currently involve national health performance reporting.

The National Partnership Agreement on Improving Public Hospital Services aims to achieve better health outcomes by driving improvements in public hospital service delivery. In particular, it aims to facilitate improved access to elective surgery, emergency department services and sub-acute care. It incorporates performance indicators, benchmarks and targets on access to elective surgery and emergency department care (see Chapter 8 'Elective surgery waiting times' and 'Emergency departments').

The National Partnership Agreement on Essential Vaccines aims to improve the health and wellbeing of Australians through the cost-effective delivery of immunisation programs under the National Immunisation Program. It has 4 outcomes on reducing vaccine-preventable diseases and 4 performance benchmarks on increasing vaccination coverage.

The COAG Reform Council* reports annually on the progress of states and territories against the specified indicators or benchmarks for each agreement (COAG Reform Council 2013c, 2013d).

*On 13 May 2014 the Australian Government announced plans to abolish the COAG Reform Council.

Review of Government Service Provision

The Review of Government Service Provision was established in 1993 by heads of government (now 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 *Report on government services* (RoGS). The 2014 edition of RoGS included chapters on public hospitals, primary and community health, and mental health management.

The RoGS publications are based on performance indicators set against a framework that reflects the review's focus on outcomes, consistent with government demand for outcome-oriented performance information. This information is supplemented by information on outputs, grouped under 'equity', 'effectiveness' and 'efficiency' headings (SCRGSP 2014).

National Health Reform Agreement

The National Health Reform Agreement between the Australian Government and the state and territory governments aims to improve health outcomes for all Australians and enhance the sustainability of the Australian health system. Under the agreement, the National Health Performance Authority (NHPA) was established to report information on the performance of local health care organisations (public and private hospitals, Local Hospital Networks and Medicare Locals, or primary health care organisations) to inform consumers, empower clinicians and service providers to drive improvements, and increase transparency and accountability (NHPA 2013).

The NHPA's public reporting is underpinned by the Performance and Accountability Framework (PAF), which was agreed by COAG in 2011. This Framework includes 48 performance indicators under the domains of equity, effectiveness, and efficiency. It includes 17 hospitals indicators and 31 indicators for primary health care organisations. The data for these indicators are released through the *MyHospitals* and *MyHealthyCommunities* websites, respectively (NHPA 2013).

The ACSQHC also has performance reporting-related roles under the Agreement, formulating and monitoring safety and quality standards, and reporting publicly on the state of safety and quality, including performance against national standards. The Commission's most recent report was structured around 3 questions that reflect aspects of other performance reporting frameworks: Will my care be safe? Will I get the right care? Will I be a partner in my care? (ACSQHC 2013b).

The National Health Performance Framework

The National Health Performance Framework (NHPF) was developed in 2001 by the National Health Performance Committee under the auspices of the Australian Health Ministers' Advisory Council (AHMAC) (AIHW 2012c; NHPC 2002). The NHPF 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 (International Organization for Standardization 2010; OECD 2013) so can support comparisons of Australia's performance internationally.

The NHPF provides a conceptual framework to understand and evaluate the health of Australians and the health system. It has 14 health dimensions grouped under 3 domains: health status, determinants of health, and health system performance (Table 9.1).

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 *Australia's health*. The indicator set was most recently revised and agreed by Health Ministers in 2009.The indicators were developed so that they meaningfully reflect the dimensions of the framework and were practical to implement in terms of cost effectiveness, timeliness and availability of quality data. There are 40 indicators across the 14 dimensions of the 3 domains (tables 9.2, 9.3 and 9.4).

Table 9.1: National Health Performance Framework (2nd edition)

Health status			
How healthy are Australians? Is it the same for everyone? Where are the best opportunities for improvement?			
Health conditions	**Human function**	**Wellbeing**	**Deaths**
Prevalence of disease, disorder, injury or trauma, or other health-related states.	Alterations to body structure or function (impairment), activity limitations and restrictions in participation.	Measures of physical, mental and social wellbeing of individuals.	Mortality rates and measures of life expectancy.
Determinants of health			
Are the factors determining good health changing for the better? Where and for whom are these factors changing? Is it the same for everyone?			
Environmental factors	**Community and socioeconomic**	**Health behaviours**	**Biomedical factors**
Physical, chemical and biological factors such as air, water and soil quality.	Community factors such as social capital, support services, and socioeconomic factors such as housing, education, employment and income.	Attitudes, beliefs, knowledge and behaviours such as patterns of eating, physical activity, smoking and alcohol consumption.	Genetic-related susceptibility to disease; and other factors such as blood pressure, cholesterol levels and body weight.

continued

Table 9.1 (continued): National Health Performance Framework (2nd edition)

Health system performance		
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?		
Effectiveness	**Continuity of care**	**Safety**
Care, intervention, or action provided is relevant to the client's needs and based on established standards. Care, intervention or action achieves desired outcome.	Ability to provide uninterrupted, coordinated care or service across programs, practitioners, organisations and levels over time.	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.
Accessibility	**Responsiveness**	**Efficiency & sustainability**
People can obtain health care at the right place and right time irrespective of income, physical location and cultural background.	Service is client oriented. Clients are treated with dignity and confidentiality, and encouraged to participate in choices related to their care.	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.

Source: Adapted from AIHW 2012c.

How the NHPF indicators are presented here

The performance indicators are presented in 3 sections, 1 for each of the NHPF domains—health status, determinants of health, and health system performance.

Each section includes a summary table listing the indicators that are included, and whether there has been a favourable or unfavourable trend over time. For a trend to be 'favourable' or 'unfavourable' it must include:

- at least 5 consecutive years of data
- at least 3 pieces of comparable information
- progressive change over the period.

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 moves in the opposite of the desired direction. For indicators where the measure does not appear to have changed over the time period or where the result of that analysis is not clear, the trend is described as 'no change/trend unclear/no trend'. For indicators where there are insufficient data to support trend analysis, the trend is described as 'no data'.

Summary information on each indicator is presented on subsequent pages. Where there is more information in an article or snapshot in *Australia's health 2014*, the material on the indicator provides a reference.

Limitations of the NHPF performance indicators

As noted above, 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, because of a lack of appropriate high-quality data, and changes in policies and priority areas for monitoring meaning that the usefulness of some indicators has reduced.

For some indicators no new data are available, so data are included that are older, and may have been included in previous editions of *Australia's health*. For example, data for the indicator on *Health literacy* were sourced from the ABS Adult Literacy and Life Skills Survey. This survey last included questions on health literacy in 2006 (ABS 2008a). For the indicator *Proportion of people with mental illness with a GP care plan*, the cost of sourcing updated data from the ABS was judged by AIHW as being too high, so older data are reported.

The indicator *Survival following an acute coronary heart disease event* has not been reported because the AIHW has judged that due to changes in the methodology used to identify acute coronary events, it is no longer appropriate to report on the indicator.

Due to changes in treatment patterns and people with diabetes using other avenues for care, the AIHW has judged that it is no longer appropriate to report on the *Proportion of people with diabetes who complete a GP annual cycle of care*, as this could result in a misleading picture of the current management of people with diabetes.

The AIHW will review the NHPF performance indicators in 2014–15 in consultation with AHMAC committees and other stakeholders for future editions of *Australia's health*.

Where do I go for more information?

For another example of national health performance reporting, see Healthcare 2011–12: comparing performance across Australia for the data reported for indicators under the National Healthcare Agreement (COAG Reform Council 2013a). Performance information for hospitals and for Medicare Locals are reported on the NHPA's *MyHospitals* website www.myhospitals.gov.au and *MyHealthyCommunities* website www.myhealthycommunities.gov.au, respectively. For information on international comparisons of health, see Chapter 9 'International comparisons'.

Health status

This domain covers the health status of Australia's population, and is measured in terms of health conditions, human function, wellbeing and deaths. The key questions asked are:

- How healthy are Australians?
- Is it the same for everyone?
- Where are the best opportunities for improvement?

The indicators included are shown in Table 9.2.

Table 9.2: Indicators of NHPF domain—health status

Trend legend	✔	✗	~	..
	Favourable	Unfavourable	No change/trend unclear/ no trend	No data

Indicator	Trend
Health conditions	
Incidence of heart attacks	✔
Incidence of selected cancers	
bowel	~
melanoma	~
lung cancer	~
female breast cancer	~
cervical	~
Incidence of sexually transmitted infections and blood-borne viruses	
syphilis	✗
HIV	✗
hepatitis B	✔
hepatitis C	✔
chlamydia	✗
gonococcal infection	✗
Incidence of end-stage kidney disease	~
Hospitalisation for injury and poisoning	✗
Human function	
Severe or profound core activity limitation	~
Wellbeing	
Psychological distress	~
Self-assessed health status	~
Deaths	
Infant/young child mortality rate	
infants (<1 year)	✔
Indigenous infants (<1 year)	✔
children aged 1–4 years	✔
Life expectancy	
all males	✔
all females	✔
Indigenous males	✔
Indigenous females	✔

Incidence of heart attacks

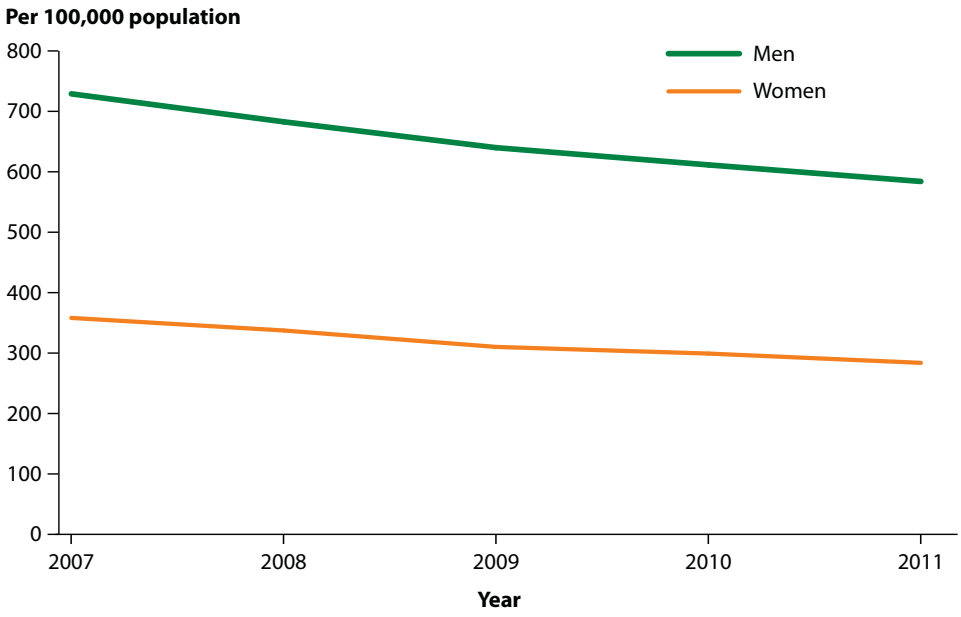
NHPF domain: Health status.

NHPF dimension: Health conditions.

More information available on this topic: Chapter 4 'Coronary heart disease'.

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.

Figure 9.1



Notes

1. Rates have been age-standardised to the Australian Estimated Resident Population as at 30 June 2001.
2. Deaths registered in 2009 and earlier are based on the final version of cause of death data; deaths registered in 2010 and 2011 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS; deaths data for 2010 have not been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010.

Sources: AHIW National Hospital Morbidity Database, AIHW National Mortality Database.

Trends in age-standardised rates of heart attacks, among people aged 25 and over, Australia, 2007–2011

- In 2011, an estimated 69,900 people aged 25 and over had a heart attack, almost two-thirds (63%) of whom were men.
- The age-standardised heart attack rate was 427 per 100,000 people in 2011—a 20% decline from the 534 per 100,000 people in 2007.
- Since 2007, heart attack rates among Indigenous adults have fallen, but have remained at least twice as high as among other Australians (age-standardised rates of 1,077 and 421 per 100,000 population, respectively, in 2011) in the 5 jurisdictions with adequate identification of Indigenous deaths (New South Wales, Queensland, Western Australia, South Australia and the Northern Territory only).

Data limitations/issues

In 2012, the method for calculating rates of heart attack was revised to reflect changes in diagnostic techniques and clinical practice. Therefore, rates presented in this report are not comparable with previously published rates on heart attacks in Australia.

Incidence of selected cancers

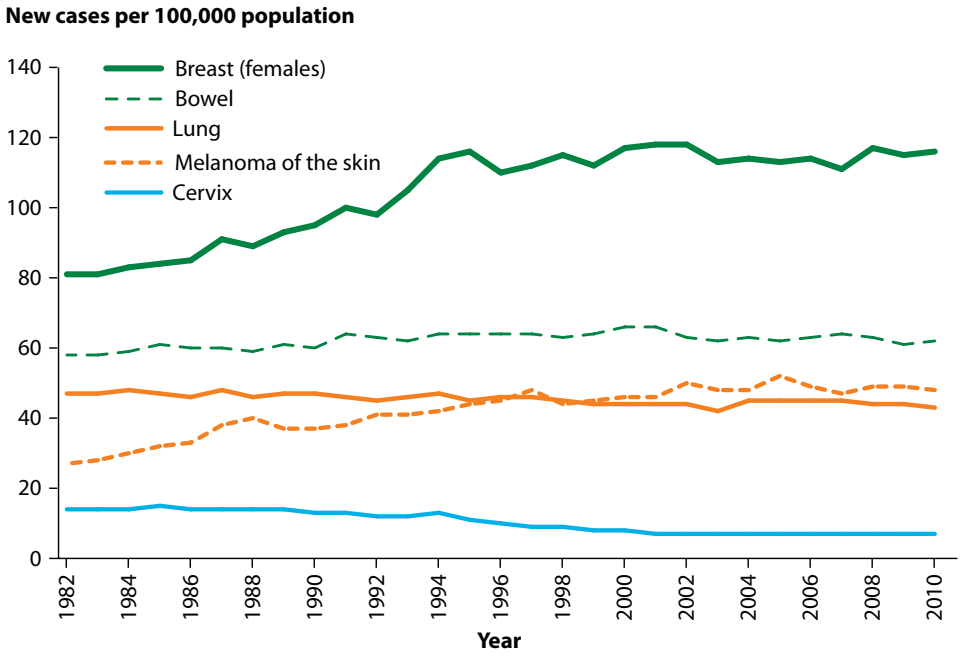
NHPF domain: Health status.

NHPF dimension: Health conditions.

More information available on this topic: Chapter 4 'Cancer in Australia'.

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).

Figure 9.2



Source: AIHW Australian Cancer Database 2010.

Incidence of selected cancers, Australia, 1982–2010

- Between 1982 and 2010, incidence rates for lung cancer and bowel cancer remained steady overall, although there were differences by sex:
  - lung cancer incidence fell among males (from 85 to 56 new cases per 100,000) and rose among females (from 18 to 32 new cases per 100,000)
  - bowel cancer incidence was steady among females, with 52 new cases per 100,000, and after an initial rise among males (1982–1996) stabilised at 76 new cases per 100,000 per year to 2010.
- The incidence of melanoma rose between 1982 and 2001, and then remained stable at around 49 new cases per 100,000 people each year to 2010. This trend was similar for males, but for females rates remained stable from earlier (1997).
- The incidence of breast cancer (females only) rose between 1982 and 1993, and then remained stable at around 115 per 100,000 females each year to 2010.
- The incidence of cervical cancer (females only) fell between 1982 and 2000, and then remained stable at around 7 per 100,000 females each year to 2010.
- In 2004–2008, data from New South Wales, Queensland, Western Australia and the Northern Territory shows that the incidence of:
  - lung cancer was nearly twice as high, and cervical cancer (females only) was nearly 3 times as high among Indigenous Australians as among non-Indigenous Australians
  - breast cancer (females only) and bowel cancer were each around 20% lower among Indigenous Australian as among non-Indigenous Australians
  - melanoma of the skin was around 70% lower among Indigenous Australians as among non-Indigenous Australians.

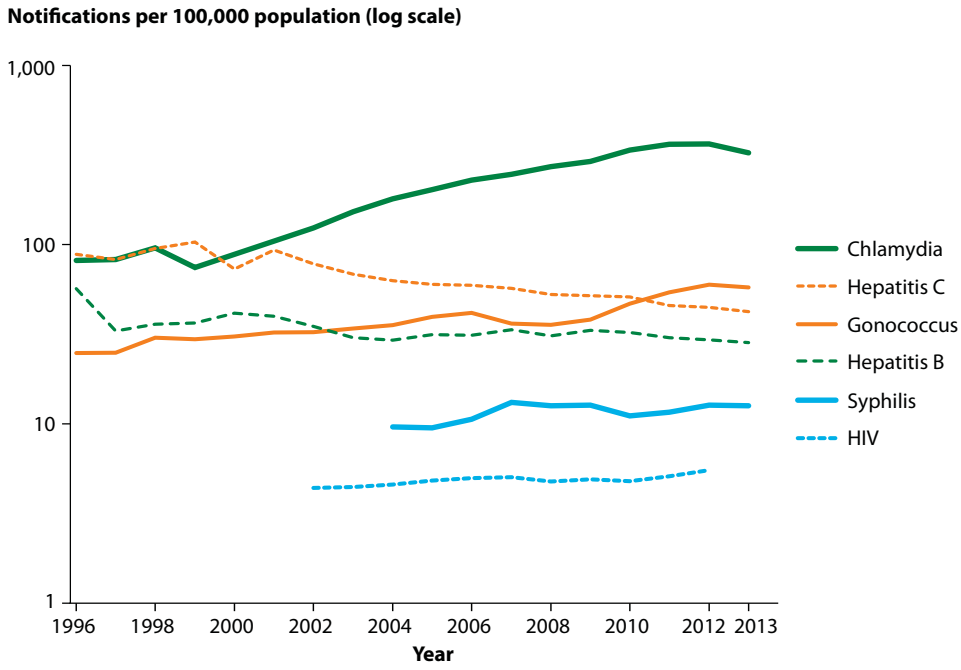
Incidence of sexually transmitted infections and blood-borne viruses

NHPF domain: Health status.

NHPF dimension: Health conditions.

Definition: The number of new cases of syphilis, HIV, hepatitis B, hepatitis C, chlamydia and gonococcal infections.

Figure 9.3



Note: Data are presented using a log scale.

Sources: National Notifiable Diseases Surveillance System; The Kirby Institute 2013.

Notification rates of sexually transmissible infections and blood-borne viruses, Australia, 1996–2013

- While chlamydia and gonococcal infection rates fell slightly in 2013, the rate of new cases has risen fivefold for chlamydia and threefold for gonococcal infections since 1994 when national notification began.
- The rate of new syphilis infections has risen from 9.6 per 100,000 people in 2004 to 12.6 in 2013.
- Notification rates of hepatitis B and hepatitis C have fallen since 2001.
- The rate of HIV diagnosis per 100,000 people has risen by 25% from 4.4 in 2002 to 5.5 in 2012.

Incidence of end-stage kidney disease

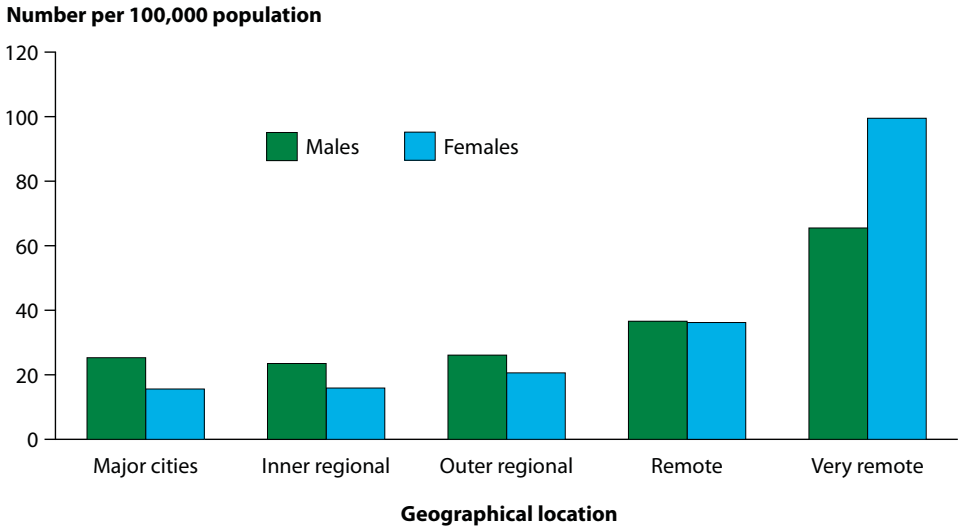
NHPF domain: Health status.

NHPF dimension: Health conditions.

More information available on this topic: Chapter 4 'Chronic 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.

Figure 9.4



Notes

1. Rates have been age-standardised to the Australian Estimated Resident Population as at 30 June 2001.
2. Cases were assigned to remoteness categories using 2006 based remoteness area concordances.
3. Data have been reported for 3 aggregated years to ensure statistical validity.

Sources: Combined data from the Australia and New Zealand Dialysis and Transplant (ANZDATA) Registry, AIHW National Mortality Database and the National Death Index.

Age-standardised rate of new cases of ESKD by sex and geographical location, 2005–2007

- 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).
- ESKD incidence rates among Indigenous Australians were 7 times that of non-Indigenous Australians (age-standardised rate of 95 and 14 per 100,000 population, respectively, in 2007–2010) in the 5 jurisdictions with adequate identification of Indigenous deaths (New South Wales, Queensland, Western Australia, South Australia and the Northern Territory only).
- ESKD incidence rates were substantially higher in *Very remote* areas; with age-standardised rates in *Very remote* areas twice the *Remote* rate, and nearly 4 times the rate of other areas in 2005–2007. This finding is strongly linked to the relatively high proportion of the population who are Aboriginal and Torres Strait Islander people in *Remote* and *Very remote* areas of Australia.

Hospitalisation for injury and poisoning

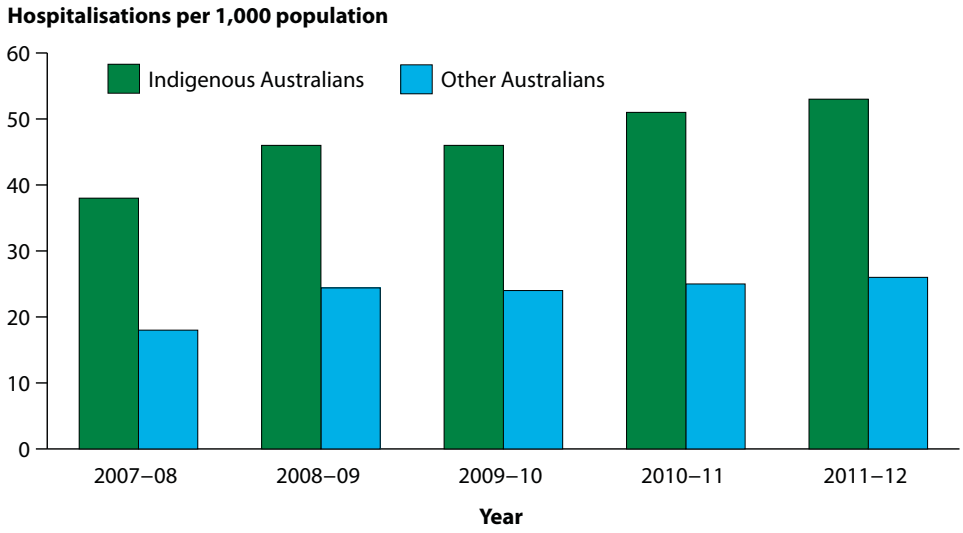
NHPF domain: Health status.

NHPF dimension: Health conditions.

More information available on this topic: Chapter 4 'Injuries'.

Definition: The number of hospitalisations with a principal diagnosis of injury or poisoning. This is presented as a number per 1,000 people (age-standardised).

Figure 9.5



Note: Excludes data for Tasmania and the Australian Capital Territory, and private hospitals in the Northern Territory.

Sources: AIHW 2009, 2010, 2011, 2012a, 2013b.

Hospitalisations for injury and poisoning, by Indigenous status, 2007–08 to 2011–12

- In 2011–12, the age-standardised rate of hospitalisations due to injury was 26.2 hospitalisations per 1,000 population. This has slightly increased over the last 5 years (from 24.1 hospitalisations per 1,000 population).
- The most common principal diagnoses for injury hospitalisations were *Injuries to upper and lower limbs* (45% of all hospitalisations) and *Complications of medical and surgical care* (18%).
- The age-standardised rate of hospitalisations due to injury for Indigenous Australians was about twice that for other Australians. *Injuries to the head and neck* was the reason for 26% of hospitalisations for Indigenous Australians compared with 16% for other Australians.

Severe or profound core activity limitation

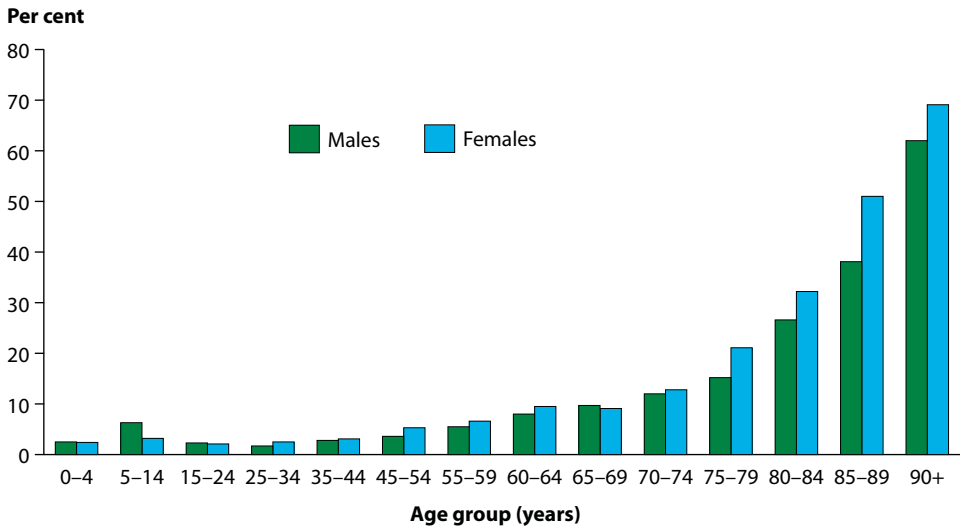
NHPF domain: Health status.

NHPF dimension: Human function.

More information available on this topic: Chapter 1 'Who we are'.

Definition: The percentage of people who sometimes or always need help with core activities of daily living (mobility, self-care or communication).

Figure 9.6



Source: ABS 2013e.

People with severe or profound core activity limitation, by age and sex, 2012 (per cent)

- In 2012, 1.4 million people—6.1% of the population—had a severe or profound core activity limitation (ABS 2013e).
- Females (6.7%) were more likely than males (5.4%) to have a limitation of this type.
- After adjusting for differences in population age structures, the rates remained broadly constant between 2003 (age-standardised rate of 6.2%) and 2012 (5.8%).

Psychological distress

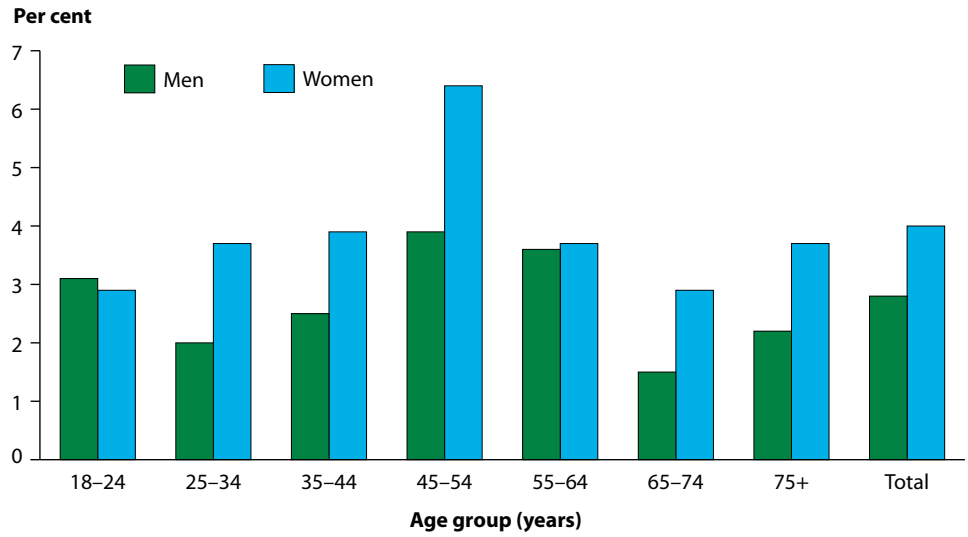
NHPF domain: Health status.

NHPF dimension: Wellbeing.

More information available on this topic: Chapter 4 'Mental health in Australia'.

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.)

Figure 9.7



Source: AIHW analysis of ABS 2012c: data cube Table 4.

Adults with very high levels of psychological distress, by age and sex, 2011–12

- In 2011–12, 3.4% of adults had very high levels of psychological distress (ABS 2012c).
- Women (4.0%) were more likely than men (2.8%) to have very high levels of distress.
- Women aged 45–54 had the highest rate of psychological distress (6.4%).
- Rates were similar in 2007–08, with 4.1% of women and 2.8% of men having very high levels of psychological distress (ABS 2009a).

Self-assessed health status

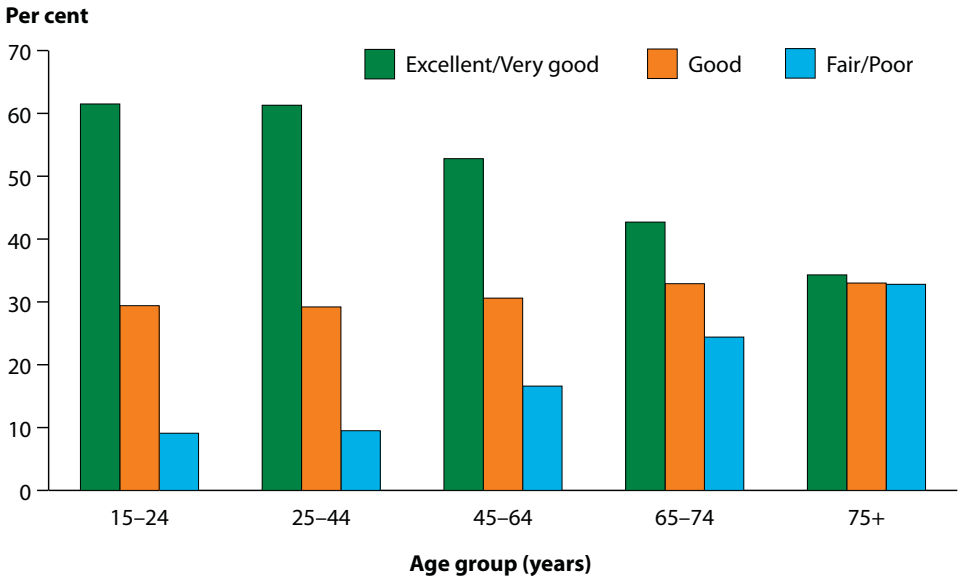
NHPF domain: Health status.

NHPF dimension: Wellbeing.

More information available on this topic: Chapter 3 'Are we getting healthier'.

Definition: The percentage of persons 15 and over who self-assess their health as excellent or very good.

Figure 9.8



Source: ABS 2013b.

Self-assessed health status, by age group, 2011–12

- In 2011–12, 55% of Australians aged 15 or over described their health as excellent or very good (ABS 2013b).
- Patterns in self-assessed health status were similar for males and females; 55% of males described their health as excellent or very good compared with 56% of females.
- Younger people were more likely than older people to rate their health as excellent or very good—62% of people aged 15–24 compared with 34% of people aged 75 or over.
- The proportion of people who described their health status as excellent or very good has not changed since 1995.

Infant/young child mortality rate

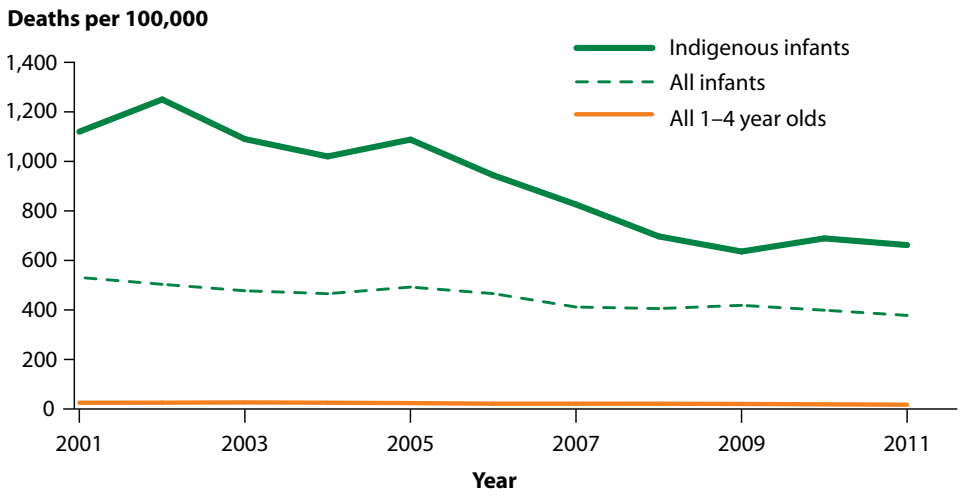
NHPF domain: Health status.

NHPF dimension: Deaths.

More information available on this topic: Chapter 6 'How healthy are Australian children?'

Definition: The number of deaths of infants (those aged under 1) divided by the number of live births, and the number of deaths of young children (those aged 1–4) divided by the population of the same age.

Figure 9.9



Notes

1. Indigenous infant mortality includes data for NSW, Qld, WA, SA and NT only. These 5 jurisdictions have been included because there are sufficient levels of identification and numbers of deaths to support mortality analysis. They do not represent an Australian figure.
2. Deaths registered in 2009 and earlier are based on the final version of cause of death data; deaths registered in 2010 and 2011 are based on revised and preliminary versions respectively, and are subject to further revision.
3. Data for 2010 have been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010.

Sources: AIHW National Mortality Database; ABS unpublished data.

Infant and child mortality, 2001–2011

- Infant mortality has fallen substantially, from 531 deaths per 100,000 in 2001 to 378 deaths per 100,000 live births in 2011—a decrease of about 29%.
- Mortality rates for Indigenous infants have also fallen substantially, from 1,120 deaths per 100,000 in 2001 to 660 per 100,000 live births in 2011—a decrease of about 41% since 2001; however, the rate remains much higher than the overall Australian rate.
- The 2011 mortality rate for children aged 1–4 was 17.3 per 100,000 population—31% lower than in 2001.

Life expectancy

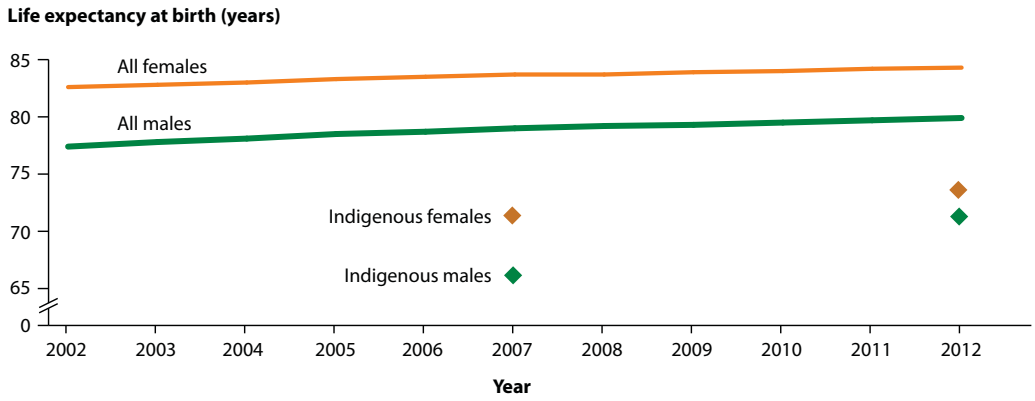
NHPF domain: Health status.

NHPF dimension: Deaths.

More information available on this topic: Chapter 3 '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.

Figure 9.10



Note: These data refer to the 3-year period ending in the year shown (for example, '2012' data apply to babies born in the period 2010 to 2012).

Sources: ABS 2013d, 2013h.

Life expectancy at birth, by Indigenous status and sex, 2002–2012

- Life expectancy for a boy born in Australia between 2010 and 2012 was 79.9 years, and for a girl 84.3 years (ABS 2013d).
- Over the last decade, the overall life expectancy at birth increased by 2.5 years for males and 1.7 years for females.
- Life expectancy for Indigenous boys born between 2010 and 2012 was estimated to be 10.6 years lower than that for non-Indigenous boys (69.1 years compared with 79.7), and for Indigenous girls 9.5 years lower than non-Indigenous girls (73.7 compared with 83.1) (ABS 2013h).
- Since 2005–2007, Indigenous life expectancy at birth for boys increased by 1.6 years and for girls by 0.6 years. Over the same period, the gap between Indigenous and non-Indigenous life expectancy narrowed by 0.8 years for males and 0.1 years for females.

Determinants of health

This domain covers the broad factors that can influence the health of an individual or a population. The key questions asked are:

- Are the factors determining good health changing for the better?
- Where and for whom are these factors changing?
- Is it the same for everyone?

The indicators included are shown in Table 9.3.

Table 9.3: Indicators of NHPF domain—health determinants

Trend legend	✔	✗	~	..
	Favourable	Unfavourable	No change/trend unclear/ no trend	No data

Indicator	Trend
Environmental factors	
Children exposed to tobacco smoke in the home	✔
Water quality	~
Community and socioeconomic	
Proportion of people with low income	~
Proportion of babies born with low birthweight	~
Health literacy	..
Educational attainment for selected school years and adults	✔
Health behaviours	
Proportion of adults who are daily smokers	✔
Proportion of adults at risk of long-term harm from alcohol	~
Fruit and vegetable intake	~
Physical inactivity	..
Biomedical factors	
Proportion of persons obese and overweight	✗

Children exposed to tobacco smoke in the home

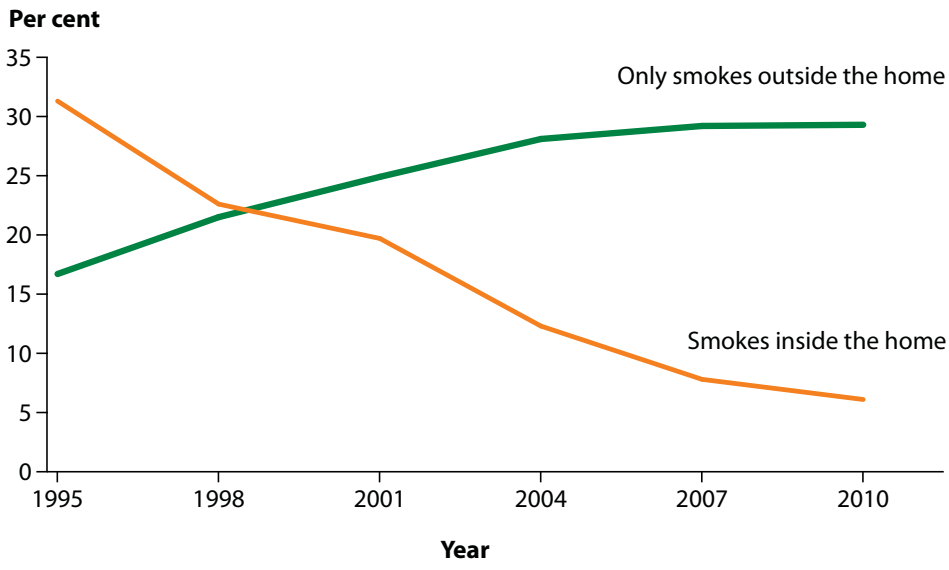
NHPF domain: Determinants of health.

NHPF dimension: Environmental factors.

More information available on this topic: Chapter 5 'Tobacco smoking'.

Definition: The percentage of households with dependent children (aged 0–14) where adults report smoking inside the home.

Figure 9.11



Source: AIHW 2012c.

Proportion of households with dependent children (aged 0–14) where adults report smoking in the home, 1995–2010

- In 2010, 6% of households with children included a person who smoked inside the home.
- This proportion has fallen dramatically since 1995 (31%).
- The proportion of smokers restricting their smoking to outside the home environment has almost doubled since 1995.

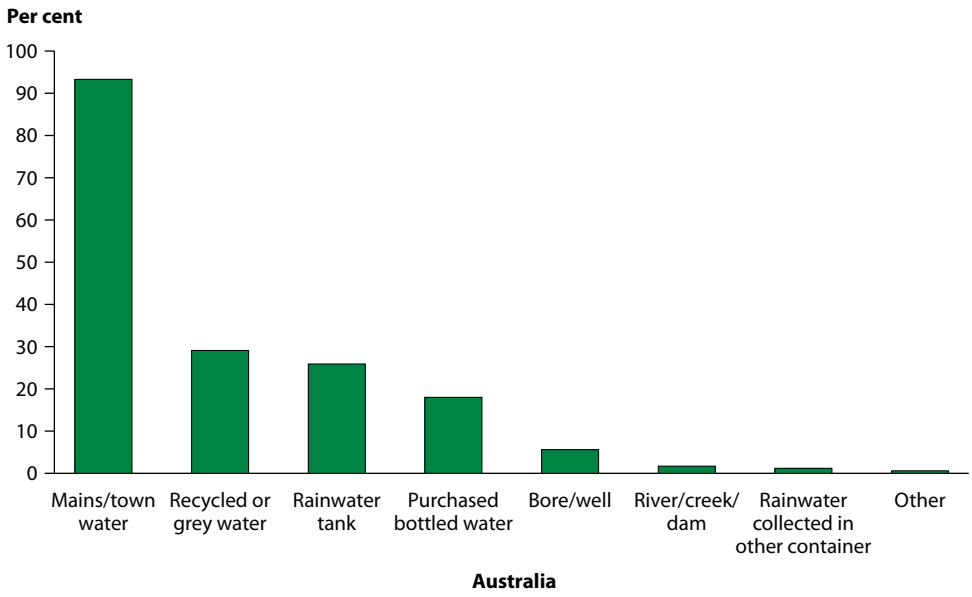
Water quality

NHPF domain: Determinants of health.

NHPF dimension: Environmental factors.

Definition: The percentage of households connected to mains or town water.

Figure 9.12



Note: Households may have more than 1 source of water.

Source: ABS 2013f.

Sources of water for Australian households, 2013

- In March 2013, more than 8 million Australian households (93%) used mains or town water as a source of water (ABS 2013f).
- Nearly all households in capital cities used mains or town water (99%) compared with 84% of households outside the capital cities. The proportions were the same in 2010.
- Water utilities providing services to more than 10,000 households are regularly tested to ensure compliance with national water quality standards. In 2012–13, more than 95% of assessed utility providers recorded full compliance, compared with 82% in 2007–08 (National Water Commission 2014).

Proportion of people with low income

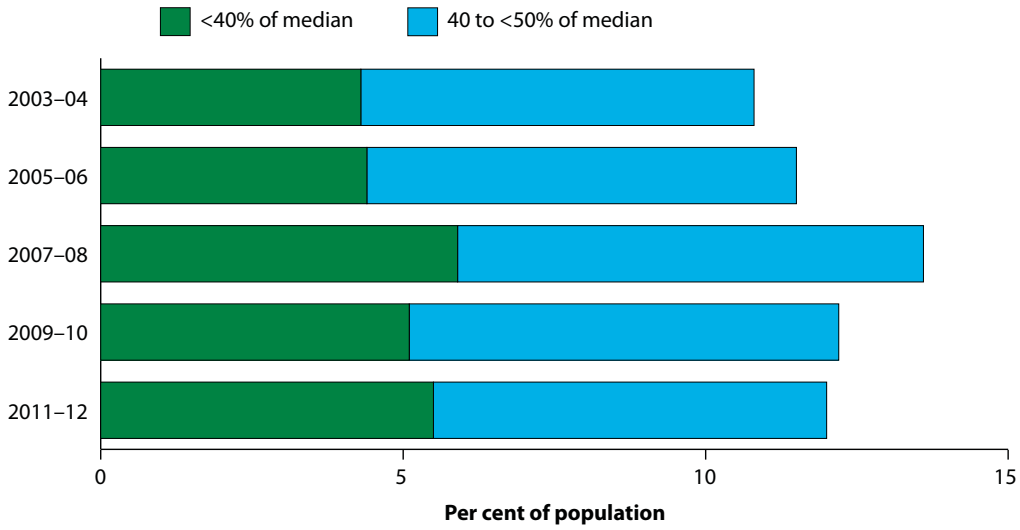
NHPF domain: Determinants of health.

NHPF dimension: Community and socioeconomic.

More information available on this topic: Chapter 1 'Who we are'.

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 percentage of all people.

Figure 9.13



Sources: Unpublished data from the ABS 2003–04, 2005–06, 2007–08, 2009–10 and 2011–12 Surveys of Income and Housing.

People living in households with a low weekly equivalised disposable household income relative to the national median, 2003–04 to 2011–12 (per cent of all people)

- In 2011–12, the median equivalised disposable household income was $790 per week (ABS 2013g).
- In 2011–12, about 2.7 million people lived on less than half the median equivalised household income (that is, less than $395 per week), including nearly 1.2 million living on less than 40% of the median ($316).
- The proportion of people living in low-income households (12.0% in 2011–12) has moved closer to the rate recorded in 2003–04 (10.8%), following a peak at 13.6% in 2007–08.

Proportion of babies born with low birthweight

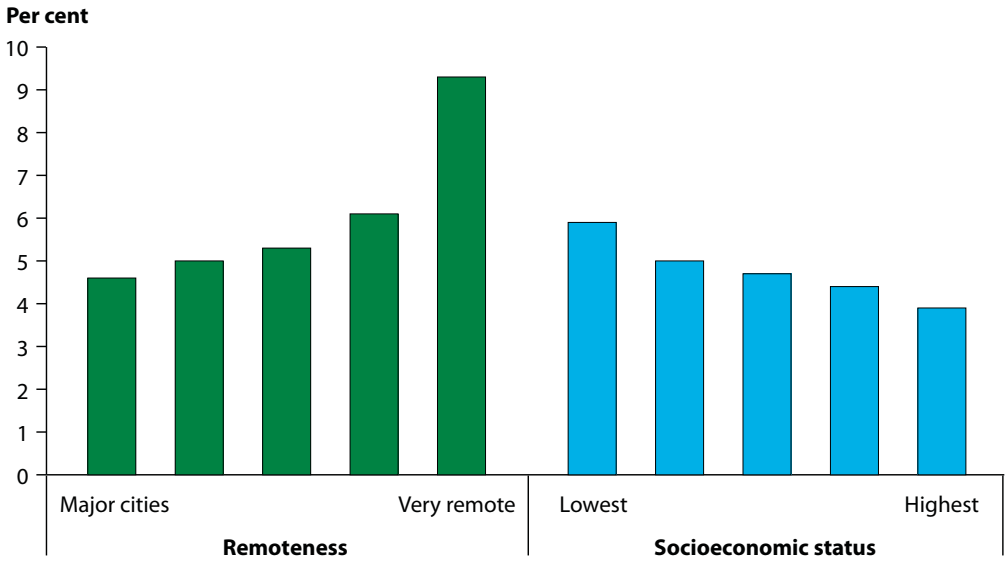
NHPF domain: Determinants of health.

NHPF dimension: Community and socioeconomic.

More information available on this topic: Chapter 6 'Australia's babies'.

Definition: Percentage of liveborn singleton babies born with a birthweight of less than 2,500 grams.

Figure 9.14



Notes

1. Excludes multiple births and stillbirths. Births were included if they were at least 20 weeks' gestation or, if gestation was not known, at least 400 grams birthweight.
2. Disaggregation by remoteness area is by place of usual residence of the mother, not by place of birth.
3. Socioeconomic status is based on the place of usual residence of the mother, not by place of birth.

Source: AIHW (unpublished) National Perinatal Data Collection.

Proportion of babies born with low birthweight, by remoteness and socioeconomic status, Australia, 2011

- In 2011, 4.8% of live singleton babies (13,985) were of low birthweight.
- The 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 almost twice that in *Major cities*. The proportion of low birthweight babies was higher for mothers living in the lowest socioeconomic status (SES) areas compared with those living in the highest SES areas.
- The proportion of low birthweight babies of Aboriginal and Torres Strait Islander mothers was 12.6%, which was twice that of babies of non-Indigenous mothers (6%).

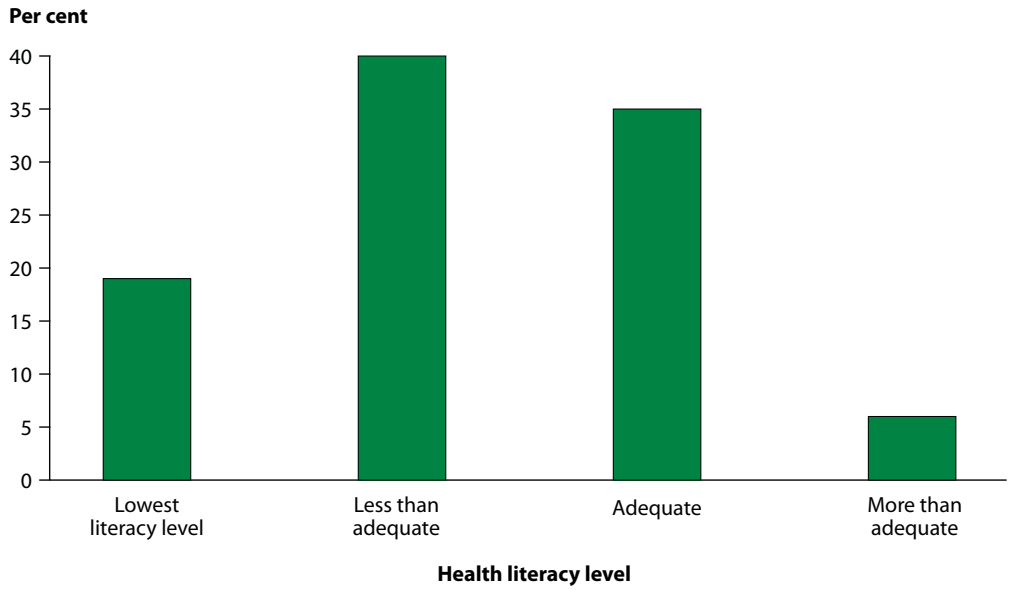
Health literacy

NHPF domain: Determinants of health.

NHPF dimension: Community and socioeconomic.

Definition: Percentage of 15–74 year olds with health literacy above the minimum level regarded as necessary for understanding and using information relating to health issues.

Figure 9.15



Source: ABS 2009b.

Health literacy of Australians aged 15–74, 2006

- In 2006, 41% of Australians aged 15–74 were assessed as having adequate or better health literacy skills (ABS 2009b).
- The proportion of people with adequate or better health literacy (41%) was lower than other types of literacy: prose (54%), document (53%) and numeracy (47%).
- It has been estimated that people with low levels of individual health literacy are between 1.5 and 3 times more likely to experience an adverse health outcome (DeWalt et al. 2004 cited in ACSQHC 2013c).

Educational attainment for selected school years and adults

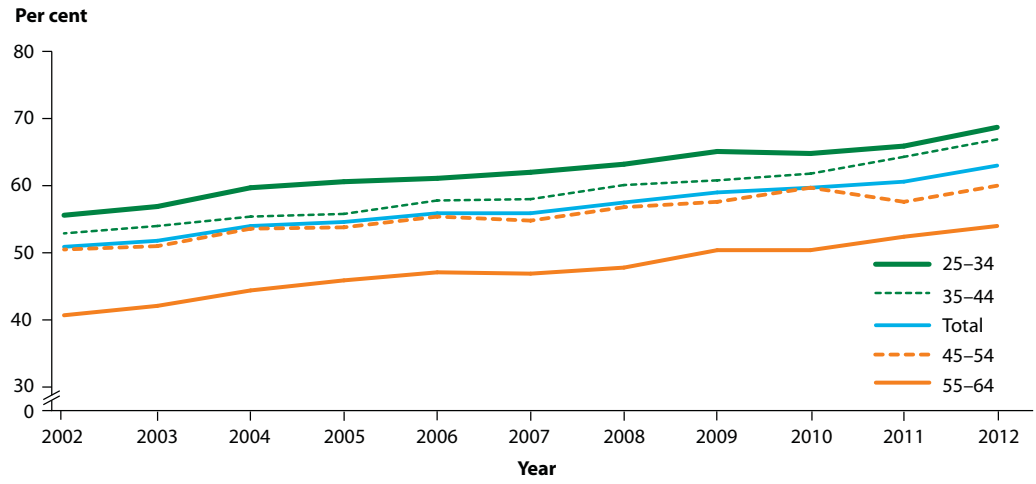
NHPF domain: Determinants of health.

NHPF dimension: Community and socioeconomic.

More information available on this topic: Chapter 1 'Who we are'.

Definition: The percentage of people aged 25–64 with a non-school qualification (diploma, certificate or degree).

Figure 9.16



Source: ABS 2008b, 2012a, 2012b; AIHW 2013a.

People aged 25–64 with a non-school qualification, by age, 2002–2012 (per cent of population)

- More than two-thirds (67%) of people aged 25–64 had a non-school qualification in 2012—this is up from 54% in 2002.
- While more men (68%) than women (65%) had a non-school qualification in 2012, the gender gap has narrowed over the past decade. In 2002, 59% of men and 50% of women had a non-school qualification.
- Men aged 55 to 64 are much more likely than women of the same age to hold higher qualifications (63% and 52% respectively). The size of the gender gap declined by age and, indeed, was reversed for the youngest age group, with more women than men aged 25–34 having a non-school qualification (73% and 71% respectively).

Proportion of adults who are daily smokers

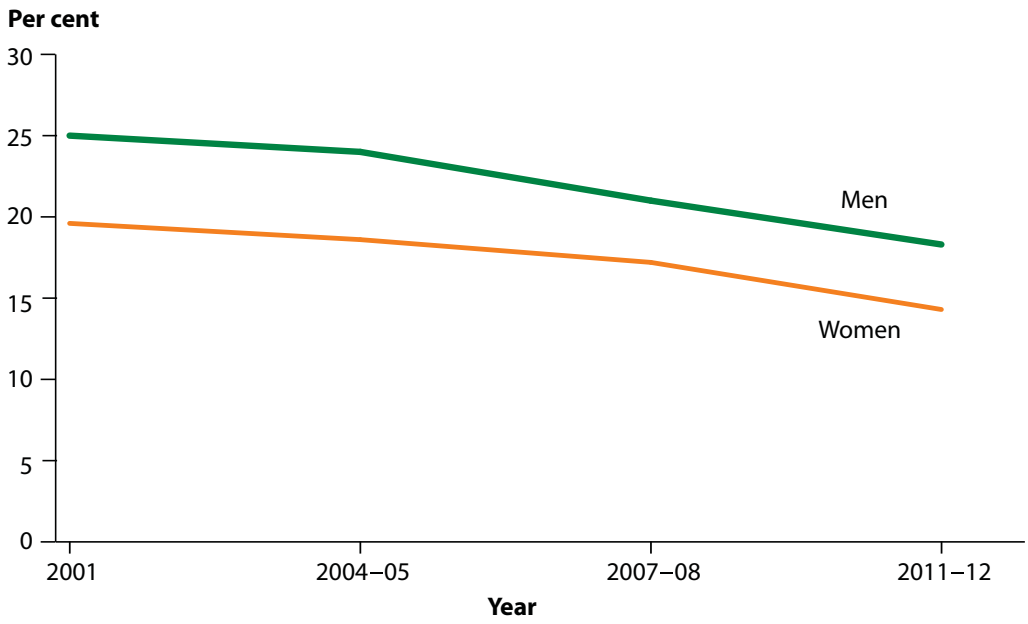
NHPF domain: Determinants of health.

NHPF dimension: Health behaviours.

More information available on this topic: Chapter 5 'Tobacco smoking'.

Definition: Adults (aged 18 and over) who smoke tobacco (manufactured or roll-your-own) every day. Presented as an age-standardised percentage.

Figure 9.17



Source: Unpublished data from the ABS National Health Survey: 2001 to 2011–12 (customised report).

Proportion of daily smokers, people aged 18 and over, by sex, 2001 to 2011–12

- Daily smoking rates have fallen since 2001, when 25% of men and 20% of women smoked daily.
- In 2011–12, 16% of adults were daily smokers; men were more likely to smoke daily than women (18% compared with 14%).

Proportion of adults at risk of long-term harm from alcohol

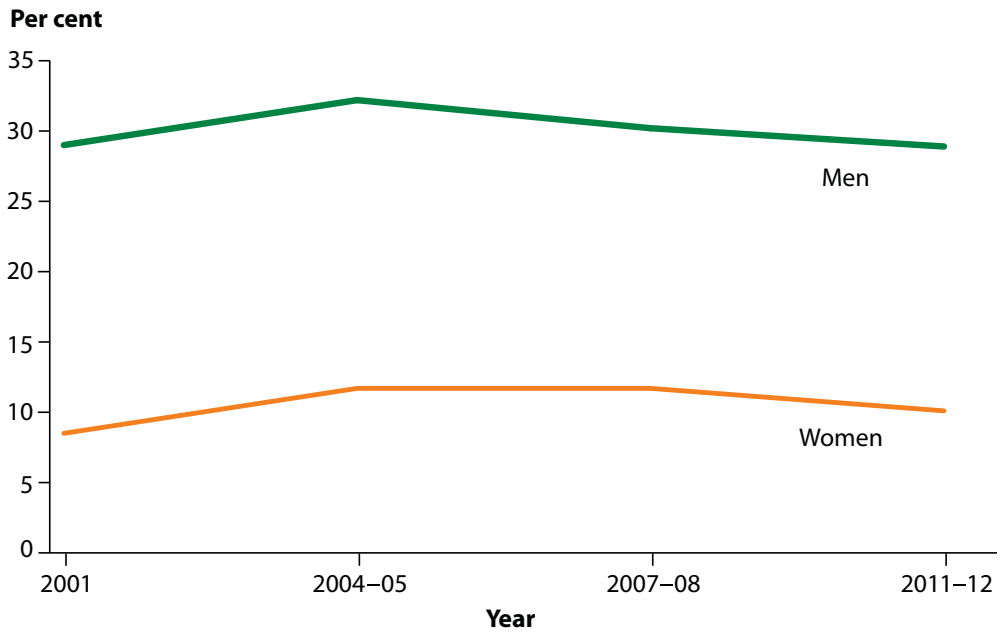
NHPF domain: Determinants of health.

NHPF dimension: Health behaviours.

More information available on this topic: Chapter 5 'Alcohol risk and harm'.

Definition: 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 guidelines. Presented as an age-standardised percentage.

Figure 9.18



Source: Unpublished data from the ABS National Health Survey: 2001 to 2011–12 (customised report).

People aged 18 and over who exceeded lifetime risk alcohol guidelines, 2001 to 2011–12

- In 2011–12, nearly 1 in 5 adults (19.5%) consumed more than 2 standard drinks per day on average, exceeding the lifetime risk guideline.
- Men were almost 3 times as likely as women to consume alcohol at risky levels: 29% for men and 10% for women.
- Rates of risky alcohol consumption have fluctuated since 2001, peaking in 2004–05 and declining to levels similar to 2001 in 2011–12.

Fruit and vegetable intake

NHPF domain: Determinants of health.

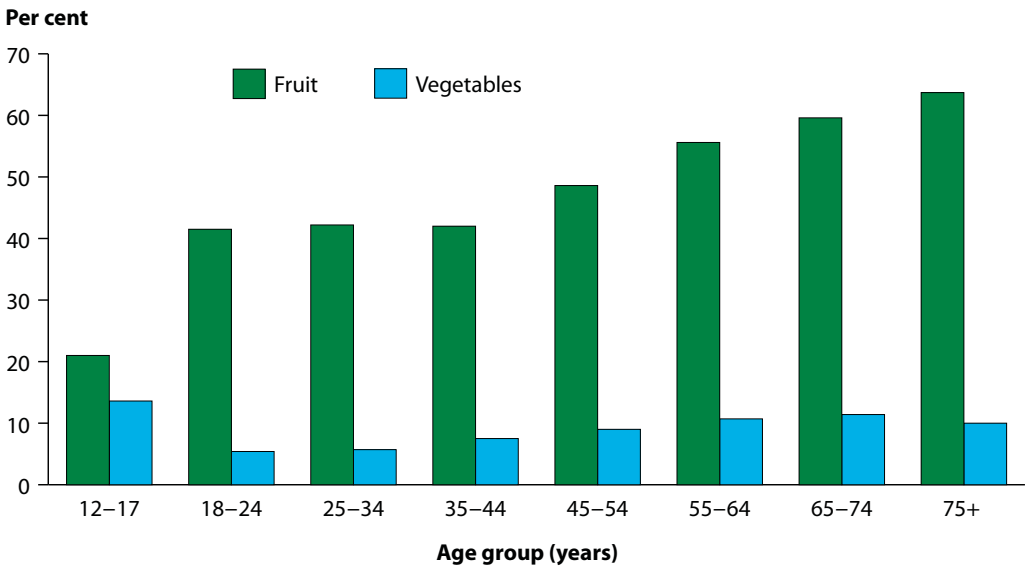
NHPF dimension: Health behaviours.

Definition: The percentage of people aged 12 and over eating sufficient serves of fruit and vegetables each day to obtain a health benefit.

Based on the NHMRC 2003 guidelines (NHMRC 2003), the recommended daily intake for people aged 18 and over is at least 2 serves of fruit and 5 serves of vegetables. For children aged 12–17, the recommended daily intake is at least 3 serves of fruit and 4 serves of vegetables. One serve is approximately 150 grams of fresh fruit, 50 grams of dried fruit, half a cup of cooked vegetables, or 1 cup of salad vegetables; beverages are not included.

Note that new Australian dietary guidelines were released in early 2013 (NHMRC 2013); national data based on these new guidelines were not available at the time of writing.

Figure 9.19



Source: ABS 2013b: Table 11.

The percentage of people aged 12 and over who ate the recommended daily intake of fruit and vegetables, by age group, 2011–12

- In 2011–12, 46% of people aged 12 and over ate sufficient serves of fruit and only 9% ate sufficient serves of vegetables, based on the NHMRC guidelines (ABS 2013b).
- Sufficient fruit intake was highest in the 75-and-over age group. Sufficient vegetable intake was highest in the 12–17 age group.
- Among those aged 12 and over, females were more likely to eat sufficient fruit and vegetables than males (6% compared with 4%).
- Among those aged 12 and over, the proportion of people who ate sufficient fruit was 48% in 2007–08, and 45% in 2011–12 (age-standardised). The proportion of people who ate sufficient vegetables was 9% in both 2007–08 and 2011–12 (age-standardised) (ABS 2009a).

Physical inactivity

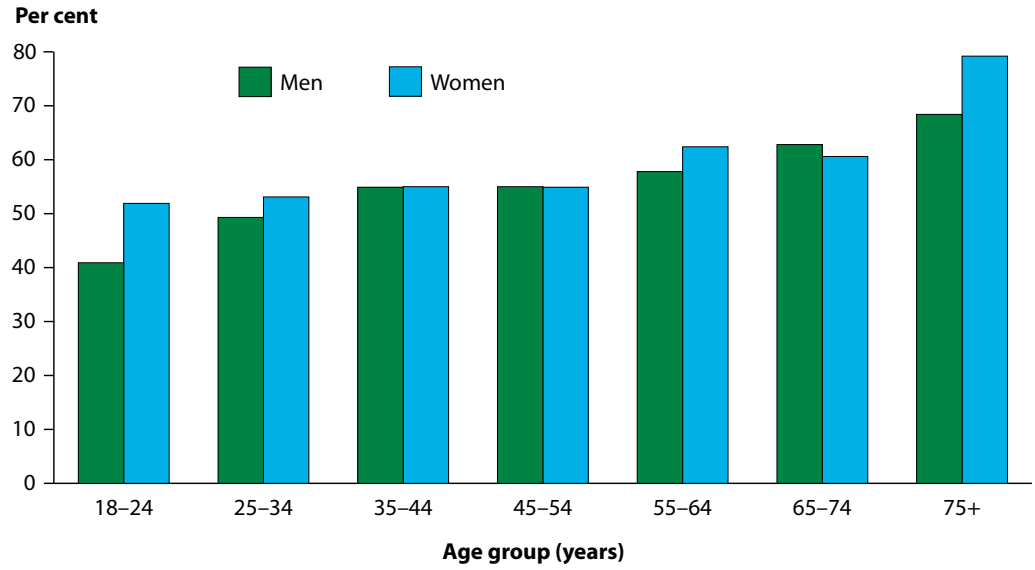
NHPF domain: Determinants of health.

NHPF dimension: Health behaviours.

More information available on this topic: Chapter 4 'Chronic disease—Australia's biggest health challenge'.

Definition: The percentage 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 9.20



Source: ABS 2013a: Table 4.

Insufficient physical activity by age group and sex, 2011–12

- In 2011–12, 56% of adults were not sufficiently active to meet the recommended minimum level of activity (ABS 2013a).
- Insufficient activity levels increased with age, from 46% of those aged 18–24, to 74% of those aged 75 and over.
- Overall, women were more likely to be insufficiently active than men (58% compared with 54%).
- Insufficient physical activity was more common in areas with the lowest socioeconomic status than in areas with the highest status (65% compared with 48%).
- There was a small decrease in the age-standardised proportion of adults who were not sufficiently active, mostly in younger adults, from 62% in 2007–08 to 56% in 2011–12 (ABS 2011, 2013a) but without comparable data from additional points in time it is not clear whether this represents a favourable trend.
- The physical activity recommendation for children aged 2–4 is 180 minutes or more per day, and for children aged 5–17 it is 60 minutes or more per day (Department of Health 2013b). In 2011–12, 30% of children aged 2–17 met the physical activity guidelines (31% of males, 28% of girls).

Proportion of persons obese and overweight

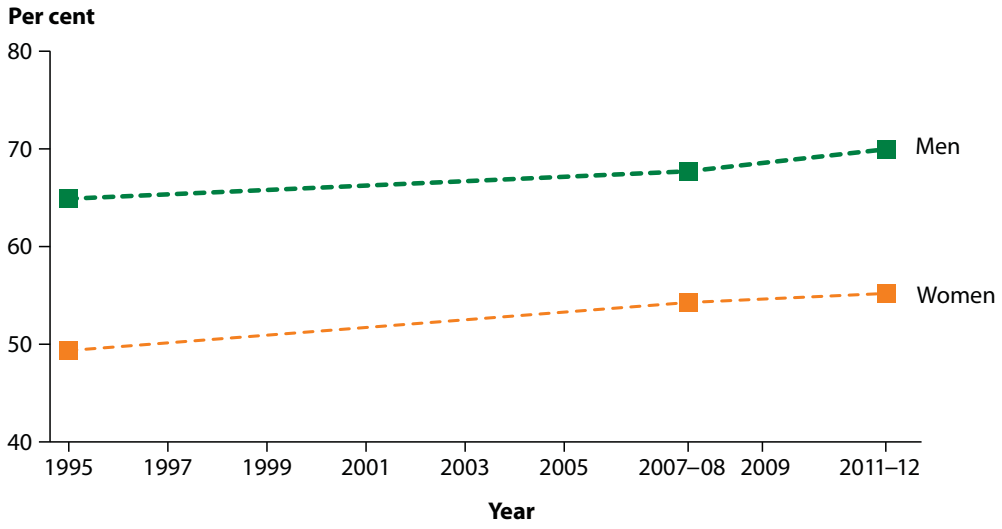
NHPF domain: Determinants of health.

NHPF dimension: Biomedical factors.

More information available on this topic: Chapter 4 'Chronic disease—Australia's biggest health challenge', Chapter 6 'Childhood overweight and obesity'.

Definition: Proportion of people who are overweight or obese. Body mass index (BMI) is a measure that classifies a person as overweight, obese, normal weight or underweight, based on their weight and height. Overweight is defined as a BMI of 25 or over but less than 30, and obesity is defined as a BMI of 30 or more.

Figure 9.21



Source: ABS 2009a: Table 17; ABS 2013b: Table 5.

Age-standardised rate of overweight or obesity, people aged 18 and over, by sex, 1995 to 2011–12

- In 2011–12, the majority of Australian adults (63%) were either overweight or obese (ABS 2013b).
- Overweight and obesity have risen over time, after adjusting for differences in the age structure, from 57% in 1995 to 63% in 2011–12. For males, the rate rose from 65% to 70%, and for females it rose from 49% to 55%.
- Among adults, overweight and obesity were highest in the 65–74 age group (75%) and lowest in the 18–24 age group (36%).
- More men were overweight than women (42% compared with 28%). Obesity rates were the same for men and women (28%).
- Women who lived in areas with the lowest socioeconomic status (SES) were more likely to be overweight or obese than women living in areas with the highest SES. In contrast, overweight and obesity rates for men did not vary by SES areas.
- In 2011–12, 26% of children aged 5–17 were overweight or obese compared with 25% in 2007–08 and 21% in 1995.

Health system performance

This domain covers the major services and interventions undertaken by the health system. The key questions asked are:

- 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?

The indicators included are shown in Table 9.4.

Table 9.4: Indicators of NHPF domain—health system performance

Trend legend	✔	✗	~	..
	Favourable	Unfavourable	No change/trend unclear/ no trend	No data

Indicator	Trend
Effectiveness	
Unsafe sharing of needles	~
Immunisation rates for vaccines in the national schedule	
1 year	~
2 years	~
5 years	✔
Adults	~
Selected potentially preventable hospitalisations	~
Survival following acute coronary heart disease event	**Not reported**
Survival of people diagnosed with cancer (5 year relative rates)	✔
Potentially avoidable deaths	✔
Safety	
Adverse events treated in hospitals	~
Falls resulting in patient harm in care setting	~
Continuity of care	
Proportion of people with diabetes with a GP annual cycle of care	**Not reported**
Proportion of people with asthma with a written asthma action plan	..
Proportion of people with mental illness with a GP care plan	..

continued

Table 9.4 (continued): Indicators of NHPF domain—health system performance

Indicator	Trend
Accessibility	
Bulk-billing for non-referred (GP) attendances	✔
Selected potentially avoidable GP-type presentations to emergency departments	~
Waiting time for elective surgery	✗
Waiting time for emergency department care	✔
Cancer screening rates	
breast	~
cervical	~
bowel	..
Differential access to hospital procedures	..
Proportion of pregnancies with an antenatal visit in the first trimester	..
Efficiency and sustainability	
Net growth in health workforce	
medical practitioners	✔
nurses and midwives	✔
Cost per case mix-adjusted separation for acute and non-acute care episodes	~

Unsafe sharing of needles

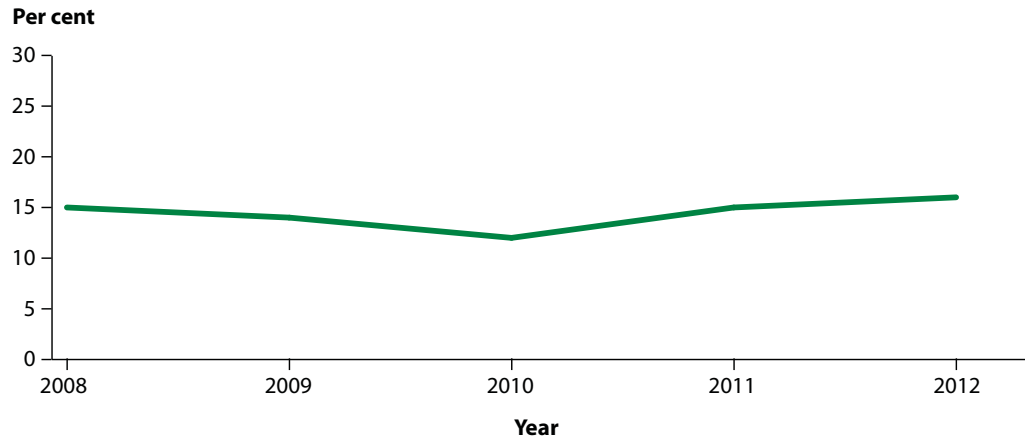
NHPF domain: Health system performance.

NHPF dimension: Effectiveness.

More information available on this topic: Chapter 5 'Illicit drug use—current and future issues'.

Definition: The percentage of injecting drug users participating in surveys carried out at needle and syringe programs, who report sharing needles and syringes in the last month.

Figure 9.22



Note: Based on people participating in surveys carried out at needle and syringe programs who were tested for HIV or hepatitis C.

Source: The Kirby Institute 2013.

Injecting drug users who report using needles and syringes after someone else in last month (per cent), 2008–12

- In 2012, 16% of participants reported using needles and syringes after someone else in the month before the survey.
- This proportion fluctuated slightly between 2008 and 2012, reaching a low of 12% in 2010 and a high of 16% in 2012.

Immunisation rates for vaccines in the national schedule

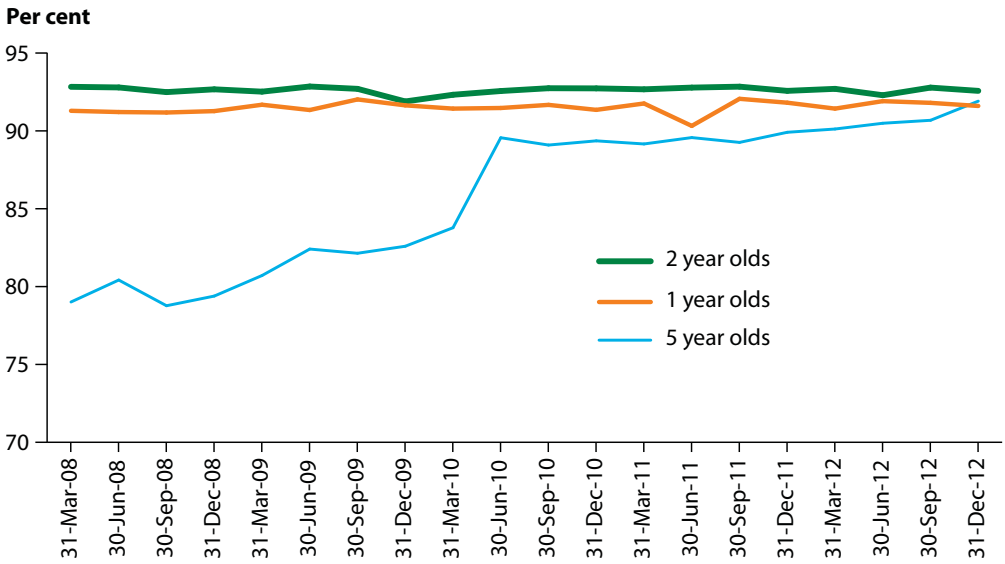
NHPF domain: Health system performance.

NHPF dimension: Effectiveness.

More information available on this topic: Chapter 4 'Immunisation and vaccine preventable diseases'.

Definition: The proportion of 1, 2 and 5 year olds who have been assessed as fully immunised according to the Australian Childhood Immunisation Register.

Figure 9.23



Source: Australian Childhood Immunisation Register, unpublished data.

Immunisation rates for vaccines in the national schedule 2008–2012

- As at December 2012, the proportion of children assessed as being fully immunised was 90% or higher for each of these age groups.
- Between March 2008 and December 2012, the immunisation rates have been relatively stable for children aged 1 and 2.
- For children aged 5 there was a significant increase in vaccination coverage, with rates rising from 79% in March 2008 to around 92% in 2012. This follows a change in eligibility rules for incentive payments, to an earlier age cut-off.

Immunisation rates for vaccines in the national schedule

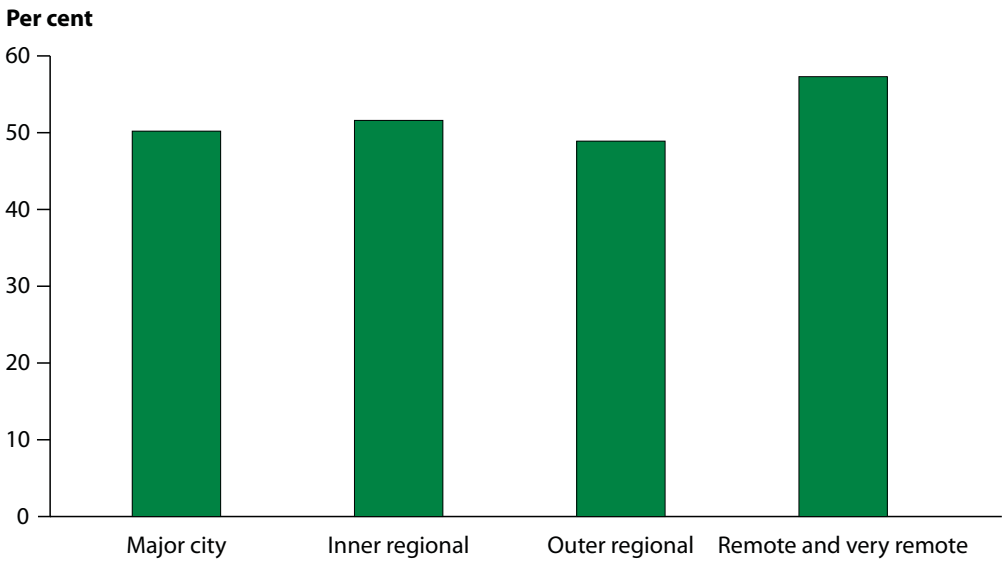
NHPF domain: Health system performance.

NHPF dimension: Effectiveness.

More information available on this topic: Chapter 4 'Immunisation and vaccine preventable diseases'.

Definition: Proportion of people aged 65 or over who have been vaccinated for influenza and pneumococcal disease.

Figure 9.24



Source: SCRGSP 2010.

Proportion of older adults vaccinated against influenza and pneumococcal disease by remoteness area, 2009

- 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%.

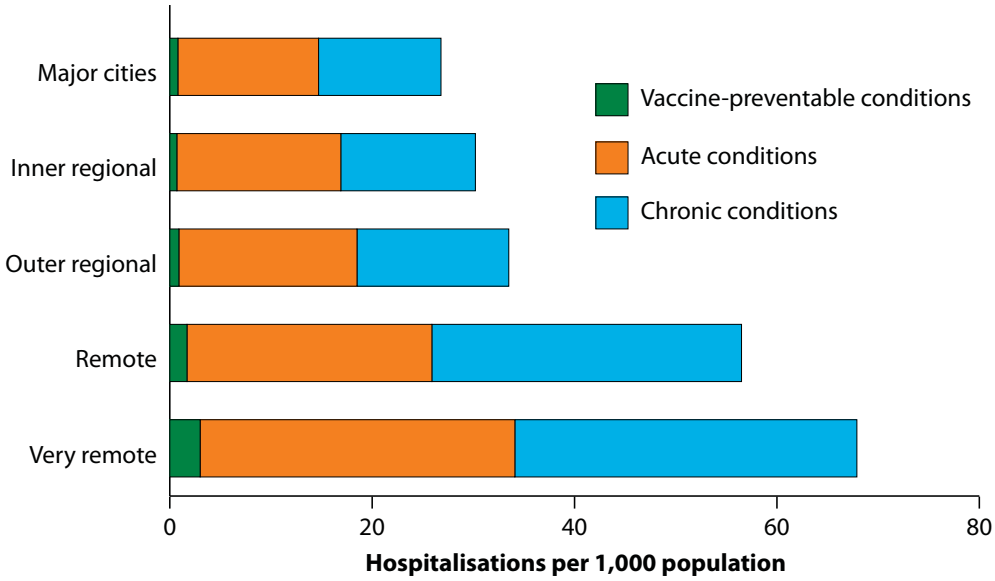
Selected potentially preventable hospitalisations

NHPF domain: Health system performance.

NHPF dimension: Effectiveness.

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 diseases (for example, measles), acute conditions (for example, ear, nose and throat infections) and chronic conditions, such as diabetes.

Figure 9.25



Source: AIHW 2013b.

Hospitalisations per 1,000 population, by remoteness area, 2011–12

- In 2011–12, there were an estimated 28.6 potentially preventable hospitalisations (PPHs) per 1,000 population. This rate decreased by an annual average of almost 4% in total from 2007-08. However, some of this may have been due to changes to the practices for classifying and reporting diabetes as an additional diagnosis relevant to hospital care.
- PPHs accounted for 7.3% of all hospital separations (9.4% of public hospital separations and 4.2% of private hospital separations).
- For 2011–12, the rate of PPHs was highest for residents of *Remote* and *Very remote* areas (56 and 67 per 1,000 population, respectively) and lowest for residents of *Major cities* (27 per 1,000 population).
- The rate of PPHs fell as the level of socioeconomic advantage rose.

Survival following an acute coronary heart disease event

NHPF domain: Health system performance.

NHPF dimension: Effectiveness.

More information available on this topic: Chapter 4 'Coronary heart disease'.

Definition: People aged 40–90 who survive an acute coronary heart disease event (heart attack).

In 2012, the AIHW revised the methodology for estimating the incidence of acute coronary events due to changes in clinical and treatment patterns and diagnostics. The revised method includes both acute myocardial infarction and unstable angina hospitalisations and has been restricted to acute coronary heart disease deaths. These fundamental changes to the definition particularly affect survival rates and could result in a misleading picture of heart attack-related survival rates—few people die from unstable angina and the number of fatal events would be substantially reduced, likely resulting in an increase in survival rates compared with the previous methodology. Further validation work and consultation are needed to assess the appropriateness of estimating survival rates based on the revised incidence methodology. Hence, the indicator on survival following acute coronary heart disease has not been reported in *Australia's health 2014*.

Survival of people diagnosed with cancer (5-year relative rates)

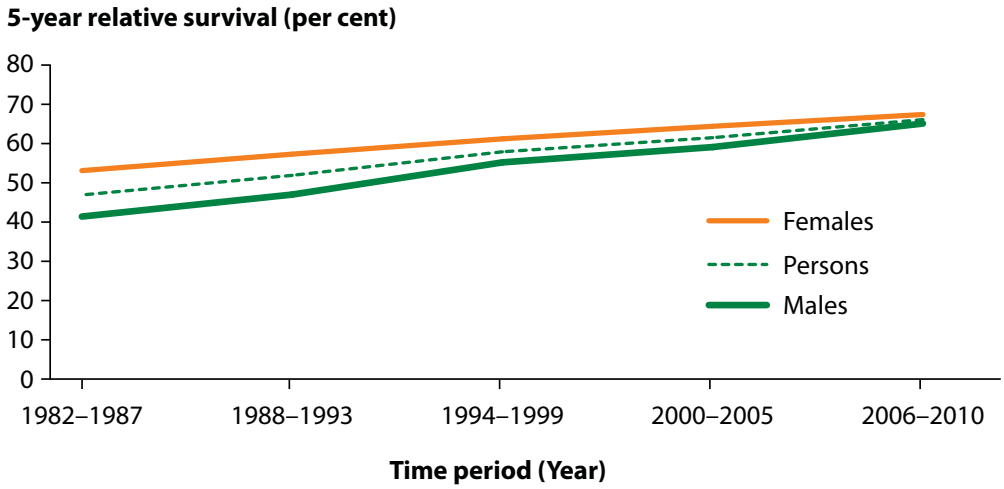
NHPF domain: Health system performance.

NHPF dimension: Effectiveness.

More information available on this topic: Chapter 4 'Cancer in Australia'.

Definition: The percentage of people diagnosed with cancer who survived for at least 5 years after diagnosis, relative to people in the general population.

Figure 9.26



Source: AIHW Australian Cancer Database 2007.

Five-year relative survival from all cancers combined, among males, females and persons, Australia, 1982–1987 to 2006–2010

In 2006–2010:

- Five-year relative survival for all cancers combined was 66%, and was slightly higher among females (67%) than among males (65%).
- Five-year relative survival decreased with increasing remoteness. It was highest for people living in *Major cities* of Australia (67%) and lowest for people living in *Remote* and *Very remote* areas (63%).
- Five-year relative survival was highest for people living in the least disadvantaged areas (71%) and lowest for people living in the most disadvantaged areas (63%).
- Between 1982–1987 and 2006–2010, 5-year survival from all cancers combined rose from 47% to 66%. The increase in survival was evident for both males and females.

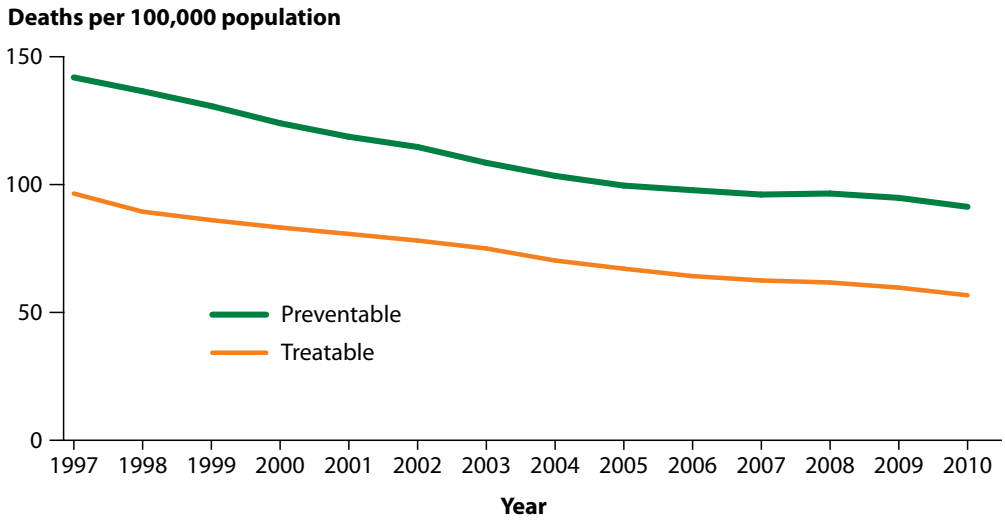
Potentially avoidable deaths

NHPF domain: Health system performance.

NHPF dimension: Effectiveness.

Definition: The number of deaths each year of people aged under 75 that are potentially avoidable within the present health system. Divided into preventable deaths (those amenable to primary prevention or screening) and deaths from potentially treatable conditions (those amenable to therapeutic interventions) (SCRGSP 2012). Deaths due to some external causes, such as suicide and road accidents, are included as potentially preventable. Data are presented as an age-standardised rate (per 100,000 population).

Figure 9.27



Sources: SCRGSP 2012 (2007–2010); AIHW National Mortality Database (1997–2006).

Age-standardised death rates for potentially avoidable deaths, 1997–2010

- In 2010, there were 32,919 potentially avoidable deaths in Australia; 62% were classified as potentially preventable and 38% as potentially treatable (SCRGSP 2012).
- The age-standardised rates were 91 per 100,000 population for potentially preventable deaths and 57 per 100,000 population for deaths from potentially treatable conditions.
- Preventable deaths fell by 36% between 1997 to 2010 (from 142 to 91 deaths per 100,000 population).
- Rates of deaths from treatable conditions fell by 41% from 1997 to 2010 (from 97 to 57 deaths per 100,000 population).

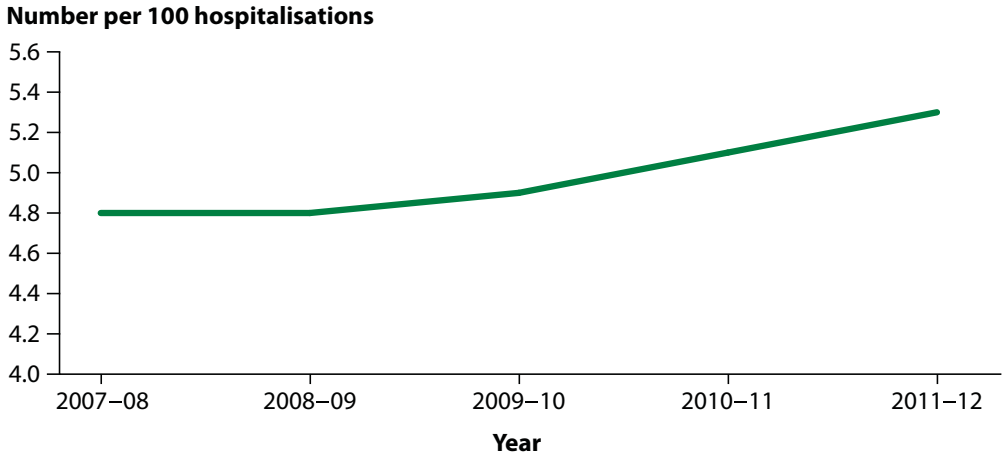
Adverse events treated in hospitals

NHPF domain: Health system performance.

NHPF dimension: Safety.

Definition: The number of hospitalisations involving an adverse event. This is presented as a number per 100 hospitalisations.

Figure 9.28



Sources: AIHW 2009, 2010, 2011, 2012a, 2013b.

Hospitalisations with an adverse event per 100 hospitalisations, all hospitals, 2007–08 to 2011–12

- 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, and some may be preventable.
- From 2007–08 to 2011–12, hospitalisations with adverse events increased from 4.8 to 5.3 per 100 hospitalisations. This does not necessarily mean that there has been an increase in adverse event rates, and may reflect increasing focus on the safety and quality of hospital care and good reporting of relevant data.
- Adverse events were more likely to occur in: overnight hospitalisations compared with same-day hospitalisations (10.3 and 1.6 per 100 hospitalisations); sub-acute and non-acute care hospitalisations compared with acute care hospitalisations (9.3 and 5.0 per 100 hospitalisations); and hospitalisations that were emergency admissions compared with hospitalisations that were non-emergency admissions (9.1 and 3.8 per 100 hospitalisations).

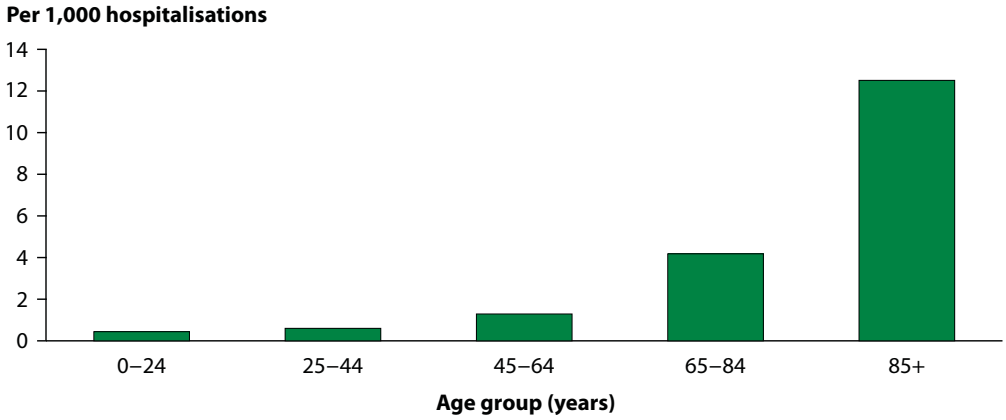
Falls resulting in patient harm in care setting

NHPF domain: Health system performance.

NHPF dimension: Safety.

Definition: The number of hospitalisations in which a patient was treated for a fall that occurred in a hospital. This is presented as a number, and a number per 1,000 hospitalisations.

Figure 9.29



Source: National Hospital Morbidity Database, 2011–12.

Hospitalisations for falls resulting in patient harm per 1,000 hospitalisations, by age group, 2011–12

- In 2011–12, there were about 25,000 hospitalisations in which a patient was treated for injuries sustained in a fall that occurred in a health service area, an overall rate of about 2.7 per 1,000 hospitalisations, up from 2.4 in 2009–10 and 2.5 in 2010–11.
- The rate ranged from 0.4 per 1,000 hospitalisations for children and young people aged up to 24 to 12.5 for patients aged 85 or older.
- More falls were reported by public hospitals (3.6 per 1,000 hospitalisations) than by private hospitals (1.4 per 1,000), and there were large variations in the rates reported among states and territories. The difference between the rates in public and private hospitals, in particular, may reflect differences in the types of patients treated.
- These rates may be underestimated, as the place of occurrence was not reported for about 27% of hospitalisations with a fall recorded. It is also possible that these rates may be overestimated, as falls that occurred in health-care settings other than hospitals are included. The increase in reported rates over recent years does not necessarily mean that there has been an increase in rates of falls, and may reflect increasing focus on the safety and quality of hospital care and good reporting of relevant data.

Proportion of people with diabetes who have a GP annual cycle of care

NHPF domain: Health system performance.

NHPF dimension: Continuity of care.

More information available on this topic: Chapter 4 'Chronic disease—Australia's biggest health challenge'.

Definition: The proportion of people with diabetes who received a Medicare Benefits Scheme-funded GP annual cycle of care.

This indicator underestimates and misrepresents the proportion of people who have a GP annual cycle of care. The indicator is based on MBS claims for the diabetes cycle of care item, however, not all GPs are eligible for or choose to make these claims, and many people with diabetes have these checks through other means. As a result, the data presented are incomplete and results in a misleading picture of the current management of people with diabetes. The AIHW has judged that it is no longer appropriate to report on the proportion of people with diabetes who complete a GP annual cycle of care indicator. Hence, this indicator has not been reported in *Australia's health 2014*.

Proportion of people with asthma with a written asthma action plan

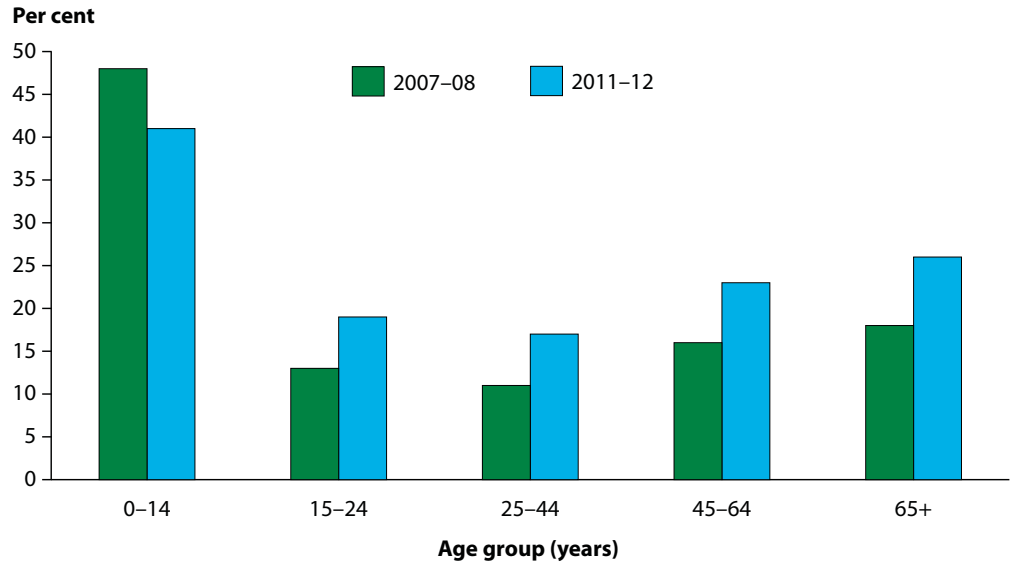
NHPF domain: Health system performance.

NHPF dimension: Continuity of care.

More information available on this topic: Chapter 4 'Chronic disease—Australia's biggest health challenge'.

Definition: The proportion of participants in the National Health Survey who reported 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.

Figure 9.30



Sources: ABS 2009a, 2013c.

Proportion of people with asthma who have a written asthma action plan, 2007–08 and 2011–12

- In 2011–12, 24% of people who reported asthma as a long-term condition also reported having a written asthma action plan.
- Among people with asthma, children aged 0–14 were the most likely to have a written asthma action plan (41%) and adults aged 25–44 were the least likely to have a written plan (17%).
- There was a small rise in the proportion of people with asthma who had a written plan, from 21% in 2007–08 to 22% in 2011–12. The rise was evident in all but the youngest age group. These changes were not statistically significant.

Proportion of people with mental illness with a GP care plan

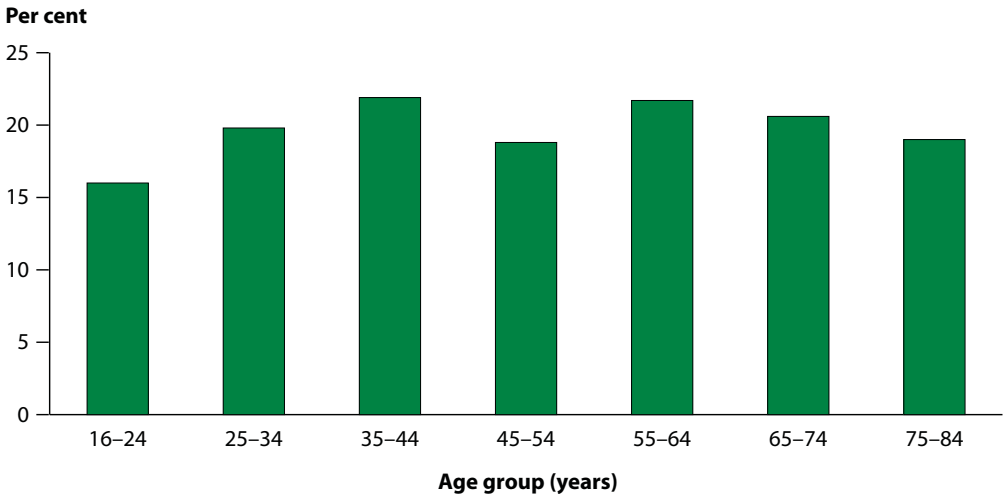
NHPF domain: Health system performance.

NHPF dimension: Continuity of care.

More information available on this topic: Chapter 8 'Mental health services at a glance'.

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.

Figure 9.31



Source: COAG Reform Council 2012.

Proportion of people with mental illness, who have a GP treatment plan, by age, 2010–11

- In 2010–11, about 1 in 5 people (20%) with mental illness had a GP mental health treatment plan.
- Young people aged 16–24 were the least likely to have a treatment plan (16%).
- People living in the most disadvantaged areas were less likely to have a plan (17%) than people living in other areas (19–21%).
- The proportion of people with mental illness who have a GP mental health plan increased from 2008–09 to 2010–11 (from 16.8% to 19.9%) (COAG Reform Council 2012); however, data over a longer time period are required to determine whether this represents a favourable trend.

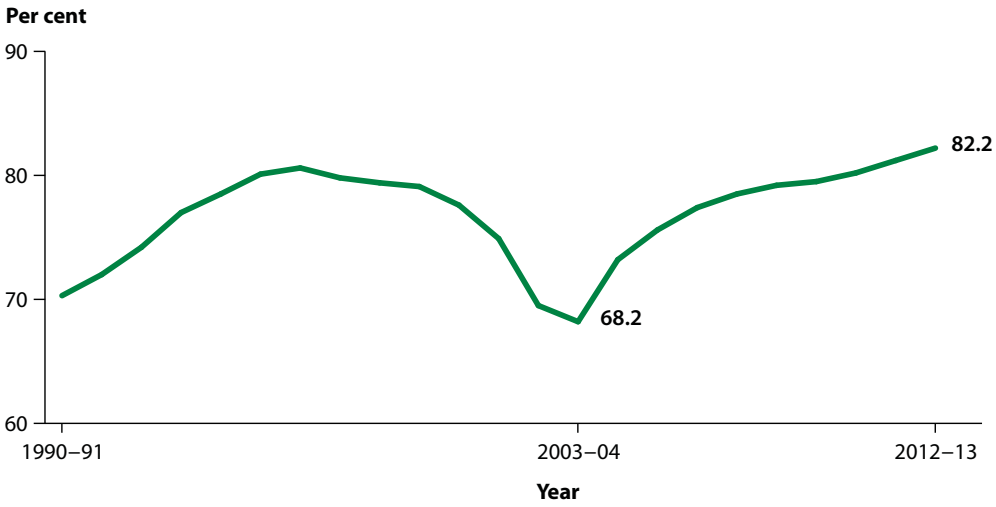
Bulk billing for non-referred (GP) attendances

NHPF domain: Health system performance.

NHPF dimension: Accessibility.

Definition: Percentage of non-referred attendances that were bulk-billed based on Medicare Benefits Scheme (MBS) services. This includes GP, vocationally registered GP, enhanced primary care and other non-referred GP services. Presented as a percentage of total annual GP attendances per financial year.

Figure 9.32



Source: Department of Health 2013a.

Bulk-billing rate for non-referred (GP) attendances, 1990–91 to 2012–13

- More than 128 million non-referred GP attendances were claimed through Medicare in 2012–13 and 82% of these services were bulk-billed.
- Bulk-billing rates varied across states and territories, from 55% in the Australian Capital Territory to 87% in New South Wales. In the remaining states: Victoria 82%, Queensland 82%, South Australia 81%, Western Australia 73%, Tasmania 76% and Northern Territory 77%.
- Bulk-billing rates for non-referred GP attendances have changed over time, and increased each year for the last decade to a record high in 2012–13 (82%). Since 1990–91, the lowest bulk-billing rate was recorded in 2003–04 (68%).

Selected potentially avoidable GP-type presentations to emergency departments

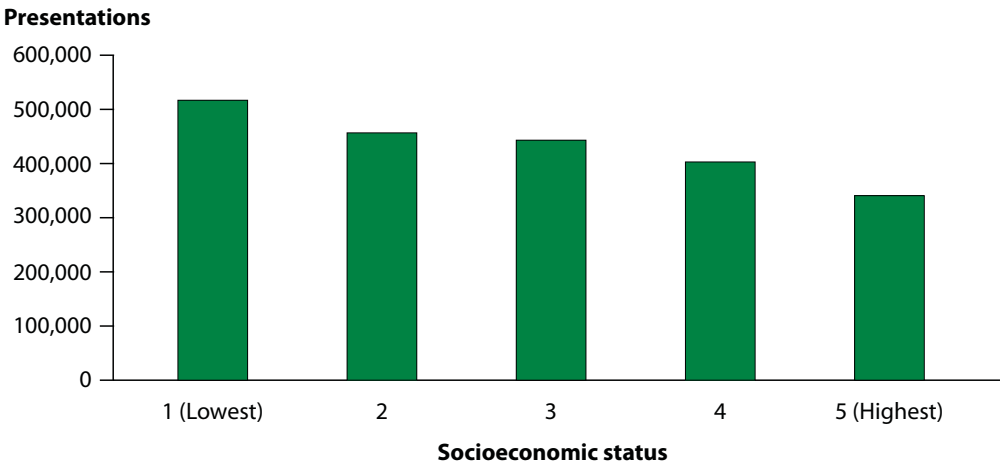
NHPF domain: Health system performance.

NHPF dimension: Accessibility.

More information available on this topic: Chapter 8 'Emergency departments: at the front line'.

Definition: The number of presentations to emergency departments in public hospitals that potentially could have been avoided through the provision of non-hospital health services.

Figure 9.33



Note: Socioeconomic status groups are based on the patient's usual residence, not the location of the hospital.

Source: AIHW 2013d.

Selected potentially avoidable GP-type presentations to public hospital emergency departments, by socioeconomic status, 2012–13

- For 2012–13, potentially avoidable GP-type presentations accounted for almost 2.2 million emergency department presentations (32% of total presentations). There were more than 1.6 million in *Principal referral and specialist women's and children's* hospitals and almost 570,000 in *Large* hospitals.
- Nationally, the number of these presentations to emergency departments was highest for patients living in areas classified as being the most socioeconomically disadvantaged (517,000 presentations, 24% of total) and the number was lowest for patients living in areas classified as being the least socioeconomically disadvantaged (340,000 presentations, 16% of total).
- These data are only for emergency departments in larger public hospitals that are mostly located in major cities, and patterns of presentations may be different in other public hospitals.
- The indicator is under review and time trends are therefore not presented; see Chapter 8 'Emergency departments: at the front line' for more information.

Waiting time for elective surgery

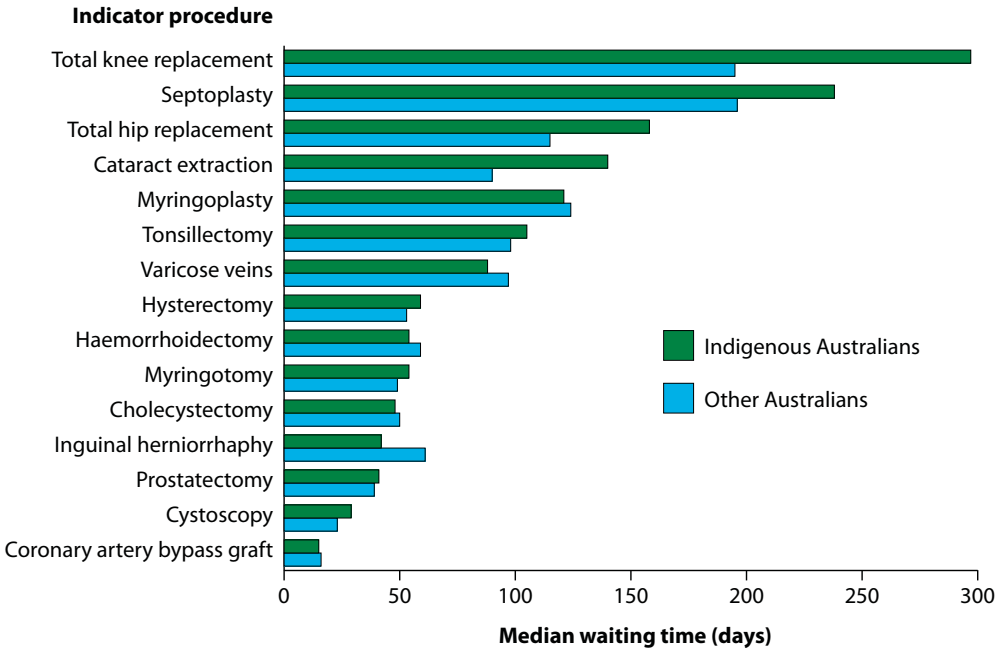
NHPF domain: Health system performance.

NHPF dimension: Accessibility.

More information available on this topic: Chapter 8 'Elective surgery waiting times'.

Definition: The median waiting times for elective surgery in public hospitals. Data are presented as a number of days.

Figure 9.34



Source: AIHW 2013c.

Median waiting time to admission for high volume elective surgery, by Indigenous status, 2012–13

- The median waiting time for elective surgery increased from 33 days in 2008–09 to 36 days in 2012–13. Over this period, the median waiting times for *Principal referral and specialist women's and children's* hospitals increased from 30 days to 35 days.
- In 2012–13, the median waiting time for Indigenous Australians (40 days) was higher than for other Australians (36 days).
- The high-volume procedure with the shortest median waiting time was *Coronary artery bypass graft* (16 days). *Septoplasty* (surgery to straighten the cartilage and bone between the nostrils) and *Total knee replacement* had the longest median waiting times (197 days and 196 days, respectively).

Waiting time for emergency department care

NHPF domain: Health system performance.

NHPF dimension: Accessibility.

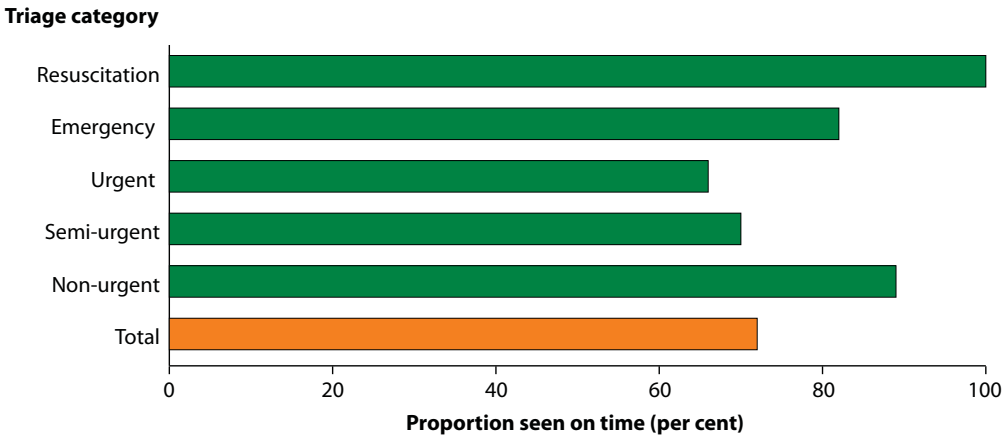
More information available on this topic: Chapter 8 'Emergency departments: at the front line'.

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.

This is presented as a percentage.

Figure 9.35



Source: AIHW 2013d.

Emergency presentations seen on time, by triage category, 2012–13

- In 2012–13, 72% of patients were seen within the recommended time for their triage category. The proportion was higher than the 70% reported for 2008–09 to 2010–11 and the same as the 72% reported for 2011–12.
- Almost 100% of *Resuscitation* patients (those requiring treatment immediately) and 89% of *Non-urgent* patients were seen within the recommended waiting time.
- The proportion of presentations seen on time for Indigenous Australians (70%) was slightly lower than the proportion of presentations seen on time for other Australians (72%).

Cancer screening rates

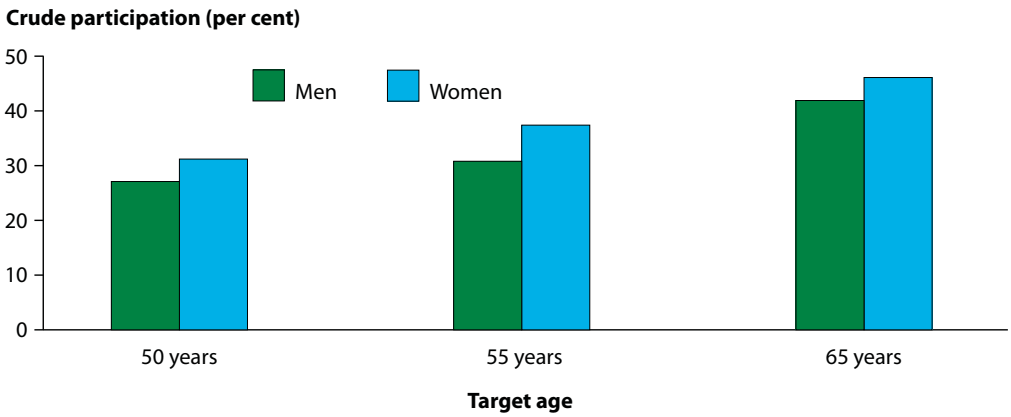
NHPF domain: Health system performance.

NHPF dimension: Accessibility.

More information available on this topic: Chapter 8 'Cancer screening in Australia'.

Definition: Proportion of the target population that participated in each of the 3 national cancer screening programs.

Figure 9.36



Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Crude participation in the National Bowel Cancer Screening Program, by sex and age, 2011–12

- In 2011–12, 35% of National Bowel Cancer Screening Program (NBCSP) invitees aged 50, 55 and 65 participated in the program. The highest rate of participation was for people aged 65 (44%), while those aged 50 had the lowest (29%). Due to a series of adjustments to NBCSP target ages and changes to program procedures, time series data for the initial years of the program are not comparable, and may be misleading. These data are not presented here.
- In 2011–2012, 55% of women aged 50–69 participated in BreastScreen Australia, a rate similar to previous years. Participation was highest in *Outer regional* areas (59%) and lowest in *Very remote* areas (46%).
- In 2011–2012, 57% of women aged 20–69 participated in the National Cervical Screening Program (NCSP), a rate similar to previous years. Participation increased with increasing socioeconomic status, from 52% of women living in areas with the lowest socioeconomic status to 64% of women living in areas with the highest socioeconomic status.

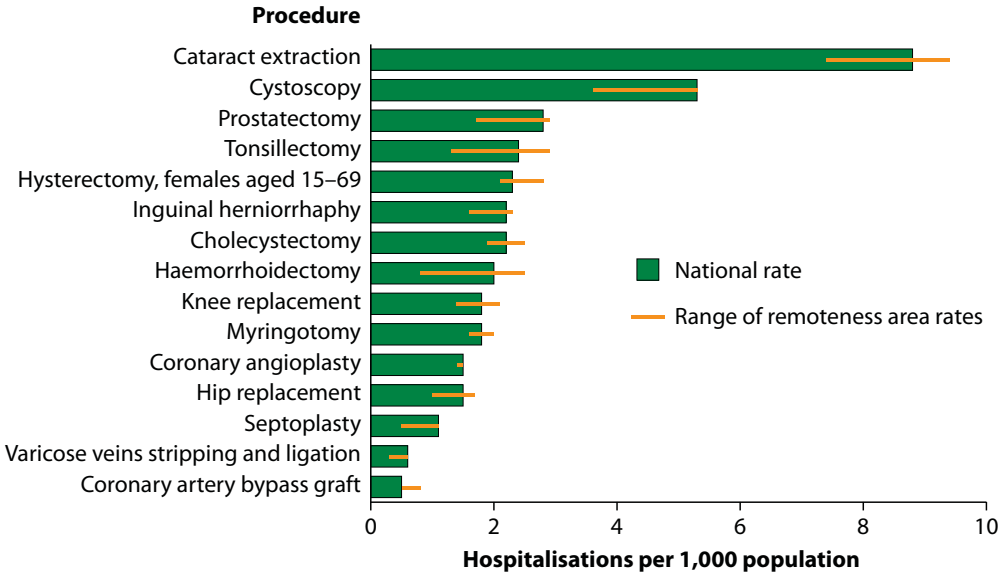
Differential access to hospital procedures

NHPF domain: Health system performance.

NHPF dimension: Accessibility.

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).

Figure 9.37



Note: Remoteness is based on the patient's usual residence, not the location of the hospital.

Source: AIHW 2013b.

Hospitalisations per 1,000 population for selected procedures, by remoteness, 2011–12

- The rates for the selected hospital procedures are presented as an indicator of accessibility for different population groups. Generally, the procedures were selected because of the frequency with which they are undertaken, because they are often elective and because alternative treatments are sometimes available.
- For almost all selected procedures, rates were highest in *Inner regional* areas and lowest in *Very remote* areas. Only 1 procedure, *Coronary artery bypass graft*, had higher rates in *Very remote* areas than other remoteness areas. The rate for *Cataract extraction* showed the most variation, ranging from 9.4 per 1,000 in *Inner regional* areas to 7.4 in *Very remote* areas.
- Variability in rates fell from 2008–09 to 2011–12 for *Coronary angioplasty* and *Varicose veins stripping and ligation* and remained stable for *Inguinal hernia*. There was no trend in variation for other procedures.

Proportion of pregnancies with an antenatal visit in the first trimester

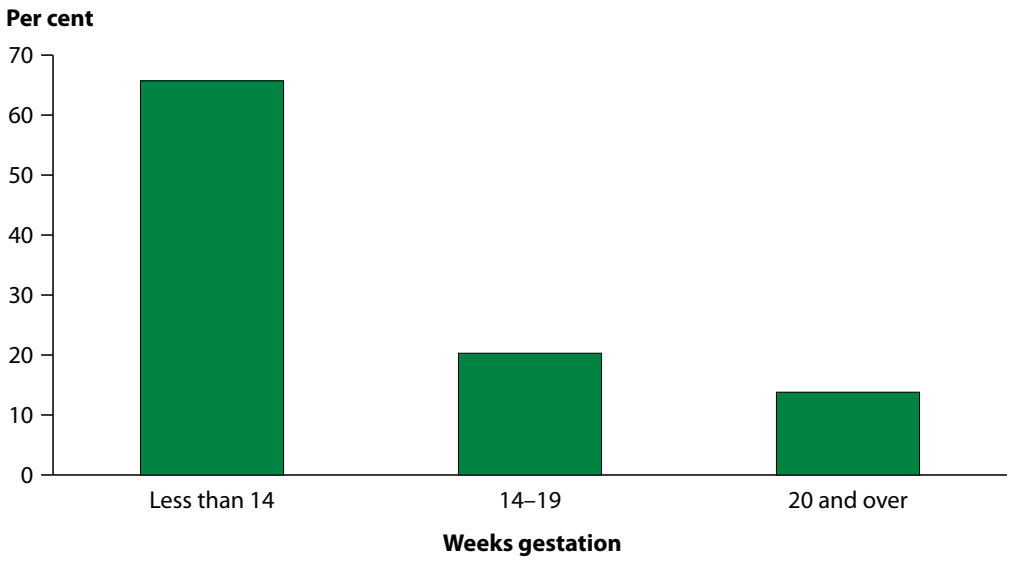
NHPF domain: Health system performance.

NHPF dimension: Accessibility.

More information available on this topic: Chapter 6 'The health of mothers'.

Definition: Pregnant females who have a live birth who had at least 1 antenatal visit in the first 13 weeks of pregnancy. Presented as a percentage of all females who had a live birth.

Figure 9.38



Source: Li et al. 2013.

Proportion of women who gave birth, by duration of pregnancy at first antenatal visit, Australia, 2011

- Of women who gave birth, 66% attended at least 1 antenatal visit in the first trimester (before 14 weeks' gestation). This was similar to 2010 (65%), the first year that national data was reported.
- About 14% attended their first antenatal visit at or after 20 weeks' gestation.

Net growth in health workforce

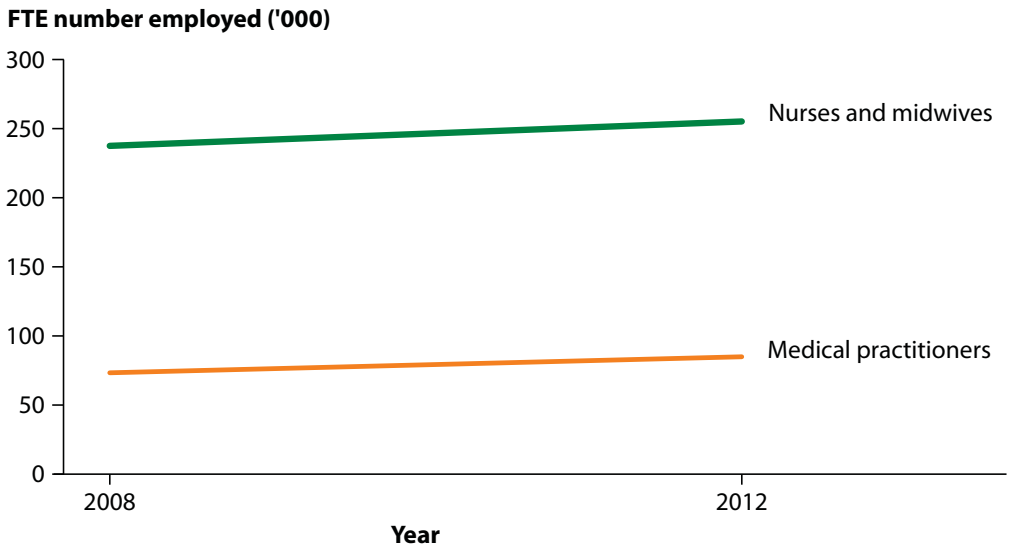
NHPF domain: Health system performance.

NHPF dimension: Efficiency and sustainability.

More information available on this topic: Chapter 2 'Who is the health workforce'.

Definition: The change over time in the full-time equivalent number of people employed in selected health workforce professions.

Figure 9.39



Source: National Health Workforce Data Set (NHWDS) medical practitioners and nurses and midwives 2012.

Full-time equivalent number of health practitioners employed, 2008 and 2012

- The number of full-time equivalent medical practitioners employed rose by 16%, from 2008 to 2012. The full-time equivalent rate rose by 8.8%, from 344 to 374 per 100,000 population over the same period.
- In the same period, the number of full-time equivalent nurses and midwives employed rose by 7%. The rise in the full-time rate was 0.5%, from 1,118 per 100,000 population in 2008 to 1,124 in 2012.

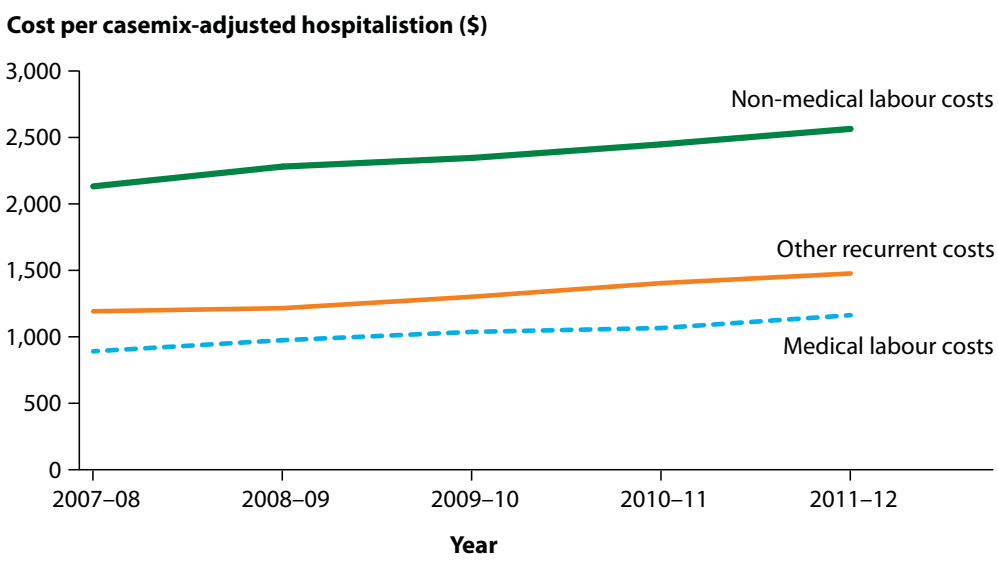
Cost per casemix-adjusted separation for acute and non-acute care episodes

NHPF domain: Health system performance.

NHPF dimension: Efficiency and sustainability.

Definition: The average cost per hospitalisation for acute and non-acute care in selected public acute hospitals, adjusted for different hospital casemixes. Data are presented as dollars.

Figure 9.40



Note: data are not adjusted for inflation.

Source: AIHW 2013b.

Cost per casemix-adjusted separation, selected public acute hospitals, 2007–08 to 2011–12

- The average cost per hospitalisation is a measure of efficiency of the provision of admitted patient services. Patients with more complex conditions are likely to cost more than patients with less complex conditions. To compare the average cost per admitted patient across hospitals, it is necessary to adjust for the average complexity of patients treated in each hospital. This is called 'casemix adjustment'. Data for private hospitals are not available.
- In 2011–12, the average cost per casemix-adjusted hospitalisation was $5,204.

- The average cost per casemix-adjusted hospitalisation has increased since 2007–08 by 23.5%, with an average rise of 5.4% annually (not adjusted for inflation). This compares to an average annual growth rate to the total health price of 2.0% and an average annual rate of change in prices throughout the national economy of 3.4%.
- In 2011–12, the average cost comprised:
  - $2,564 for non-medical labour expenditure (an average annual rise of 4.7% between 2007–08 and 2011–12)
  - $1,163 for medical labour expenditure (5.5%)
  - $1,477 for other recurrent expenditure (6.9%).

References

ABS (Australian Bureau of Statistics) 2008a. 4233.0—health literacy, Australia, 2006. Canberra: ABS. Viewed 18 November 2013, <http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/4233.0Main%20Features22006?opendocument&tabname=Summary&prodno=4233.0&issue=2006&num=&view=>.

ABS 2008b. Education and work, Australia, May 2008. ABS cat. no. 6227.0. Canberra: ABS.

ABS 2009a. National Health Survey: summary of results, 2007–2008 (reissue). ABS cat. no. 4364.0. Canberra: ABS.

ABS 2009b. Australian Social Trends, June 2009: health literacy. ABS cat. no. 4102.0. Canberra: ABS. Viewed 8 November 2013, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Main+Features20June+2009>.

ABS 2011. Physical activity in Australia: a snapshot, 2007–08. ABS cat. no. 4835.0.55.001. Canberra: ABS.

ABS 2012a. Education and work, Australia, May 2012. ABS cat. no. 6227.0. Canberra: ABS.

ABS 2012b. Education and work, Australia: additional data cubes, May 2012. ABS cat. no. 6227.0.55.003. Canberra: ABS.

ABS 2012c. Australian Health Survey: first results, 2011–12. ABS cat. no. 4364.0.55.001. Canberra: ABS.

ABS 2013a. Australian Health Survey: physical activity, 2011–12. ABS cat. no. 4364.0.55.004. Canberra: ABS.

ABS 2013b. Australian Health Survey: updated results, 2011–12. ABS cat. no. 4364.0.55.003. Canberra: ABS.

ABS 2013c. Australian Health Survey: health service usage and health related actions, 2011–12. ABS cat. no. 4364.0.55.002. Canberra: ABS.

ABS 2013d. Deaths, Australia, 2012. ABS cat. no. 3302.0.55.001. Canberra: ABS.

ABS 2013e. Disability, ageing and carers, Australia: summary of findings, 2012. ABS cat. no. 4430.0. Canberra: ABS.

ABS 2013f. Environmental issues: water use and conservation, March 2013. ABS cat. no. 4602.0.55.003. Canberra: ABS.

ABS 2013g. Household income and income distribution, Australia, 2011–12. ABS cat. no. 6523.0. Canberra: ABS

ABS 2013h. Life tables for Aboriginal and Torres Strait Islanders, 2010–2012. ABS cat. no. 3302.0.55.003. Canberra: AIHW.

ABS 2013i. Measures of Australia's progress. Canberra: ABS. Viewed 9 February 2014, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/mf/1370.0>.

ACSQHC (Australian Commission on Safety and Quality in Health Care) 2013a. Indicators of safety and quality. Sydney: ACSQHC. Viewed 18 November 2013, <http://www.safetyandquality.gov.au/our-work/information-strategy/indicators/>.

ACSQHC 2013b. Vital signs 2013: the state of safety and quality in Australian health care. Sydney: ACSQHC. Viewed 9 February 2014, <http://www.safetyandquality.gov.au/publications/vital-signs-2013/>.

ACSQHC 2013c. Consumers, the health system and health literacy: taking action to improve safety & quality, consultation paper, June 2013. Sydney: ACSQHC. Viewed 8 November 2013, <http://www.safetyandquality.gov.au/our-work/patient-and-consumer-centred-care/health-literacy/consumers-the-health-system-and-health-literacy-taking-action-to-improve-safety-and-quality-3/>.

AIHW (Australian Institute of Health and Welfare) 2009. Australian hospital statistics 2007–08. Health services series no. 33. Cat. no. HSE 71. Canberra: AIHW.

AIHW 2010. Australian hospital statistics 2008–09. Health services series no. 34. Cat. no. HSE 84. Canberra: AIHW.

AIHW 2011. Australian hospital statistics 2009–10. Health services series no. 40. Cat. no. HSE 107. Canberra: AIHW.

AIHW 2012a. Australian hospital statistics 2010–11. Health services series no. 43. Cat. no. HSE 117. Canberra: AIHW.

AIHW 2012b. Australian hospital statistics 2011–12: emergency department care. Health services series 45. Cat. no. HSE 126. Canberra: AIHW.

AIHW 2012c. Australia's health 2012. Australia's health no. 13. Cat. no. AUS 156. Canberra: AIHW.

AIHW 2013a. Australia's welfare 2013. Australia's welfare series no. 11. Cat. no. AUS 174. Canberra: AIHW.

AIHW 2013b. Australian hospital statistics 2011–12. Health services series 50. Cat. no. HSE 134. Canberra: AIHW.

AIHW 2013c. Australian hospital statistics 2012–13: elective surgery waiting times. Health services series 51. Cat. no. HSE 140. Canberra: AIHW.

AIHW 2013d. Australian hospital statistics 2012–13: emergency department care. Health services series 52. Cat. no. HSE 142. Canberra: AIHW.

COAG Reform Council 2012. Healthcare 2010–11: comparing performance across Australia. COAG Reform Council: Sydney.

COAG Reform Council 2013a. Healthcare 2011–12: comparing performance across Australia. Sydney: COAG Reform Council.

COAG Reform Council 2013b. Reform agenda: healthcare. Sydney: COAG Reform Council. Viewed 19 November 2013, <http://www.coagreformcouncil.gov.au/agenda/healthcare>.

COAG Reform Council 2013c. National Partnership on Essential Vaccines: performance report for April 2012—March 2013. Sydney: COAG Reform Council.

COAG Reform Council 2013d. Sydney: National Partnership Agreement on Improving Public Hospital Services: performance report for 2012. Sydney: COAG Reform Council.

COAG Reform Council (National Healthcare Agreement Review Working Group) 2012. National Healthcare Agreement review report July 2012. Sydney: COAG Reform Council. Viewed 18 November 2013, <http://www.coag.gov.au/node/439>.

Department of Health 2013a. Medicare statistics, Table 1.4. Canberra: Department of Health. Viewed 25 November 2013, <http://www.health.gov.au/medicarestats>.

Department of Health 2013b. Physical Activity Guidelines. Canberra: Department of Health. Viewed 16 December2013, <http://www.health.gov.au/internet/main/publishing.nsf/content/health-pubhlth-strateg-phys-act-guidelines>.

DeWalt D, Berkman N, Sheridan S, Lohr K & Pigone M 2004. Literacy and health outcomes: systematic review of the literature. Journal of General Internal Medicine 19:1228–39.

DHAC (Department of Health and Aged Care) 1999. An active way to better health: national physical activity guidelines for adults. Canberra: DHAC.

International Organization for Standardization 2010. Health informatics—health indicators conceptual framework (ISO/TS 21667). Geneva: International Organization for Standardization.

Li Z, Zeki R, Hilder L & Sullivan EA 2013. Australia's mothers and babies 2011. Perinatal statistics series no. 27. Cat. no. PER 57. Canberra: AIHW National Perinatal Epidemiology and Statistics Unit.

National Water Commission 2014. National performance report 2012–13: urban water utilities Canberra: National Water Commission.

NHMRC (National Health and Medical Research Council) 2003. Australian dietary guidelines. Canberra: NHMRC.

NHMRC 2013. Australian dietary guidelines. Canberra: NHMRC.

NHPA (National Health Performance Authority) 2013. Our work. Sydney: NHPA. Viewed 18 November 2013, <http://www.nhpa.gov.au/internet/nhpa/publishing.nsf/Content/Our-work>.

NHPC (National Health Performance Committee) 2002. National report on health sector performance indicators 2001. Brisbane: Queensland Health.

OECD (Organisation for Economic Co-operation and Development) 2013. Health at a glance 2013: OECD indicators. Paris: OECD.

SCRGSP (Steering Committee for the Review of Government Service Provision) 2010, National Agreement Performance Information 2009–10: National Healthcare Agreement. Canberra: Productivity Commission.

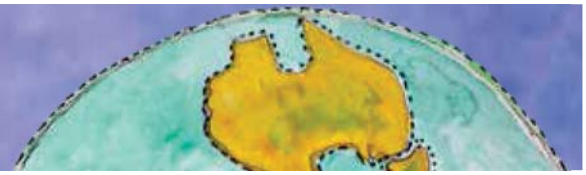
SCRGSP 2012. National agreement performance information 2011–12: National Healthcare Agreement. Canberra: Productivity Commission.

SCRGSP 2014. Report on government services 2014, Chapter 1: the approach to performance measurement. Canberra: Productivity Commission.Viewed 9 February 2013, <http://www.pc.gov.au/gsp/rogs/reporting-approach >.

The Kirby Institute 2013. HIV, viral hepatitis and sexually transmissible infections in Australia: annual surveillance report. Sydney: The Kirby Institute, The University of New South Wales.

FEATURE ARTICLE

9.2 International comparisons



SNAPSHOT

SNAPSHOT

In most aspects of health Australia matches or leads other comparable countries. 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. Most OECD countries are high-income economies and, although each faces different challenges in dealing with specific health inequalities, they are regarded as developed countries that provide a useful basis for comparison with Australia. This snapshot focuses on selected mortality, risk and illness indicators to show how Australia compares with similar nations in terms of overall health outcomes.

Figures 9.41 and 9.42 show Australia's ranking among OECD countries based on data from 1990 and 2009 (or the nearest preceding year available). While data are available for later years for some indicators, they are not available for all OECD countries so have not been presented here. Mortality data are not necessarily comparable with data presented elsewhere in this report as they have been age-standardised to the total OECD population for 2010 to allow comparisons across countries.

As well as rankings, the values for Australia are shown for each indicator. The value of an indicator may have improved even though Australia's comparative ranking has fallen, and vice versa. For each indicator:

- the direction and position of the arrow show the change in ranking over the period
- the data next to the arrow head are the most recent value (that is, for 2009).

What we are doing well

Out of the 28 indicators, Australia ranked in the top third of OECD countries in 2009 for 11 and in the top half for 16.

In 2009, the overall mortality rate in Australia was among the lowest of all OECD countries at 687 deaths per 100,000 population; second only to Japan (613).

Australia had 1 of the lowest smoking rates in 2009 (17% of people aged 15 and over were daily smokers). Among OECD countries, Australian was ranked 5th after Sweden (14%), Iceland (15%), United States (16%) and Canada (16%).

Australia's ranking for life expectancy was among the highest in the world in 2009; 7th and 6th for life expectancy at birth of males and females respectively, and 3rd and 6th for life expectancy at age 65 of males and females respectively.

In the 2 decades since 1990, Australia's ranking has improved greatly for colon cancer deaths (from 23rd to 7th) and chronic obstructive pulmonary disease deaths (from 27th to 16th).

Australia's change in ranking from 1990 to 2009 also improved for deaths due to lung cancer (16th to 10th), coronary heart disease (23rd to 18th), stroke (13th to 8th), breast cancer (15th to 12th), suicide (14th to 11th), maternal mortality rates (9th to 8th), low birthweight (21st to 15th) and incidence of acquired immune deficiency syndrome (AIDS) (27th to 17th).

Where we could improve

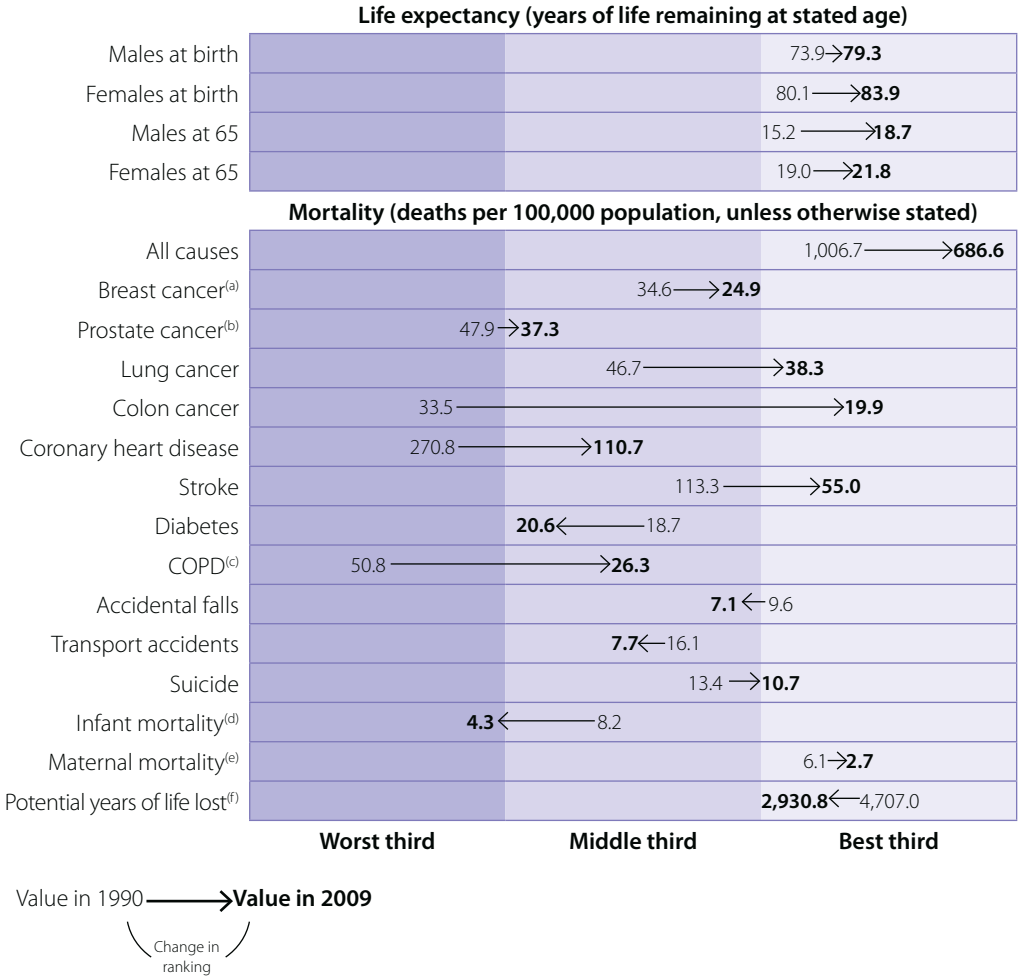
The proportion of Australian children vaccinated against diphtheria, tetanus and pertussis decreased slightly between 1990 and 2009 (from 95% to 92%), while the rates in most OECD countries increased. As a result, Australia was ranked 31st out of 34 countries in 2009; equal with New Zealand (92%) and ahead of Denmark (89%) and Austria (83%).

In 2009, Australia lagged behind two-thirds of OECD countries in infant mortality rates. The infant mortality rate in Australia has nearly halved since 1990 (from 8.2 to 4.3 deaths per 1,000 live births), but its ranking has dropped from 18th to 23rd as other countries have had greater improvement.

Unlike the other mortality indicators, the rate of deaths due to diabetes in Australia increased from 1990 to 2009 (18.7 to 20.6 deaths per 100,000 population). This resulted in its ranking dropping below half of the OECD countries in 2009 (from 15th to 20th).

Australia's ranking since 1990 also fell for deaths due to accidental falls (10th to 12th), deaths due to transport accidents (14th to 17th) and overall potential years of life lost (10th to 11th). Australia's ranking also fell for alcohol consumption (17th to 21st), measles vaccination (17th to 20th) and decayed, missing or filled teeth among children aged 12 (1st to 9th).

Figure 9.41



(a) Breast cancer refers to deaths per 100,000 females.

(b) Prostate cancer refers to deaths per 100,000 males.

(c) Chronic obstructive pulmonary disease (here includes bronchitis, asthma and emphysema).

(d) Infant mortality refers to deaths per 1,000 live births.

(e) Maternal mortality refers to deaths per 100,000 live births.

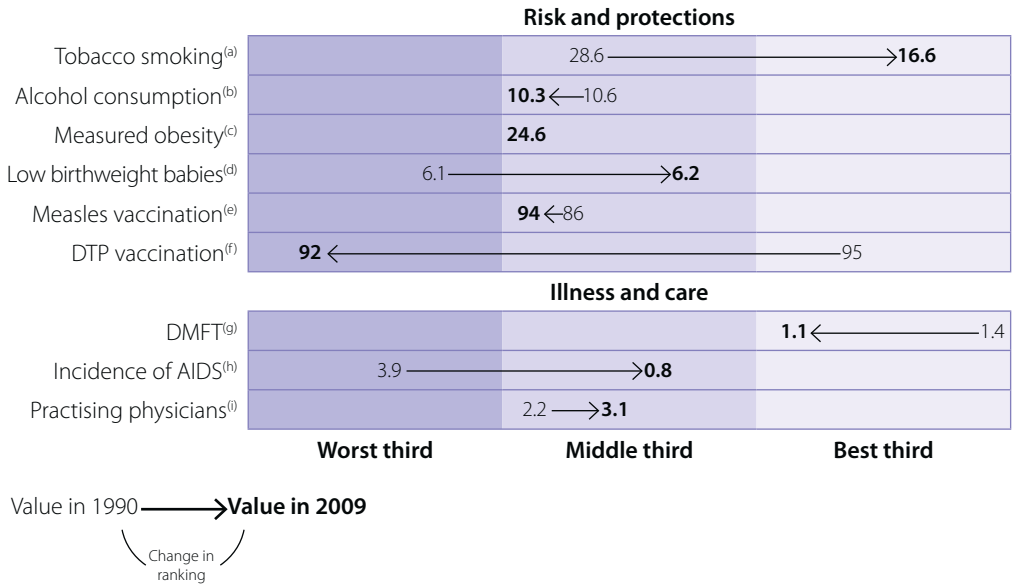
(f) Potential years of life lost refers to years lost per 100,000 population aged 0–69.

Note: Data for Australia reflect those in the OECD database and may differ to data presented elsewhere in this report. All mortality data have been standardised to the 2010 OECD population.

Source: AIHW analysis of OECD.StatExtracts (OECD 2013a).

Australia's ranking among OECD countries, selected mortality indicators, 1990 and 2009 (or nearest preceding year)

Figure 9.42



(a) Tobacco consumption refers to proportion of people aged 15 and over who are daily smokers.

(b) Alcohol consumption refers to annual litres of alcohol per capita among people aged 15 and over.

(c) Measured obesity refers to proportion of people aged 18 and over with a measured body mass index of 30 or more; suitable data not available for 1990.

(d) Low birthweight babies refers to number of babies weighing less than 2,500g per 100 live births.

(e) Measles vaccination refers to proportion of children immunised at age 24 months.

(f) Diphtheria, tetanus, pertussis (DTP) vaccinations refer to proportion of children immunised at 24 months.

(g) Decayed, missing or filled permanent teeth (DMFT) refers to the average number of decayed, missing or filled permanent teeth among children aged 12.

(h) Incidence of acquired immune deficiency syndrome (AIDS) refers to number per 100,000 population.

(i) Practising physicians refers to physicians providing care directly to patients and presented here per 1,000 population.

Note: Data for Australia reflect those in the OECD database and may differ to data presented elsewhere in this report.

Source: AIHW analysis of OECD.StatExtracts (OECD 2013a).

Australia's ranking among OECD countries, selected risk and illness indicators, 1990 and 2009 (or nearest preceding year)

What is missing from the picture?

Although great efforts are made to account for variation in data collection and reporting methods, making valid comparisons of health across different countries is challenging. This is particularly true in the case of comparing the appropriateness, safety and quality of health care provided across countries. Such information is being further developed as part of the OECD Health Care Quality Indicator project that began in 2002.

Where do I go for more information?

There are numerous reports published by national and international organisations that present international comparisons of health. *A working guide to international comparisons of health* provides a general guide to reporting, interpreting and understanding comparisons.

Health at a glance (OECD 2013b), published biennially by the OECD, and *OECD.StatExtracts* (OECD 2013a) online compares OECD countries (including Australia) on key indicators of health and health system performance.

The world health report (WHO 2013a) and *World health statistics* (WHO 2013b), published annually by the World Health Organization (WHO), provide a global assessment of health through statistics and information relating to 194 WHO member states.

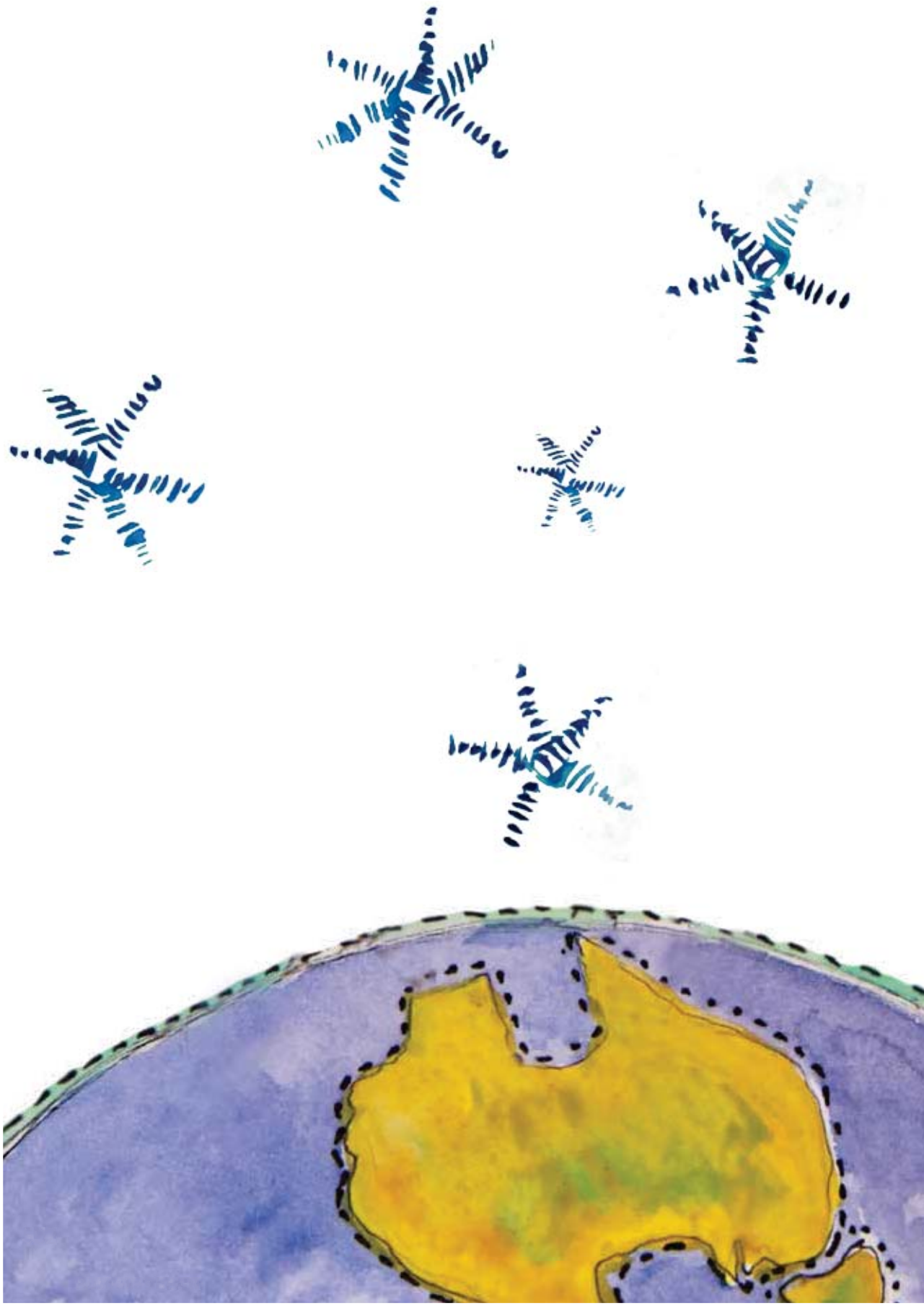
References

OECD (Organisation for Economic Co-operation and Development) 2013a. OECD.StatExtracts. Paris: OECD. Viewed 12 December 2013, <http://stats.oecd.org/>.

OECD 2013b. Health at a glance 2013: OECD indicators. Paris: OECD.

WHO (World Health Organization) 2013a. The world health report 2013: research for universal health coverage. Geneva: WHO.

WHO 2013b. World health statistics 2013. WHO: Geneva.



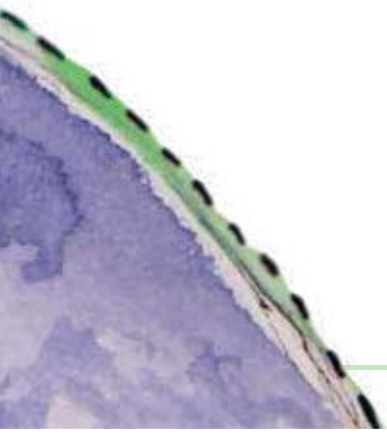
Methods and conventions

Symbols

Acronyms and abbreviations

Glossary

Index



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 1 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	Age group (years)	Australia, 30 June 2001
0	253,031	45–49	1,358,594
1–4	1,029,326	50–54	1,300,777
5–9	1,351,664	55–59	1,008,799
10–14	1,353,177	60–64	822,024
15–19	1,352,745	65–69	682,513
20–24	1,302,412	70–74	638,380
25–29	1,407,081	75–79	519,356
30–34	1,466,615	80–84	330,050
35–39	1,492,204	85 and over	265,235
40–44	1,479,257	**Total**	**19,413,240**

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 7th edition of 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 (NCCH 2010).

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 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.

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.

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, from 2007 data onwards the ABS will be revising 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: Deaths data are provided to the AIHW by the Registries of Births, Deaths and Marriages and the National Coronial Information System and coded by the ABS. These data are maintained at the AIHW in the National Mortality Database.

References

ABS (Australian Bureau of Statistics) 2003. Australian demographic statistics, September quarter 2002. ABS cat. no. 31010.0. Canberra: ABS.

NCCH (National Centre for Classification in Health) 2010. The international statistical classification of diseases and related health problems, 10th revision, Australian modification (ICD-10-AM), Australian Classification of Health Interventions (ACHI) and Australian Coding Standards (ACS), 7th edn. Sydney: University of Sydney.

WHO (World Health Organization) 1992. International Statistical Classification of Diseases and Related Health Problems. 10th revision, volumes 1 and 2. Geneva: WHO.

Symbols

$	Australian dollars, unless otherwise specified
—	nil or rounded to zero
%	per cent
g	gram
kg	kilogram
'000	thousands
m	million
mm Hg	millimetres of mercury
n.a.	not available
. .	not applicable
n.e.c.	not elsewhere classified
n.p.	not published by the data source
>	more than
<	less than
≥	more than or equal to
≤	less than or equal to
*	value has a relative standard error of 25% to 50% and should be used with caution
**	value has a relative standard error greater than 50% and is considered too unreliable for most practical purposes

Acronyms and abbreviations

AATSIHS	Australian Aboriginal and Torres Strait Islander Health Survey
ABS	Australian Bureau of Statistics
ACSQHC	Australian Commission on Safety and Quality in Health Care
ACT	Australian Capital Territory
ADHD	Attention Deficit Hyperactivity Disorder
ADI	Alzheimer's Disease International
AEDI	Australian Early Development Index
AHS	Australian Health Survey
AIBL	Australian Imaging, Biomarker and Lifestyle (AIBL) study
AIDS	acquired immune deficiency syndrome
AIHW	Australian Institute of Health and Welfare
AHMAC	Australian Health Ministers' Advisory Council
ALOS	average length of stay
ALSWH	Australian Longitudinal Survey of Women's Health
ANZDATA	Australian and New Zealand Dialysis and Transplant (ANZDATA) Registry
AODTS NMDS	Alcohol and Other Drug Treatment Services National Minimum Data Set
ART	assisted reproductive technology
ASGC	Australian Standard Geographic Classification
ASGS	Australian Statistical Geography Standard
ASSAD	Australian School Students Alcohol and Drug (ASSAD) survey
ATC	Anatomical Therapeutic Chemical
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
DALY	disability-adjusted life years
DCIS	ductal carcinoma in situ

DMFT	decayed, missing or filled permanent teeth
DSP	Disability Support Pension
DTP3	3rd dose of diphtheria, tetanus and pertussis-containing (DTP) vaccine
DVA	Department of Veterans' Affairs
EDRS	Ecstasy and related Drugs Reporting System
EPS	emerging psychoactive substances
ERP	estimated resident population
ERRCD	Electronic Recording and Reporting of Controlled Drugs
ESKD	end-stage kidney disease
FOBT	faecal occult blood test
FTE	full-time equivalent
GDP	gross domestic product
GFC	global financial crisis
GP	general practitioner
HDL	high density lipoproteins
HIV	human immunodeficiency virus
HPV	human papillomavirus
IARC	International Agency for Research on Cancer
IDRS	Illicit Drug Reporting System
IFG	impaired fasting glucose
KRT	kidney replacement therapy
K10	Kessler Psychological Distress Scale—10 items
LDL	low density lipoproteins
LHNs	Local Hospital Networks
LSAC	Longitudinal Study of Australian Children

MBS	Medicare Benefits Schedule
MENC1	1st dose of a meningococcal C vaccine
MMR1	1st dose of measles, mumps and rubella (MMR) vaccine
MMR2	2nd dose of measles, mumps and rubella (MMR) vaccine
NAPLAN	National Assessment Program – Literacy and Numeracy
NATSIHS	National Aboriginal and Torres Strait Islander Health Survey
NATSISS	National Aboriginal and Torres Strait Islander Social Survey
NBCSP	National Bowel Cancer Screening Program
NCSP	National Cervical Screening Program
NDIS	National Disability Insurance Scheme
NDSHS	National Drug Strategy Household Survey
NEAT	National Emergency Access Target
NEST	National Elective Surgery Target
NESWTDC	National Elective Surgery Waiting Times Data Collection
NHA	National Healthcare Agreement
NHMRC	National Health and Medical Research Council
NHPA	National Health Performance Authority
NHPF	National Health Performance Framework
NHS	National Health Survey
NHS (UK)	National Health Service (United Kingdom)
NNAPEDCD	National Non-Admitted Emergency Department Care Database
NNDSS	National Notifiable Disease Surveillance System
NOPSAD	National Opioid Pharmacotherapy Statistics Annual Data
NPA IHPS	National Partnership Agreement on Improving Public Hospital Services
NPAPH	National Partnership Agreement on Preventive Health
NRAS	National Registration and Accreditation Scheme
NSW	New South Wales
NT	Northern Territory
OECD	Organisation for Economic Co-operation and Development
PAF	population attributable fraction
PAF	Performance and Accountability Framework

PBS	Pharmaceutical Benefits Scheme
PIED	Performance and Image Enhancing Drug
PPH	potentially preventable hospitalisations
Qld	Queensland
RPBS	Repatriation Pharmaceutical Benefits Scheme
RSI	relative stay index
SA	South Australia
SAB	*Staphylococcus aureus* bacteraemia
SA1	Statistical Area Level 1
SDAC	Survey of Disability, Ageing and Carers
SES	socioeconomic status
SIDS	sudden infant death syndrome
STI	sexually transmissible infection
Tas	Tasmania
TCP	Transition Care Program
TFR	total fertility rate
TV	television
US	United States
Vic	Victoria
VPD	vaccine preventable disease
WA	Western Australia
WCRF	World Cancer Research Fund
WHO	World Health Organization
YLD	years lived with disability
YLL	years of life lost

Glossary

Note that terms in bold type in the definitions are themselves glossary items.

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 hospitals: Public and private hospitals that provide services mainly to admitted patients with acute or temporary ailments. The average length of stay is relatively short.

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.

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. In this report, 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 currently used as an indicator of safety in Australia's health system.

aetiology: The cause or origin of disease.

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: Acquired immunodeficiency syndrome, caused by the human immunodeficiency virus (HIV).

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 practitioners: For the purpose of this report, allied health practitioners 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**.

ambulatory patients: Patients who are capable of walking; they are not bedridden or confined to a hospital.

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.

arthritis: A group of disorders in which there is **inflammation** of the joints, which can become stiff, painful, swollen or deformed. The 2 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.

asymptomatic: Without symptoms.

Australian Government health expenditure: Total expenditure incurred by the Australian Government on its own health programs. It does not include the funding provided by the Australian Government to the states and territories by way of grants under Section 96 of the Constitution.

Australian Government health funding: 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.

available beds: Are beds immediately available for use by admitted patients.

average length of stay (ALOS): The average of the length of stay for admitted patient episodes. Calculated by dividing total patient days in a given period by the total number of hospital separations in that period.

avoidable deaths: See **potentially avoidable deaths**.

benchmark: A standard or point of reference for measuring quality or performance.

bloodborne virus: Any of a group of viruses that are typically passed on to another person by direct contact between the 2 people's blood, such as through sharing drug injecting equipment. Notable examples are hepatitis B, hepatitis C and human immunodeficiency virus (HIV).

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, kg ÷ 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.

Canadian National Occupancy Standard: A standard used to assess overcrowding in households, based on the number, sex, age, and relationships of household members.

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 consumption: The amount of fixed capital used up each year—otherwise known as depreciation.

capital expenditure (spending): 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: 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: Hospitals, aged care facilities (for example, nursing homes and aged care hostels), cared components of retirement villages, and other 'homes' such as children's homes if the person has been, or was expected to be, a usual resident of that (or another facility) for 3 months or more. Note, this definition applies to the ABS Survey of Disability, Ageing and Carers 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.

casemix: The range and types of patients (the mix of cases) treated by a hospital or other health service. This provides a way of describing and comparing hospitals and other services for planning and managing health care. Casemix classifications put patients into manageable numbers of groups with similar conditions that use similar health-care resources, so that the activity and cost efficiency of different hospitals can be compared.

cataract: A cloudy or opaque area in the lens of the eye.

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**.

chemotherapy: The use of drugs (chemicals) to prevent or treat disease, with the term usually being applied to treatment for cancer rather than for other uses.

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 1 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**.

colonoscope: See **colonoscopy**.

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.

community living: Place of usual residence is a private or non-private dwelling as distinct from residential aged care, hospital or other type of institutional accommodation. Community settings include private dwellings (a person's own home or a home owned by a relative or friend) and certain types of non-private dwellings, for example, retirement village accommodation.

comorbidity: When a person has 2 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** or **problem**.

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. Compare with **current prices**.

core activity: Term used in discussions of disability, referring to the basic activities of daily living, namely self-care, mobility and communication.

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**.

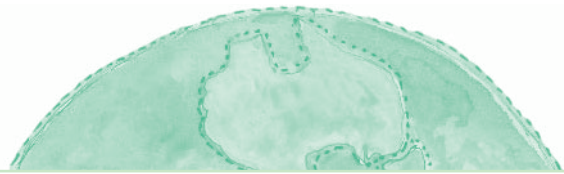
cystic fibrosis: A serious hereditary disease in which mucus from glands is too thick and sticky, affecting the lungs and other organs. The person is prone to frequent chest infections, with related problems such as severe **bronchiectasis**, and a much shortened life expectancy.

current prices: Dollar amounts reported for a particular year, unadjusted for inflation. Changes in current price expenditures reflect changes in both price and volume. Compare with **constant prices**.

DALY: See **disability-adjusted life year**.

data linkage: The bringing together (linking) of information from 2 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 and worsening loss of higher brain power, such as memory, understanding and reasoning.



demographics: Statistical data relating to population characteristics, such as age, sex, economic status, education level, and employment status, among others.

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.

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 3 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.

diphtheria: A bacterial infection that usually starts with soreness of the throat and tonsils but which can also affect other parts of the body and become severe enough to block breathing. It is preventable by **vaccination**.

disability: Described by WHO as a concept of several dimensions relating to an impairment in body structure or function, a limitation in activities (such as mobility and communication), a restriction in participation (involvement in life situations, such as work, social interaction and education), and the affected person's physical and social environment. Described by the *Oxford concise colour medical dictionary* (1998) as 'a loss or restriction of functional ability or activity as a result of impairment of the body or mind'.

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.

disorder (health disorder): Used synonymously with **condition**.

donovanosis: Infectious disease (previously called granuloma inguinale) caused by the bacteria *Chlamydia granulomatis*. It features painless genital ulcers with tissue destruction, and can result in secondary infection and scarring.

ductal carcinoma in situ: A non-invasive tumour of the mammary gland (breast) arising from cells lining the ducts.

elective care: Care that, in the opinion of the treating clinician, is necessary and for which admission can be delayed for at least 24 hours.

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.

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.

English-speaking background: Includes anyone born in Australia, New Zealand, the United Kingdom, Ireland, the United States of America, Canada, Zimbabwe or South Africa.

epidemic: An outbreak of a disease or its occurrence at a level that is clearly higher than usual, especially if it affects a large proportion of the population.

epidemiology: The study of the patterns and causes of health and disease in populations, and the application of this study to improve health.

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.

external cause: The term used in disease classification to refer to an event or circumstance in a person's external environment that is regarded as a cause of injury or poisoning.

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.

fetal death: Birth of a fetus weighing at least 400 grams (or, where birthweight is unavailable, of at least 20 weeks gestation), which shows no signs of life. Commonly referred to as stillbirth.

fetal death rate: Number of fetal deaths per 1,000 total births (fetal deaths plus live births).

financial year: The 12 month period from 1 July to 30 June.

FOBT: See **faecal occult blood test**.

free-standing day hospital facility: A private hospital where only minor operations and other procedures not requiring overnight stay are performed, and which does not form part of any private hospital providing overnight care.

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.

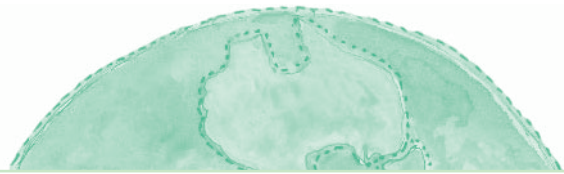
haemodialysis: A form of **dialysis** where a machine is connected to a person's bloodstream and then filters the blood externally to the body, removing water, excess substances and waste from the blood as well as regulating the levels of circulating chemicals. In doing this the machine takes on the role normally played by the kidneys. Haemodialysis is provided largely in hospitals or **satellite dialysis units**.

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**, amount 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.

Hib (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: refers to 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**.

highly specialised drugs: Under Section 100 of the National Health Act, certain drugs (for example cyclosporin) can only be supplied to patients through hospitals because only hospitals can provide the facilities or staff necessary for the appropriate use of the drugs. These drugs are funded by the Australian Government separately from the Pharmaceutical Benefits Scheme.

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 2 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.

illicit drugs: The term 'illicit drug' can encompass a number of broad concepts including:

- Illegal drugs—a drug that is prohibited from manufacture, sale or possession in Australia—for example, cannabis, cocaine, heroin and ecstasy.

- Misuse or extra-medical use of pharmaceuticals—drugs that are available from a pharmacy, over-the-counter or by prescription, which may be subject to misuse—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, or inhalants such as petrol, paint or glue.

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 Socioeconomic Disadvantage: 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 1 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.

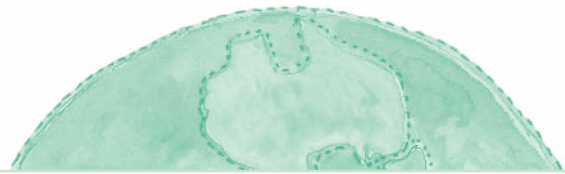
informal carer: A person of any age who provides any informal assistance, in terms of help or supervision, to people with disabilities or long-term conditions, or people who are aged 60 and over. This assistance must be ongoing, or likely to be ongoing, for at least 6 months. See also **primary carer**.

insulin: Hormone that is produced by the pancreas and regulates the body's energy sources, most notably the sugar glucose.

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.

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 1 person and surgically placed into someone with ESKD. The kidney can come from a live or deceased donor.

labour force: People who are employed or unemployed (not employed but actively looking for work). Note, this definition applies to the Australian Bureau of Statistics Labour Force Survey and may differ somewhat from other collections' definitions. See also **workforce**.

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 Australians.

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): Defined as 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 ABS National Health Surveys to describe a health condition that has lasted, or is expected to last, at least 6 months. See also **chronic diseases**.

long-term oxygen therapy: Administration of oxygen as a medical intervention, prescribed 15 hours or more per day.

low birthweight: Weight of a baby at birth that is less than 2,500 grams.

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. Compare with **non-main English-speaking countries**.

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: 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.

metabolic syndrome: A collection of conditions that often occur together and can increase the risk of **type 2 diabetes**, **stroke** and heart disease.

metadata: Is often called 'data about data'. It is the underlying definition or structured description of the content, quality, condition or other characteristics of data.

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**.

neoplasm: An abnormal ('neo', new) growth of tissue. Can be 'benign' (not a cancer) or 'malignant' (a cancer).

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-communicable (chronic) disease: Diseases or illnesses that are not passed between people. They are generally of long duration and slow to progress.

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-main English-speaking countries: In the context of people born outside Australia, it includes all countries except the United Kingdom, Ireland, New Zealand, Canada, the United States of America and South Africa. A person born in a non-main English-speaking country does not necessarily have poor English-speaking skills. Compare with **main English-speaking countries**.

nursing homes: See **residential aged care facilities**.

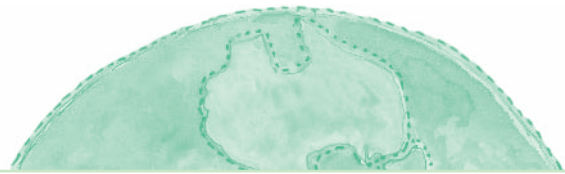
nutrition: The intake of food, considered in relation to the body's dietary needs.

obesity: Marked degree of overweight, defined for population studies as a **body mass index** of 30 or over. See also **overweight**.

occasion of service: Occurs when a patient receives some form of service from a functional unit of a hospital, but is not admitted.

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: A medical specialty dealing with eye diseases.



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: Thinning and weakening of the bone substance, with a resulting risk of fracture.

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.

overcrowding: Where a dwelling requires one or more additional bedrooms to adequately house its inhabitants, according to the **Canadian National Occupancy Standard**

overnight 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 care: Describes care designed for patients with a terminal illness. The emphasis is on relieving symptoms and achieving the best possible quality of life under the circumstances for the patient, their family and carers.

pandemic: An epidemic occurring worldwide, or over a wide area, crossing international boundaries and usually affecting a large number of people.

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**.

pathology: General term for the study of disease, but often used more specifically for diagnostic services which examine specimens, such as samples of blood or tissue.

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.

patient transport services: Organisations engaged mainly in providing transport of patients by ground or air, along with health (or medical) care. These services are often provided during a medical emergency but are not restricted to emergencies. The vehicles are equipped with life-saving equipment operated by medically trained personnel. Includes public ambulance services or flying doctor services, such as the Royal Flying Doctor Service and Care Flight. Also includes patient transport programs, such as patient transport vouchers or support programs to assist isolated patients with travel to obtain specialised health care.

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).

perinatal death: Fetal or neonatal death.

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 attributable fraction (PAF): The proportion (fraction) of a disease, illness, disability or death in a population that can be attributed to a particular **risk factor** or combination of risk factors. For example, the PAF for cigarette smoking in contributing to lung cancer deaths has been consistently put at about 80% or more in Australia, meaning that if nobody smoked in Australia there would be 80% fewer deaths from lung cancer. Also known as an aetiological (causal) fraction.

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; on populations rather than on individuals; and on 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: Refers to 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.

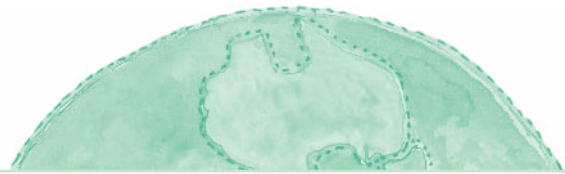
potential years of life lost (PYLL): Number of potential years of life lost in a population as a result of premature death.

potentially avoidable deaths: Are deaths below the age of 75 from a specified range of conditions where death is considered to be largely avoidable today, given existing health and social systems. For example, such deaths due to HIV/AIDS, injuries and lung cancer could be avoided through prevention; those due to asthma, appendicitis and a range of other types of cancer could be avoided through treatment; and those through coronary heart disease, stroke and diabetes could be avoided through a combination of prevention and treatment. The rate of potentially avoidable deaths in Australia is currently being used as an indicator of the health system's effectiveness.

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.

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 or aged 60 and over in 1 or more of the core activities (communication, mobility and self-care). The 2009 Survey of Disability, Ageing and Carers included as carers people aged 15 and over who identified themselves as carers or were nominated by a care recipient as a carer. See also **informal carer**.

principal diagnosis: The diagnosis listed in hospital records to describe the problem that was chiefly responsible for **hospitalisation**.

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 private **free-standing day hospital facilities**.

private patient (in hospital): Person admitted to a private hospital, or person admitted to a public hospital who decides to choose the doctor(s) who will treat them or to have private ward accommodation. This means they will be charged for medical services and accommodation.

problem (health problem): Term often used synonymously with **condition** or **disorder**. May also be used more specifically to refer to symptoms and other health factors that a person or the doctor perceives as a concern—a problem—that needs attention; and which, for example, the person may record in a survey or their doctor may list in clinical notes to form a 'problem list'.

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.

psychiatric hospital: Establishment devoted mainly to the treatment and care of admitted patients with mental illness.

pulmonary rehabilitation: A system of care that includes education, exercise training, nutrition counselling and psychosocial support.

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 Australians who need them.

public patient: A patient admitted to a public hospital who has agreed to be treated by doctors of the hospital's choice and to accept shared ward accommodation. This means that the patient is not charged.

quintile: A group derived by ranking the population of people or elements according to specified criteria and dividing it into 5 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.

rate: A rate is 1 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.

record linkage: See **data linkage**.

recurrent spending: Is spending (expenditure) on goods and services that are used during the year, for example, salaries. It may be contrasted with **capital spending**.

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.

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**.

rubella (German measles): A communicable disease of children and young adults which has mild symptoms but which often causes serious birth defects if it occurs in a mother during the first 3 months of pregnancy. It is preventable by **vaccination**.

satellite dialysis unit: A dialysis unit to provide **haemodialysis** away from a hospital.

same-day patients: Admitted patients who are admitted to hospital and separated on the same day.

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.

Section 100 drugs: See **highly specialised drugs**.

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**.

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 4 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 status: An indication of how 'well off' a person or group is. In this report, socioeconomic status is mostly reported using the **Socio-Economic Indexes for Areas**, typically for 5 groups, from the most disadvantaged (worst off) to the least disadvantaged (best off).

Socio-Economic Indexes for Areas: A set of indexes, created from Census data, that aim to represent the **socioeconomic status** 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 status. This report uses the **Index of Relative Socioeconomic 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 a serious bloodstream infection that may be associated with hospital care. As such, it is known as a type of healthcare-associated infection.

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.

statistics (health): Numerical description of a population's health and the factors affecting that health.

STI: See **sexually transmissible infection**.

stillbirth: See **fetal death**.

stress: Poorly defined term referring to when a person is under significant psychological or physical pressure—real or perceived, acute or chronic.

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.

substance use disorder: A disorder of harmful use and/or dependence on illicit or licit drugs, including alcohol, tobacco and prescription drugs.

suicide: Deliberately ending one's own life.

surveillance (for health): See **monitoring**.

survival: See **relative survival**.

tetanus: A serious infection in which a bacterial nerve poison causes spasm of the jaw muscles (lockjaw) and body muscles generally. It is caused by a bacterium entering through a wound. The disease is preventable by **vaccination**.

total fertility rate: Estimate of the average number of children a woman would bear during her lifetime if she experienced current age-specific fertility rates throughout her reproductive life.

Torres Strait Islander: A person of Torres Strait Islander descent who identifies as a Torres Strait Islander and is accepted as such by the community in which he or she lives.

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 National 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 3 molecules of fatty acid. Triglycerides are the main constituents of natural fats and oils.

tuberculosis (TB): A bacterial disease that affects the lungs especially, with serious fever-like symptoms and destruction of tissue. It can spread to other parts of the body, causing secondary problems and often death if not treated.

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.

usual residence: Refers to the place where a person has lived or intends to live for a total of 6 months or more.

vaccination: The process of administering a vaccine to a person to produce immunity against infection. See immunisation.

wellbeing: Is a state of health, happiness, and contentment along with security. 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. Wellbeing is typically measured with self-reports, and indicators such as household income, unemployment levels and neighborhood crime can also be used.

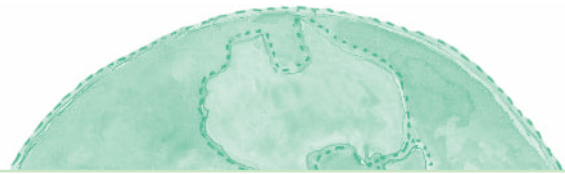
workforce: People who are employed or unemployed (not employed but actively looking for work). See also **labour force**.

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.



Index

A

AATSIHS, *see* Australian Aboriginal and Torres Strait Islander Health Survey

abdominal and pelvic pain, hospitalisations for, 392

Aboriginal Australians, *see* Indigenous Australians

ABS, *see* Australian Bureau of Statistics

academic qualifications, *see* education

accessibility, *see* patients

accident and emergency services, *see* emergency departments

accident compensation schemes, health system funding paid by, 38

accidental falls, *see* falls

accidents, *see* injuries; transport accidents

acetylsalicylic acid, 350

acquired immune deficiency syndrome, *see* HIV/AIDS

ACSQHC, 435, 437

active ageing, 266

activity, *see* disability and functioning; physical activity

acute coronary syndrome, *see* coronary heart disease

acute hospital care, 392
- adverse events, 479
- mental health-related rates of seclusion, 383
- potentially preventable, 475
- stroke patients average length of stay, 130

acute hospitals, 390, 391

acute myeloid leukaemias, 205

acute myocardial infection, *see* coronary heart disease

acute respiratory conditions, *see* influenza

additional diagnoses, *see* comorbidities

ADHD, 224

administration, 49

admitted patients, *see* hospitals and hospitalisations

adolescents, *see* children and young people

adult children, *see* children and young people

Adult Literacy and Life Skills Survey, 440

adult vaccination, *see* immunisation and vaccine preventable diseases

advanced adenoma, 355

adverse events in hospitals, 425–7
- *Complications of medical and surgical care*, 449
- performance indicators, 470, 479–80

AEDI, 208, 209

aero-medical health services, 362, 389

affective disorders (mood disorders), 132, 133, 134
- adults aged 25–44 years, 244
- adults aged 45–64 years, 248
- young people, 133, 224
- *see also* depression

after-hours primary health care services, 366–7

age, 10–13
- adults aged 25–44 years, 241–6
- adults aged 45–64 years, 246–50
- alcohol and other drug treatment services clients, 379–80, 381
- alcohol consumption, 167–8, 381
- arthritis and other musculoskeletal conditions, 122; joint replacements, 123
- asthma written plans, 482
- blood cholesterol, 162
- blood pressure, 161
- body weight, 469
- cancer, 109
- cancer screening program participants, 354, 355; bowel cancer, 488
- children, *see* age of children and young people
- chronic disease through life course, 100–1
- comorbidities, 99, 101
- coronary heart disease, 18, 125, 126
- at death, *see* age at death
- dementia, 273–5; medications received, 279
- diabetes, 141; insulin pump users, 142
- disability, 306, 450; long-term health condition onset, 25
- drug users, 176, 178, 381
- educational attainment, 461
- fruit and vegetable consumption, 80, 464, 465
- health expenditure, per person, 55–6
- hospital patients, *see* age of hospital patients
- impaired fasting glucose, 162
- incontinence, 288
- Indigenous Australians, *see* age of Indigenous Australians
- life expectancy, *see* life expectancy
- mental health, *see* age and mental health
- mothers, *see* age of mothers
- older people, *see* age of older people
- oral health, 151, 152
- physical activity, 466, 467
- self-assessed health status, 85, 452

stroke (cerebrovascular disease), 19, 128
tobacco smokers, 170–1, 226; Indigenous Australians, 307
vaccination and vaccination coverage, 154, 155, 157
vaccine preventable diseases, 154–5
see also children and young people; infants; older people

age and mental health, 133
comorbidities, 135
emergency department presentations, 383
GP care plans, 483
psychological distress, 451

age at death
cancer, 109
coronary heart disease, 18, 125, 126
Indigenous Australians, 329, 330
injuries, 148
stroke (cerebrovascular disease), 19
vaccine preventable diseases, 154, 155
see also life expectancy

age of children and young people, 11–13
body weight, 211, 213, 214, 225; at 4–5 years old, 212
breastfeeding, 207
deaths, 21
diabetes, 223
gestational, 202
immunisation (vaccination) coverage/rates, 154, 155; performance indicators, 470, 473
mental health, 133, 223–5
nutrition and diet, 218, 219, 225
oral health, 151, 152, 207
physical and screen-based activity, 216, 217, 225; recommendations, 215
satisfaction with life, 222
tobacco smokers, 170, 171; started, 226

age of hospital patients
dental conditions, 152
emergency department presentations, 396, 398
injuries, *see* age of hospital patients with injuries
joint replacements, 123
palliative care, 291
in private hospitals, 419–20, 421
residential aged care discharges, 284, 286
sub-acute and non-acute care, 407

age of hospital patients with injuries
injuries, 148; falls in care setting, 480; self-harm, 235; transport accidents, 232, 233

age of Indigenous Australians, 12–13, 297
at death, 329, 330
dementia, 275
disability, 306
health checks, 316
mothers, 195
tobacco smokers, 307

age of mothers, 16, 195, 196, 197, 231
caesarean section deliveries, 199, 200
perinatal deaths, 202

age of older people, 11–13, 256, 258, 259, 263
aged care residents, 261
comorbidities, 101
dementia, 273–4; medications received, 279
employment, 17–18
hospital patients discharged to residential aged care, 284, 286
incontinence, 288
private hospital patients, 420, 421
self-assessed health status, 85

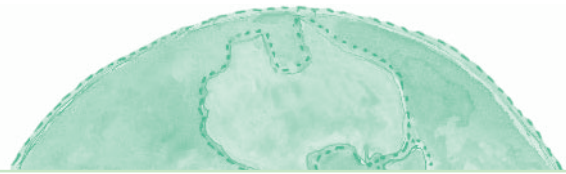
age-standardisation, 78

age-standardised death rates, 78–9
asthma, 138
cancer, 105
dementia, 276–7
geographical areas, 186, 187
potentially avoidable deaths, 478
stroke (cerebrovascular disease), 128

age-standardised hospitalisation rates
cardiovascular disease, 125, 317, 498
differential access to procedures, 489
Indigenous Australians, 315, 317, 449; geographical areas, 325, 326
injuries, 149, 317, 449
kidney disease, 144
potentially preventable hospitalisations, 326
respiratory conditions, 139, 315, 317
stroke, 130

age-standardised incidence/prevalence rates
body weight, 468, 469
cancer, 105
diabetes, 141
disability (core activity limitation), 450
disability rates in geographical areas, 186
fruit and vegetable consumption, 465
heart attacks, 442, 443
injuries, 148
kidney disease, 447–8; replacement therapy (KRT) treatments, 144
physical inactivity, 467
respiratory conditions, 138
stroke (cerebrovascular disease), 128
tobacco smoking, 164; Indigenous Australians, 22, 307

age-standardised participation rate for cancer screening, 355



aged care, 266, 268, 281
- geographical areas, 84
- *see also* residential aged care residents

aged people, *see* older people

ageing, *see* population ageing

AHS, *see* Australian Health Survey

AIBL study, 281

AIDS, *see* HIV/AIDS

aids and appliances, expenditure on, 49
- incontinence, 289

aircraft and aero-medical health services, 362, 389

alcohol and other drug treatment services, 168, 181, 379–81

Alcohol and Other Drug Treatment Services National Minimum Data Set (AODTS NMDS), 181, 184, 379, 380

alcohol consumption, 81, 164, 167–9
- adults aged 25–44 years, 244, 245
- adults aged 45–64 years, 249
- alcohol and other drug treatment services clients, 168, 380, 381
- geographical areas, 187
- health promotion campaigns and preventive interventions, 350
- Indigenous Australians, 227–8, 308, 331, 337; burden of disease, 334
- international comparisons, 498, 500
- performance indicators, 455, 463
- pregnant women, 196, 197
- prisoners, 189
- tobacco smokers, 102
- young people, 227–8, 229–30, 232
- *see also* substance use disorders

allergies, 204
- *see also* asthma; hay fever

allied health services, 40
- GP referrals, 363
- Indigenous Australians Medicare claims, 315
- mental health Medicare-subsidised access, 136, 382–4
- private hospital non-admitted patient care, 419
- rehabilitation care, 406
- *see also* dental services and oral health; pharmacists and pharmacies; psychologists

alprazolam, 182

ALSWH, 248

Alzheimer disease, *see* dementia

Alzheimer's Disease International, 277–8

ambulance services (patient transport), 49, 362, 387–9, 395, 397

amoxicillin, 429

amphetamines, *see* methamphetamines

analgesics (pain-killers), 177, 182, 292, 429

ancillary services (general treatment services) health insurance, 263, 362
- *see also* physiotherapists

angina, *see* coronary heart disease

antenatal health, 195–6, 471, 490

antibiotics, 371, 425, 429

antidepressants, 370, 384, 385, 386

antidepressants and antipsychotics hospitalisations, 177

anti-epileptics, 292

antipsychotics, 384, 385, 386

anxiety disorders, 132, 133
- adults aged 25–44 years, 244
- adults aged 45–64 years, 248
- anxiolytics prescriptions, 384, 385
- children, 204
- comorbidity with physical condition, 135
- psychological distress, 134
- young people, 133, 224
- *see also* psychological distress

ANZDATA, 146

AODTS NMDS, 181, 184, 379, 380

aortic aneurysm and dissection as cause of death, 72

appendicectomy, 426

appliances, *see* aids and appliances

ART, 195

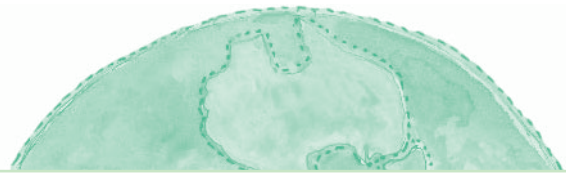
artery bypass grafting, 410, 486, 489

arthritis and other musculoskeletal conditions, 95–6, 122–4, 134, 248
- burden of disease, 91, 92
- cause of death, 73
- comorbidities, 99, 261
- expenditure and funding, 51, 96
- Indigenous Australians, 305
- older people, 258; aged care residents, 261
- people with disability, 25
- prisoners, 189
- risk factors, 81
- *see also* back problems; osteoporosis

arthritis and other musculoskeletal conditions as cause of hospitalisations, 123
- elective surgery waiting times, 409–10, 486
- Indigenous Australians, 332, 486
- private hospitals, 416
- readmissions after surgery, 426
- *see also* joint replacements

ASGC Remoteness Structure, 15

ASGS, 15
Asia, Australians born in, 265
ASSAD survey, 174
assaults, *see* violence
assisted reproductive technology (ART), 195
associated causes of death, *see* multiple causes of death
asthma, 83, 96, 138–40
  children, 204, 205
  comorbidities, 99; underlying and associated cause of death, 76–7
  Indigenous Australians, 305
  prisoners, 189
  written plans, 470, 482
  young people, 223
astigmatism, 204
attempted suicide, 134
Attention Deficit/Hyperactivity Disorder, 224
Australasian Fire and Emergency Services Authorities Council, 389
Australia and New Zealand Dialysis and Transplant Registry, 146
Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS), 319–20
  behavioural risk factors, 307, 309
  health services access, 314, 322
Australian Bureau of Statistics (ABS)
  Australian Health Survey, *see* Australian Health Survey
  census data, *see* Census of Population and Housing
  death data, 70
  General Social Survey, 267
  geographical framework, 15
  health literacy data, 264, 440
  Indigenous data, *see* Australian Bureau of Statistics (ABS) Indigenous data
  'jobless' families data, 17
  Measures of Australia's progress, 435
  National Health Survey, *see* National Health Survey
  National Survey of Mental Health and Wellbeing, *see* National Survey of Mental Health and Wellbeing
  Patient Experience Survey, 371, 404
  population projections, 10–11, 243, 256
  suicide statistics, 237
  Survey of Disability, Ageing and Carers, *see* Survey of Disability, Ageing and Carers
Australian Bureau of Statistics (ABS) Indigenous data, 299
  behavioural risk factors, 307, 309, 331, 334
  deaths, 302
  National Aboriginal and Torres Strait Islander Health Survey (NATSIHS), 331, 332, 334
  see also Australian Aboriginal and Torres Strait Islander Health Survey
Australian Capital Territory, *see* states and territories
Australian Childhood Immunisation Register, 473
Australian Commission on Safety and Quality in Health Care (ACSQHC), 435, 437
Australian Council of State Emergency Services, 389
Australian Crime Commission, 181
Australian Defence Force, 40
Australian dietary guidelines, 217, 218
Australian Early Development Index (AEDI), 208, 209
Australian Government, 34, 38, 40, 50, 52–5
  headspace youth mental health services, 135
  Medicare, 38–40
  National Mental Health Strategy, 131
  National Partnership Agreement on Preventive Health funding, 347
  regulatory role, 42
Australian Guide to Healthy Eating, 219
Australian health ministers, 41–2, 357, 412, 438
Australian Health Ministers' Advisory Council, 42, 437
Australian Health Survey (AHS), 95, 351
  adults aged 25–44 years, 243, 244
  adults aged 45–64 years, 248
  eating disorder questions, 238
  health service use, 261
  injuries, 150
  kidney disease, 144
  older people, 258, 259, 261; socioeconomic status, 265
  psychological distress, 223, 243
  self-assessed health status, 85, 222, 243, 259
  young people, 222, 223
  see also Australian Aboriginal and Torres Strait Islander Health Survey
Australian Health Survey (AHS) health determinants statistics, 22–3, 80, 245
  adults aged 45–64 years, 249
  biomedical risk factors, 161
  children, 80, 219; body weight, 210, 211, 214, 219
  fruit and vegetable consumption, 80, 219, 249
  geographical areas, 23, 187, 319
  older people, 265
  physical activity, 80, 249
  tobacco smokers, 170, 226
  young people, 226
Australian Imaging, Biomarker and Lifestyle (AIBL) study, 281
Australian Longitudinal Survey of Women's Health, 248
Australian National Children's Nutrition and Physical Activity Survey, 219



Australian National Preventive Health Agency, 347
Australian Psychological Society, 223
Australian School Students Alcohol and Drug survey, 174
Australian Standard Geographical Classification Remoteness Structure, 15
Australian Statistical Geography Standard, 15
Australia's welfare, 23
average age
  anxiety disorder onset, 224
  mothers, 16, 195, 196
  tobacco smokers start, 226
average cost per casemix-adjusted hospitalisation, 492–3
average cost weights, 418
average length of hospital stay, *see* length of hospital stay
average size of dwellings, 16
avoidable deaths, *see* potentially avoidable deaths

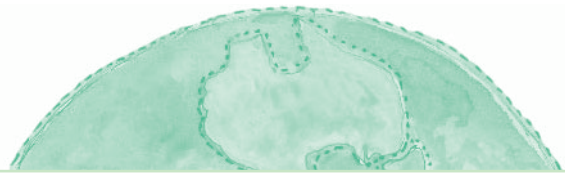
B

babies, *see* births and pregnancy; infants
bachelor degree holders, *see* education
back problems, 96, 122, 244, 248
  burden of disease, 93, 96
  imaging and pathology tests, 371
bacterial infections, *see* immunisation and vaccine preventable diseases
barbiturates and benzodiazepines (and other sedatives excluding alcohol), hospitalisations for, 177
bedrooms in dwellings, 16
beds in hospitals, 390, 391, 414–15
behaviours, *see* health determinants; mental health; violence
benzodiazepines, 181, 182
  and other sedatives, 177
Better Access initiative, 383
Bettering the Evaluation and Care of Health (BEACH) survey, 363, 429
  see also general practitioners consultations
bicyclists deaths, 232
binge drinking (single occasion risk), 164, 167–8
  geographical areas, 187
  Indigenous Australians, 308, 337
  young people, 227
biomedical risk factors, 161–3
  see also blood cholesterol; blood pressure; body weight
bipolar disorder, 132
birth, life expectancy at, *see* life expectancy
birth centre births, 195
birth defects, *see* congenital anomalies
births and pregnancy, 10, 16, 195–203
  after-hours health service, 366
  cause of female deaths, 73, 74
  contraception use, 230
  expenditure and funding, 51
  fertility clinics, 415
  fertility rates, 201, 297
  hospital obstetric/maternity services, 390, 393, 415, 417
  Indigenous, *see* Indigenous births and pregnancy
  see also infants; mothers
birthweight, 100, 202
  international comparisons, 497, 500
  performance indicators, 455, 459
bisexual and homosexual drug users, 176
bladder cancer, 106, 111
bladder examination (cystoscopy), 410, 486, 489
blindness, 258
blood-borne viruses, *see* hepatitis; HIV/AIDS; sexually transmissible infections
blood cholesterol (lipid disorders), 161–2
  geographical areas, 187
  GP consultations, 96
  Indigenous Australians, 334
blood pressure (hypertension, hypertensive diseases), 95–6, 161
  adults aged 25–44 years, 244
  adults aged 45–64 years, 248, 249
  burden of disease, 92; Indigenous Australians, 334
  cause of death, 73; associated, 76
  comorbidities, 99
  obese people, 102
  older people, 258
blood sugar levels, *see* diabetes; glucose regulation
body-stressing, 252
body weight (overweight, obesity, body mass index), 22–3, 81, 165
  adults aged 25–44 years, 244, 245
  adults aged 45–64 years, 249, 250
  birthweight, *see* birthweight
  blood pressure, 102
  burden of disease, 91, 92, 334
  children, 210–21, 213, 349, 469
  geographical areas, 23, 213, 319–21
  health promotion campaigns and preventive interventions, 349
  Indigenous Australians, 309, 319–21, 334, 337
  international comparisons, 500
  people with disability, 25
  performance indicators, 350, 455, 468–9

pregnant women, 196
young people, 225
see also physical activity
bones, *see* arthritis and other musculoskeletal conditions
border drug seizures, 181, 183
bore/well water, 457
bottled water, 457
bowel cancer (colon, colorectal, rectal cancer), 105–6, 107, 113–14
follow-up colonoscopy after screen, 355
performance indicators, 441, 444–5
risk factors, 81
bowel cancer as cause of death, 20, 71–3, 105
adults aged 45–64 years, 250
international comparisons, 497, 499
treatments reducing, 114–15
underlying or associated, 77
bowel cancer screening (NBCSP), 113, 355, 356
geographical areas, 188
performance indicators, 471, 488
boys, *see* age; children and young people; sex (gender)
brain cancer, 20, 106
breast cancer, 105–6, 107, 113–14
diagnosed after screening, 354
performance indicators, 441, 444–5
treatments improving survival, 115
breast cancer as cause of death, 20, 71, 73, 105
at age 25–44 years, 246
at age 45–64 years, 250
international comparisons, 497, 499
trend data, 114
underlying or associated, 77
breast cancer screening (BreastScreen Australia), 113, 354, 355
performance indicators, 471, 488
breastfeeding, 207
breathing difficulties, *see* respiratory conditions
British Medical Journal, 219
bronchiectasis as cause of death, 138
bulk-billing, 366, 471, 484
buprenorphine, 181, 182
burden of disease, 91–3, 96, 98
drug use, 173, 334
Indigenous Australians, 82, 91, 93, 334
mental health, 91, 134
see also deaths and causes of death; disability and functioning; potential years of life lost
Butterfly Foundation, 238
bypass grafting, 410, 486, 489

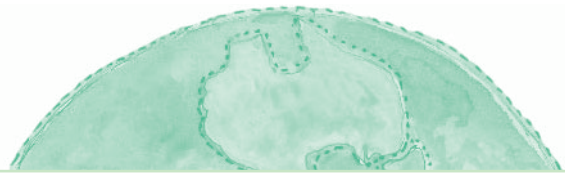
C

caesarean section, 195, 198–200
Canada, 179, 280, 361, 372
see also international comparisons
cancer (neoplasms), 95–9, 105–21
burden of disease, 91, 92, 93
children, 21, 115, 205
data gaps and deficiencies, 26, 107
expenditure and funding, 51, 109
health promotion campaigns and preventive interventions, 350
older people, 258
palliative care, 117, 291
performance indicators, 441, 444–5, 470, 477
risk factors, 112–13
socioeconomic status, 99, 110
young people, 223
see also bowel cancer; breast cancer; cervical cancer; lung cancer; melanoma of skin; survival after cancer
cancer as cause of death, 20, 70–3, 96, 97, 105, 109–10
adults aged 24–44 years, 246
adults aged 45–64 years, 250
burden of disease component, 91, 93
children, 21, 115, 205
Indigenous Australians, 24, 110, 302
international comparisons, 497, 499
palliative care, 117, 291, 292
projected data, 115–16
risk factor exposure, 112
treatments reducing, 114–15
trend data, 111, 114, 118
underlying or associated, 77, 117–18
young people, 223
cancer as cause of hospitalisations, 107, 285
expenditure and funding, 109
Indigenous Australians in geographical areas, 324
palliative care, 291, 292
private hospitals, 415, 416, 417
treatments and procedures, 107, 114–15, 415, 417; elective surgery waiting times, 409
Cancer Australia, 107
cancer screening, 113, 350, 354–6
expenditure and funding, 109
geographical areas, 188
performance indicators, 471, 488
cannabis (cannabinoids, marijuana), 175, 176, 178
alcohol and other drug treatment services clients, 380, 381
hospitalisations, 177
synthetic, 183



young people, 178, 228
capital cities, 14
water connection, 457
see also geographical areas
capital expenditure, 49, 50
carcinomas, 108, 354
cardiac arrhythmias as cause of death, 73
cardiothoracic surgery waiting times, 409, 410
cardiovascular disease (circulatory system diseases, CVD), 95–9, 125–30
burden of disease, 91, 92, 93, 96
expenditure and funding, 51, 96
geographical areas, 319–21
health promotion campaigns and preventive interventions, 348, 350
Indigenous Australians, 305, 317, 319–21
medicines, 428
older people, 258; aged care residents, 261
prisoners, 189
risk factors, 100–1, 162
see also blood cholesterol; blood pressure; coronary heart disease; stroke
cardiovascular disease as cause of death, 70–4, 128–9
burden of disease component, 91, 93
heart failure, 72, 73; hospital palliative care patients, 292
Indigenous Australians, 24, 83, 127, 130, 302
international comparisons, 497, 499
palliative care, 292
underlying or associated, 76, 77
see also coronary heart disease as cause of death; stroke (cerebrovascular disease) as cause of death
cardiovascular disease as cause of hospitalisations, 125, 410, 486, 489
differential access to procedures, 489
elective surgery waiting times, 409, 410, 486
heart failure palliative care, 292
Indigenous Australians, 317, 324, 486
residential aged care residents, 285
cared accommodation, *see* residential aged care
carers, 242, 247
cancer patients, 117
older people as, 267
of people with incontinence, 288, 289
stroke survivors, 130
cars, *see* motor vehicles; transport accidents
casemix costs per separation, 471, 492–3
casualty departments, *see* emergency departments
cataracts, 258
cataracts as cause of hospitalisations, 392
differential access to procedures, 489
elective surgery waiting times, 410; Indigenous Australians, 486
readmissions after surgery, 426
causes (reasons)
body weight, 212
discouraged job seekers not looking for work, 267
headspace mental health service presentations, 135
health service inaccessibility, 84; Indigenous Australians, 314, 322, 332
ill health, 6–7: *see also* health determinants
Indigenous health gap, 329–32, 336–8
smokers try quitting, 171
causes of death, *see* deaths
causes of general practitioner consultations, *see* general practitioners consultations
causes of hospitalisations, *see* hospitals and hospitalisations
Census of Population and Housing
adults aged 25–44 years, 242
adults aged 45–64 years, 246–7
health workforce, 61
households (families), 16
Indigenous Australians, 299; deaths, 302; disability, 306; housing, 310
older people, 264
centenarians, 263
central nervous system, *see* nervous system disorders
cephalexin, 429
cerebrovascular disease, *see* stroke
cervical cancer, 113–14
health promotion campaigns and preventive interventions, 350
high-grade abnormality detected after screening, 354
human papillomavirus (HPV), 113, 154, 156, 157, 347
performance indicators, 441, 444–5
cervical cancer screening, 113, 350, 354–5
Indigenous women, 356
performance indicators, 471, 488
check-ups, 363
children, 369
dental, 152
Indigenous Australians, 314, 316
chemists, *see* pharmacists
chemotherapy, 107, 114
private hospitals, 415, 416, 417
chickenpox, 156
child abuse, 208, 334
Child Dental Health Survey, 207

childhood vaccination (immunisation), 154, 155
international comparisons, 498, 500
performance indicators, 470, 473
children and young people, 11–13, 16, 204–40
arthritis and other musculoskeletal conditions, 25, 122
body weight, 210–21, 225, 469; preventive interventions, 349
cancer, 21, 115, 205, 223
carers of, 242, 247; grandparents, 267
deaths, *see* children and young people and death
diabetes, 141, 205, 223
drug use, 174, 176, 178, 228–30; alcohol and other drug treatment services clients, 380
educational attainment and performance, 17
health checks, 369
health expenditure, per person, 55
hospitalisations, 152, 415; injuries, 232, 233, 234, 249: *see also* Principal referral and specialist women's and children's hospitals
Indigenous, *see* Indigenous children and young people
mental health, *see* children and young people and mental health
nutrition and diet, 165, 217–19
oral health, 151, 152, 207
physical activity, 80, 214–17, 225, 349, 467
teenage mothers, 195, 197, 202, 231
tobacco smoke exposure in home, 455, 456
tobacco smokers, 170–1, 226
see also age; births and pregnancy; households; infants; students
children and young people and death, 21
cancer, 21, 115, 205
performance indicators, 441, 453
vaccine preventable diseases, 154
see also Indigenous children and young people and death; infant deaths
children and young people and mental health, 132, 133, 204, 206, 223–5
drugs and alcohol consumption association, 229
prevention and early intervention, 135
Chinese medicine practitioners, 43, 60, 63
chiropractors, 43, 60, 63
consultations, 361
chlamydia, 441, 446
young people, 230, 231
cholecystectomy, 410, 486, 489
cholesterol, *see* blood cholesterol
Chronic Disease Package, 40
chronic diseases, *see* diseases and illness
chronic obstructive pulmonary disease (COPD, chronic lower respiratory disease), 138–40
burden of disease, 96
risk factors, 100–1, 102
chronic obstructive pulmonary disease as cause of death, 72, 73, 96, 97, 138–9
adults aged 45–64 years, 250
hospital palliative care patients, 292
international comparisons, 497, 499
rural and remote areas, 25
underlying or associated, 76–7, 117
chronic sinusitis, 204
cigarettes, *see* tobacco smoking
circulatory system diseases, *see* cardiovascular disease
cirrhosis of liver, 72, 74
cities, *see* capital cities; geographical areas
CKD, *see* kidney disease
classifications
body weight, 468
causes of death, 70
geographical areas, 15
self-harm, 237
clinical depression, *see* depression
clinical treatments, *see* procedures and treatments
clinical trials, 115
clinicians, *see* medical practitioners
COAG, *see* Council of Australian Governments
cocaine, 175, 176, 178
hospitalisations, 177
young people, 228
codeine, 181, 182
cognitive impairment, *see* dementia
co-location of private and public hospitals, 422
colon (colorectal) cancer, *see* bowel cancer
colonoscopies, 355
Commonwealth Government, *see* Australian Government
Commonwealth Scientific and Industrial Research Organisation, 281
communicable diseases, *see* immunisation and vaccine preventable diseases
communication technologies, *see* technology
community health services, 49, 386
Medicare Locals, 360, 364–6, 374; access to preferred GP, 370
mental health, 383, 386
community participation, 267, 289
community pharmacies, *see* pharmacists and pharmacies



comorbidities (additional diagnoses, multiple chronic conditions), 99, 101
- diabetes, 144, 261, 305; hospitalisations, 142
- incontinence, 289
- Indigenous Australians, 305; unmet needs, 332, 333
- kidney disease, 144
- older people, 259
- residential aged care residents, 261
- *see also* mental health comorbidities; multiple causes of death

Complications of medical and surgical care, 449

composite health measure, 335–6

computers, *see* screen-based activity; technology

conceptual framework, 4–7

concessional prescription pharmaceuticals, 40, 428

condoms, 230

congenital anomalies, 51, 202, 324

congenital rubella, 156

consultations, *see* health workforce (health professionals) consultations

contagious diseases, *see* immunisation and vaccine preventable diseases

Continence Aids Payment Scheme, 289

continuity of care, 370
- performance indicators, 470, 481–3

contraception, 230

contracted admitted patient care, 422

contributing causes of death, *see* multiple causes of death

coordinated care models, 102–3, 119, 136, 369–70
- Local Hospital Networks, 37
- *see also* Medicare Locals

COPD, *see* chronic obstructive pulmonary disease

core activity limitations, *see* disability and functioning

coronary angioplasty, 489

coronary artery bypass graft, 410, 486, 489

coronary heart disease (CHD, heart attack, ischaemic heart disease), 125–7
- burden of disease, 93, 96
- health promotion campaigns and preventive interventions, 348, 350
- hospitalisations, 125, 410, 486, 489
- performance indicators, 441, 442–3, 476
- risk factors, 100–1

coronary heart disease as cause of death, 18, 70–4, 96, 97, 125, 126
- adults aged 25–44 years, 245, 246
- adults aged 45–64 years, 250
- burden of disease component, 93
- international comparisons, 497, 499
- socioeconomic status, 99
- underlying or associated, 76, 77, 117

coroner-certified deaths, 237

correctional services/police vehicles as emergency department presentation mode, 397

cost-effectiveness
- primary health care, 373
- public and preventive health programs and policies, 348–50

cost weights, 418

costs
- alcohol consumption, 167
- body weight, 210, 212
- drug use, 173, 183
- food, 219
- health services, as barrier to access, 84, 364–5; Indigenous Australians, 314, 322
- hospitals, 418, 471, 492–3
- *see also* individual out-of-pocket payments

Council of Ambulance Authorities, 389

Council of Australian Governments (COAG), 41, 350, 436, 437
- expert panels, 401, 402, 412

Council of Australian Governments (COAG) Reform Council, 84, 436
- elective surgery performance indicator, 411
- emergency department waiting time performance indicator, 401, 402

couple families, *see* households

creek/dam/river water, 457

CSIRO, 281

cultural diversity, *see* overseas-born population

customs and excise duties, 171, 350

CVD, *see* cardiovascular disease

cyclist deaths, 232

cystoscopy, 410, 486, 489

D

daily drinking, *see* alcohol consumption

daily smoking, *see* tobacco smoking

DALYs, *see* burden of disease

dam/river/creek water, 457

data linkage (integration), 44
- aged care pathways, 268; people with dementia, 281
- hospital and residential care, movement between, 287
- Indigenous mortality and life expectancy, 300
- kidney disease (ESKD), 146

data sources, gaps and deficiencies, x, 26–7, 43–4, 103
alcohol and other drug treatment services, 380–1
alcohol consumption, 169, 307
ambulance services, 389
arthritis and other musculoskeletal conditions, 122, 124
biomedical risk factors, 161, 163
births and pregnancy, 196, 197, 203, 231; caesarean section, 200
burden of disease, 91, 93
cancer, 26, 107, 120
cancer screening, 356
children, *see* data sources, gaps and deficiencies for children
coronary heart disease, 127, 443, 476
deaths and causes of death, 70, 74, 77, 302–3; maternal, 196
dementia, 273, 275, 276, 280–2
diabetes, 141, 142–3, 475; GP annual cycle of care, 481
disability, 26
drug use, 174, 178, 183–4; treatment for opioid use, 181
geographical areas, 186, 188, 319–20, 321, 322
health expenditure and funding, 57–8, 268
health services unmet needs, 332
health workforce, 62
immunisation and vaccine preventable diseases, 157
incontinence, 290
Indigenous Australians, *see* data sources, gaps and deficiencies for Indigenous Australians
injuries, 150, 237, 238; falls resulting in hospital patient harm, 480
international comparisons, 501
kidney disease, 146
life expectancy, 69
mental health, 132–3, 136–7, 206, 386; care plans, 440
nutrition and diet, 166
older people, 268
oral health, 153
palliative care, 293
pharmaceuticals (medicines), 371, 428, 429–30
primary health care, *see* data sources, gaps and deficiencies for primary health care
prisoners, 189, 191
residential aged care, 261; admissions to and from hospital, 287
respiratory conditions, 140
stroke, 130
tobacco smoking, 171, 307
working-age population, 252–3
young people, 225, 231, 238
see also Australian Bureau of Statistics; classifications; definitions

data sources, gaps and deficiencies for children, 206, 208–9
body weight, 210, 214, 219–20
fruit and vegetable consumption, 219
physical activity, 216

data sources, gaps and deficiencies for hospitals, 392–3
elective surgery, 409, 412
emergency departments, 366, 394, 395, 401, 404–5; Indigenous presentations, 397; potentially avoidable GP-type presentations, 405, 485
potentially preventable hospitalisations, 475
private hospitals, 419, 423, 492
safety and quality, 427
sub-acute and non-acute care, 408

data sources, gaps and deficiencies for Indigenous Australians, 298–300, 306
behavioural risk factors, 307, 309, 331
burden of disease, 91, 93
cancer screening, 356
deaths, 302–3
dementia, 275, 281
geographical areas, 319–20, 321, 322, 327
health gap, 331, 332–6, 338–9
human papillomavirus (HPV) vaccination, 157
social health determinants, 312

data sources, gaps and deficiencies for Indigenous health service access and use, 314, 316, 332–6, 338
emergency department presentations, 397; seen on time, 401
geographical areas, 321, 322, 327

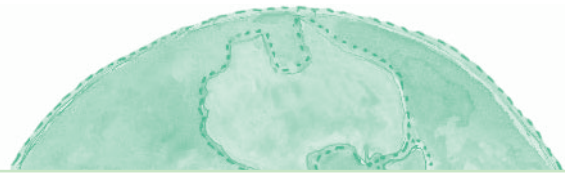
data sources, gaps and deficiencies for performance indicators, 440
coronary heart disease (heart attacks), 443, 476
diabetes patients with GP annual cycle of care, 481
falls resulting in hospital patient harm, 480
potentially avoidable GP-type emergency department presentations, 405, 485
potentially preventable hospitalisations, 475

data sources, gaps and deficiencies for primary health care, 363, 371, 373–4
child health checks, 369
coordinated care, 369
general practitioners, 366; medicines prescribed, 429
outcomes, 372
safety and quality, 370–1

day hospitals, *see* same-day hospital care

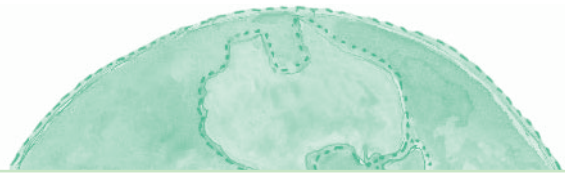
deafness, *see* hearing

deaths and causes of death, 18–21, 70–9, 94, 96–8
adults aged 25–44 years, 245–6
adults aged 45–64 years, 250
alcohol, 169



bowel (colon, colorectal, rectal) cancer, *see* bowel cancer as cause of death
cancer, *see* cancer as cause of death
cardiovascular disease, *see* cardiovascular disease as cause of death
children, *see* children and young people and death; infant deaths
chronic obstructive pulmonary disease, *see* chronic obstructive pulmonary disease (COPD) as cause of death
dementia and Alzheimer disease, 70–4, 76–7, 96, 276–7; hospital palliative care patients, 292
diabetes, *see* diabetes as cause of death
in emergency departments, 403
falls, 73, 148, 498, 499
geographical areas, 25, 74, 110, 186, 187; cancer, 110
Indigenous Australians, *see* Indigenous deaths
injuries, *see* injuries as cause of death
international comparisons, 20–1, 497, 498, 499
kidney-related diseases, 72, 76–7, 144, 292
maternal, 196
opioid-related, 179
palliative care, 117, 291–3
performance indicators, 441, 453–4
potentially avoidable deaths, 470, 478; Indigenous Australians, 24
respiratory conditions, 72, 73, 76, 83, 138–9: *see also* chronic obstructive pulmonary disease (COPD) as cause of death
rural and remote areas, 25
socioeconomic factors, 333
tobacco smoking, 171
vaccine preventable diseases, 154, 155
work-related, 251
young people, *see* children and young people and death
see also life expectancy; multiple causes of death; survival
decayed teeth, *see* dental services and oral health
deceased kidney donors, 145
definitions, 3–7
adverse events, 479
age-standardisation, 78
body weight, 210
cancer, 108
drug use, 174
elective surgery urgency categories, 412
emergency department presentations, 395
health measures, 335
health system, 33
Indigenous Australians, 297
mental health, 132
multiple causes of death, 75
non-acute hospital care, 406
old, 257
potentially avoidable GP-type presentations, 404
prevalence, 273
prevention, 344–6
sub-acute hospital care, 406
see also classifications
degree holders, *see* education
delivery and delivery methods (births), 195, 198–200
dementia and Alzheimer disease, 258, 271–83
cause of death, 70–4, 76–7, 96, 276–7; hospital palliative care patients, 292
residential aged care residents, 261, 276; hospital admissions, 285
demography, *see* population
dental hygienists, 152
dental practitioners, 43, 60, 61, 152
geographical areas, 63, 152
dental prosthetists, 152
dental services and oral health, 151–3, 361
children, 151, 152, 207
cost as barrier to accessing, 84, 365
geographical areas, 84, 365
Indigenous Australians, 314, 332
international comparisons, 498, 500
public, 84, 151, 153
risk factors, 81
waiting times, 84, 371
dental services and oral health expenditure and funding, 34, 49, 51, 96, 152
Indigenous per person, 52
private health insurance, 362
dental therapists, 152
dentists, 152
Department of Health, 351, 356, 428
Department of Health and Ageing, 348
Department of Social Services, 134
Department of Veterans' Affairs (DVA), 40, 422
dependent children, *see* children and young people
depression, 95–6, 132
antidepressant prescriptions, 370, 384, 385, 386
comorbidities, 99
residential aged care residents, 261
risk factors, 81, 102
see also suicide
dermatitis and eczema, 204
developmentally vulnerable children, 208, 209

diabetes (endocrine, nutritional and metabolic disorders), 95, 141–3
children and young people, 141, 205, 223
expenditure and funding, 51
geographical areas, 319–21
GP consultations, 96; annual cycle of care patients, 481
Indigenous Australians, 24, 142, 302, 305, 319–21, 330
kidney disease, 144
older people, 258; residential aged care residents, 261
people with disability, 25
risk factors, 100, 102, 141; impaired fasting glucose, 162
diabetes as cause of death, 72, 73, 97
geographical areas, 74
Indigenous Australians, 24, 302, 330
international comparisons, 498, 499
underlying or associated, 76–7, 142
diagnostic imaging, *see* imaging
dialysis, 144–5
Indigenous Australians, 145, 324
private hospitals, 415, 416
diazepam, 182
diet, *see* nutrition and diet
Dietary guidelines for children and adolescents, 217–19
dietetics interventions, 406
digestive disorders, 51
cause of death, 302
gastroenteritis hospitalisations, 156
Indigenous hospitalisations, 315, 317, 332
private hospitalisations, 416
diphtheria, 154
DTP vaccination, 155; international comparisons, 498, 500
diplomas, *see* education
disability-adjusted life years, *see* burden of disease
disability and functioning, 23, 25
adults aged 25–44 years, 243
adults aged 45–64 years, 247
aids and appliances, 49
arthritis and other musculoskeletal conditions, 25, 122
carers of people with, 242, 247
identification of people using mainstream services, 26
incontinence comorbidity, 289
Indigenous Australians, 299, 306
mental health comorbidity, 25, 134
older people, 259–60, 263; overseas-born population, 264
performance indicators, 441, 450
after stroke, 128
see also dementia
disability-free life expectancy, 78, 260
Disability Support Pension qualification conditions, 134
disadvantage, *see* health inequalities; socioeconomic status
discouraged job seekers, 267
diseases and illness, 3–7, 79–87, 90–157
adults aged 25–44 years, 244
adults aged 45–64 years, 248
children, 204–6
expenditure and funding, 51, 58; government programs, 40
Indigenous Australians, 305, 329–30
older people, 258–9
people with disability, 25
prevention and treatment, 342–430
prisoners, 189
young people, 223–5
see also arthritis and other musculoskeletal conditions; burden of disease; cancer; cardiovascular disease; deaths and causes of death; dementia; dental services and oral health; diabetes; digestive disorders; health determinants; hearing; hospitals and hospitalisations; immunisation and vaccine preventable diseases; injuries; kidney disease; mental health; procedures and treatments; respiratory conditions; vision
divorces, 242, 246–7
'DNeT' project, 183
doctors, *see* medical practitioners; medical services
document literacy, 460
domestic violence, 334
domiciliary hospital care, 390
donepezil, 278, 279
donors for kidney transplants, 145
drink driving, 230
drinking, *see* alcohol consumption
drivers, 230, 232
drowning and near-drowning, 148, 149
drug seizures, 181, 183
drugs, 173–85, 379–81
burden of disease, 173, 334
driving under influence, 230
Indigenous Australians, 308, 334
prisoners, 189
young people, 174, 176, 178, 228–30; alcohol and other drug treatment services clients, 380
see also alcohol consumption; injecting drug users; pharmaceuticals; substance use disorders; tobacco smoking
'Drugs and new technologies' project, 183
ductal carcinomas in situ (DCIS), 354
DVA, 40, 422
dwellings, *see* homes



E

e-health (telehealth, telemedicine), 37–8, 371, 374
  telephone-based advice services, 366–7
ear, nose and throat elective surgery waiting times, 409, 410
ear problems, *see* hearing
early childhood development, 208, 209
  see also children and young people; infants
eating, *see* nutrition and diet
economic conditions, 54, 57
ecstasy, 174, 175, 178
  emerging psychoactive substances (EPS) use, 183
  young people, 228
Ecstasy and related Drugs Reporting System (EDRS), 174, 184
eczema and dermatitis, 204
education and educational attainment (qualifications), 17
  Indigenous Australians, 17, 310–12, 331, 337; health services access, 332
  medicine commencements, 61
  performance indicators, 455, 461
  see also students
EERCD initiative, 184
  effectiveness, 470, 472–8
  primary health care, 368–9, 373
  public and preventive health programs and policies, 348–50
efficiency, 57, 471, 492–3
elective surgery, 39
  private hospitals, 418
  private patients, 41
  waiting times, 409–12, 471, 486
Electronic Recording and Reporting of Controlled Drugs initiative, 184
emergency ambulance incidents, 387–8
Emergency Department National Minimum Data Set, 150, 169
emergency departments, 361, 363, 391, 394–405
  after-hours GP services and reductions in presentations, 366
  alcohol presentations, 169
  arrival mode, 362, 388, 395, 397
  drug presentations, 184
  injuries presentations, 150
  mental health-related presentations, 383
  potentially avoidable GP-type presentations, 403–4, 471, 485
  private hospitals, 415; admissions, 419
  waiting times, 399–402, 403, 471, 487
emergency hospital admissions, 418
  adverse events, 479
emerging psychoactive substances (EPS), 182–3, 184
emotional abuse of children, 208
emotional problems, 135
  see also mental health
emphysema, *see* chronic obstructive pulmonary disease
employment, 17–18, 242, 246
  drug users, 176
  health relationship, 250–2
  Indigenous Australians, 311, 331, 332, 337
  older people, 266–7
  work stress, 82, 252
  see also health workforce
employment restrictions, people with, 243, 247
end-stage kidney disease, *see* kidney disease
endocrine, nutritional and metabolic disorders, *see* diabetes
endoscopy clinics, 415
energy intake, 165, 219
Enhanced Mortality Database project, 300
environmental health determinants, 455, 456–7
equity, *see* health inequalities
equivalised disposable household income, 458
ESKD, *see* kidney disease
Europe, Australians born in, 264–5
Every cigarette is doing you damage campaign, 346
excise and customs duties, 171, 350
exercise, *see* physical activity
expenditure, *see* health expenditure
external causes, *see* injuries
eye problems, *see* vision

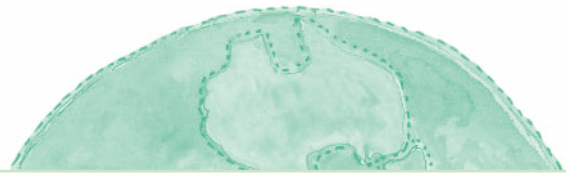
F

Factors influencing health status and contact with health services, 416
faecal occult blood tests, *see* bowel cancer screening
falls as cause of death, 73, 148
  international comparisons, 498, 499
falls as cause of hospitalisations, 148, 149
  in care setting, 470, 480
  older people, 259; residential aged care residents, 285
families, *see* households
family environment, 208
fatalities, *see* deaths
Federal Government, *see* Australian Government
females, *see* sex (gender); women
fentanyl, 181, 182
fertility clinics, 415

fertility rates, 201
Indigenous women, 297
fetal deaths (stillbirths), 201, 202
fillings, 151, 152
finance, *see* costs; health expenditure and funding
first-time mothers, 16
assisted reproductive technology (ART), 195
caesarean section, 199
flu, *see* influenza
flying hours by aero-medical health services, 389
food, *see* nutrition and diet
for-profit private overnight hospitals, 414
45 and Up Study, 268
frontotemporal lobe dementia, 271
fruit consumption, *see* nutrition and diet
full-time employment, 242
full-time equivalent (FTE) health workforce employment, 60–1, 491
ambulance services, 387
dental practitioners, 60, 152
general practitioners, 367
mental health services, 384–5
functioning, *see* disability and functioning
funding, *see* health expenditure and funding

G

galantamine, 278, 279
ganglioneuroblastoma, 205
gastroenteritis hospitalisations, 156
gay and bisexual drug users, 176
GDP to health expenditure ratio, 47–8
general practitioners, 367, 368
coordination of care, 369
Medicare Locals, 360
see also medical practitioners
general practitioners consultations, 95, 96, 361, 362, 363–7, 374
arthritis and other musculoskeletal conditions, 96, 123
asthma, 139
bulk-billing, 366, 471, 484
diabetes annual cycle of care patients, 481
geographical areas, 188, 319–21, 322–4, 364–6, 367; deferred access, 84
Indigenous Australians, 314, 315, 319–21, 322–4
Medicare Locals, 364–6, 374; access to preferred GP, 370
mental health, 96, 135, 384, 385; patients with care plans, 440, 483
older people, 261
patient experience, 371
people with disability, 25
potentially avoidable emergency department presentations, 403–4, 471, 485
prescriptions, 363, 384, 385, 429
General Social Survey, 267
general surgery, 409
general treatment services, *see* ancillary services
generic drugs, 349
genetics, *see* congenital anomalies
genitourinary diseases, 51, 258
Indigenous hospitalisations, 317, 332
urology elective surgery waiting times, 409
see also bowel cancer; prostate cancer
geographical areas (major cities, regional and remote), 13–15, 24–5, 40, 84, 186–8
birthweight, 202, 459
body weight, 23, 319–21; children, 213
cancer, 110
cancer screening, 188, 354, 488
cocaine users, 178
deaths and causes of death, 25, 74, 186, 187; cancer, 110
diabetes, 319–21
fruit and vegetable consumption by children, 219
general practitioners consultations, 188, 319–21, 322–4, 364–6, 367; deferred access, 84
health workforce, 61, 63, 367; dental practitioners, 63, 152
hospitals, *see* hospitals and hospitalisations in geographical areas
kidney disease, 188, 447, 448
older people, 264; influenza and pneumococcal disease vaccination rates, 474
physical activity by children, 216–17
private hospital patients, 420
stroke, 130
tobacco smokers, 319–21; pregnant women, 196
water source, 457
see also states and territories
geographical areas (major cities, regional and remote), Indigenous Australians living in, 14–15, 25, 297–8, 318–28
health expenditure and funding, 52
kidney disease (CKD) hospitalisations, 145–6
overcrowded households, 310
geriatric evaluation and management hospital care, 406, 407, 408
private hospitals, 418
gestational age, 202
gestational diabetes, 141

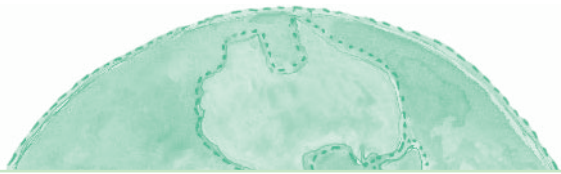


GFC, 54
gingko biloba, 278
girls
  human papillomavirus vaccination, 113, 154, 156, 157, 347
  see also age; children; sex (gender)
glaucoma, 258
Global Burden of Disease Study 2010, 91, 93, 134
global financial crisis, 54
glucose regulation, 162
  medications, 142, 143
Go for 2&5 campaign, 346
golden staph (*Staphylococcus aureus*), 285, 425, 427
gonococcal infection (gonorrhoea), 441, 446
  young people, 230, 231
governance, 41–2
government health prevention interventions, 346–51
government roles and responsibilities, 33, 34, 41–3
grandparent carers, 247, 267
grey or recycled water, 457
Grim Reaper campaign, 346
gross domestic product (GDP) to health expenditure ratio, 47–8
group households, 16
gum disease, 152
gynaecological surgery, 410

H

haemodialysis, *see* dialysis
Haemophilus influenzae type b, 156
haemorrhagic stroke, *see* stroke
haemorrhoidectomy, 410, 486, 489
hallucinogens, 175, 177
  young people, 228
hand hygiene protocols, 425
hay fever (allergic rhinitis), 138
  adults aged 25–44 years, 244
  adults aged 45–64 years, 248
  children, 204
  young people, 223
HDL cholesterol, 162
head and neck injuries, 449
headspace youth mental health services, 135
health administration, 49
health behaviours, *see* health determinants
health care models, *see* models of health care
health check-ups, *see* check-ups
health classifications, *see* classifications
health data, *see* data sources, gaps and deficiencies
health determinants (protective and risk factors; health behaviours), 4–6, 80–1, 94, 100–3, 160–91
  adults aged 25–44 years, 244–5
  burden of disease, 91, 92
  cancer, 112–13
  children, 210–21
  dementia, 272–3
  geographical areas, 187
  incontinence, 289
  Indigenous Australians, 307–13, 331, 332–4, 336–8
  international comparisons, 265
  mothers, 195–6, 197, 471, 490
  older people, 265
  performance indicators, 455–69
  prisoners, 189
  socioeconomic status, 99
  young people, 225–31
  see also alcohol consumption; biomedical risk factors; body weight; drugs; nutrition and diet; physical activity; socioeconomic status; tobacco smoking
health expenditure and funding, 33–5, 36, 38–41, 47–59
  body weight, 212
  cancer, 51, 109
  illicit drug costs, 173
  incontinence, 289
  mental health, 51, 96, 131, 386
  palliative medicine specialists MBS benefits, 291
  pharmaceuticals, 40, 314, 386, 428–9
  population ageing, 55–6, 262–3
  primary health care, 34, 36, 49, 50, 373
  public and preventive health, 49, 347
  see also costs; non-government sector expenditure and funding; state and territory expenditure and funding
health expenditure and funding for disease groups, 51, 96, 98
  data gaps and deficiencies, 58
  mental health, 51, 96, 131
  oral health, *see* dental services and oral health expenditure and funding
health indicators, *see* performance indicators
health inequalities, 24–6, 84
  primary health care accessibility, 363–8
  see also disability and functioning; geographical areas; Indigenous Australians; socioeconomic status
health insurance, *see* Medicare; private health insurance
health literacy, 455, 460
  overseas-born population, 264
health ministers, 41–2, 357, 412, 438

Health Ministers' Advisory Council, 42, 437
health performance, *see* performance indicators
health professionals, *see* health workforce
health promotion, *see* public and preventive health
health research, 49
health risk factors, *see* health determinants
health screening, *see* cancer screening
health service users, *see* patients
health services (health system), 32–63
  ageing and, 55–6, 261–8
  performance indicators, 470–93
  see also health expenditure and funding; health workforce; hospitals and hospitalisations; primary health care
health status performance indicators, 440–54
health workforce (health professionals), 60–3, 261
  ambulance services, 387
  coordinated care, 369–70
  expenditure and funding, 34, 49
  geographical areas, 63, 367
  mental health services, 384–5
  public hospital labour costs, 493
  registration, 42–3
  see also dental practitioners; medical practitioners; nurses and midwives; pharmacists
health workforce (health professionals) consultations, 361
  mental health, 382–4
  older people, 261
  people with disability, 25
  see also general practitioners consultations
Healthcare 2011–12, 84
Healthdirect Australia, 366–7
healthy ageing, 266
hearing, 258, 305
  ear, nose and throat elective surgery waiting times, 409, 410
heart disease/attack, *see* coronary heart disease
heart failure as
  cause of death, 72, 73; hospital palliative care patients, 292
Heart Foundation, 346, 351
Helicobacter pylori, 112
helicopter ambulance aircraft, 389
hepatitis A, 156
hepatitis B, 156, 350, 441, 446
hepatitis C, 189, 441, 446
Hereceptin, 115
herniorrhaphy, 410, 486, 489
heroin and other opioids, 175, 176, 178–82, 184
  alcohol and other drug treatment services clients, 181, 380, 381
  hospitalisations, 177, 181
high blood cholesterol, *see* blood cholesterol
high blood pressure, *see* blood pressure
high body weight/mass, *see* body weight
high dependency private hospital units, 415
high sugar levels, *see* diabetes
higher degree holders, *see* education
hip replacements, 123
  differential access to hospital procedures, 489
  readmissions after surgery, 426
  waiting times, 410, 486
HIV/AIDS, 441, 446
  Grim Reaper campaign, 346
  international comparisons, 497, 500
  young people, 230, 231
Hodgin lymphoma, 223
home births, 195
home ownership (housing tenure), 16, 242
  Indigenous Australians, 310, 311–12; health services access, 332
homelessness, 310
homes, 16
  adult children living at, 16
  children exposed to tobacco smoke in, 455, 456
  dialysis patients receiving treatment at, 145
  older people wishing to remain in, 266
  palliative care for terminal illnesses, 117
homicide, 148
homosexual and bisexual drug users, 176
hospital beds, 390, 391, 414–15
hospital infrastructure development, 423
hospitals and hospitalisations, 251, 361, 363, 390–427
  adverse events, *see* adverse events in hospitals
  alcohol-related, 168, 169
  asthma, 139
  births, *see* births and pregnancy
  chronic obstructive pulmonary disease (COPD), 139, 292
  coronary heart disease, 125
  dental conditions, 152
  diabetes, 142
  drug-related, 177, 181
  elective surgery, *see* elective surgery
  falls, 49, 148, 259, 285; in care setting, 470, 480
  geographical areas, *see* hospitals and hospitalisations in geographical areas



infectious (vaccine preventable) diseases, 154, 155, 156; Indigenous Australians, 324
injuries, *see* injuries as cause of hospitalisations
kidney disease (CKD), 144–6, 292
Local Hospital Networks, 37
older people, 259, 261; residential aged care admissions to and from, 284–7
palliative care, 117, 291, 292, 408, 418
Performance and Accountability Framework, 437
respiratory conditions, 285, 292, 305, 315, 317, 324, 332
stroke, 130
tobacco smoking related, 171
transport accidents, 148, 149, 232, 233; case saved through road safety initiatives, 348
see also acute hospitals; emergency departments; potentially preventable hospitalisations; private hospitals; public hospitals; residential aged care residents

hospitals and hospitalisations expenditure and funding, 34, 48–9, 50
cost weights, 418
incontinence, 289
Medicare, 38–9
patient services for disease groups, 51
see also private health insurance; private hospitals expenditure and funding; public hospitals expenditure and funding

hospitals and hospitalisations in geographical areas, 319–21, 324–7, 390–1
dental conditions, 152
differential access to procedures, 471, 489
Indigenous Australians, 145–6, 324–7
kidney disease (CKD, ESKD), 145–6, 188
Local Hospital Networks, 37
potentially preventable conditions, 325–7, 475

hours of working (full/part-time), 18, 242

hours worked, 251

household income, 26, 458
Indigenous Australians, 311–12, 337
see also socioeconomic status

households (family types), 16, 208, 242–3
children's bodyweight, 212, 213
children's exposure to tobacco smoking, 456
employment, 17
Indigenous, 310
low-income, 458
water connection, 457

housing, 16
Indigenous Australians, 310, 332
older people, 262
see also homes

human papillomavirus (HPV) vaccination, 113, 154, 156, 157, 347

hydrotherapist and physiotherapist consultations, 361, 406

hyperopia, 204, 244, 248, 305

hypertensive diseases, *see* blood pressure

hypnotics and sedatives, 384, 385

hysterectomy, 410, 426, 486, 489

I

ICD, 70, 237

IFG, 162

illegal imports of drugs, 181, 183

Illicit Drug Reporting System (IDRS), 174, 176, 380

illicit drugs, *see* drugs

illness, *see* diseases

imaging services, 371
GP-ordered tests, 363
Indigenous Australians Medicare claims, 315

immigrants, *see* overseas-born population

immunisation and vaccine preventable diseases (infectious diseases), 6, 154–7, 348, 350
expenditure and funding, 51
human papillomavirus (HPV), 113, 154, 156, 157, 347
Indigenous Australians, 324
international comparisons, 368, 498, 500
National Partnership Agreement on Essential Vaccines, 436
performance indicators, 470, 473–4, 475
potentially preventable hospitalisations, 470, 475
see also sexually transmissible infections

impaired fasting glucose, 162

imports
illicit drugs, 181, 183
tobacco products, 171

in vitro fertilisation (ART), 195

inactivity, *see* physical activity

income, 25–6
Indigenous Australians, 311–12, 332, 337
older people, 262
performance indicators, 455, 458
self-assessed health impact, 251
see also socioeconomic status

incontinence, 288–90

indicators of health, *see* performance indicators

Indigenous Australians, 12–13, 82–3, 296–339
alcohol consumption, 227–8, 308, 331, 334, 337
births, *see* Indigenous births and pregnancy
burden of disease, 82, 91, 93, 334

cancer, 24, 110, 302, 324, 445
cancer screening, 354, 356
cardiovascular disease, 24, 83, 305, 317, 319–21, 324; coronary heart disease, 127, 443; stroke, 130
children, *see* Indigenous children and young people
deaths, *see* Indigenous deaths
dementia, 275, 281
diabetes, 24, 142, 302, 305, 319–21, 330
education, 17, 310–12, 331, 332, 337
geographical location, *see* geographical areas (major cities, regional and remote), Indigenous Australians living in
health expenditure and funding for, 52; Chronic Disease Package, 40
hospitalisations, *see* Indigenous hospitalisations
households (families), 16; housing tenure, 310, 311–12, 332
Indigenous primary health care services clients, 367
kidney disease (CKD, ESKD), 83, 145–6, 448
life expectancy, 300, 301, 333; performance indicators, 454
older people, 264
prisoners, 190
self-assessed health status, 85, 190, 304, 311–12, 332; parents living with children, 208
view of health, 3
young people, *see* Indigenous children and young people

Indigenous births and pregnancy, 202
birthweight, 202, 459
fertility rates, 297
infant mortality, 21, 498, 499
mothers, 196, 201; antenatal visits, 195

Indigenous children and young people, 16
alcohol consumption, 227–8
body weight, 309; birthweight, 202, 459
deaths, *see* Indigenous children and young people and death
education, 310
fruit and vegetable consumption, 219
headspace youth mental health service clients, 135
sexual abuse, 334
substance use, 229
suicide, 235
vaccination coverage, 154

Indigenous children and young people and death, 82, 302, 303, 329
infants, 21, 302, 303; performance indicators, 441, 453
young people, 233, 235

Indigenous Chronic Disease Package, 40

Indigenous deaths, 24, 82–3, 99, 301–3, 329, 330
cardiovascular disease, 24, 83, 127, 130
children and infants, 21, 82, 233, 302, 303, 329
Enhanced Mortality Database project, 300
life expectancy, 300, 301, 333; performance indicators, 441, 454
maternal, 196
suicide, 235
transport accidents, 233

Indigenous estimated resident population (ERP), 299

Indigenous health practitioners, 43, 60, 61, 63

Indigenous hospitalisations, 314, 315, 317
elective surgery waiting times, 486
emergency department presentations, 397; *see*n on time, 401
geographical areas, 319–21, 324–7
injuries, 149, 315, 317, 324, 449; young males, 232
kidney disease (CKD), 145–6; dialysis, 145, 324
potentially preventable, 325–7
procedure recorded, 332
stroke, 130
unmet needs, 333

Indigenous primary health care services, 367

Indigenous tobacco smokers, 22, 307, 337
burden of disease, 334
geographical areas, 319–21
pregnant women, 196
social determinants, 331
young people, 226

individual out-of-pocket payments, 38, 50, 53–4
dental expenses of people with private dental cover, 152
Indigenous Australians, 52
Medicare, 38–40
PBS co-payments, 40
self-funded private hospital patients, 422

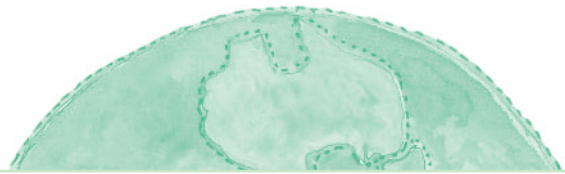
inequalities in health, *see* health inequalities

infant deaths, 21
Indigenous babies, 21, 302, 303
international comparisons, 21, 498, 499
performance indicators, 441, 453
perinatal, 201, 202
sudden infant death syndrome (SIDS), 348

infants, 201–3
birthweight, *see* birthweight
breastfeeding, 207
neonatal conditions, 51; private hospital intensive care units, 415
vaccination, 154, 155

influenza, 154, 156
immunisation (vaccination) coverage, 154; international comparisons, 368

influenza and pneumococcal disease immunisation (vaccination) rates, 474



influenza and pneumonia as cause of death, 72, 73, 76, 154, 155
informal carers, *see* carers
inguinal herniorrhaphy, 410, 486, 489
inhalants, 177, 228
injecting drug users, 174, 176, 178
  alcohol and other drug treatment services clients, 380
  sharing of needles, 470, 472
injuries, 148–50
  burden of disease, 91, 92
  expenditure and funding, 51
  work-related, 251, 252
  see also falls; transport accidents
injuries as cause of death, 148
  adults aged 25–44 years, 245, 246
  falls, 73, 148; international comparisons, 498, 499
  Indigenous Australians, 302
  young people, 232–7
  see also suicide; transport accidents as cause of death
injuries as cause of hospitalisations, 148–9
  aged care residents, 285
  children, 149
  falls, 148, 149, 259, 285; in care setting, 470, 480
  Indigenous Australians, 149, 232, 315, 317, 449; geographical areas, 324
  older people, 259; residential aged care residents, 285
  performance indicators, 441, 449
  self-harm, 234, 235, 237
  transport accidents, 148, 149, 232, 233; case saved through road safety initiatives, 348
  young people, 232, 233, 234
inner regional areas, *see* geographical areas
instrumental birth deliveries, 195, 198
  mothers with caesarean section history, 199
insulin, 141, 142, 143
insulin pump users, 142
insurance, *see* Medicare; private health insurance
integrated care models, *see* coordinated care models
integrated data sets, *see* data linkage
intentional injuries, *see* self-harm; violence
inter-hospital contract patients, 422
International Association for the Study of Obesity, 214
international comparisons, 497–501
  antibiotic prescriptions, 371
  burden of disease, 93
  childhood overweight and obesity, 214
  education, 17
  employment, 17; hours worked, 251
  health expenditure, 48, 57; public and preventive health, 347
  health workforce, 61, 62, 500
  immunisation (vaccination) rates, 368, 498, 500
  infant deaths, 21, 498, 499
  life expectancy, 68, 69, 497, 499
  medication prescriptions, 370–1
  patient ratings of doctors, 371
International Statistical Classification of Diseases and Related Health Problems, 70, 237
internet, *see* screen-based activity; technology; websites
interpersonal relationships, *see* relationships
interpersonal violence, *see* violence
intimate partner violence, 334
invasive pneumococcal disease, *see* pneumococcal disease
ischaemic heart disease, *see* coronary heart disease
ischaemic stroke, *see* stroke

J

Japan, 251
  see also international comparisons
jobs, *see* employment
joint replacements, 123
  differential access to hospital procedures, 489
  readmissions after surgery, 426
  waiting times, 410, 486
juvenile arthritis, 122
juveniles, *see* children and young people

K

Kessler Psychological Distress Scale, 451
  see also psychological distress
kidney cancer, 106
kidney disease (chronic/end-stage kidney disease, ESKD), 144–7
  geographical areas, 188, 447, 448
  hospitalisations, 144–6; palliative care, 292
  Indigenous Australians, 83, 145–6, 448
  performance indicators, 441, 447–8
  risk factors, 81
  see also dialysis
kidney disease (end-stage kidney disease, kidney failure) as cause of death, 72, 76–7, 144
  palliative care hospital patients, 292
kidney replacement therapy (KRT), 144–6
kidney transplants, 144, 145

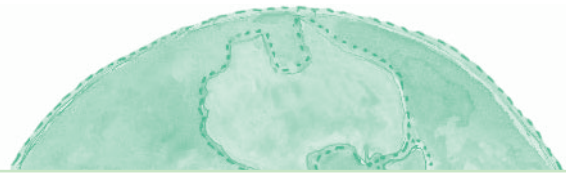
knee replacements, 123
differential access to hospital procedures, 489
readmissions after surgery, 426
waiting times, 410, 486
Koori Growing Old Well Study, 275, 281

L

labour costs in public hospitals, 492
labour force, *see* employment; health workforce
labour productivity, 251
land transport accidents, *see* transport accidents
Large hospitals, 391, 404
elective surgery waiting times, 409
larynx cancer, 111
laxatives, 292
LDL cholesterol, 162
length of hospital stay, 391, 392, 419
private hospitals, 413
stroke, 130
sub-acute and non-acute care, 408
see also patient days; same-day hospital care
leukaemia, 106, 108
cause of death, 72, 73
children, 205
Lewy bodies, dementia with, 271
Life. Be in it campaign, 346
life course, 100–1, 194–293
see also age
life expectancy, 18, 57, 67–9
Indigenous Australians, 300, 301, 333
international comparisons, 69, 497, 499
performance indicators, 441, 454
socioeconomic factors, 333
lifestyle behaviours, *see* health determinants
limb injury hospitalisations, 449
lip cancer, 111
lipid disorders, *see* blood cholesterol
literacy and numeracy, 17, 460
Indigenous students, 310
see also health literacy
live births, *see* births and pregnancy
liver cancer, 350
cause of death, 20, 72, 77
liver diseases as cause of death, 72, 74
adults aged 25–44 years, 246
adults aged 45–64 years, 250
hospital palliative care patients, 292
living arrangements of people with dementia, 276
living donors for kidney transplants, 145
Local Hospital Networks, 37
locations
ambulance services, 387
birth took place, 195
where dementia population lives, 276
falls in hospital care setting, 480
tobacco smoking in/outside home environment, 456
see also geographical areas; living arrangements
lone-parent families, *see* households
lone-person households, 16, 243
long-sightedness, 204, 244, 248, 305
long-term conditions, *see* diseases and illness
Longitudinal Study of Australian Children, 208, 211, 212
lower and upper limb injury hospitalisations, 449
lower back pain, *see* back problems
lung cancer, 105–6, 112
performance indicators, 441, 444–5
lung cancer as cause of death, 20, 70–3, 96, 105, 112
adults aged 45–64 years, 250
burden of disease component, 93
international comparisons, 497, 499
socioeconomic status, 99
underlying or associated, 77
lymphoid leukaemias, 205
lymphomas, 106, 108
cause of death, 20, 72, 73
young people, 223

M

McGrail and Humphreys, 322
macular degeneration, 258
mains or town water, 457
maintenance hospital care, 406, 408
private hospitals, 418
major cities, *see* capital cities; geographical areas
males, *see* men; sex (gender)
mammographic screening, *see* breast cancer screening
Maori, 333
marijuana, *see* cannabis
marriages, 242, 246–7
maternity, *see* births and pregnancy
mathematics (numeracy), 17, 460

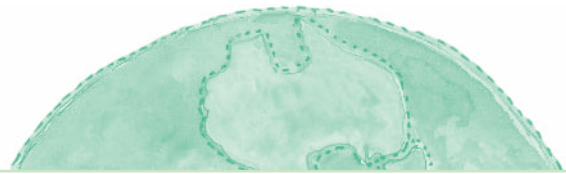


measles, 156
vaccination, 154, 155, 348; international comparisons, 498, 500
Measures of Australia's progress, 435
median waiting times
elective surgery, 409–10, 486
emergency department care, 399, 400
Medical hospitalisations, 392, 393, 417
medical imaging, *see* imaging
medical practitioners, 43, 60, 63
geographical areas, 188
international comparisons, 61, 62, 500
net growth, 471, 491
student domestic commencements, 61
see also general practitioners; medical services; specialist medical practitioners
medical radiation practitioners, 43, 60, 63
medical research, 49
medical services
expenditure and funding, 34, 39, 49; public hospital labour costs, 492
Indigenous users, 314, 332, 333
see also medical practitioners
medical tests, *see* tests
Medicare, 38–40
coordinated care data, 369
mental health-related services subsidised, 136, 382–4, 386
palliative care-related services subsidised, 291
Medicare claims, 362
child health checks, 369
diabetes patients with GP annual cycle of care, 481
GP bulk-billing, 366, 471, 484
GP visits after-hours, 366
Indigenous Australians, 314, 315, 316
tests, 371
Medicare Locals, 360, 364–6, 374
access to preferred GP, 370
medications/medicines, *see* pharmaceuticals
Medium hospitals, 391
elective surgery waiting times, 409
melanoma of skin, 105, 106, 107
cause of death, 20, 72
performance indicators, 441, 444–5
ultraviolet radiation risk factor, 112
young people, 223
memantine, 278, 279
men
testicular cancer, 114, 223
see also prostate cancer; sex (gender)
meningococcal disease, 156
MENC1 vaccination, 155
menopause, 247
mental health, 131–7, 351, 382–6
adults aged 25–44 years, 243
adults aged 45–64 years, 247–8
burden of disease, 91, 134
carers, 242
children, *see* children and young people and mental health
comorbidities, *see* mental health comorbidities
employed people, 251
expenditure and funding, 51, 96, 131, 386
GP care plans, 440, 483
Indigenous Australians, 190
after marriage ends, 242
medications, 189, 384, 385, 386
parents living with children, 208
people with disability, 25
prisoners, 189, 190
young people, *see* children and young people and mental health
see also affective disorders; anxiety disorders; dementia; depression; nervous system disorders; psychologists; stress
mental health as cause of hospitalisations, 383, 393
Indigenous Australians, 315, 317; geographical areas, 324
private hospitals, 417
psychogeriatric care, 406
public outpatients, 390, 391
mental health comorbidities, 135
aged care residents, 261
arthritis and other musculoskeletal conditions, 122
asthma, 99
disability, 25, 134
metabolic disorders, *see* diabetes
'metabolic syndrome', 102
metformin, 142, 143
methadone oral liquid, 181
methamphetamines and amphetamines, 175, 176, 178
alcohol and other drug treatment services clients, 380, 381
young people, 178, 228
methicillin resistant *Staphylococcus aureus* bacteraemia (SAB) cases, 425
midwives, *see* nurses
migrants, *see* overseas-born population
Minister for Veterans' Affairs, 41
MMR vaccination, 154, 155
models of health care, 37–8, 102–3, 369–70
cancer, 26, 119

mental health, 136
see also Medicare Locals
mood disorders, *see* affective disorders; depression
morbidity, *see* disability and functioning; diseases
morning after pill, 230
morphine, 181, 182
mortality, *see* deaths
mortgages, 16
mothercraft hospitals, 391
mothers, 16, 195–200, 231
antenatal period, 195–6, 471, 490
gestational diabetes, 141
Indigenous, 195, 196, 201
maternal deaths, 196; international comparisons, 497, 499
see also age of mothers; births and pregnancy
motor neurone disease, 291, 292
motor vehicles
driver and passenger deaths, 232
police/correctional services vehicles as emergency department presentation mode, 397
young drivers, 230
see also ambulance services; transport accidents
motorcycle rider deaths, 232
multiple causes of death (underlying and associated), 75–7
cancer, 77, 117–18
diabetes, 76–7, 142
kidney diseases, 144
multiple chronic conditions, *see* comorbidities
multiple GP consultations, 361
multiple risk factors, 102
overweight and obese children, 216, 217, 219
multipurpose service hospitals, 391
mumps, 156
MMR vaccination, 154, 155
musculoskeletal conditions, *see* arthritis and other musculoskeletal conditions
myeloid leukaemias, 205
MyHealthyCommunities website, 437
MyHospitals website, 425, 437
myocardial infarction, *see* coronary heart disease
myopia, 204, 223, 244, 305
myringoplasty, 410, 486
myringotomy, 410, 486, 489

N

National Aboriginal and Torres Strait Islander Health Measurements Survey, 309
National Aboriginal and Torres Strait Islander Health Survey (NATSIHS), 331, 332, 334
National Aboriginal and Torres Strait Islander Nutrition and Physical Activity Survey, 309
National Aboriginal and Torres Strait Islander Social Survey, 331
National Aged Care Data Clearinghouse, 261, 287
National Assessment Program—Literacy and Numeracy (NAPLAN) scores, 310
National Bowel Cancer Screening Program, *see* bowel cancer screening
National Cervical Cancer Screening Program, *see* cervical cancer screening
National Disability Agreement funded services
psychiatric disability, clients with, 134
National Disability Strategy 2010–2020, 26
National Drug and Alcohol Research Centre, 183
National Drug Strategy, 167, 173
National Drug Strategy Household Survey (NDSHS), 174, 175, 184, 380
alcohol consumption, 81, 167, 197
tobacco smoking, 170
National Elective Surgery Target (NEST), 411
National Elective Surgery Waiting Times Data Collection, 412
National Emergency Access Target (NEAT), 401–2
National Health and Medical Research Council (NHMRC), 217
alcohol guidelines, 167
dietary guidelines, 165; children, 217–19
National Health Performance Authority, 437
National Health Performance Committee, 437
National Health Performance Framework, 437–93
National Health Reform Agreement, 437
National Health Survey (NHS), 95, 164
adults aged 25–44 years, 243, 244
adults aged 45–64 years, 248
asthma written plans, 482
body weight, 214
children, 214, 291
fruit and vegetable consumption, 80, 219
Indigenous Australians, 334
older people's self-assessed health status, 259
psychological distress, 243
young tobacco smokers, 226
see also Australian Health Survey
National Healthcare Agreement (NHA), 436
see also performance indicators



National Heart Foundation, 346, 351
National Hospital Morbidity Database, 324–6
National Mental Health Commission, 131, 136
National Mental Health Report 2013, 131
National Mental Health Strategy, 131
national minimum data sets
  alcohol and other drug treatment services (AODTS NMDS), 181, 184, 379, 380
  emergency department presentations, 150, 169
National Nutrition and Physical Activity Survey, 214–16
National Nutrition Survey, 219
National Opioid Pharmacotherapy Statistical Annual Data (NOPSAD) collection, 181, 184, 380
National Partnership Agreement on Essential Vaccines, 436
National Partnership Agreement on Improving Public Hospital Services (NPA IHPS), 401–2, 411, 436
National Partnership Agreement on Preventive Health (NPAPH), 212, 350
National Physical Activity Guidelines, 80
National Physical Activity Recommendations for children, 214–16
National Prisoner Health Data Collection, 189, 191
National Registration and Accreditation Scheme, 42–3, 62
National Survey of Mental Health and Wellbeing (2007 survey), 132, 133, 134
  comorbidities, 135
  health service use, 135–6
  young people, 224
National Survey of People Living with Psychotic Illness, 133, 134
National Tobacco Campaign, 346
National Tobacco Strategy 2012–2018, 170
NATSIHS, 331, 332, 334
NATSISS, 331
natural causes of death, 75–7
natural increase in population, 10
NDS, 26
NDSHS, *see* National Drug Strategy Household Survey
neck and head injuries, 449
needles and syringes, sharing of, 470, 472
neglect of children, 208
neonates, *see* births and pregnancy; infants
neoplasms, *see* cancer
nervous system disorders, 51
  Indigenous hospitalisations, 324, 332
  medicines, 428
NEST, 411
NESWTDC, 412
net overseas migration, 10
net worth, 262
neuroblastoma, 205
New South Wales, 131, 268, 275, 281
  see also states and territories
New Zealand, 41, 333
  see also international comparisons
NHA, 436
see also performance indicators
NHMRC, *see* National Health and Medical Research Council
NHPA, 437
NHPF, 437–93
NHS, *see* National Health Survey
NNAPEDCD, 394, 395, 404
non-acute hospital care, *see* sub-acute and non-acute hospital care
Non-admitted Patient Emergency Department Care National Minimum Data Set, 150, 169
non-admitted patients (outpatient services), 361, 363, 391, 392–3
  private hospitals, 419
  see also emergency departments
non-dependent children, *see* children and young people
non-government sector expenditure and funding, 34, 38, 50, 53–4
  see also private health insurance; individual out-of-pocket payments
non-Hodgkin lymphoma, 20, 106
non-rheumatic valve disorders as cause of death, 73
non-school qualifications, *see* education
nootropics and psychostimulants, 385
NOPSAD collection, 181, 184, 380
Northern Territory, 333
  see also states and territories
not-for-profit private hospitals, 414
NPA IHPS, 401–2, 411, 436
NPAPH, 212, 347, 350
NRAS, 42–3, 62
numeracy, 17, 460
nurses and midwives, 43, 60
  coordination of care, 369
  geographical areas, 63, 367
  mental health services, 384
  net growth, 471, 491
  practising nurses, 61, 62
  telephone advice service, 366, 367
nursing home care units in public hospitals, 390
nursing homes, *see* residential aged care

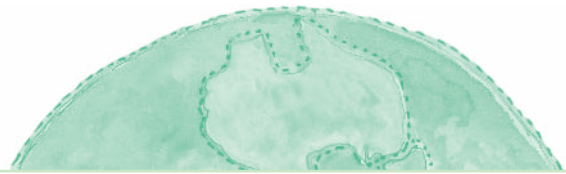
nutrition and diet (fruit and vegetable consumption), 80, 81, 165
adults aged 25–44 years, 244, 245
adults aged 45–64 years, 249
dietetics interventions, 406
health promotion campaigns and preventive interventions, 346, 349, 350
Indigenous Australians, 309; burden of disease, 334
performance indicators, 455, 464–5
young people, 225; eating disorders, 225, 238
see also body weight

O

obesity, *see* body weight
obstetrics services, *see* births and pregnancy
occupational health and safety, 251, 252
occupational therapists, 43, 60, 63
rehabilitation interventions, 406
OECD, *see* Organisation for Economic Cooperation and Development
oesophageal cancer as cause of death, 72
older people, 11–13, 256–70
coronary heart disease deaths, 18, 126
dementia, 258, 273–4; residential aged care residents, 261, 276
health expenditure, per person, 55
immunisation (vaccination) coverage/rates, 154, 157, 368; performance indicators, 470, 474
life expectancy, 67; international comparisons, 497, 499
private hospital patients, 418, 420, 421
self-assessed health status, 85, 259, 452
sub-acute hospital care, 406, 407, 408, 418
see also age; residential aged care residents
one-parent families, *see* households
one-person households, 16, 243
operating theatres, private hospitals with, 390, 415
operations, *see* procedures and treatments
opioids, *see* heroin and other opioids
optical services, 40
eye surgery hospitals, 415
Medicare, 39
ophthalmology surgery waiting times, 409, 410
private health insurance reimbursement, 362
optical services consultations, 361
optometrists, 43, 60, 63
oral and maxillofacial surgery hospitals, 415
oral health, *see* dental services
oral health therapists, 152
Organisation for Economic Cooperation and Development (OECD), 57
see also international comparisons
orthopaedics, *see* arthritis and other musculoskeletal conditions
osteoarthritis, 122, 248
joint replacement, 123
osteopaths, 43, 60, 63
osteoporosis, 122, 258
people with disability, 25
risk factors, 81
other recurrent costs, 34, 49, 50
Ottawa Charter for Health Promotion, 343
out-of-hospital services expenditure, 51
cancer, 109
out-of-pocket payments, *see* individual out-of-pocket payments
outer regional areas, *see* geographical areas
outpatient services, *see* non-admitted patients
ovarian cancer as cause of death, 71, 73
overcrowded Indigenous households, 310
overnight hospitalisations, *see* length of hospital stay
overseas-born population, 10
breast cancer screening, 354
children: bodyweight, 212, 213; mental health, 135
older people, 264–5
overseas comparisons, *see* international comparisons
overseas travel, 39
overweight, *see* body weight
oxazepam, 182
oxycodone, 181, 182

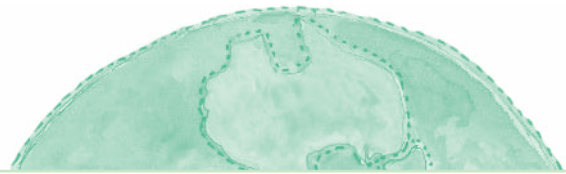
P

PAF, 437
pain-killers (analgesics), 177, 182, 292, 429
palliative care, 117, 291–3, 408
private hospitals, 418
pancreatic cancer, 105, 106
cause of death, 20, 71–3
Pap tests (cervical cancer screening), *see* cervical cancer screening
paracetamol, 429
parasitic diseases, *see* immunisation and vaccine preventable diseases
parents, 16, 208
working, 17
Parkinson disease, 292



part-time employment, 18
partner violence, 334
passive smoking, children, 455, 456
pathology services, 371
  GP-ordered tests, 363
  Indigenous Australians Medicare claims, 315
  private hospital non-admitted patient care, 419
Pathways in Aged Care Project, 281
patient days, 392
  private hospitals, 416
  rehabilitation care, 406
  Staphylococcus aureus bacteraemia rates, 425
  see also length of hospital stay
Patient Experience Survey, 371, 404
patient transport (ambulance services), 49, 362, 387–9, 395, 397
patients (health service use and access), 35, 44
  alcohol and other drug treatment services, 379–81
  ambulance services transport, 362, 388
  geographical areas, 319–27
  Indigenous Australians, 314–17, 319–27, 332, 333, 338
  mental health services, 135–6; psychiatric disability, 134
  people with disability, 25
  performance indicators, 471, 484–90
  see also health workforce (health professionals) consultations; hospitals and hospitalisations; individual out-of-pocket payments
PBS, *see* pharmaceuticals
pedestrian deaths, 232
pelvic and abdominal pain, hospitalisations for, 392
pensioners, 134
  concessional prescription pharmaceuticals, 40, 428
per person health expenditure, 47
  Indigenous Australians, 52; Pharmaceutical Benefits Scheme, 314
  mental health services, 386
Performance and Accountability Framework, 437
Performance and Image Enhancing Drugs, 184
performance indicators, 350, 411, 434–501
perinatal mortality, 201, 202
  see also infant deaths
pertussis, 155, 156
  DTP vaccinations, 155; international comparisons, 498, 500
pethidine, 182
Pharmaceutical Benefits Advisory Committee, 428
Pharmaceutical Benefits Pricing Authority, 428
pharmaceutical poisonings, 148, 149, 232
pharmaceuticals (prescription and non-prescription medicines/medications), and Pharmaceutical Benefits Scheme (PBS) and Repatriation Pharmaceutical Benefits Scheme (RPBS), 40, 267, 362, 428–30
  arthritis and other musculoskeletal conditions, 124
  cost as barrier to filling prescriptions, 365
  dementia, 278–9
  diabetes, 142, 143
  expenditure and funding, 40, 428–9; per Australian, for mental-health related prescriptions, 386; per Indigenous Australian, 314
  general practitioner prescriptions, 363, 384, 385, 429
  mental health, 189, 384, 385, 386
  misuse, non-medical or extra-medical use, 174, 175, 179–82, 184
  opioid overdoses, 179
  palliative care, 292
  pharmaceutical opioid prescriptions, 181, 182
  prisoners, 189
  safety and quality, 267, 370–1
  see also immunisation and vaccine preventable diseases
pharmaceuticals (prescription and non-prescription medicines/medications), expenditure and funding for, 34, 49, 51
  cancer, 109
  patient co-payments, 40
pharmacists and pharmacies (chemists), 43, 60, 428
  consultations, 361
  geographical areas, 63, 367
pharmacotherapy treatment for opioid use, 180–1, 184, 380
physical abuse, *see* violence
physical activity and inactivity, 81, 455, 466–7
  adults aged 25–44 years, 244, 245
  adults aged 45–64 years, 249
  burden of disease, 91, 92, 93, 334
  children and young people, 80, 214–17, 225, 349, 467
  geographical areas, 187
  health promotion campaigns and preventive interventions, 346, 349, 350
  Indigenous Australians, 309, 331, 334
  international comparisons, 265
  self-assessed health status association in over 45s, 266
  socioeconomic status, 26, 165
  stomach cancer risk factor, 112
  tobacco smokers, 102
  see also body weight; disability and functioning
physicians, *see* medical practitioners
physiotherapist and hydrotherapist consultations, 361, 406
physiotherapists, 43, 60, 63
  private health insurance reimbursement, 362
pill the, 230

places, *see* locations
plastic and reconstructive surgery hospitals, 415
platinum-based chemotherapy, 114
pneumococcal disease, 155, 156
  immunisation (vaccination) coverage, 154
pneumococcal disease and influenza immunisation (vaccination) rates, 474
pneumonia and influenza as cause of death, 72, 73, 76, 154, 155
podiatrists, 43, 60, 63
poisoning, 148, 149
  adults aged 25–44 years, 245, 246
  young people, 232
police/correctional services vehicles as emergency department presentation mode, 397
poliomyelitis, 154
population, 10–29
  see also age; per person health expenditure; sex (gender)
population ageing, 16, 55–6, 256–70
  cancer, 117
population health, *see* public and preventive health
positive ageing, 266
post-school qualifications, *see* education
potential years of life lost, 498, 499
potentially avoidable deaths, 470, 478
  Indigenous Australians, 24
potentially avoidable GP-type emergency department presentations, 403–4, 471, 485
potentially preventable hospitalisations, 368
  Indigenous Australians, 325–7
  performance indicators, 470, 475
practising nurses, 61, 62
pregnancy, *see* births and pregnancy
premature deaths, 91, 92, 93, 343
  potential years of life lost, 498, 499
  see also age at death; burden of disease; infant deaths
prescription medicines, *see* pharmaceuticals
pressure ulcers, 285
preterm births, 202
preventive health, *see* public and preventive health
primary health care, 357–78
  expenditure and funding, 34, 36, 49, 50, 373
  healthy ageing role, 266
  Performance and Accountability Framework, 437
  see also community health services; dental services and oral health; health workforce; pharmaceuticals; public and preventive health
principal diagnoses for hospitalisations, *see* hospitals and hospitalisations
Principal referral and specialist women's and children's hospitals, 390, 391
  elective surgery waiting times, 486
  potentially avoidable emergency department presentations, 404
prisoners, 189–91
private acute hospitals, 390
private health insurance, 40–1
  dental cover, 152
  health system funding paid by, 38, 50, 53–4, 362, 422
  older people, 263
Private Health Insurance Administration Council, 41
private hospitals, 390–3, 413–24
  caesarean section, 199–200
  falls in care setting, 480
  mental health services, 385, 417
  potentially preventable separations, 475
  Staphylococcus aureus bacteraemia (SAB) rates, 425, 427
  sub-acute and non-acute care, 406, 407, 408, 418
private hospitals expenditure and funding, 34, 49, 421–2, 423
  cost weight, 418
  private health insurers, 422
private patients, 39, 40–1
private psychiatric hospitals, 390
private renter households, 16
private sector health services, 34
  see also medical practitioners; pharmacists and pharmacies; private hospitals
procedures and treatments, 390, 392, 393, 415
  alcohol problems, 168, 379–81
  assisted reproductive technology (ART), 195
  cancer, 107, 114–15; private hospitals, 415, 416, 417
  coronary heart disease, 126
  dementia, 277–9
  drug problems, 178, 379–81; opioid dependence, 180–1, 184, 380
  general practitioners, 363
  Indigenous Australians, 332
  kidney replacement therapy (KRT), 144–6
  readmissions after surgery, 426
  see also hospitals and hospitalisations; pharmaceuticals
productive ageing, 266
productivity in health-care delivery, 267
productivity of labour, 251
profound activity limitations, *see* disability and functioning
prose literacy, 460



prostate cancer, 105–7
cause of death, 20, 71, 72, 77, 105; international comparisons, 499
prostatectomy, 410, 426, 486, 489
prostheses, *see* aids and appliances
protective factors, *see* health determinants
psychiatric disability, 134
psychiatric hospitals, 390, 391
psychiatrists, 135, 384, 385
psychoactive substances, 174, 182–3
see also cannabis; ecstasy; hallucinogens
psychogeriatric care, 406, 418
psychological distress, 441, 451
adults aged 25–44 years, 243
adults aged 45–64 years, 247
with anxiety disorders, 134
with arthritis and other musculoskeletal conditions, 122
geographical areas, 319–21
Indigenous Australians, 319–21
young people, 223; using drugs and alcohol, 229
psychologists, 43, 60, 384
consultations, 135, 383, 384
geographical areas, 63, 367
psychostimulants and nootropics, 385
psychotic disorders, 131, 132, 134
medication prescriptions, 384, 385, 386
public sector mental health service clients, 133
see also schizophrenia
public and preventive health (health promotion), 40, 265–7, 343–56
expenditure and funding, 49, 347
see also cancer screening; immunisation and vaccine preventable diseases
public dental services, 84, 151, 153
public hospitals, 363, 390–412, 417, 422–3
beds, 390, 391, 414
caesarean section, 199–200
elective surgery, *see* elective surgery
emergency department admissions to, 402–3
falls in care setting, 480
length of hospital stay, 391, 392, 419
mental health services, 383, 386
palliative care, 291
pharmaceuticals provided, 40
potentially preventable separations, 475
public and private patients, 39, 41
readmissions after surgery, 426, 427
safety and quality, 425–7
Staphylococcus aureus bacteraemia (SAB) rates, 425
stroke units, 130
see also emergency departments
public hospitals expenditure and funding, 34, 49
cost per casemix-adjusted separation, 471, 492–3
cost weight, 418
per Indigenous person, 52
Medicare, 38–9
mental health services, 386
public patients, 38–9, 41
public psychiatric hospitals, 390
public renter households, 16
public sector health services, 33
see also public hospitals
purchased bottled water, 457

Q

Q fever, 156
qualifications, *see* education
quality of health care, *see* safety and quality
quality of health data, *see* data sources, gaps and deficiencies
quality of water, 455, 457
Queensland, 131
see also states and territories
quitting smoking, 171
prisoners, 190

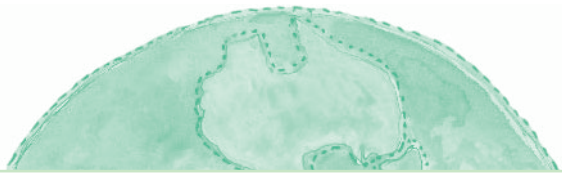
R

radiotherapy, 114
rainwater, 457
reading, 17
Indigenous Year 5 students, 310
readmissions after surgery, 426, 427
reasons, *see* causes
rectal cancer, *see* bowel cancer
recurrent expenditure, *see* health expenditure and funding
recycled or grey water, 457
regional areas, *see* geographical areas
registration of health professionals, 42–3
regulation, 42–3
rehabilitation hospital care, 391, 406, 408, 415, 418
relationships, 242, 246–7
carers and people with incontinence cared for, 289
Indigenous intimate partner violence, 334
problems experienced by children and adolescents, 135

relative stay indexes, 419
remote areas, *see* geographical areas
renal disease, *see* dialysis; kidney disease
renters, 16, 262
  Indigenous Australians, 310, 312
Repatriation Pharmaceutical Benefits Scheme, 40, 428
  see also pharmaceuticals
Report on government services, 437
reporting of health performance, 435–9
research, 49
residential aged care, 261, 284–7
  expenditure and funding for incontinence, 289
  private hospital services, 415
residential aged care residents with mental disorders, 261
  dementia, 261, 276; hospital admissions, 285
resource sharing between private and public hospitals, 422
resources, *see* health expenditure and funding; health workforce
respiratory conditions, 138–40
  adults aged 45–64 years, 248
  cause of death, 72, 73, 76, 83, 138–9, 330
  expenditure and funding, 51
  hospitalisations, 285, 315, 317, 324, 332; COPD palliative care, 292
  Indigenous Australians, 83, 305, 315, 317, 324, 330, 332
  see also asthma; chronic obstructive pulmonary disease; hay fever; influenza; pneumococcal disease
respite care in residential aged care, 286
retail pharmacists, *see* pharmacists and pharmacies
retirement savings, 252, 263
revenue to health expenditure ratio, 54–5, 57
Review of Government Services, 437
rheumatoid arthritis, 122
rhinitis, *see* hay fever
risk factors, *see* health determinants
rivastigmine, 278, 279
river/creek/dam water, 457
road traffic accidents, *see* transport accidents
rotavirus, 156
Royal Australasian College of Surgeons, 412
Royal Flying Doctor Service, 362
RPBS, 40, 428
  see also pharmaceuticals
rubella, 156
  MMR vaccination, 154, 155
rural areas, *see* geographical areas

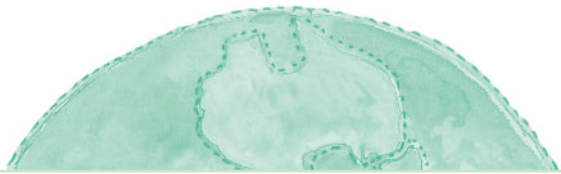
S

safety and quality, 267
  performance indicators, 470, 479–80
  primary health care, 370–1
  see also adverse events
salt, 350
same-day hospital care (day hospitals), 361, 392, 413, 415, 416, 417
  adverse events, 479
  beds, 414, 415
  cost weight, 418
  expenditure and funding, 421, 422
  public hospitals, 392, 417; co-location with, 422
satisfaction with life, *see* wellbeing
schizoaffective disorder, 132
schizophrenia, 132
  community mental health services contacts, 383
  public sector mental health service clients, 133
school students, *see* students
schooling, *see* education
scientific literacy, 17
screen-based activity, time children and young people spend in, 80, 215, 216–17, 225
screening programs, *see* cancer screening
SDAC, *see* Survey of Disability, Ageing and Carers
secondary care, 36
  see also hospitals and hospitalisations; specialist medical practitioners
secondary students, *see* students
sedatives and hypnotics prescriptions, 384, 385
sedatives users hospitalisations, 177
sedentary behaviour, *see* physical activity
self-assessed health status, 85
  adults aged 25–44 years, 243
  adults aged 45–64 years, 248
  aged 45–64 years, 247
  with asthma, 83
  employed people, 251
  incontinence and, 289
  Indigenous Australians, 85, 190, 208, 304, 311–12, 332
  older people, 85, 259, 452
  oral health, 152
  parents living with children, 208
  people with disability, 25
  performance indicators, 441, 452
  physical activity and sitting time association in over 45s, 266
  prisoners, 190
  young people, 222



self-harm, 149, 237, 238
young people, 234, 235
see also suicide
separations from hospital, *see* hospitals and hospitalisations
septicaemia as cause of death, 73
septoplasty, 410, 486, 489
severe activity limitations, *see* disability and functioning
sex (behaviour), *see* sexual practices
sex (gender), 12–13
adults aged 25–44 years, 242, 243, 244–6
adults aged 45–64 years, 246–8, 249–50, 252
alcohol and other drug treatment services clients, 379
alcohol consumption, *see* sex (gender) and alcohol consumption
arthritis and other musculoskeletal conditions, 122, 123
asthma, 205
births, live, 16
blood cholesterol, 162
blood pressure, 161, 244, 249
body weight, *see* sex (gender) and body weight
bowel cancer screening participants, 355
cancer, *see* sex (gender) and cancer
carers, 242, 247
children, *see* sex (gender) of children and young people
coronary heart disease, 70–3, 125–6, 127, 442, 443
death, *see* sex (gender) and death
dementia, 273–4, 275, 276; medications received, 279
developmentally vulnerable children, 208, 209
diabetes, 141
disability, 259, 263, 450; expected years living free of, 78, 260
drug users, 176
educational attainment, 461
employment, 17–18, 242, 267, 331
fruit and vegetable consumption, 465
health expenditure, per person, 55, 56
health workforce, 61
hospitalisations, *see* sex (gender) of hospital patients
impaired fasting glucose, 162
incontinence, 288
injuries, 148: *see also* sex (gender) and injury deaths
kidney disease, 447–8
life expectancy, *see* sex (gender) and life expectancy
mental health, *see* sex (gender) and mental health
multiple risk factors, 102
nutrition and diet, 218–19, 244, 245, 249
older people, *see* sex (gender) of older people
physical activity, 244, 245, 249, 466, 467; children, 216, 217, 467
prisoners, 189
self-assessed health status, 243, 247, 248, 452
stroke (cerebrovascular disease), 70, 72, 73, 128–9
superannuation and retirement savings, 252
tobacco smokers, *see* sex (gender) of tobacco smokers
work-related injuries and illnesses, 251
young people, *see* sex (gender) of children and young people
sex (gender) and alcohol consumption, 164, 463
adults aged 25–44 years, 244, 245
adults aged 45–64 years, 249
Indigenous Australians, 308
young people, 227
sex (gender) and body weight, 23, 468, 469
adults aged 25–44 years, 244, 245
adults aged 45–64 years, 249
children, 211, 213, 214
sex (gender) and cancer, 105, 109, 112, 445
cause of death, 70–3, 105, 109, 250
children, 205
projected new cases and deaths, 115
survival after, 477
sex (gender) and death, 18–19, 70–3
adults aged 25–44 years, 245–6
age-standardised rates, 79
cancer, 70–3, 105, 109, 250
chronic obstructive pulmonary disease (COPD, chronic lower respiratory diseases), 138–9, 250
coronary heart disease, 70–3, 126, 245, 246, 250
dementia, 70–3, 276
Indigenous Australians, 330
injuries, *see* sex (gender) and injury deaths
stroke (cerebrovascular disease), 70, 72, 73, 128–9
suicide, 234–6
sex (gender) and injury deaths, 148
poisoning, 245, 246
suicide, 234–6, 245, 246, 250
transport accidents, 232, 234, 245, 246; Indigenous Australians, 233
sex (gender) and life expectancy, 67–9
Indigenous Australians, 301
international comparisons, 68–9, 497, 499
performance indicators, 441, 454
sex (gender) and mental health, 133, 135, 248
cause of death, 70–3, 234–6
Medicare-subsidised mental health-related services clients, 383
psychological distress, 223, 243, 247, 451
young people, 223, 224–5
sex (gender) of children and young people, 204, 222
alcohol consumption, 227

arthritis and musculoskeletal conditions, 122
asthma, 205
body weight, 211, 213, 214
cancer, 205
drug users, 176
injuries, 232–6
mental health, 223, 224–5
nutrition and diet, 218–19
physical activity and inactivity, 216, 217, 467
suicide, 234–6
sex (gender) of hospital patients
coronary heart disease, 125
emergency department presentations, 396, 398
injuries, 148, 232, 233, 234, 259
joint replacements, 123
in private hospitals, 419–20
residential aged care discharges, 284, 286
respiratory conditions, 139
sub-acute and non-acute care, 407
sex (gender) of Indigenous Australians, 12–13
alcohol consumption, 308
cancer, 445
coronary heart disease, 127
deaths, 330
life expectancy, 301
suicide, 235
tobacco smokers, 331
transport injury deaths, 233
transport injury hospitalisations, 232
sex (gender) of older people, 263
arthritis and other musculoskeletal conditions, 122
chronic kidney disease (CKD) deaths, 126
dementia, 273–4, 275
disability, 259, 263
employment, 267
injury hospitalisations, 259
sex (gender) of tobacco smokers, 112, 348, 462
adults aged 25–44 years, 244
adults aged 45–64 years, 249, 250
Indigenous Australians, 331
young people, 226
sexual abuse of children, 334
sexual practices, 230–1, 334
see also births and pregnancy
sexually transmissible infections (STIs), 441, 446
human papillomavirus (HPV) vaccination, 113, 154, 156, 157, 347
young people, 229, 230–1
see also HIV/AIDS
short-sightedness, 204, 223, 244, 305
sickness, *see* diseases
SIDS, 348
sight, *see* vision
Silk Road website, 183
single-parent families, *see* households
single-person households, 16, 243
sinusitis, 204
size of dwellings, 16
size of private hospitals, 414–15
size of public hospitals, 390, 391, 394
elective surgery waiting times, 409, 486
potentially avoidable emergency department presentations, 404
skin cancer, 107
Slip Slop Slap campaign, 346
see also melanoma of skin
skin diseases
dermatitis and eczema in children, 204
expenditure and funding, 51
Indigenous Australians in geographical areas, 324
sleep centres, 415
Slip Slop Slap campaign, 346
small hospitals, 391
Smith, K eg al., 275
smoking, *see* tobacco smoking
social costs, *see* costs
social gradient of health, *see* socioeconomic status
social health determinants, 6, 100
Indigenous Australians, 310–13, 331, 332–3, 336–8
see also education; employment; housing; income; socioeconomic status
social participation of people with incontinence, 289
social wellbeing, *see* wellbeing
social work rehabilitation interventions, 406
socioeconomic participation, *see* community participation; employment
socioeconomic status, 4, 25–6, 84, 99, 252
alcohol consumption, 164
birthweight, 202, 459
body weight, 23, 165; children, 212–13
cancer, 99, 110
cervical cancer screening, 354
cocaine use, 178
coordinated primary health care, 369
coronary heart disease, 127
diabetes, 142



fruit and vegetable consumption by children, 219
general practitioners consultations, 364–5
hospitalisations, 368, 407, 420, 485
Indigenous Australians, 332, 333, 334
life expectancy, 333
mental health, 135, 248; GP care plans, 483
mothers, 196; caesarean section, 200
older people, 265
physical activity, 26, 467; children, 216, 217
potentially preventable hospitalisations, 475
respiratory conditions, 138
stroke, 130
tobacco smokers, 26, 164, 196
see also income

solar ultraviolet radiation, 112

sole-parent households, *see* households

sole-persons households, 16, 243

South Australia, 117
see also states and territories

specialist homelessness services, Indigenous Australians accessing, 310

specialist medical practitioners, 369
GP referrals, 363
Indigenous Australians MBS claims, 314, 315
older people's consultations, 261
people with disability's consultations, 25

specialist palliative care services, 291

specialist women's and children's hospitals, *see Principal referral and specialist women's and children's* hospitals

speed, *see* methamphetamines

spending, *see* health expenditure

standard drinks, *see* alcohol consumption

standards, *see* classifications; definitions; quality

Standing Council on Health (Australian health ministers), 41–2, 357, 412, 438

Staphylococcus aureus bacteraemia (SAB), 285, 425, 427

state and territory expenditure and funding, 34, 38, 50, 52–5
mental health services, 131, 386
pharmaceuticals provided in public hospitals, 40

State of Preventive Health 2013 report, 347

states and territories, 13, 33, 41–2
ambulance services, 387–8
bulk-billing, 484
elective surgery waiting times, 409, 411, 412
emergency department presentations, 396, 401, 402, 403
falls in hospital care setting, 480
Indigenous Australian residents, 15, 297
life expectancy, 68
mental health, 131, 385, 386
older people, 264
Staphylococcus aureus bacteraemia (golden staph) rates, 425

Steering Committee for the Review of Government Service Provision, 389

stillbirths, 201, 202

STIs, *see* sexually transmissible infections

Stoma Appliance Scheme, 289

stomach cancer, 72, 112

stress, 82, 252
young people, 223
see also psychological distress

Stress and Wellbeing Survey 2013, 223

stroke (cerebrovascular disease), 128–30
burden of disease, 93, 96
health promotion campaigns and preventive interventions, 350
risk factors, 81, 102
stroke (cerebrovascular disease) as cause of death, 19, 70, 72, 73, 96, 97, 128–9
burden of disease component, 93
geographical areas, 74
Indigenous Australians, 130
international comparisons, 497, 499
underlying or associated, 76, 77

students, 17
drug use, 174, 178
Indigenous, 310
stress and distress, 223
tobacco smoking, 171
see also education

sub-acute and non-acute hospital care, 406–8, 418
adverse events, 479
palliative care, 117, 291, 292, 408, 418

substance use disorders, 132, 133, 134
young people, 133, 224
see also alcohol consumption; drugs

successful ageing, 266

sudden infant death syndrome (SIDS), 348

sugar levels, *see* diabetes

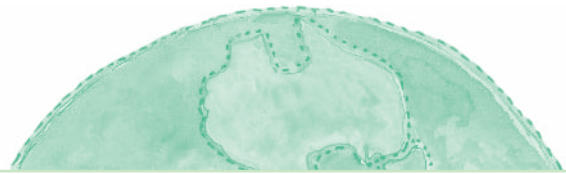
suicidality (suicidal thoughts, plans or attempts), 134
people with disability, 25

suicide (intentional self-harm), 71, 72, 148, 237, 238
adults aged 25–44 years, 245, 246
adults aged 45–64 years, 250
geographical areas, 74
international comparisons, 497, 499
young people, 234–6

sun protection, 112
see also skin cancer
superannuation coverage, 252, 263
surgery, *see* elective surgery; procedures
Surgical hospitalisations, 392, 393, 417
Survey of Disability, Ageing and Carers (SDAC), 243, 247, 259, 263
dementia, 273
survival after cancer, 106, 109–10, 111, 116
children, 205
performance indicators, 470, 477
socioeconomic status, 99
survival after coronary heart disease event, 476
Sweden, 251
see also international comparisons
Sydney, 14, 281
syphilis, 441, 446
young people, 230, 231
syringes and needles, sharing of, 470, 472

T

Tasmania, 184
see also states and territories
taxation, 171, 349, 350
taxation revenue to health expenditure ratio, 54–5, 57
TCP, 284, 285, 287
technology, 37–8, 371, 374
assisted reproductive (ART), 195
internet drug sales and distribution, 183, 184
telephone-based advice services, 366–7
see also screen-based activity; websites
teenagers, *see* children and young people
teeth, *see* dental services and oral health
telehealth (telemedicine), *see* e-health
television, *see* screen-based activity
temazapam, 182
territories, *see* states and territories
tertiary qualifications, *see* education
testicular cancer, 114, 223
tests, 371
consultations for results, 363
cost as barrier, 365
tetanus, 156
DTP vaccination, 155; international comparison, 498, 500
therapeutic procedures, *see* procedures and treatments
thermal injury, 148, 149
Tick endorsement program, 346
time
aero-medical health services flying hours, 389
ambulance services responses to emergency incidents, 387–8
antenatal visits in first trimester, 471, 490
caring for people with incontinence, 288
caring for stroke survivors, 130
emergency department presentations, 397, 399; time spent in department, 401–2, 403
fatal vehicle accidents occurred, 232
hours of working (full/part-time), 18, 242
hours worked, 251
physical activity undertaken, *see* physical activity
prisoners serve in prison, 189
see also length of hospital stay
tobacco smoking, 22, 81, 112, 164, 170–2
adults aged 25–44 years, 244, 245
adults aged 45–64 years, 249
alcohol consumption, 102
burden of disease, 91, 92, 334
children exposed in home, 455, 456
geographical areas, 196, 319–21
health promotion campaigns and preventive interventions, 346, 348, 350
Indigenous Australians, *see* Indigenous tobacco smokers
international comparisons, 497, 500
people with disability, 25
performance indicators, 455, 456, 462
physical activity, 102
pregnant women, 196
prisoners, 189, 190
socioeconomic status, 26, 164, 196
young people, 170–1, 226
tonsillectomy, 410, 426, 486, 489
tooth decay, *see* oral health
Torres Strait Islanders, *see* Indigenous Australians
total fertility rate, 201
total joint replacements, *see* joint replacements
town or mains water, 457
towns, *see* geographical areas
trachea, bronchus and lung cancer, *see* lung cancer
tramadol, 182
trans-fats, 350
transgender, intersex or transsexual headspace clients, 135
Transition Care Program (TCP), 284, 285, 287
transplants, 144, 145



transport, *see* ambulance services; motor vehicles
transport accidents, 92
transport accidents as cause of death, 71, 72, 148
adults aged 25–44 years, 245, 246
geographical areas, 74
international comparisons, 498, 499
lives saved through road safety initiatives, 348, 349
young people, 232–4
transport accidents as cause of hospitalisations, 148, 149
cases saved through road safety initiatives, 348
young people, 232, 233
'treat' foods, 165, 219
treatments, *see* procedures and treatments
triage categories of emergency department presentations, 395, 398
arrival mode, 395, 397
episode end status, 402, 403
hour of presentation, 399
potentially avoidable emergency department presentations, 404
seen on time, 400–1, 487
'25 by 25', 94
type 1 diabetes, 141, 205
insulin pump users, 142
young people, 141, 223
type 2 diabetes, 141, 142
children, 141
risk factors, 102, 141
young people, 223

U

ulcers, 285
ultraviolet radiation, 112
underlying causes of death, *see* deaths and causes of death
underweight, 22
unemployment, *see* employment
unintentional injuries, *see* injuries
United Kingdom, 82, 250, 251
see also international comparisons
United Nations, 94
United States, 38, 179, 251
see also international comparisons
University of Western Australia, 136
unknown primary site cancer, 106
cause of death, 20, 71–3
unmet needs, 332, 333
unsafe sex, *see* sexual practices
upper and lower limb injury hospitalisations, 449
urology elective surgery waiting times, 409

V

vaccinations, *see* immunisation and vaccine preventable diseases
vaginal births, 195, 198
mothers with caesarean section history, 199
varicose veins, 410, 486, 489
vascular dementia, 271
vascular diseases, *see* cardiovascular disease
vascular surgery waiting times, 409
vegetable consumption, *see* nutrition and diet
very remote areas, *see* geographical areas
VET, *see* education
veterans and dependants, 40, 428
private hospital patients, 422
see also pharmaceuticals
Victoria, *see* states and territories
Victorian Cytology Service, 113
video-conferencing, 37
violence (assaults, physical abuse), victims of
alcohol-related, 168; young people, 230
child abuse and neglect, 208, 334
hospitalisations, 149
Indigenous Australians, 334
see also self-harm
vision
adults aged 25–44 years, 244
adults aged 45–64 years, 248
children, 204
hospitals and hospitalisations, 415, 416; elective surgery waiting times, 409, 410, 486
Indigenous Australians, 305, 486
older people, 258
young people, 223
see also cataracts; optical services
vocational education and training, *see* education
volatile solvent users hospitalised, 177
volunteers
ambulance services personnel, 387
older people, 267

W

waiting times
- dental services, 371; public, 84
- elective surgery, 409–12, 471, 486
- emergency departments, 399–402, 403, 471, 487
- GP appointments, 364

war veterans, widows and widowers, *see* veterans

water quality, 455, 457

wealth, 262

websites
- drug marketplaces, 183, 184
- *MyHealthyCommunities*, 437
- *MyHospitals*, 425, 437

weight, *see* body weight

well/bore water, 457

wellbeing, 3
- employed people, 251
- young people, 222
- *see also* mental health; self-assessed health status

Western Australia, 131, 135, 275
- *see also* states and territories

wholesale sales of alcohol data, 169

whooping cough, *see* pertussis

withdrawal contraceptive method, 230

women
- eating disorders, 225
- human papillomavirus (HPV) vaccination, 113, 154, 156, 157, 347
- hysterectomy and gynaecological surgery, 410, 426, 486, 489
- menopause, 247
- *see also* births and pregnancy; breast cancer; cervical cancer; *Principal referral and specialist women's and children's hospitals*; sex (gender)

work, *see* employment; health workforce

worked hours, 251

workers' compensation claims, 251, 252

working-age population, 241–55

working hours (full/part-time), 18, 242

World Alzheimer Report 2009, 273

World Health Organization (WHO), 6, 84
- health, definition of, 3
- health promotion and prevention, 343–4, 350
- health system, definition of, 33
- International Statistical Classification of Diseases and Related Health Problems, 70, 237

written asthma plans, 470, 482

Y

Years 3, 5, 7, and 9 literacy and numeracy standards, 310

Year 4 literacy and numeracy standards, 17

Year 12 completion rates, 17
- Indigenous Australians, 310, 331

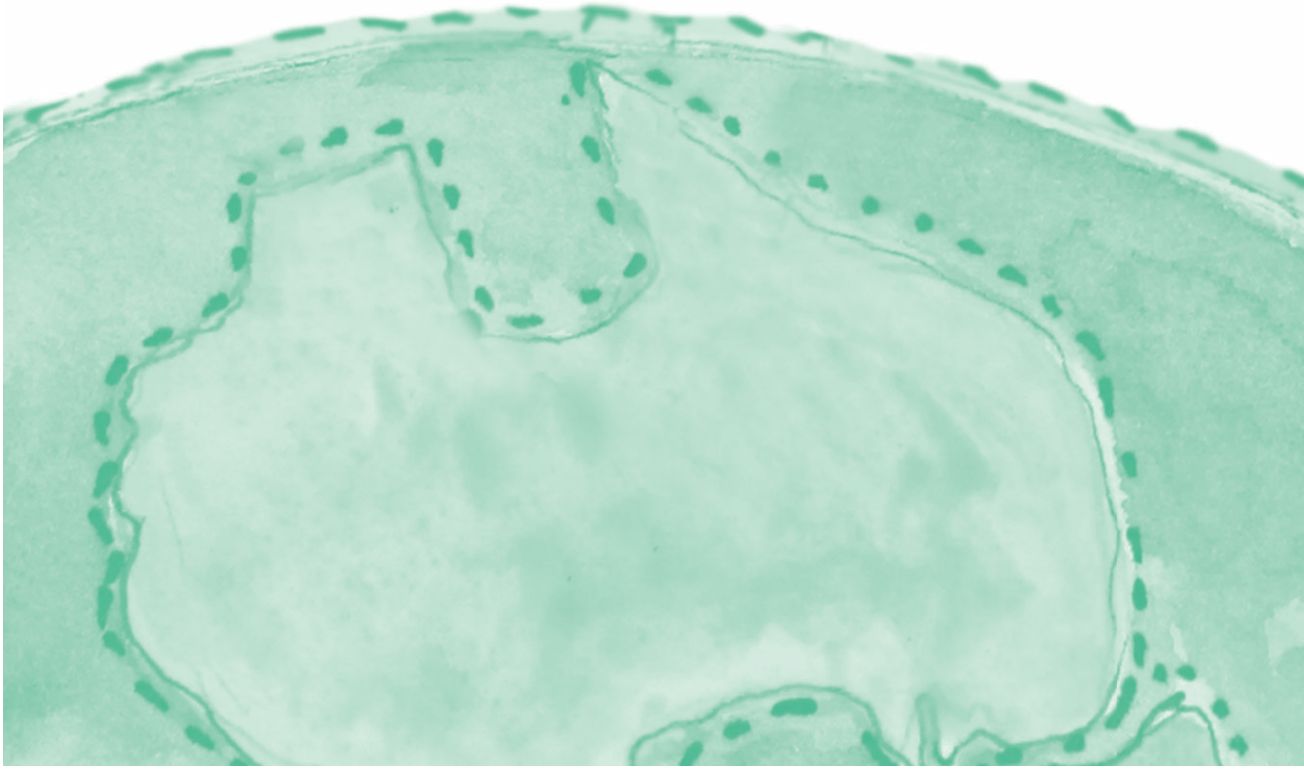
Year 12 retention rates, 310–11

young people, *see* children and young people

younger onset dementia, 274, 281
- Indigenous Australia, 275

Australia's health 2014—in brief

This edition of *Australia's health* is accompanied by a mini companion report, *Australia's health 2014—in brief*, that summarises key statistics and concepts from the main report.



Australia's health 2014 is the 14th biennial health report of the Australian Institute of Health and Welfare.

This edition combines analytical feature articles on highly topical health issues with short statistical snapshots in the following areas:

- Understanding health and illness
- The Australian health system
- How healthy are we?
- Leading types of ill health
- Health behaviours and risks
- Health through your life
- Indigenous health
- Preventing and treating ill health
- Indicators of Australia's health.