Australia's HEALTH 2002

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Senator the Hon Kay Patterson
Minister for Health and Ageing
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 2002,* 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 Sandra Hacker
Chairperson of the Board

24 May 2002

For health and welfare
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Health Industry and Investment Division

Health Services Division

New South Wales State Office

Office of Aboriginal and Torres Strait Islander Health

Population Health Division

Portfolio Strategies Division

South Australia State Office

Therapeutic Goods Administration

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Preface

Since 1988 *Australia's Health* has reported on the health status of Australians, determinants of health, risk factors affecting health, and services and resources applied within the healthcare system. This 2002 edition follows the framework agreed by Australian Health Ministers in 2001, and includes reporting on the six National Health Priority Areas.

The health of most Australians is very good and continues to improve, although regrettably there is still no evidence of improvement for Indigenous Australians. Health services are widely available and accessible, and of high quality. There are pressures at all levels of the health system, with around 640,000 people being employed in the sector to deliver a complex and demanding array of services. Together these account for 8.5% of Gross Domestic Product.

Australia's Health 2002 describes a wide array of factors that affect demand for, and supply of health interventions and services, which in turn contribute to overall health expenditure. Most interventions have an immediate effect, but for some, particularly those that impact on risk factors, the effects may not be obvious for some years. Thus evaluation of our success means examining changes in risk factor prevalence as well as final outcomes. In this light, as a nation we have been successful in reducing smoking rates, with only 19.5% of adults now smoking daily. Vaccination coverage has expanded and there has been an overall reduction in high blood pressure within the community. But there is still more to do, especially in areas such as physical inactivity, obesity and motor vehicle accidents.

On the treatment side, our cancer survival results are world class, and heart disease survival is also excellent. Again, there are areas of potential improvement. For example, by supporting better prescribing practices we may be able to reduce the incidence of pharmaceutical adverse events.

The authors of this report have provided excellent material for thoughtful reflection and analysis. Readers can develop an informed view of the pressures acting on the health system now, and likely future developments. The complex interactions among such a large number of factors makes summary difficult. But make sense of it we must, as there is no doubt that today's decisions on service provision, financing, infrastructure and training will have substantial effects on the nation's future health, the health system and its overall cost.

As always, feedback from you, our readers, is welcome.

The *Australia's Health 2002* author team was led by Geoff Sims, and then Ching Choi. I would particularly like to thank the whole team and the members of the Editorial Committee for another landmark report to continue the series proudly produced by the AIHW since 1988.

Richard Madden
Director

1 Introduction

As we enter a new millennium, Australians can expect their health and wellbeing to improve: death rates continue to fall, and access to treatment and other services is generally improving. Overall, the nature of illness and disability has dramatically shifted away from infectious diseases to chronic conditions, especially those influenced by lifestyle and behaviour. However, rates of disability in the population have remained stable.

This report—the eighth in the series of biennial reports on health in Australia produced by the Australian Institute of Health and Welfare (AIHW)—is a compilation of key health statistics and analysis based mainly on the work of the AIHW. Many of the topics covered in the report are more fully treated in separate AIHW publications, all of which are freely available on the AIHW web site (www.aihw.gov.au). Also available on the AIHW web site are interactive data matrices on a range of topics, currently including hospital episodes, cancer incidence, general practice and disability services.

1.1 Structure and highlights of the report

The report is broadly structured along the lines of the conceptual schema for health shown in Figure 1.1. This shows health and wellbeing as the outcome of many causes and processes modified by intervention activities that are supported by human and material resources.

This first chapter discusses what health is, what determines it, and the role of health information in supporting the needs of service users, providers and administrators in the system. It also includes an overview of the Australian health system.

Chapter 2 reports on the health status of Australians and describes the major diseases and conditions that have an impact on their health. It shows the following:

- Australians enjoy one of the highest life expectancies in the world—82.1 years for females and 76.6 years for males in 2000.
- Death rates from cancer as a whole have been falling over the past 20 years, although slowly. Five-year cancer survival increased between 1982–86 and 1992–94 from 43.8% to 56.8% for males and from 55.3% to 63.4% for females.
- Despite continuing gains in life expectancy during the late twentieth century, the rate of severe or profound disability (through activity limitation) appears to have been relatively stable over the past decade.

Chapter 3 focuses on the individual and environmental factors that determine health. It highlights the important role of the so-called SNAP set of risk factors in chronic disease (i.e. **s**moking, poor **n**utrition, **a**lcohol misuse and **p**hysical inactivity). Key findings include:

- Smoking rates have continued to decline, with less than 20% of Australians aged 14 or over smoking tobacco daily.

- Average energy intake increased by over 10% for boys and girls aged 10–15 years, and by around 4% for adults, between the mid-1980s and 1990s.

- In a new analysis of alcohol risk, the AIHW estimates that 35% of adult Australians drink at levels which are risky for short-term harm, and around 10% drink at levels which put them at risk of harm in the long term.

- Adult participation in sufficient physical activity for a health benefit declined from 62% in 1997 to 57% in 2000.

- Overweight and obesity remains a serious problem, affecting around 65% of men, 45% of women and 22% of children aged 2–17 years.

Chapter 4 discusses the health of particular population groups. It shows that although most Australians enjoy good health today, some groups in the population continue to suffer poor health, in particular Aboriginal and Torres Strait Islander peoples. Other findings in this chapter are:

- There are important differences in health status, health risk factors and health service access between urban and rural populations.

- Injury and poisoning are leading causes of child deaths, and asthma is the leading cause of disease burden among children; a concern for future health patterns is the high prevalence of tobacco smoking among young people.

- A clear trend is emerging in the analysis of age-specific fertility: among women aged less than 30 years the birth rates are in a long-term decline; this is partly offset by women in their late thirties and early forties whose birth rates are increasing.

Box 1.1: Australia at a glance

- *19 million people, including about 400,000 Indigenous people (2% of total)*
- *Average life expectancy at birth is 82 years for women, 77 for men*
- *Life expectancy for Indigenous people is much lower, at 63 years for women and 56 for men*
- *Fertility rate well below replacement level, middle-ranked among developed countries*
- *Climate varied but mainly continental and dry; highly urbanised, most people live in south-east seaboard region, high exposure to sun radiation*
- *Many cultural backgrounds, 23% of residents born overseas*
- *78% of 15–19-year-olds are at school or other educational institutions*
- *Per capita income high, gross domestic product (GDP) 12th among 30 OECD countries*
- *Services sector main contributor to GDP (63%)*
- *Unemployment under 7% in early 2002*
- *Health expenditure 8.5% of GDP in 1999–00*

Chapter 5 examines the cost of health services, employment in the health industry and the provision and use of health services. Highlights of this chapter include:

- In 1999–00, $53.7 billion was spent on health services in Australia. About 71.2% was funded by governments—48.0% by the Commonwealth Government (up from 44.2% in 1996–97), and 23.2% by State, Territory and local governments (up from 23.0%).
- There were 5.9 million separations from public and private hospitals in 1999–00, and a total of 22.6 million days spent in hospital. Separation rates for private hospitals rose by 19% between 1995–96 and 1999–00, and by 1.7% for public acute hospitals.
- Medicare provided benefits for 213.9 million services in 2000–01, 3.7% more than in 1998–99. The Pharmaceutical Benefits Scheme subsidised 148.1 million community prescriptions, 18.4% more than the 125.1 million in 1989–99.

Chapter 6 outlines the need for health information for a better understanding of current and emerging health issues, and the structures and processes involved. It describes key achievements and challenges for the health information system. One achievement has been the adoption of a framework for health system performance measurement (the National Health Performance Framework) and a set of criteria for the selection of performance indicators. In the past 2 years there has also been considerable expansion in health survey capacity across the country. The National Health Survey will be conducted on a 3-yearly basis from 2001, including substantial supplementation for Aboriginal and Torres Strait Islander peoples.

Statistical tables covering a range of topics are included after chapter 6. These tables contain data on population and fertility as well as health-related information. Many of the tables provide time series information, as well as comparing Australia with other countries.

1.2 Health and its determinants

What is health?

In 1946 the World Health Organization (WHO) described health as ‘a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity’ (WHO 1946). A more recent dictionary definition of health is ‘the general condition of the body or mind with reference to soundness and vigour’ (Macquarie 1997).

Together these two definitions convey the ideas that:

- health is an important part of wellbeing, of how people feel and function, and also contributes to social and economic wellbeing
- health is not simply the absence of illness or injury, and there are degrees of good health as well as of bad health
- health should be seen in a broad social context.

In short, healthy people feel and function well in body and mind and are in a position to keep doing so for as long as possible.

Despite the longevity and status of the WHO definition, it remains a challenge to fully measure the concepts contained in it. Most of the measures that are currently used relate to ill health (e.g. deaths, hospital episodes, incidence of disease). WHO now focuses on health outcomes as much as on health problems (WHO 2001).

In the last two decades, the effort has expanded to include measuring determinants of health (factors influencing health), functioning and disability, and describing the context in which health is assessed and managed. For each aspect of health that is measured, equity issues must also be addressed.

What determines and influences health?

Many things determine and influence health. Indeed, the dominant view presently is a 'multicausal' one, in which disease, disability and (ultimately) death are to be seen as the result of the interaction of human biology, lifestyle and environmental (including social) factors, modified by healthcare interventions.

Figure 1.1 presents a conceptual framework for health. Disability, disease and death are aspects of health and wellbeing, and all can be seen as the result of a complex interplay of many determinants described as individual or environmental. These causes and effects can be modified to various degrees by health protection, prevention and promotion, or by treatment and rehabilitation; in the end stages of life, palliation services feature. Such interventions are supported by human and material resources, including essential information via research, monitoring and evaluation.

Determinants of health include those that can be measured in an individual, although the measures of these determinants are often aggregated to population groups. Environmental factors can be physical, as in landscape and climate; biological, as in vegetation, the food supply, infectious agents and other animal life; and socioeconomic, as in politics, culture, standard of living and other economic factors, and interactions within and among communities.

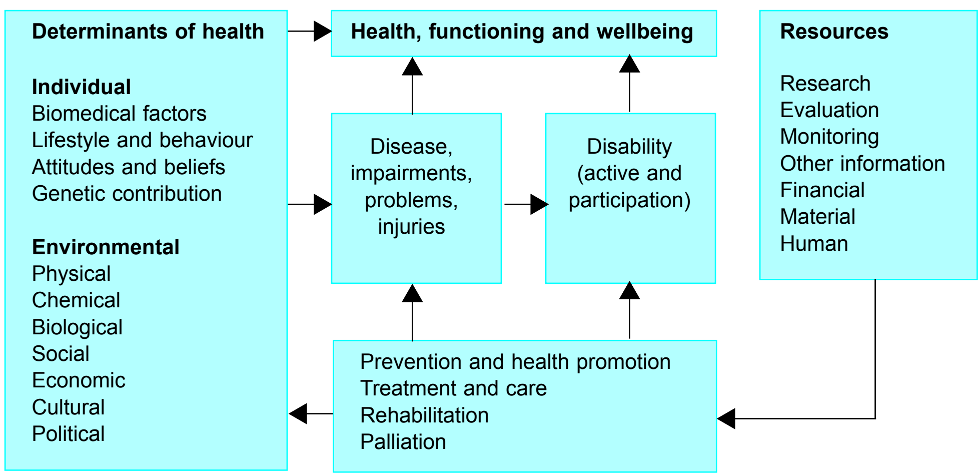

Figure 1.1: A conceptual framework for health

Environmental factors in turn overlap one another in many ways and are also influenced by the actions of individuals and groups.

In assessing interventions, the following are important:

- availability of and access to appropriate health services
- the responsiveness of the health system to a person's needs
- the quality of the services provided.

Implications for improving health

Health interventions can occur at many levels. These can range from clinical and preventive attention to individuals through to efforts to improve the physical, social and economic environment for special groups or the community as a whole. As well as seeking to reduce people's exposure to risks, some strategies aim to help people develop personal skills to exercise more control over their own health and environments, and to make healthy choices.

Given the great range of influences on health, many major improvements require a strong partnership between public health and clinical care, and also that the health sector work with other sectors to make the best use of limited resources. This further requires that other sectors take into account the possible health impact of their decisions.

Improvements have occurred among all the major Australian socioeconomic groups, even though there are continuing large inequalities between them in their levels of health. However, to achieve the full scope of improvement also requires significant social changes such as reducing educational and economic disadvantage.

Solving these major issues often involves value judgments, and often includes political processes because of competing interests. Along with limited resources, the challenge requires choices, priority setting and trade-offs between the health sector and other sectors, between prevention and treatment services, and between the short term and longer term.

1.3 The role of health information

Health information is fundamental to developing effective health policies and programs, to coordinating treatment and care, and to empowering consumers.

Again using the structure of Figure 1.1, health information is about:

- quantifying the inputs to the health system
- monitoring and evaluating health programs
- extending and refining knowledge
- measuring the extent and distribution of health determinants and risk factors
- assessing the effectiveness (outcomes) of the system
- understanding the relationships among all of the above.

Australia has for the last decade given substantial attention to coordinating and structuring health information to support decision making. The National Health Information Agreement, made in 1993 between Commonwealth, State and Territory health agencies, the Australian Bureau of Statistics and the AIHW, now includes the Health Insurance Commission. A major product of this agreement is the *National Health Data Dictionary*, which is updated annually to provide standards for national health information and generally to be a guide for gathering health data.

There is also a burgeoning collection of information frameworks, indicator sets and national minimum data sets (i.e. an agreed set of data items on a particular topic that are collected in a uniform manner and collated for national reporting). Much effort in the past 2 years has gone into developing the National Health Performance Framework, under the auspices of the Australian Health Ministers' Advisory Council. This framework proposes a number of indicators to comprehensively cover aspects of performance at the organisational level and at the system level, while keeping a focus on equity issues and encompassing the role of health determinants (more detail can be found in Chapter 6).

With increasing electronic availability of clinical information, opportunities are growing to improve heath information for populations and system-wide purposes. Provided personal privacy and confidentiality are properly protected richer data sets will become possible to improve health and health services.

1.4 The Australian health system

The Australian health system is widely regarded as being world-class, in terms of both its effectiveness and efficiency. This is largely achieved as a result of partnerships between individual Australians and families and healthcare professionals. People's decisions about lifestyle, self-care, and seeking and acting on professional help, and their participation in the development of public policy at many levels, all contribute to shaping the Australian health system. Increasingly, detailed information is available to and accessed by individuals, especially via the Internet.

The system is complex, with many types and providers of services and a range of funding and regulatory mechanisms. Those who provide services include medical practitioners, other health professionals, hospitals, and other government and non-government agencies. Funding is provided by the Commonwealth (federal) Government, State and Territory governments, health insurers, individual Australians and a range of other sources.

The Commonwealth's funding includes two major national subsidy schemes, Medicare and the Pharmaceutical Benefits Scheme. These schemes cover all Australians and subsidise their payments for private medical services and for a high proportion of prescription medications bought from pharmacies. The Commonwealth and State governments also jointly fund public hospital services so they are provided free of charge to patients. Between them, these three funding provisions aim to give all Australians, regardless of their personal circumstances, access to adequate health care at an affordable cost or no cost. These arrangements, with minor modifications, have been supported by successive governments for almost 30 years.

Many patients' first contact with the health system is through a general medical practitioner (GP). Patients can choose their own GP and are reimbursed for all or part of the GP's fee by Medicare, depending on the GP's billing arrangements. For specialised care, patients can be referred to specialist medical practitioners, other health professionals, hospitals or community-based healthcare organisations. Community-based services, some of which can also be accessed directly by patients, provide mental health, family planning and other specialised care and treatment, usually funded through Medicare or other government programs.

Patients can access public hospitals through emergency departments, where they may present on their own initiative, or via the ambulance services, or after referral from a medical practitioner. Admitted patients are charged nothing for their treatment or accommodation, unless they choose private treatment. Emergency department and outpatient services are free.

Australians may also choose to be treated in a private hospital, or be treated as private patients in a public hospital. Private patients can choose their own doctor, and they must pay for the hospital's services, with or without the support of private health insurance, or through other arrangements such as compensation. Medicare subsidises the fees charged by doctors for services provided to private patients in hospitals, and private health insurance funds also contribute towards medical fees for insured patients. No-gap or known-gap arrangements are increasingly being agreed on between hospitals and insurers.

Since the late 1990s, various Commonwealth incentives encouraged people to take up and retain private health insurance. There are virtually no employer-based health insurance schemes in Australia.

Australians also visit dentists and other private sector health professionals of their choice. Charges are met by the patients themselves, or with support of private health insurance. Limited provision of these services is available from the public sector on a needs-tested basis.

The health service system is regulated in various ways. Private hospitals are licensed by State and Territory governments. Medical practitioners and other health professionals are registered for practice in each State and Territory. The Commonwealth's regulatory roles include overseeing the safety and quality of pharmaceutical and therapeutic goods and appliances, and regulating the private health insurance industry. Commonwealth and State policies also regulate food safety and product labelling, and encourage quality across the health system.

An important addition to the services outlined above is the provision of public health services, community health services and ambulance services, largely funded by Commonwealth, State and Territory, and local governments. Public health services include:

- activities to ensure food quality
- immunisation services and other communicable disease control (including biosecurity)

- public health education campaigns (including health promotion in the areas of nutrition and physical activity)
- injury prevention activities
- programs to reduce the use of tobacco, alcohol and illicit drugs, and their harmful effects on individuals and communities
- environmental monitoring and control
- screening programs for diseases such as breast cancer.

Essential support to the health service system is given by many other agencies. Research is fostered and funded through the National Health and Medical Research Council. Statistical agencies provide the information needed for prevention, detection, diagnosis, treatment, care and associated policy. Consumer and advocacy groups contribute to public discussion and policy. Professional associations for medical practitioners and other health professionals help set professional standards and clinical guidelines. Universities and hospitals undertake training of undergraduate and postgraduate health professionals. Voluntary agencies contribute in various ways, including raising funds for research, running education and health promotion programs, and coordinating voluntary care.

Although they are not seen as part of the health system, many other government and non-government organisations play a role because of their influence on health. Departments of transport and the environment, the media and the food industry are just a few examples.

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2 Health of Australians

This chapter provides an overview of the health of the Australian population as a whole, drawing on the most recent available data. It covers major dimensions of health status, highlights areas of importance and, where possible, provides trends over time to show whether there has been improvement or not.

The chapter is divided into six sections:

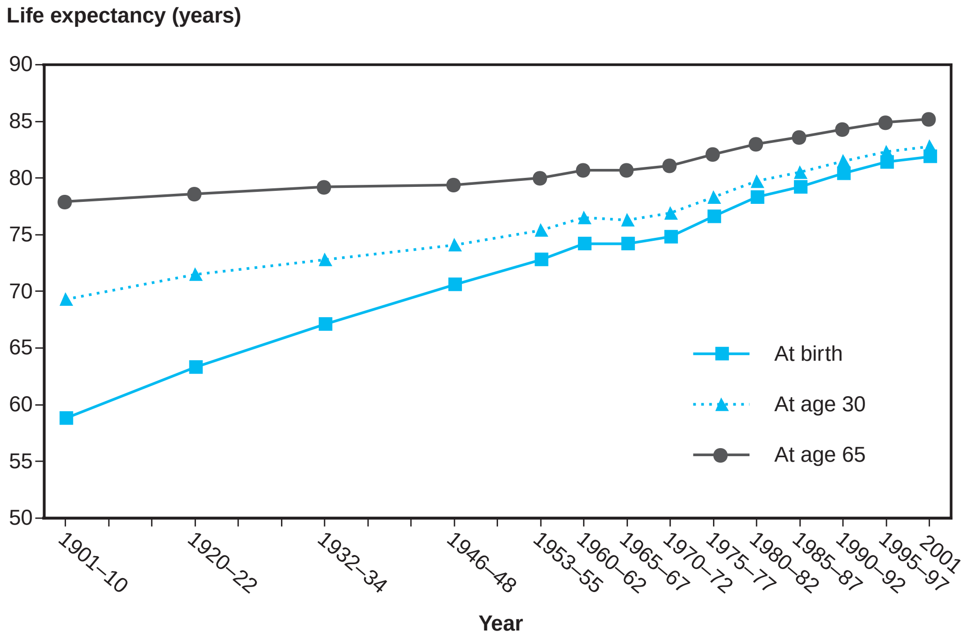
- **Health** covers components such as life expectancy, self-reported health, oral health, immunological health and sexual health.
- **Functioning and disability** describes disability and provides information on the level and types of disability in the Australian population.
- **Mortality** documents the leading causes of death for Australia as a whole and for various age groups, the proportion of total deaths that occur among those age groups, and longer term trends in death rates for a range of major diseases.
- **Non-communicable diseases and conditions** covers a range of important diseases and conditions, including injuries, that have a significant impact in Australia through illness, disability or death.
- **Communicable diseases** provides information on acute respiratory infections, bloodborne diseases such as viral hepatitis and HIV/AIDS, non-HIV sexually transmitted infections, vaccine-preventable diseases, and topical problems such as meningococcal and Creutzfeldt-Jakob diseases.
- **National Health Priority Areas diseases and conditions** summarises data on the combined impact of six major diseases and conditions, namely cardiovascular diseases, cancers, injuries, mental problems, diabetes mellitus and asthma. These have been chosen for special focus as National Health Priority Areas by the Commonwealth, State and Territory governments.

2.1 Health

Life expectancy and longevity

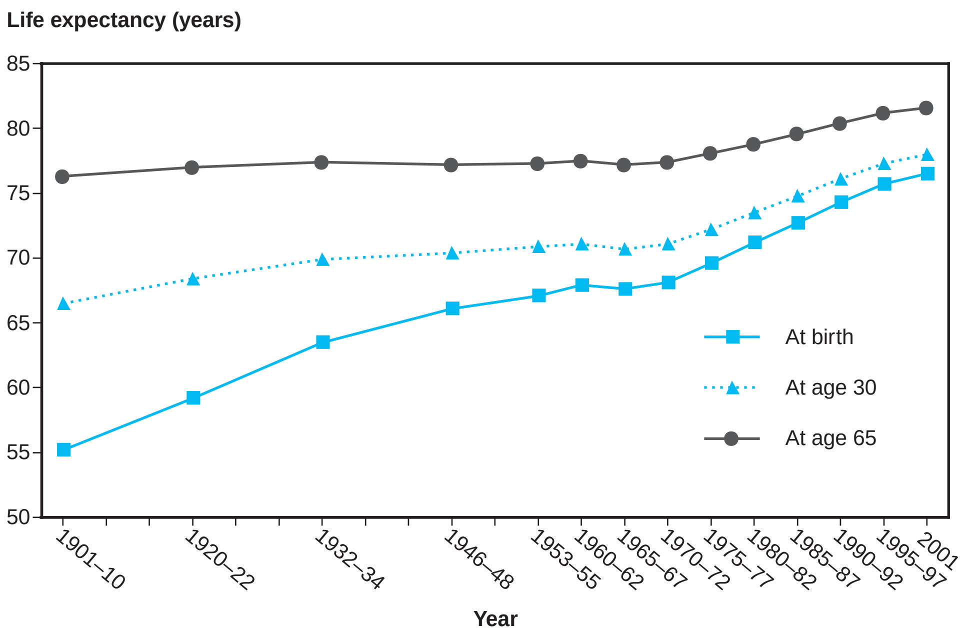
Life expectancy

In 2000, life expectancy at birth was 76.6 years for Australian males and 82.1 years for females. In contrast, in the 1901–1910 period a male could expect to live 47.2 years and a female 58.8 years. These are increases in expected years of life of almost 30 years (60%) for males and of 23 years (40%) for females during the twentieth century.



Source: Australian Government Actuary Life Tables 1995–97.

Figure 2.1: Life expectancy, females, 1901 to 2001



Source: Australian Government Actuary Life Tables 1995–97.

Figure 2.2: Life expectancy, males, 1901 to 2001

Over the long term, reductions in infant and child mortality have been the greatest contributors to this improvement. However, significant gains have also occurred through reductions in death rates among the middle-aged and the elderly, especially for diseases of the circulatory system (heart disease and stroke) over the past few decades. Males aged 30 in 2001 could expect to live to 78.0 years and females to 82.8 years. This is about 12 years more than the respective life expectancies in the period 1901–1910. Males aged 65 years in 2001 could expect to live to 81.6 years and females to 85.2 years, about 6 years more than for those in 1901–1910.

These trends have important consequences. Not only do they increase the proportion of the population reaching an advanced age, but they also influence health, disease, and disability patterns in a population.

Life expectancy for population groups

Life expectancy is not uniform across population groups within Australia. Aboriginal and Torres Strait Islander peoples have a much lower life expectancy at birth than the national average. Indigenous people born in the period 1998–00 are expected to live about 20 years less than the rest of the Australian population, Indigenous males to about 56 years and females to about 63 years (ABS 2001a). Among broad socioeconomic groups in 1996, males in the most disadvantaged fifth were expected to live 3.6 years less than those in the most advantaged fifth, and for corresponding females the difference was 1.9 years (AIHW: Mathers et al. 1999b).

Life expectancy also shows regional variation. Life expectancy at birth in the Northern Territory is lower by 5.3 and 6.5 years for males and females respectively, compared with the national average. These differences reflect the higher death rates of the Indigenous populations, which make up close to 30% of the Northern Territory population (AIHW: Mathers et al. 1999a).

International comparisons

Overall, Australians enjoy one of the highest life expectancies in the world. In 2000, the male life expectancy of 76.6 years can be compared with the highest recorded, in Japan (77.5) and Sweden (77.3). The highest female life expectancies were recorded in Japan (84.7 years) and France (83.1), compared with Australia's 82.1. Australian life expectancy is a little higher than that of countries such as Canada, Norway and Spain, and significantly higher than that of countries such as New Zealand, the United Kingdom and the United States (Table 2.1).

Most of the countries compared in Table 2.1 are from the more developed regions of the world. The life expectancies of less developed countries are considerably lower. Regions defined by the United Nations as being made up of less developed countries (i.e. countries outside Europe, North America, Australia, Japan and New Zealand) have an overall life expectancy of about 64 years, compared with 75 years for developed regions. The African continent has the lowest life expectancy at birth (less than 50 years).

Australia is part of the Asia and the Pacific region, whose average life expectancy in 2000 was only 66 years for males and 69 years for females. However, life expectancy in the region varies greatly, including 63 years for males and 64 for females in India and corresponding figures of 64 and 68 for Indonesia, 69 and 73 for China, 75 and 80 for Singapore and 76 and 82 for Hong Kong SAR (ESCAP 2000).

'Healthy life expectancy'

As part of the measure of overall life expectancy, the World Health Organization (WHO) has proposed 'healthy life expectancy' (HALE) as a measure of the expected number of years to be lived without reduced functioning. HALE calculations adjust the overall life expectancy by the years of life lived with reduced functioning because of ill health (WHO 2002).

Australia's 'healthy life expectancy' is among the highest in the world. Australian males can expect to live 69.6 years of life without reduced functioning, ranking them sixth in the world, and females 73.3 years, making them third. These figures represent a very

Table 2.1: 'Healthy life expectancy', selected countries, 2000

Males				Females			
		'Healthy life expectancy'				'Healthy life expectancy'	
Country	Life expectancy	Years	Per cent[(a)]	Country	Life expectancy	Years	Per cent[(a)]
Japan	77.5	71.2	91.9	Japan	84.7	76.3	90.1
Switzerland	76.7	70.4	91.9	Switzerland	82.5	73.7	89.3
Sweden	77.3	70.1	90.7	**Australia**	**82.1**	**73.3**	**89.3**
Iceland	77.1	69.8	90.5	France	83.1	72.9	87.8
Greece	75.4	69.7	92.4	Italy	82.4	72.8	88.4
Australia	**76.6**	**69.6**	**90.9**	Sweden	82.0	72.7	88.7
New Zealand	75.9	69.5	91.5	Iceland	81.8	72.6	88.7
Italy	76.0	69.5	91.5	Austria	81.4	72.5	89.1
Denmark	74.2	68.9	92.8	Spain	82.3	72.5	88.1
Norway	75.7	68.8	90.8	Greece	80.8	72.3	89.5
Spain	75.4	68.7	91.2	Norway	81.4	72.3	88.8
France	75.2	68.5	91.1	New Zealand	80.9	72.1	89.0
UK	74.8	68.3	91.3	Canada	81.5	71.7	88.0
Canada	76.0	68.3	89.8	Germany	80.6	71.5	88.6
Austria	74.9	68.1	91.0	Finland	80.9	71.5	88.3
Ireland	74.1	67.8	91.5	UK	79.9	71.4	89.4
Belgium	74.6	67.7	90.8	Belgium	80.9	71.0	87.8
Germany	74.3	67.4	90.7	Ireland	79.7	70.9	89.0
Singapore	75.4	66.8	88.6	Denmark	78.5	70.1	89.3
Finland	73.7	66.1	89.7	Singapore	80.2	68.9	85.9
USA	73.9	65.7	88.9	USA	79.5	68.8	86.6
Portugal	71.7	63.9	89.1	Portugal	79.3	68.6	86.5
Poland	69.2	59.3	85.6	Poland	77.7	64.3	82.8
Russia	59.4	50.3	84.7	Russia	72.0	60.6	84.2
South Africa	49.6	43.0	86.7	South Africa	52.1	43.5	83.5

(a) Per cent of life expectancy spent without loss of functioning capacity.

Source: WHO 2002.

high proportion of life with full functioning capacity. Australian males and females can expect to live 90.9% and 89.3% of their lives with full functioning capacity. This compares very favourably with other countries that have high life expectancies. Australian males lie twelfth behind Danish males who have a proportion of 92.8%, and Australian females lie fourth behind Japanese females who have a 90.1% proportion (WHO 2002) (Table 2.1).

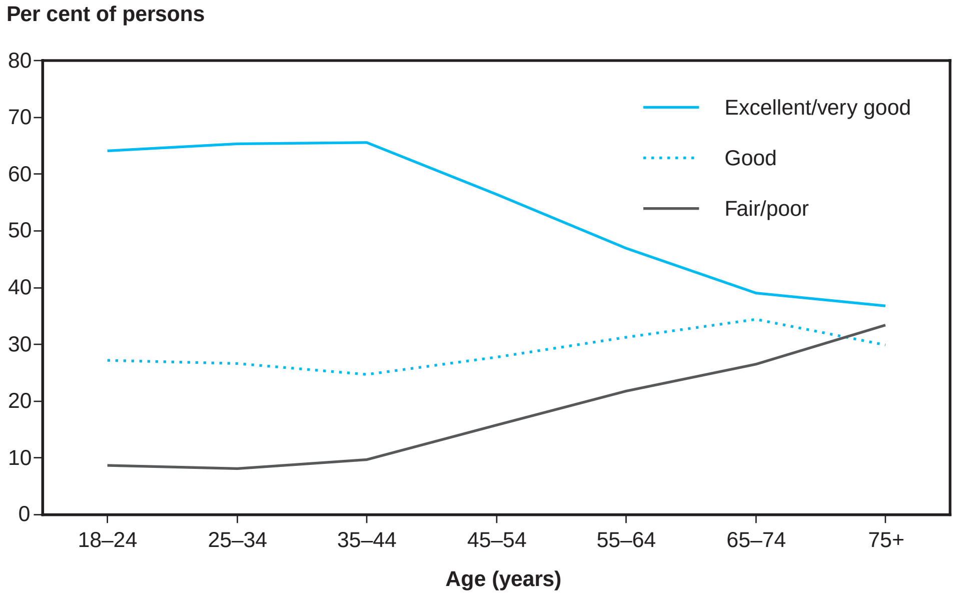
Self-reported health

People's perception of their own health has been shown to be a powerful, independent predictor of their future health care use and survival (Miilunpalo et al. 1997; Idler & Benyamini 1997).

This section discusses how Australians rate their own health and wellbeing, based on self-assessed health status data from the 1989–90 and 1995 National Health Surveys, and the 1997 National Survey of Mental Health and Wellbeing of Adults, all conducted by the Australian Bureau of Statistics (ABS).

Self-assessed health status

Just over half (57%) of people aged 18 years and over reported their overall health as excellent or very good in 1997, and a further 28% reported that they were in good health. Proportions were similar for the two sexes. The remaining 15% rated their health as either fair or poor. In interpreting these findings, note that some people in poorer health were not included in the survey—for example, people living in institutions such as hospitals and nursing homes.



Source: AIHW analysis of National Survey of Mental Health and Wellbeing.

Figure 2.3: Self-assessed health status, 1997

Self-assessed health status is strongly related to age. In the 1997 survey the proportions reporting excellent or very good, good, and fair or poor health remained relatively unchanged up to the age group 35–44 years. At ages over 44 years, the proportion reporting excellent or very good health declined with increasing age, from 66% at ages 35–44 to 37% at ages 75 and over, and the corresponding proportion reporting fair or poor health increased from 10% to 33% (Figure 2.3).

Self-reported health and socioeconomic status

The link between health and socioeconomic status has been clearly shown in studies both in Australia and overseas (Wilkinson & Marmot 1998), with lower socioeconomic status generally being associated with poorer overall health.

As expected, the proportion of people who report their health as only fair or poor shows a marked trend across socioeconomic groups. People who are less educated, unemployed or living in households with low income all report poorer health (Table 2.2).

Also, as the 1990s progressed, the proportion reporting good health increased across most socioeconomic groups. The only exception was among the unemployed, with 21% reporting fair or poor health in 1997—up slightly from 19% in 1995 but still lower than 25% in 1989–90.

Table 2.2: Adults who say their health is only 'fair' or 'poor', 1989–90 to 1997

Socioeconomic group	1989–90	1995	1997
Sex			
Men	20.5	17.3	15.6
Women	21.1	16.6	13.5
Smoking			
Smoker	26.2	22.5	n.a.
Non-smoker	18.4	15.0	n.a.
Education			
Secondary	24.4	19.6	17.8
Post-secondary	18.4	14.5	13.4
Bachelor's degree and higher	11.3	9.2	6.8
Employment			
Unemployed	24.9	19.4	21.3
Employed	12.7	9.3	7.8
Income			
Low	32.1	24.3	n.a.
Middle	20.4	25.2	n.a.
High	14.1	13.0	n.a.

Notes

1. The age groups for the different categories for self-reported health are: 18 years and over for sex, smoking and income; 20 years and over for education; and 18–64 years for employment.
2. All proportions have been age-standardised using the 1991 total Australian population.

Source: AIHW analysis of 1989–90 and 1995 ABS National Health Surveys, and 1997 ABS National Survey of Mental Health and Wellbeing of Adults.

Oral health

Dental decay and gum diseases remain among the most prevalent illnesses for Australians. Oral diseases are a largely silent epidemic, but one which causes widespread infection and disability.

Australia enjoys a high level of oral health among most children. Using the internationally accepted comparison age and indicator for child oral health reveals that, among OECD countries, Australian 12-year-old children have the second lowest number of permanent teeth with some dental decay. Whereas health policy aimed at improving child oral health (such as fluoridation of water supplies) has been largely successful, there are some concerning signs. First, the time-series information available indicates that improvements in child oral health may have peaked and even begun to reverse. Second, there is a substantial social gradient in child oral disease that indicates a small disadvantaged group of children who experience a disproportionate share of dental decay.

However, these problems are overshadowed by persistent high levels of oral disease, particularly dental caries, among adults. Only some of the improved oral health of children has been carried through to adulthood. By mid-life, decay experience is extensive and as yet has shown only modest improvements over recent decades. Older adults have surprisingly high levels of current decay, despite the loss (extraction) of many more susceptible teeth earlier in life.

Child dental health

The following data on child oral health are based on information collected in the Child Dental Health Survey, a surveillance activity undertaken by the Australian Institute of Health and Welfare (AIHW) Dental Statistics and Research Unit.

After a continuing improvement in primary and secondary school children's oral health from the 1970s, it now appears that the declines in dental decay have slowed and, in some cases, levels of decay are beginning to increase. Oral health in children is most often assessed by their dental decay experience, expressed as a count of the number of teeth currently decayed, the number that have been extracted as a result of having been decayed, and the number that have received fillings. The average number of decayed, missing or filled teeth in the deciduous dentition ('baby' or primary teeth) of children aged between 5 and 10 years declined markedly between 1989 and 1996, but has since increased for children aged 5, 6 and 8 while reducing only slightly for the other age groups (Table 2.3) (Armfield et al. 2001).

Dental caries experience in the permanent dentition ('adult' teeth) shows a similar pattern, declining between 1989 and 1996 but then increasing for children aged 7, 8, 9 and 10 (Table 2.4). Between 1996 and 1998 only 12-year-olds showed any appreciable reductions in decay experience. Although the caries experience of children is improved over levels first observed in 1977, it is now becoming apparent that improvements have stalled or that the caries experience of children may be beginning to increase once again.

Table 2.3: Primary teeth with caries experience[(a)], students 5 to 10 years old, 1989 to 1998 (average number of teeth)

	Age (years)					
	5	6	7	8	9	10
1989	2.07	2.15	2.38	2.31	2.26	1.88
1990	1.85	2.06	2.20	2.31	2.28	1.78
1991	1.78	1.94	2.13	2.24	2.22	1.81
1992	1.80	1.95	1.93	2.21	2.11	1.74
1993	1.76	1.90	2.01	2.15	2.13	1.73
1994	1.56	1.79	1.95	2.13	2.01	1.71
1995	1.49	1.73	1.87	2.05	1.97	1.61
1996	1.26	1.45	1.66	1.68	1.72	1.47
1997	1.28	1.50	1.63	1.78	1.75	1.47
1998	1.37	1.51	1.62	1.81	1.70	1.40

(a) As measured by dmft index (number of decayed, missing and filled primary teeth).

Source: AIHW DSRU Child Dental Health Survey, Australia 1989–98.

Table 2.4: Permanent teeth with caries experience[(a)], students 6 to 12 years old, 1989 to 1998 (average number of teeth)

	Age (years)						
	6	7	8	9	10	11	12
1989	0.09	0.26	0.46	0.65	0.83	1.37	1.56
1990	0.10	0.24	0.42	0.63	0.76	1.00	1.44
1991	0.09	0.24	0.40	0.56	0.83	0.91	1.29
1992	0.09	0.21	0.38	0.53	0.69	0.90	1.22
1993	0.08	0.22	0.36	0.51	0.66	0.90	1.10
1994	0.11	0.23	0.37	0.47	0.65	0.88	1.09
1995	0.10	0.20	0.36	0.46	0.57	0.79	1.01
1996	0.07	0.18	0.30	0.38	0.49	0.66	0.90
1997	0.07	0.17	0.30	0.42	0.52	0.65	0.86
1998	0.07	0.21	0.32	0.41	0.58	0.64	0.83

(a) As measured by DMFT index (number of decayed, missing and filled permanent teeth).

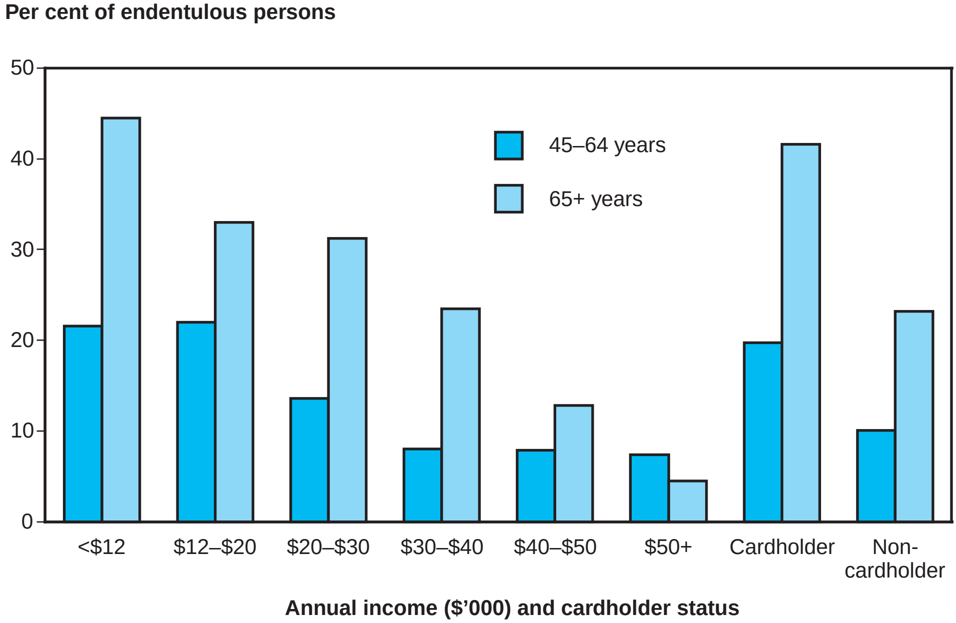
Source: AIHW DSRU Child Dental Health Survey, Australia 1989–98.

Oral health of Australian adults

Historically, increasingly high percentages of older adults were edentulous (having lost their natural teeth), leading to a diminishing burden of oral disease due to fewer teeth exposed to disease processes. Complete tooth loss has been declining rapidly over recent decades. Improved treatment options that encourage the retention of teeth and improved community expectations to keep teeth for life may result in further decreases in tooth loss.

For instance, among Australian adults aged 65 years and over the percentage edentulous has decreased from 66% in 1979 to 51% in 1989 to 38% in 1999.

Despite this great improvement, some population groups appear to be left behind in this decline. These include lower income adults and those who hold a health concession card conferring eligibility for public dental care.



Source: AIHW Dental Statistics and Research Unit National Dental Telephone Interview Survey 1999.

Figure 2.4: Complete tooth loss among adults aged 45 years and over, 1999

Tooth loss is unequally distributed socially, with progressively greater impact evident among lower income groups. Figure 2.4 presents the percentage of edentulous people aged 45 years and over within income groups.

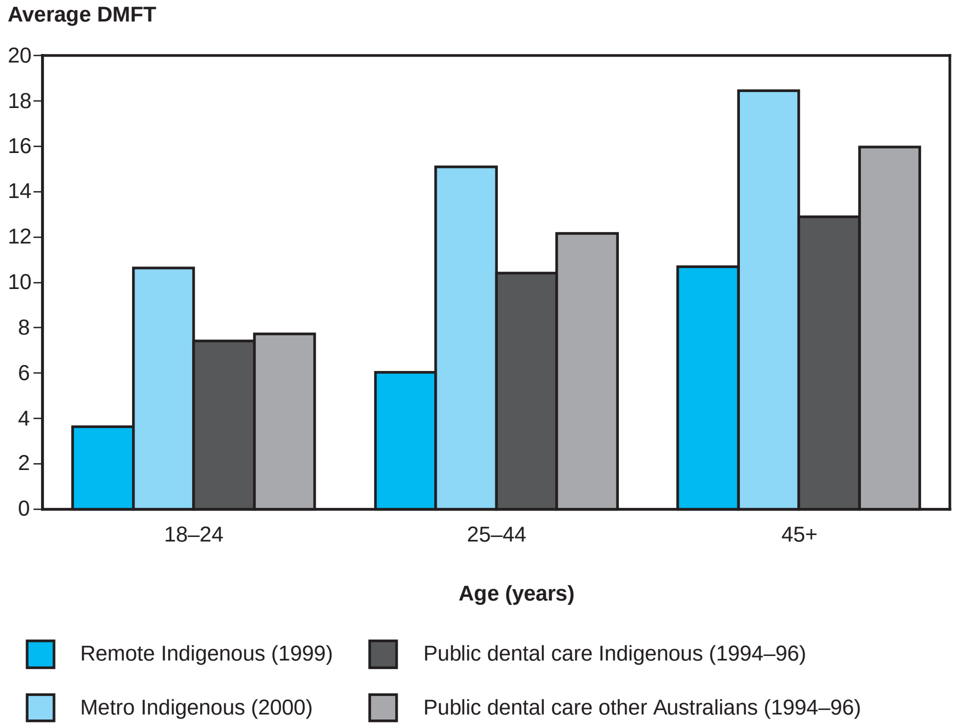
Complete tooth loss decreased sharply across income in both the age groups 45–64 years and 65 years and over. Cardholders had a higher rate of complete tooth loss than non-cardholders with the difference evident in both age groups (Figure 2.4).

Indigenous adult oral health

Data on Indigenous adults are available only from sporadic surveys. The National Oral Health Survey of Australia in 1987–88 did not collect data on Indigenous status, although a special supplementary survey was undertaken on 35–44-year-olds in Central Australia.

Data from the National Dental Telephone Interview Survey 1994–96 indicated that a higher proportion of Indigenous Australians than other Australians were edentulous, particularly over the age of 65 years (72% with no natural teeth compared with 28%).

Figure 2.5 shows the average number of teeth with caries experience by age group for Indigenous people in remote communities in South Australia and the Northern Territory (1999), an Indigenous metropolitan clinic (2000) and those who were seen in public clinics in the period 1994–96, compared with other Australians seen across the same period. Caries levels of the remote communities are lowest of the four groups and the caries experience in the metropolitan clinic is the highest in all age groups.



Note: Indigenous figures based on oral health data processed by the Dental Statistics and Research Unit in collaboration with participating Indigenous communities.

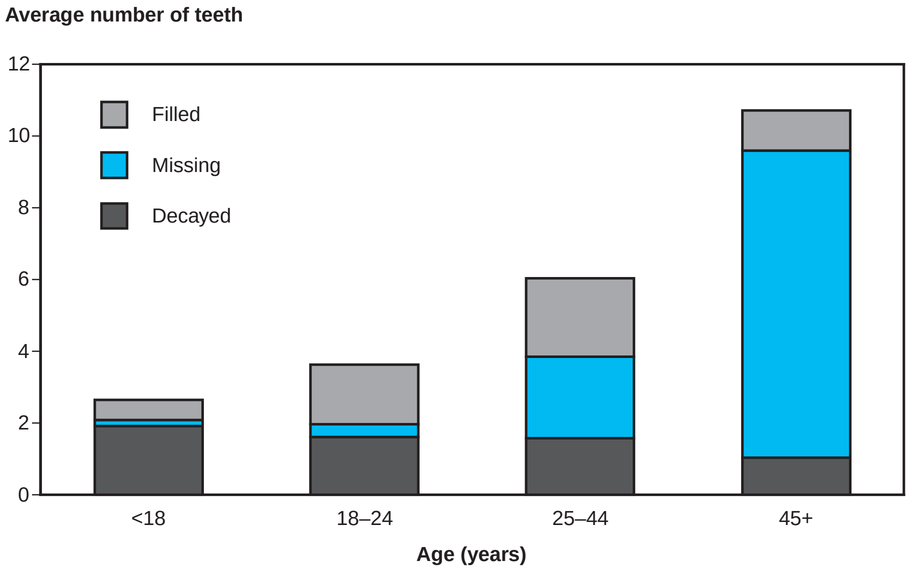
Sources: AIHW Dental Statistics and Research Unit surveys: oral health survey of Indigenous persons — remote 1999; oral health survey of Indigenous persons — metro 2000; Adult Dental Programs Survey 1994–96.

Figure 2.5: Caries experience (DMFT) of Indigenous persons

Figure 2.6 shows the average number of decayed, missing or filled teeth of Indigenous Australians in remote areas in 1999. In the youngest age group, untreated decay accounts for over 70% of the caries experience. Levels of filled teeth and teeth with untreated decay are comparable in the 18–24 age group. By the 25–44 age group, the largest component is missing teeth, which is absolutely dominant in the oldest age group.

The substantial increase in missing teeth in the older age groups of Indigenous adults in remote communities may reflect a predominance of tooth extraction as a treatment for caries or the contribution to tooth loss of other oral diseases. Gum disease is regarded as the second most frequent cause of tooth extraction, although for most Australians this contributes to less than 20% of all tooth loss.

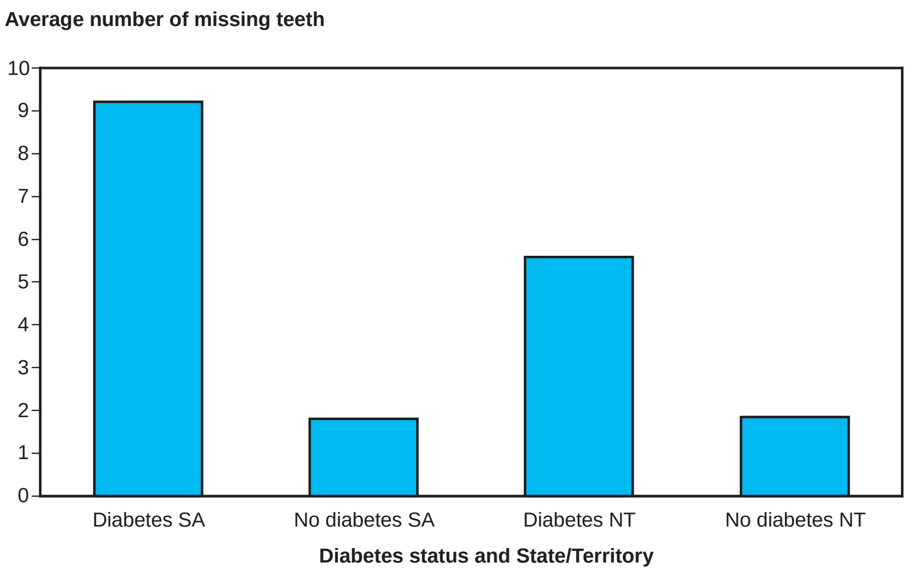
The Indigenous population is known to have higher levels of Type 2 diabetes than other Australians, and diabetes and gum diseases have been shown to be associated. This relationship was investigated. When the average number of missing teeth was examined by diabetic status (Figure 2.7), people with diabetes were found to have significantly more missing teeth, indicating that gum disease known to be associated with diabetes may have contributed to tooth loss.



Note: Indigenous figures based on oral health data processed by the Dental Statistics and Research Unit in collaboration with participating Indigenous communities.

Source: AIHW Dental Statistics and Research Unit oral health survey of Indigenous persons — remote 1999.

Figure 2.6: Average number of teeth with caries experience among Indigenous adults in remote communities, 1999



Note: Indigenous figures based on oral health data processed by the Dental Statistics and Research Unit in collaboration with participating Indigenous communities.

Source: AIHW Dental Statistics and Research Unit oral health survey of Indigenous persons — remote 1999.

Figure 2.7: Average number of missing teeth by diabetic status among Indigenous adults in remote communities, 1999

Knowledge about the risk factors and effective treatments of gum diseases among Indigenous adults is currently rudimentary. However, control of levels of dental plaque and cessation of smoking are two of the factors thought to be important. In remote communities the practice of brushing teeth is not common. In addition, smoking is a recognised risk factor for gum disease and higher numbers of Indigenous people smoke than other Australians. Both of these factors may increase the risk of gum disease.

In remote areas the prevalence of diabetes and other chronic diseases has increased substantially over the past 20 years. Increased levels of tooth loss seem to be related to these general health changes.

Immunological health

The immunological health of an individual depends upon the ability of their body to rapidly recognise and effectively protect itself against infection. An infection does not necessarily lead to significant illness. The great majority of microorganisms to which people are exposed cause only mild symptoms or discomfort. There are, however, a minority of organisms, such as those which cause measles or legionnaire's disease, which can lead to severe illness or death if introduced into the body.

Without a functioning immune system, humans can be quickly overwhelmed by infections. The immune system also contributes to a range of other health outcomes. A number of primary disease-prevention strategies take advantage of the human immune system to prevent or reduce the severity of diseases in individuals and the community. Paramount among these is vaccination.

Although it greatly strengthens the immune response, vaccination is not without risks. An extremely small number of people may have a severe reaction to a vaccination. However, the risks of becoming ill with a childhood disease and of suffering severe side effects or death as a result are very much higher than the risk of an adverse reaction to a vaccination. The rates of adverse reactions to the vaccines on the National Health and Medical Research Council (NHMRC) schedule (recommended for routine vaccination for Australian children) compared with the known effects of various diseases are shown in Table 2.5.

Vaccines currently used in the standard schedule of childhood immunisation in Australia are diphtheria, tetanus, pertussis, measles, mumps, rubella, polio, *Haemophilus influenzae* type b (Hib) and hepatitis B (NHMRC 2000). All these vaccines are highly effective, ranging from 84% to 95% (MacIntyre & Gidding 2001).

Monitoring immunisation levels

The level of immunity of a population can be monitored in several different ways. The most useful indicator is examination of antibody levels in the blood. This type of information is currently not collected for the Australian population. Another indicator of the level of immunity is the extent of vaccination coverage. Although Australia first instituted a childhood vaccination program in the 1920s, information on coverage was less than satisfactory until the establishment of the National Notifiable Diseases Surveillance Scheme (NNDSS) in 1991 and the Australian Childhood Immunisation Register (ACIR) in 1996 (Lister et al. 1999).

Table 2.5: Comparison of the effects of diseases for which the NHMRC recommends vaccination of children with the side effects of those vaccinations

Disease	Effects of disease	Side effects of vaccination
Diphtheria	Death in 6.6% of cases. Paralysis and heart failure.	Local inflammation or fever in 10%. Very rare other adverse effects.
Hepatitis B	Liver cancer or cirrhosis in 33% of chronic cases.	Pain and fever in between 1% and 7%. Anaphylactic shock in 1 in 600,000 or 0.00016%.
Haemophilus influenzae type b	Death in 5%, permanent brain damage in 25% of cases.	Local discomfort or inflammation in 5%, fever in 2%.
Measles	Pneumonia in 4%, encephalitis in 0.05%, death in 0.005% and brain damage in 0.02% of cases. Brain degeneration, which is always fatal, in 0.004% of cases.	Discomfort, local inflammation or fever in 10%. Non-infectious rash in 1%. Encephalitis in 1 per 1 million vaccinations.
Mumps	Encephalitis in 0.5% of cases, inflammation of testicles in 20% of post-pubescent males.	Swelling of salivary glands in 1%. Mild encephalitis in 1 in 3 million vaccinations.
Pertussis (whooping cough)	Death in 0.5% of cases aged under 6 months from pneumonia or brain damage.	Local inflammation or fever in 10%. Very rare other adverse effects.
Polio	Death in 5% and permanent paralysis in 50% of hospitalised cases.	Diarrhoea, headache and/or muscular pain in less than 1%. Paralysis of recipient or close contact in 1 in 2.5 million vaccinations.
Rubella	90% of infants whose mothers are infected 10 weeks after conception are born with major congenital abnormalities (deafness, blindness, brain damage, heart defects).	Discomfort, local inflammation and fever in 10%. Swollen glands, stiff neck or joint pains in 5%. Non-infectious rash in 1% and bruising or bleeding after first dose of MMR vaccine in 0.003%.
Tetanus	Death in 10% of cases.	Local inflammation or fever in 10%. Very rare other adverse effects.

Source: NHMRC 2000.

The ACIR was set up as part of the National Childhood Immunisation Program to collect information on the vaccination status of children under 7 years. It was developed in response to a decline in childhood immunisation in Australia and the resulting increase in the incidence of vaccine-preventable diseases in childhood. In 1997, as part of the 'Immunise Australia' program, a number of incentives were introduced to improve vaccination coverage in Australia comprising incentives for parents to improve compliance with the vaccination schedule and incentives for general practitioners who monitor, promote and provide age-appropriate immunisation services for children.

According to the Australian Standard Vaccination Schedule, a child who is fully immunised at 1 year of age has received three doses of diptheria/tetanus/pertussis (DTP) vaccine, three doses of oral polio vaccine and two or three doses of Hib vaccine (depending on the particular Hib vaccine used) (NHMRC 1997a, 2000). Full immunisation at 2 years of age requires a booster dose of DTP, a Hib booster and a dose of measles/mumps/rubella vaccine (MMR). Since the establishment of the ACIR and the 'Immunise Australia' program, the overall age-appropriate vaccination coverage for children at 1 year of age increased from 74.9% in 1997 to 91.2% in 2001 and that for children at 2 years increased from 63.8% in 1997 to 84.7% in 2000 (ACIR, Health Insurance Commission, unpublished data, 12 July 2001).

Allergies, auto-immunity and immunodeficiency

In certain circumstances the immune system of some people may overreact to some antigens so they suffer from allergies. In other cases, and for reasons not yet well understood, the immune system may fail to recognise the difference between its own body and foreign agents, and will attack cells in its own body. This is thought to be a major cause of a number of diseases, such as Type 1 diabetes and rheumatoid arthritis, that are understood as auto-immune diseases. In still other cases, foreign agents attack the body's immune system, leaving a person liable to suffer severe illnesses from other infectious agents, such as commonly occurring bacteria that normally cause only mild illnesses. The best known of these foreign agents is the human immunodeficiency virus (HIV), the virus that causes acquired immunodeficiency syndrome (AIDS).

There is a growing body of evidence that physical and emotional stress, including depression, can reduce immunity. Psychological stress inhibits many aspects of the immune response. For example, acute stress was found to suppress the immune response to hepatitis B vaccine and to the common cold (Cohen et al. 1991; Glaser et al. 1992, 1998). This suppression of the immune system can happen through direct transmission of signals from the nervous system to the immune system, or through hormones produced during stress which can adversely affect the immune system. It would appear that a sense of wellbeing and security, including good mental health, mediated through the immune system has beneficial effects for health in general.

Allergies

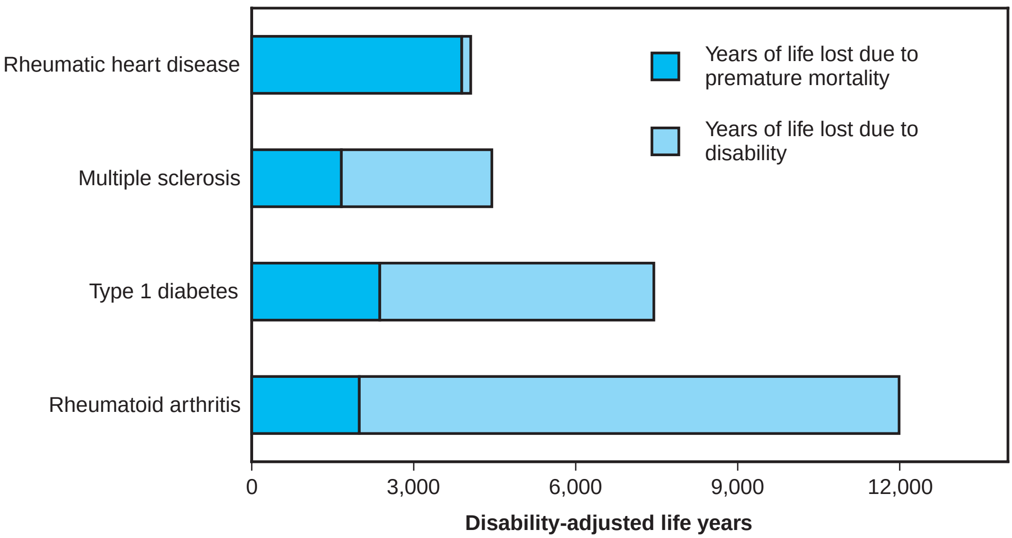
Allergic reactions can occur to such things as wasp and bee venom, particular drugs, certain foods, grass and tree pollen, and dust mites. For example, hay fever occurs after the immune system reacts to pollen allergens and becomes sensitised to them. Later exposure to the same allergen will cause a rapid and vigorous immune response that includes the release of histamines and other chemicals. Asthma is an increasingly serious disease in Australia (Robertson et al. 1991) and allergies are also believed to be involved in its development as well as in triggering attacks. The rapid increase in asthma in developed countries has led to the suggestion that the reduced rate of infections in infancy and childhood, due to improved hygiene, is responsible for the persistence of an immature immune response. This would particularly be the case in genetically prone individuals (Abramson & Walters 2000).

Auto-immunity

The failure of the immune system to distinguish between its own body and foreign agents leads to a variety of auto-immune diseases, including:

- systemic lupus erythematosus, which involves an immune reaction to nucleic acids normally occurring in body cells (Bach & Koutouzov 1997)
- rheumatoid arthritis, a crippling disease in which the immune system attacks the joints
- Type 1 diabetes, which results from the destruction of the insulin-producing cells of the pancreas
- rheumatic fever, where antibodies against the bacterium streptococcus also react with heart muscle, damaging heart valves
- multiple sclerosis, believed to be caused by auto-immune responses to certain parts of the nervous system.

Auto-immune diseases are responsible for significant illness, disability and activity restriction in Australia (AIHW: Mathers et al. 1999a). Most of the disease burden for the auto-immune diseases shown in Figure 2.8, with the exception of rheumatic heart disease, was due to disability. With the exception of Type 1 diabetes, the auto-immune diseases shown are more prevalent among females than males, and this difference is reflected in both hospital and mortality statistics (Table 2.6).



Note: A disability-adjusted life year is a year of healthy life lost through premature death or living with disability due to illness or injury.

Source: AIHW: Mathers et al. 1999a.

Figure 2.8: Total burden of disease from selected auto-immune diseases, 1996

Table 2.6: Selected auto-immune diseases and conditions: estimated hospitalisations (1997–98) and mortality (1998)

	Hospital separations		Mortality	
Condition	**Males**	**Females**	**Males**	**Females**
Type 1 diabetes	5,691	5,454	192	154
Rheumatic heart disease	827	1,364	101	164
Rheumatoid arthritis	1,507	4,111	50	131
Multiple sclerosis	949	2,381	35	78
Systemic lupus	227	948	8	37

Sources: AIHW National Hospital Morbidity and Mortality Databases.

The incidence and prevalence of these auto-immune diseases and the morbidity and mortality associated with them are difficult to establish. These diseases may share a common origin, but are expressed in a diverse number of illnesses and outcomes. A wide range of information is collected on epidemiological aspects of these diseases; however, the degree to which they are classified as auto-immune in administrative collections varies. No consistent categorisation of auto-immune diseases occurs, and this may result in an underestimate of their burden on the community.

Immunodeficiency

Immunodeficiency arises through a variety of mechanisms. Some people are born with defective immune systems. In others, disease may suppress or damage the immune system. Some microorganisms attack the immune system itself, leaving it unable to protect the body against other microorganisms. A good example of the latter is infection with HIV, which causes weakness of the immune system leading to AIDS. If damage to the immune system reaches a certain point in people with HIV, cellular immunity collapses and opportunistic infections and diseases such as Kaposi's sarcoma and pneumocystis pneumonia can cause death.

Sexual health

Sexual and reproductive health is described as a state of complete mental, physical and social wellbeing in all matters relating to the reproductive system and to its functions and processes (United Nations 1994). It is affected by, and affects, a broad range of attitudes and social values.

Improved methods of contraception over the past half-century, and greater access to those methods, have contributed to changes in attitudes both to sexuality and to reproduction. In addition, various social and economic factors influence decisions about marriage and the timing, spacing and numbers of children within a family.

The appearance of HIV/AIDS in the 1980s gave greater prominence to all sexually transmitted diseases and influenced approaches to public education and awareness. Greater recognition of the scope of sexual and reproductive health, particularly since the UN International Conference on Population and Development in 1994, has encouraged concern over reproductive health problems and issues such as female genital mutilation.

This section provides an overview of the sexual health of Australians, relating to reproduction, fertility control, sexually transmitted diseases and sexual health problems. Section 2.5 on communicable diseases later in this chapter provides additional information on sexually transmitted infections (STIs).

Fertility

Since 1961, when each woman on average had 3.6 babies, total fertility rates have declined to 1.75 births per woman in 2000 (ABS 2000a). This is notably below the replacement level of 2.1 babies per woman, and reflects a trend in fertility to drop below the replacement level in the developed, and even in some developing, countries.

Aided by effective and available methods of fertility control, Australian women are increasingly delaying or avoiding marriage and postponing childbearing. The reasons for such choices are beyond the scope of this report but have been widely discussed elsewhere (e.g. McDonald 2000 and Hugo 2000).

The median age of first marriage in 2000 was 26.7 years for women and 28.5 for men (ABS 2000b) compared with 21 years for women and 23.3 for men in 1971 (BIR 1992). Almost half (48%) of all childbearing now takes place at age 30 and over. Some 30% of births occur outside marriage, although in most cases the paternity is acknowledged (ABS 2000a).

Of the generation of women born in the mid-1960s—those currently reaching the end of their reproductive years—it has been estimated that more than one-fifth will remain childless (Carmichael 1998). For many such women, childlessness is a deliberate choice. Others may have fertility problems, either innate or due to causes such as pelvic infections. In addition there are increasing numbers for whom the postponement of child-bearing results in age-related infertility. Demand for medical assistance such as in-vitro fertilisation (IVF) and gamete intra-fallopian transfer is increasing; in 2000–01 there were 135,657 infertility services for which Medicare benefits were paid (Department of Health and Ageing, pers. comm.). Chances of pregnancy with each IVF treatment cycle have doubled in the past decade to 18% in 2000. More than 4,300 babies were born after IVF in 1999, accounting for 1.7% of all births (AIHW NPSU 2001).

Contraception

Contraceptive methods may be non-medical, medical or surgical. The first category includes withdrawal or periodic abstinence (rhythm or calendar techniques), douches, spermicides, and male and female condoms. In Australia, diaphragms, oral contraceptives, intra-uterine devices, injectables and tubal occlusion devices as well as post-coital or ‘emergency’ contraception require medical prescription or other medical intervention. Tubal ligation or (occasionally) hysterectomy for women and vasectomy for men are surgical procedures. In 2000–01, Medicare fee-for-service benefits were paid for 6,417 tubal ligations and 27,518 vasectomies (Department of Health and Ageing, pers. comm.). These figures exclude services to public patients in hospitals and through other publicly funded programs. The exclusions are probably not very significant in the case of tubal ligation but may considerably underestimate the total number of vasectomies. However, the Medicare data do demonstrate the continuing trend to male, rather than female, sterilisation.

The 1995 National Health Survey (ABS 1998c) found that two-thirds of Australian women aged 18–49 years were using contraception in 1995, the most recent year for which data are available. Almost 40% of 18–49-year-old women that were currently using contraception took an oral contraceptive, 19% were sterilised, and in 18% of cases their partners used condoms.

A further 18% of 18–49-year-old women interviewed in the 1995 National Health Survey were either not sexually active, or were trying to become or had become pregnant. The remaining 15% did not use contraception, although they were presumably at risk and trying to avoid pregnancy.

Data from the 1997 Survey of Australian Secondary Students indicated that 67% of students of both sexes had begun sexual intercourse before the age of 18. However, in 1998 the Young Women's Pregnancy Survey in New South Wales and the Australian Capital Territory of women who had given birth or had a pregnancy termination in the previous year showed that only 72% had used contraception at the time of first intercourse, and that proportion included those who used withdrawal and other less reliable methods (Evans 2000).

Termination of pregnancy

National information on induced abortions is lacking. Only South Australia, the Northern Territory and Western Australia collect population-based data on induced abortions. In 2000–01, Medicare fee-for-service benefits were paid for 76,603 terminations of pregnancy; this figure excludes services to public patients in hospital and through other publicly funded programs. Mathers and colleagues (AIHW: Mathers et al. 1999a) estimated that in 1996 total terminations were some 90,700, a rate of 19 per 1,000 women aged 15–49. Of those terminations, about 93% or more than 84,000 may have involved unwanted pregnancy (Adelson et al. 1995).

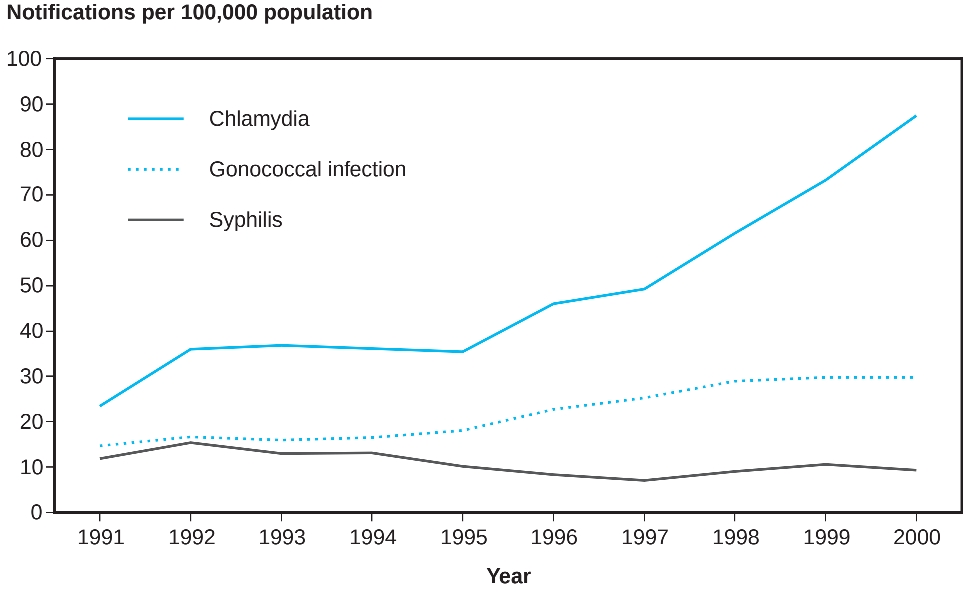
Sexually transmitted infections

Many STIs are notifiable on a national basis, which means that any diagnosis of the infection must be reported to the relevant State/Territory authorities. These reports are then provided to the Commonwealth through the NNDSS. The infections classified as sexually transmissible for surveillance in the NNDSS are chlamydial infection, donovanosis, gonococcal infection and syphilis.

Trends in the annual number of notifications for chlamydia, gonococcal infection and syphilis are shown in Figure 2.9. Chlamydia is the highest reported STI and is among the top five notifiable diseases in Australia.

In 2000, a total of 16,770 notifications for chlamydial infection were received, a rate of 87.5 cases per 100,000 population compared with a rate of 23.4 per 100,000 population in 1991. Part of this increase may reflect increased rates of testing and notification rather than a genuine rise in incidence.

Notifications of gonococcal infection have doubled over the same period, from 2,530 (a rate of 14.6 per 100,000) in 1991 to 5,708 (29.8 per 100,000) in 2000. Antibiotic-resistant strains of gonorrhoea present an increasing problem throughout the Asia–Pacific region.



Source: NNDSS 2002.

Figure 2.9: Trends in sexually transmitted infection notifications, 1991 to 2000

In Australia in 2000, the Gonococcal Antimicrobial Surveillance Programme found that 19.5% of isolates were penicillin-resistant, whereas 9.6% were less sensitive and 8.2% were resistant to quiriolene (GASP 2000).

The number of cases of syphilis has fluctuated but the overall trend shows a slight decrease. The highest number of reported cases was 2,695 in 1992 and the lowest 1,313 in 1997. In 2000 there were 1,780 cases, giving a rate of 9.3 per 100,000 population.

HIV/AIDS and hepatitis B and C are discussed later in this chapter (page 93).

Other important infections which are commonly or usually spread by sexual contact include genital herpes, genital warts, trichomoniasis and some parasitic infestations such as pubic lice. However, these infections are not subject to national notification and no information on their incidence is available.

Health of reproductive organs and pregnancy

In 2000–01, the Bettering the Evaluation and Care of Health (BEACH) survey found that female genital system problems accounted for 4.2 per cent of the total number of health problems managed by general practitioners (GPs) (AIHW: Britt et al. 2001a). Most of these visits were for genital check-ups or Pap smears (24%), or for menopausal problems (23%). A further 13% involved menstrual problems, but this underestimates their actual frequency. Of the young women in the Women's Health Australia survey who complained of menstrual problems, fewer than half had sought help from a doctor (Women's Health Australia 1997).

Table 2.7: Hospital separations by principal diagnosis, 1999–00

	Separations		% total separations	
Diagnosis	**Males**	**Females**	**Males**	**Females**
Diseases of the male genital organs	42,835	. .	1.6	. .
Diseases of the breast	1,731	13,264	0.06	0.4
Diseases of the female pelvic organs and genital tract	. .	167,282	. .	5.3
Complications relating to pregnancy	. .	55,612	. .	1.8
Complications relating to labour/ delivery	. .	268,861	. .	8.5
Complications relating to the puerperium	. .	30,770	. .	1.0
Pregnancy with abortive outcome	. .	72,151	. .	2.3

. . Not applicable.

Source: AIHW National Hospital Morbidity Database.

Consultations relating to pregnancy and family planning accounted for 2.7% of all health issues in the BEACH survey. Male genital problems accounted for 1% of all health issues managed by GPs.

Statistics on hospital separations (Table 2.7) provide some information on morbidity related to reproductive organs (male and female) as well as complications of pregnancy (AIHW 2001a).

Further indicators of reproductive health include female genital mutilation and male erectile dysfunction. Most States and Territories now have legislation specifically banning female genital mutilation. However, in the 1990s an estimated 120,000 women living in Australia came from countries where some form of female circumcision is traditional. The proportion of women from those countries actually affected by these practices remains unknown.

Erectile dysfunction among men may result from both physical and psychological causes, including diabetes and cardiovascular disorders, treatments for prostate or bladder cancer, and drug and alcohol abuse. A study in Perth of adult males attending GPs found that 39 per cent of respondents reported erectile dysfunction and 18.6 per cent experienced such dysfunction all the time. Only 11.4% had received any medical treatment for the condition (Chew et al. 1997).

2.2 Functioning and disability

Functioning and disability are important aspects of health in its broadest sense. Disability can include an impairment in body structure or function, a limitation in activities (such as mobility and communication) or a restriction in participation (involvement in life situations such as social interaction and work). The experience and degree of disability are influenced by environmental factors, such as social attitudes, physical access or technical equipment. This conceptualisation of disability reflects that of the new International Classification of Functioning, Disability and Health (ICF), which was endorsed by the World Health Assembly in May 2001 (WHO 2001b). The

Box 2.1: ABS 1998 Survey of Disability, Ageing and Carers: restrictions and their severity

Specific restrictions are:

- *core activity restrictions*
- *schooling or employment restrictions.*

Core activities are:

- *self-care—bathing or showering, dressing, eating, using the toilet and managing incontinence*
- *mobility—moving around at home and away from home, getting into or out of a bed or chair and using public transport*
- *communication—understanding and being understood by others: strangers, family and friends.*

A core activity restriction may be:

- *profound—unable to perform a core activity or always needing assistance*
- *severe—sometimes needing assistance to perform a core activity*
- *moderate—not needing assistance but having difficulty performing a core activity*
- *mild—having no difficulty performing a core activity but using aids or equipment because of disability.*

Note: In the text of this chapter, 'a severe or profound core activity restriction' is sometimes referred to as 'severe or profound restriction'.

Source: ABS 1999c.

ICF is a core member of the WHO family of health-related classifications, complementary to the other core member, the International Classification of Diseases (ICD), which focuses on diseases and health conditions.

Statistically, disability can be measured along a continuum, and estimates of the level of disability in the community vary with the particular definition. At the broadest level, the ABS 1998 Survey of Disability, Ageing and Carers estimated that 3,610,300 people (19.3% of the Australian population) had a 'disability' (Table 2.8). This reflected the proportion of people in the survey who reported at least one of a list of limitations, health conditions or impairments that had lasted, or were likely to last, for at least 6 months and which restricted everyday activities. The proportions of males and females with a disability were approximately equal.

The 1998 survey also collected information about 'specific activity restrictions', of which there are five categories: restrictions in the three 'core' activities of daily living (self-care, mobility and communication), in schooling or in employment (Box 2.1). Of those with disability, an estimated 3,155,900 people had at least one specific activity restriction, 16.9% of the Australian population. Based on self-reports, an estimated 1,135,900 people or 6.1% of Australians had a 'severe or profound core activity restriction', meaning that they sometimes or always needed personal assistance or supervision with the 'core' activities of daily living.

Table 2.8: People with a disability, by disability status and severity, 1998

	Core activity restriction				Schooling or employment restriction only[(a)]	Total with specific restrictions	Without specific restrictions	Total with a disability
	Profound	Severe	Moderate	Mild				
					Number ('000)			
Males	218.8	286.6	338.6	534.3	188.4	1,566.7	254.4	1,821.1
Females	318.9	311.6	321.7	497.5	139.5	1,589.2	200.0	1,789.2
Persons	537.7	598.2	660.3	1,031.8	327.9	3,155.9	454.4	3,610.3
					Per cent[(b)]			
Males	2.4	3.1	3.6	5.8	2.3	16.9	2.7	19.6
Females	3.4	3.3	3.4	5.3	1.7	16.9	2.1	19.1
Persons	2.9	3.2	3.5	5.5	2.0	16.9	2.4	19.3

(a) Schooling or employment restriction related to people aged under 65 years.

(b) Percentage of the Australian population of that sex.

Source: ABS 1998 Survey of Disability, Ageing and Carers, unpublished data tables; AIHW 2001b.

Table 2.9: People with a disability as a percentage of the Australian population, 1998

	Main disabling condition		All disabling conditions	
Condition type	**Number ('000)**	**Per cent**	**Number ('000)**	**Per cent**
Psychiatric[(a)]	**258.2**	**1.4**	609.6	3.3
Intellectual and other mental[(b)]	**262.2**	**1.4**	407.8	2.2
Sensory	**393.8**	**2.1**	n.a.	n.a.
Diseases of eye	113.2	0.6	281.2	1.5
Diseases of ear	280.6	1.5	985.2	5.3
Physical	**2,695.8**	**14.4**	n.a.	n.a.
Nervous system diseases	182.3	1.0	343.7	1.8
Stroke	63.6	0.3	230.3	1.2
Other circulatory diseases	246.6	1.3	1,004.1	5.4
Respiratory diseases	260.9	1.4	592.1	3.2
Arthritis	497.1	2.7	1,107.5	5.9
Other musculoskeletal disorder	744.3	4.0	1,212.9	6.5
Head injury/any other brain damage	39.2	0.2	169.6	0.9
All other diseases and conditions[(c)]	661.9	3.5	1,601.2	8.6
Total population	**18,659.7**	**100.0**	n.a.	n.a.

n.a. Not available.

(a) Includes the groups entitled 'Psychoses/mood affective disorders' and 'Neurotic/stress-related/somatoform disorders' in ABS publications. This definition has changed since the 1993 survey (see AIHW 1997).

(b) Includes the groups entitled 'Intellectual and developmental disorders' and 'Other mental and behavioural disorders'. This definition has changed since the 1993 survey and now includes Down syndrome (see AIHW 1997).

(c) Includes other physical diseases and conditions such as spina bifida, neoplasms and diseases of urinary system, genital organs and breast.

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

Most reported disabilities in the 1998 survey were associated with a physical 'main condition' (14.4% of the population); i.e. the 'long-term condition identified by a person as the one causing the most problems' (ABS 1999c). The most common physical 'main conditions' were arthritis (2.7%) and other musculoskeletal disorders (4.0%). The next most frequent group was sensory (2.1%), followed by intellectual (1.4%) and psychiatric (1.4%) conditions (Table 2.9).

The possibility of multiple disabilities or conditions complicates the estimation of prevalence. Table 2.9 compares the prevalence of various conditions, according to whether they were reported as the main condition or among a number of disabling conditions. Reported prevalence is higher when all conditions are considered, suggesting the common occurrence of multiple conditions in the population with a disability. In particular, head injury and brain damage, stroke and other circulatory diseases were frequently reported in combination with another condition.

Recent studies from the United States and some European countries have suggested that disability prevalence rates among older people have started to decline and that the improvements have mainly occurred through reduced levels of moderate or mild disability. On the other hand, no evidence of a decline in disability rates was reported for Australia, the United Kingdom and some other developed countries (AIHW 2001b). Indeed, between 1993 and 1998 the estimated rate of severe or profound restriction in Australia, as reported by the ABS, increased to 6.1% of the population after being stable during the decade or so before, at around 4%. However, almost all of this reported increase can be attributed to the changes in design and methods of the 1998 disability survey which 'captured' a larger number of people with a severe or profound restriction than the 1993 survey (AIHW 2001b).

2.3 Mortality

This section describes the patterns of mortality in the Australian population, examining causes of death, age and sex patterns, and recent and longer term trends over time.

Leading causes of death

In 2000, there were 128,291 deaths recorded in Australia, consisting of 66,817 male deaths (712 deaths per 100,000 males) and 61,474 female deaths (450 deaths per 100,000 females). The top ten individual causes of death were responsible for about 60% of all deaths in 2000 (Table 2.10). Coronary heart disease (also known as ischaemic heart disease: heart attack and related disorders) and cerebrovascular disease (stroke) accounted for more than 30% of all deaths. All cancers combined accounted for almost another 30%.

Table 2.10: Leading causes of death, 2000

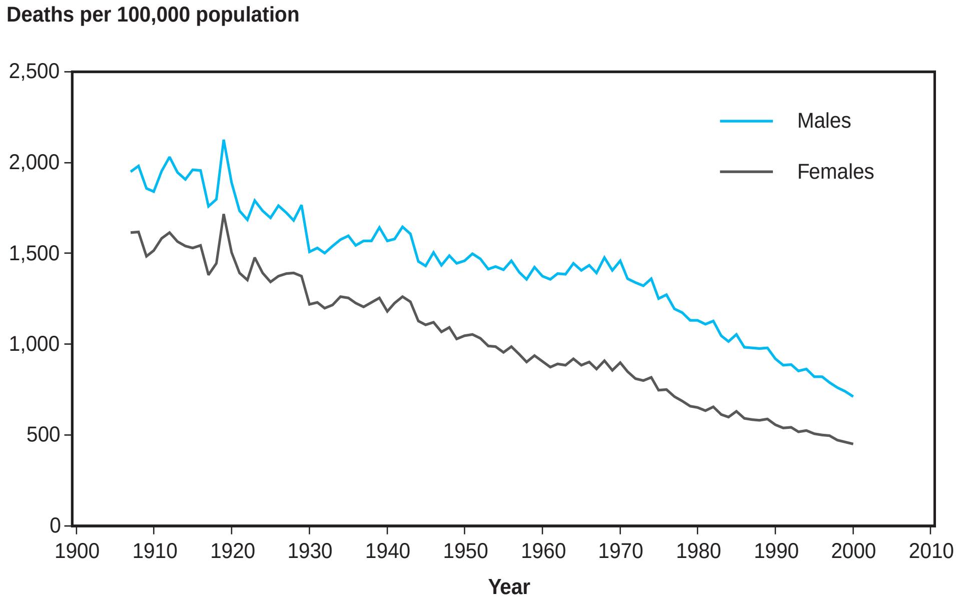
Males				Females			
	Cause	Number of deaths	% of all deaths		Cause	Number of deaths	% of all deaths
1	Ischaemic heart disease (I20–I25)	14,052	21.0	1	Ischaemic heart disease (I20–I25)	12,469	21.3
2	Cerebrovascular disease (I60–I69)	4,913	7.3	2	Cerebrovascular disease (I60–I69)	7,387	12.0
3	Lung cancer (C34)	4,587	6.9	3	Breast cancer (C50)	2,511	4.1
4	Chronic obstructive pulmonary disease (J41–J44)	3,281	4.9	4	Lung cancer (C34)	2,291	3.7
5	Prostate cancer (C61)	2,663	4.0	5	Colorectal cancer (C18–C21)	2,179	3.5
6	Colorectal cancer (C18–C21)	2,533	3.8	6	Chronic obstructive pulmonary disease (J41–J44)	2,015	3.3
7	Suicide (X60–X84)	1,860	2.8	7	Dementia and related disorders (G30–G32, F01–F03)	1,698	2.8
8	Diabetes (E10–E14)	1,594	2.4	8	Pneumonia & influenza (J10–J18)	1,625	2.6
9	Land transport accidents (V00–V89)	1,374	2.0	9	Diabetes (E10–E14)	1,412	2.3
10	Pneumonia & influenza (J10–J18)	1,312	2.0	10	Diseases of arteries, arterioles and capillaries (I7)	1,296	2.1
	Total leading causes	**38,169**	**57.1**		**Total leading causes**	**34,883**	**56.7**
	All deaths	**66,817**	**100**		**All deaths**	**61,474**	**100**

Note: Codes refer to the International Classification of Diseases, 10th Revision (ICD-10).
Source: AIHW National Mortality Database.

Death rates over the last century

Death rates fell considerably over the last century. The age-standardised rates for males have fallen by 62% from a high of 1,887 deaths per 100,000 males in the early 1900s to 712 deaths per 100,000 in 2000. The rates for females fell by 70% from 1,516 deaths per 100,000 during the early 1900s to 450 deaths per 100,000 females in the year 2000 (Figure 2.10). This has been attributed to a combination of better living conditions, improved public health and safety initiatives, and improved medical treatments.

Trends in death rates for the major causes from 1907 to 2000 are shown in Figures 2.11 and 2.12.



Note: Age standardised to the Australian population at 30 June 1991.
Source: AIHW National Mortality Database.

Figure 2.10: Trends in mortality, 1907 to 2000

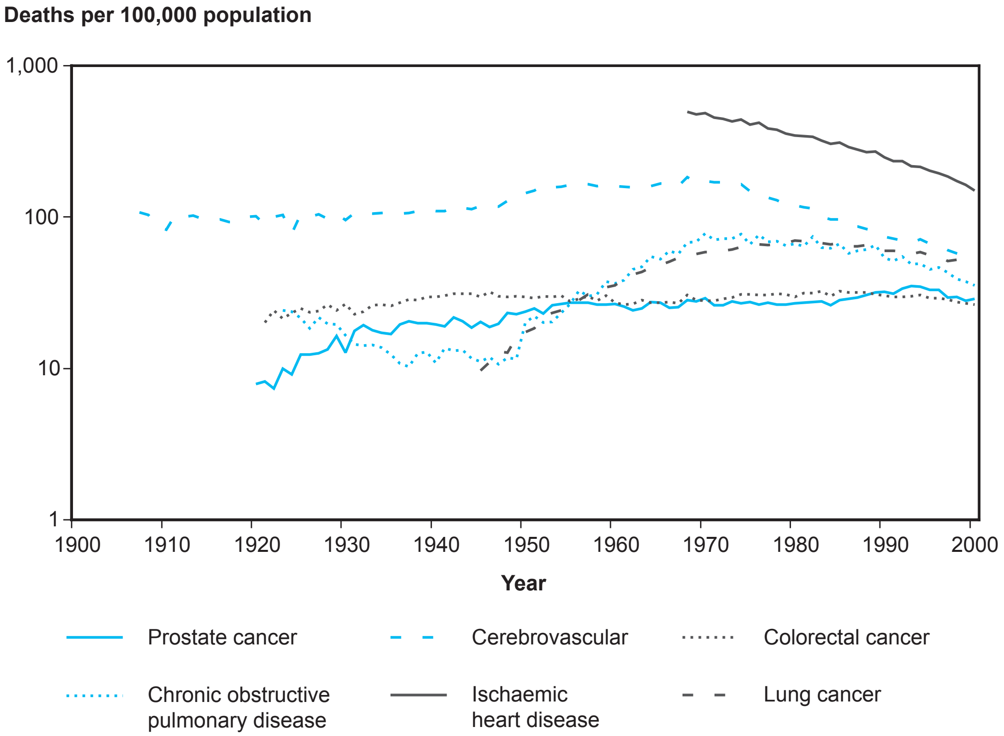
Box 2.2: Comparing death rates: age-standardisation

Statistics relating to deaths are sometimes presented as crude death rates, i.e. the number of deaths in a year divided by the number of individuals in the corresponding population. For example, the crude death rate in Australia in 2000 was 669 deaths per 100,000 population.

However, since the risk of dying varies greatly with age, even small differences in the age structure of populations may affect crude death rates. This may make comparisons between different populations and analysis of time trends in the same population misleading. One way around this difficulty is to compare age-specific death rates, i.e. mortality at particular ages, but this requires that separate comparisons be made for each age group. However, variations in age structure, between populations or over time, can be adjusted by a simple statistical procedure called age-standardisation.

In this report, unless otherwise specified, death rates have been directly age-standardised to the Australian population as at 30 June 1991 (ABS 1993). Both the AIHW and the ABS agreed to adopt this as the national standard until population estimates for 30 June 2001 become available. The population at 30 June 1991 was the standard used in the 1996, 1998 and 2000 editions of Australia's Health, *whereas the 1992 and 1994 editions used the population as at 30 June 1988. For this reason, age-standardised death rates in this publication cannot be directly compared with those in the 1992 and 1994 editions.*

The major causes of death are coded to the International Classification of Diseases (ICD) system, Version 10 (WHO 1992). The ICD-10 classification categorises diseases into 21 broad groupings or chapters on the basis of type of condition or body system. Causes of death can be further disaggregated either on the basis of similar disease causation (e.g. infectious diseases or cancers), or into specific entities (e.g. tuberculosis, breast cancer or AIDS).



Notes

1. Age standardised to the Australian population at 30 June 1991.
2. Death rates presented on logarithmic scale.
3. The time series for ischaemic heart disease begins in 1968 due to coding changes between ICD-8 and previous versions of the ICD.

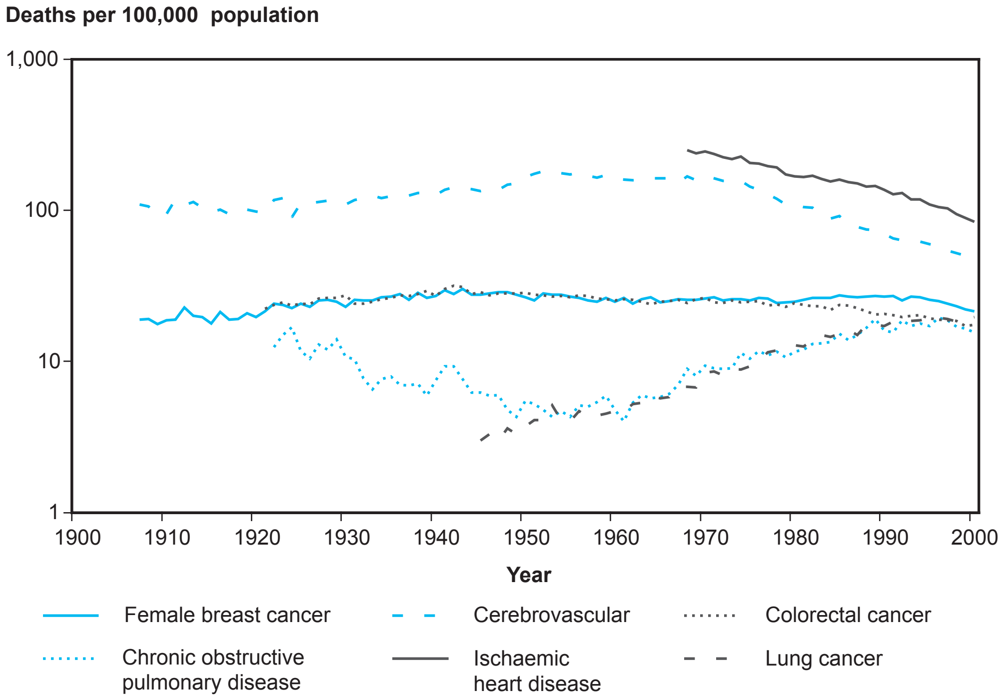
Source: AIHW National Mortality Database.

Figure 2.11: Trends in major causes of death, males, 1907 to 2000

Trends over the last century for selected conditions

Coronary heart disease (also known as ischaemic heart disease, and comprising heart attack and related disorders) is the single biggest cause of death in Australia. In 2000, there were 150 deaths per 100,000 males and 84 deaths per 100,000 females with coronary heart disease as the underlying cause of death. Coronary heart disease death rates climbed steadily from 1940 to 1968 (AIHW: d'Espaignet 1993). Since then, the rates have declined steadily. During the 5 years 1996–00, death rates declined annually by 6.3% in males and 5.6% in females. The reduction in coronary heart disease death rates is believed to be due both to prevention and to improved medical management of the disease.

Cerebrovascular disease (stroke) is the second largest cause of death for both sexes, with 53 deaths per 100,000 males and 48 deaths per 100,000 females in 2000. Death rates increased over the first half of the century, but began to slow down between 1950 and 1970. Since 1970, death rates for stroke have declined annually by over 4.5% in males and 4.9% in females. As with CHD, changes in lifestyle and improvements in disease management are considered to have contributed to the decline in death rates.



Notes

1. Age standardised to the Australian population at 30 June 1991.
2. Death rates presented on logarithmic scale.
3. The time series for ischaemic heart disease begins in 1968 due to coding changes between ICD-8 and previous versions of the ICD.

Source: AIHW National Mortality Database.

Figure 2.12: Trends in major causes of death, females, 1907 to 2000

Lung cancer is the leading cause of cancer deaths in Australia, with 48 deaths per 100,000 in males and 19.6 deaths per 100,000 in females in 2000. Between 1940 (when lung cancer was first listed as a specific cause of death) and 1982, the annual death rate for males increased steadily. Since 1982 the male rate has been declining steadily. During the 5 years 1996–00, the rate declined annually by 3.1%. The lung cancer death rate for females also increased from 1940 to 1967, but the female rate was a third of the rate for males. The lung cancer death rate for females, unlike that for males, continued to rise beyond 1982 (Figures 2.11 and 2.12), reflecting trends in smoking among females. During the period 1982–95 the death rate rose at 1.8% annually. Since 1995, the death rate for lung cancer in females has continued to rise, but more slowly at about 0.2% per year.

Colorectal cancer is the second most common cause of cancer deaths, with rates of 26.5 per 100,000 males and 17.5 per 100,000 females in 2000. Colorectal cancer death rates have fluctuated over the last few decades. The rates increased in both sexes from 1921 to the early 1940s. For males, the rate continued to climb to a high of 32.4 deaths per 100,000 in 1983. Since then the rate has been falling steadily and during the 5 years 1996–00 it declined at 2.5%. The rate for females has fallen since 1942, and during the 5 years 1996–00 it fell at 2.5% per year.

Breast cancer is the fourth leading cause of cancer deaths, and the most common cause of cancer deaths among females. In 2000, there were 21.5 deaths per 100,000 females. The death rate for breast cancer peaked in the early 1940s, having increased slowly since 1921. The rate decreased between 1940 and 1950, after which it remained relatively stable until 1993, fluctuating between 25 and 27 deaths per 100,000 females. Since 1993, the rate has fallen at about 3.0% per year.

Prostate cancer is the second most common cause of cancer death in males, with 83% of prostate cancer deaths occurring among those over the age of 70. In 2000 the death rate for prostate cancer was 28.8 deaths per 100,000 males. Since 1921, the death rate for prostate cancer has been increasing slowly. The early 1990s saw a marked increase in the death rate, reaching a high of 35.1 deaths per 100,000 males in 1993. However, between 1993 and 2000 the rate decreased by 3.1% per year.

Chronic obstructive pulmonary disease (COPD) is the fourth most common cause of death in males and the sixth most common in females. The two main diseases in this group, chronic bronchitis and emphysema, are usually caused by smoking. In 2000, there were 35.5 deaths per 100,000 males and 15.6 deaths per 100,000 females with COPD as the underlying cause of death. Death rates for COPD have followed a pattern similar to those for deaths from lung cancer in both males and females. COPD death rates in males increased steadily from the early 1950s, peaking in 1970. In the period 1970–00, the male death rate declined by 1.1% per year and since 1995 the decline has been 5.2%. In females, the COPD death rate increased between 1960 and 1995 at about 4.5% per year, again related to trends in female smoking. However, since 1995 there has been a 4.2% annual decline in the COPD death rate among females.

Suicide statistics began in 1907 when the rates were 24.4 and 5.0 deaths per 100,000 population for males and females respectively. The suicide rate for males has fluctuated between 15 and 25 deaths per 100,000 during the twentieth century, except for the World War II years when the rate fell to 11 deaths per 100,000. The rate in 2000 was 19.4 deaths per 100,000 males. The suicide rate for females was relatively constant over the twentieth century, fluctuating between 4 and 6 deaths per 100,000 except during the period from 1960 to the late 1970s. During this period the rate rose, reaching 12.2 deaths per 100,000 females in 1967, after which it declined. By the 1980s the rate had fallen to about 5 deaths per 100,000 females and in 2000 it was 5.2.

Major causes of death by life stage

Of the 128,291 deaths recorded in Australia in 2000 (Table 2.11):

- more than 70% of all male deaths and more than 80% of female deaths were in people aged 65 or older
- about 23% of male deaths and 14% of female deaths were in people aged 25–64
- about 3% of male deaths and 2% of female deaths were in people aged less than 25 years.

Injuries and poisoning are the most common causes of death for males and females in age groups 1–14 and 15–24 and for males aged 25–44. Cancer is the most common cause of death for females aged 25–44, and for males and females aged 45–64. Cardiovascular disease, which includes ischaemic heart disease and stroke, is the prominent cause of death for people aged over 65 years. The major causes of death in various age groups in 2000 are presented in Table 2.12.

Table 2.11: Numbers of deaths, 2000

Age group	Males	Per cent	Females	Per cent
0	725	1.1	565	0.9
1–14	377	0.6	264	0.4
15–24	1,201	1.8	463	0.7
25–44	4,311	6.5	2,006	3.3
45–64	11,173	16.7	6,712	10.9
65–84	36,303	54.3	27,798	45.2
85+	12,709	19.0	23,644	38.5
Missing	18	—	2	—
Total	**66,817**	**100.0**	**61,474**	**100.0**

Source: AIHW National Mortality Database.

Table 2.12: Leading causes of death, 2000

	Males		Females	
Age group	**Cause of death**	**% deaths[(a)]**	**Cause of death**	**% deaths[(a)]**
Infants (less than 1 year	Conditions emerging from the perinatal period	49.0	Conditions emerging from the perinatal period	49.7
	Congenital anomalies	25.0	Congenital anomalies	25.1
	Sudden death	13.0	Sudden death	9.7
	Injury and poisoning	3.4	Injury and poisoning	4.1
1–14	Injury and poisoning	50.7	Injury and poisoning	35.6
	Cancer	14.3	Cancer	17.4
	Nervous system disease	10.3	Congenital anomalies	11.4
	Congenital anomalies	6.4	Nervous system diseases	9.8
15–24	Injury and poisoning	72.8	Injury and poisoning	61.3
	Mental disorders	7.2	Cancer	11.7
	Cancer	5.3	Mental disorders	6.7
	Nervous system diseases	4.5	Endocrine disorders	4.1
25–44	Injury and poisoning	51.8	Cancer	33.2
	Cancer	12.4	Injury and poisoning	31.5
	Cardiovascular disease	13.1	Cardiovascular disease	12.0
	Digestive disorders	7.6	Mental disorders	4.2
45–64	Cancer	41.4	Cancer	55.2
	Cardiovascular disease	28.5	Cardiovascular disease	17.8
	Injury and poisoning	9.5	Respiratory system diseases	5.7
	Respiratory system diseases	4.8	Injury and poisoning	5.7
65–84	Cardiovascular disease	38.2	Cardiovascular disease	40.7
	Cancer	34.6	Cancer	29.9
	Respiratory system diseases	10.1	Respiratory system diseases	8.7
	Endocrine	3.4	Endocrine	3.9
85+	Cardiovascular disease	47.9	Cardiovascular disease	55.6
	Cancer	18.3	Cancer	11.4
	Respiratory system diseases	12.7	Respiratory system diseases	8.9
	Genitourinary diseases	3.4	Mental disorders	4.3

(a) Percentage within age group.

Source: AIHW National Mortality Database.

2.4 Non-communicable diseases and conditions

Cardiovascular disease

The term 'cardiovascular disease' is used to cover all diseases and conditions involving the heart and blood vessels. It includes coronary heart disease, stroke, peripheral vascular disease and heart failure. The main underlying problem in cardiovascular disease is atherosclerosis, a process that clogs blood vessels with deposits of fat, cholesterol and other substances that have built up in the inner lining of the vessels. It is most serious when it affects the blood supply to the heart (causing angina, heart attack or sudden death) or to the brain (which can lead to a stroke).

Cardiovascular disease is Australia's largest health problem. Despite great declines in death rates from it over the past few decades, the health and economic burden of cardiovascular disease exceeds that of any other disease and it kills more people than any other disease (accounting for 39% of all deaths). Coronary heart disease is the greatest single cause of death among Australians and stroke is the second largest.

Based on the 1995 National Health Survey, an estimated 2.8 million Australians, or 16% of the population, had cardiovascular conditions. High blood pressure was the most common condition for both males and females (AIHW 2001c).

Much of the death, disability and illness caused by cardiovascular disease is preventable. Many Australians remain at higher risk of the disease through tobacco smoking, being physically inactive, eating a diet high in saturated fats or being overweight. Many Australians have high blood pressure or high blood cholesterol. It is important to note that there have been declines in physical activity participation and that the proportion of overweight and obese Australians has dramatically increased over the past 20 years (see Chapter 3).

Coronary heart disease (ischaemic heart disease)

Coronary heart disease is the most common cause of sudden death in Australia. It consists mainly of acute myocardial infarction (heart attack) and angina. A heart attack is a life-threatening emergency that occurs when a vessel supplying blood to the heart muscle suddenly becomes blocked by a blood clot. Angina is temporary chest pain or discomfort when the heart's own blood supply is inadequate to meet extra needs.

There are no national data on the incidence of coronary heart disease in Australia. However, the Universities of Newcastle and Western Australia and the Queensland Department of Health have developed a method to estimate the rate of coronary events among people aged 35–69 years (AIHW 2001c). Using this method, it is estimated that there were 18,817 coronary events (mainly heart attacks) among people aged 35–69 in 1997–98. Of these coronary events, almost two-thirds (12,457 cases) were non-fatal heart attacks.

The rates of non-fatal heart attacks have declined significantly between 1993–94 and 1997–98, by 13% for men and 20% for women.

Stroke

Stroke (also known as cerebrovascular disease) occurs when an artery supplying blood to the brain suddenly becomes blocked or bleeds, often causing paralysis of parts of the body or speech problems. It includes ischaemic stroke (blockage), haemorrhagic stroke (bleeding), transient ischaemic attack and other cerebrovascular diseases.

Each year, around 40,000 Australians have a stroke, with 70% of these being first-ever strokes. Strokes are more common among older Australians, with around 50% of all strokes occurring in those aged 75 years and over. Under the age of 85 years, the incidence of stroke is higher in males than in females. For 45-year-olds, the risk of having a stroke before age 85 is 1 in 4 for males and 1 in 5 for females (NHMRC 1997b).

Stroke is a leading cause of disability. From the 1998 Survey of Disability, Ageing and Carers there were an estimated 63,530 Australians with a disability resulting from a stroke. Over 75% of these needed assistance with self-care, mobility or communication (ABS 1999c).

Rheumatic fever and rheumatic heart disease

Rheumatic fever is caused by group A streptococcus bacteria associated with infections of the throat and skin. This occurs mainly in children and young adults and may affect the heart valves, the heart muscle and its lining, the brain and the joints. Recurrences of rheumatic fever lead to cumulative heart damage and can be almost completely prevented by strict follow-up and monthly injections of penicillin. Rheumatic heart disease is the longer term damage done to the heart muscle and heart valves by acute rheumatic fever.

Although this type of cardiovascular disease is rare among the Australian population overall, its prevalence among Indigenous Australians living in remote areas is very high. Since the 1950s acute rheumatic fever and rheumatic heart disease have largely become diseases of economically disadvantaged people. Poverty and overcrowding, poor sanitary conditions, lack of education and limited access to medical care for diagnosis and treatment are contributing factors to this disease in Australia.

A register of people with known or suspected rheumatic fever and rheumatic heart disease operates in the Top End of the Northern Territory. The following data come from the Northern Territory Rheumatic Heart Disease Register (Angela Kelly, pers. comm.). In 2001, Indigenous children aged 5–14 years accounted for 62% of all cases of acute rheumatic fever among Indigenous Australians in the Northern Territory (13 cases). There were 143 cases for every 100,000 Indigenous children aged 5–14. In contrast, there were no reported cases of acute rheumatic fever among other Australian children living in the area.

In 2001, there were 660 people with rheumatic heart disease in the Top End of Australia's Northern Territory, of whom 93% were Aboriginal and Torres Strait Islander peoples (617 cases). Rheumatic heart disease was present in 57 children aged 5–14 (9% of all cases), all of whom were Indigenous Australians. The prevalence of rheumatic heart disease among Indigenous Australians in the Top End was 1,640 per 100,000 in 2001. In contrast, among other Australians in the area the rate was 38 per 100,000.

Health services

General practice

A survey of general practice activity found that in 2000–01 cardiovascular problems represented 11% of all problems managed by GPs (AIHW: Britt et al. 2001a). Hypertension (high blood pressure) was the most common cardiovascular problem managed and was the most frequent problem seen in general practice overall, accounting for 6.0% of all problems. Lipid disorders (abnormal levels of cholesterol or related substances in the blood) rated highly as well, accounting for 2.0% of problems managed. Other common cardiovascular problems managed were coronary heart disease (0.9%) and heart failure (0.5%).

Several classes of drugs to lower blood pressure or blood lipids were among the top 30 drug groups prescribed by GPs, reflecting the large number of high blood pressure and/or lipid problems managed. Lipids accounted for the highest number of chemistry pathology tests ordered, and represented 11.3% of all pathology tests ordered by GPs. The two problems accounting for the highest number of pathology tests ordered overall were lipid disorder (6.4% of these problems were managed with a pathology order) and hypertension (6.2% of these problems were managed with a pathology order).

Comparison of 2000–01 survey results with those of a similar study conducted in 1990–91 showed that although hypertension remained the most common problem managed by GPs, the rate per 100 encounters fell from 9.5 to 8.6. In contrast, the management rate for lipid disorders increased from 1.8 to 2.9 per 100 encounters.

Hospitalisation

In 1999–00, cardiovascular disease accounted for 443,068 hospital separations (7.5% of all hospitalisations) from all public acute and private hospitals in Australia. Of these, 36% were attributed to coronary heart disease, 12% to stroke, 11% to heart rhythm disorders, 9% to heart failure, 3% to peripheral vascular disease and 2% to hypertensive disease.

Across all age groups, there were likely to be more males in hospital for cardiovascular disease than females. The sex differential was particularly marked for coronary heart disease and peripheral vascular disease, where there were twice as many males in hospital for these diseases as females. Hospitalisations associated with stroke and heart failure were similar for the two sexes, whereas for hypertensive disease, rheumatic fever and rheumatic heart disease, females had more hospital separations than males.

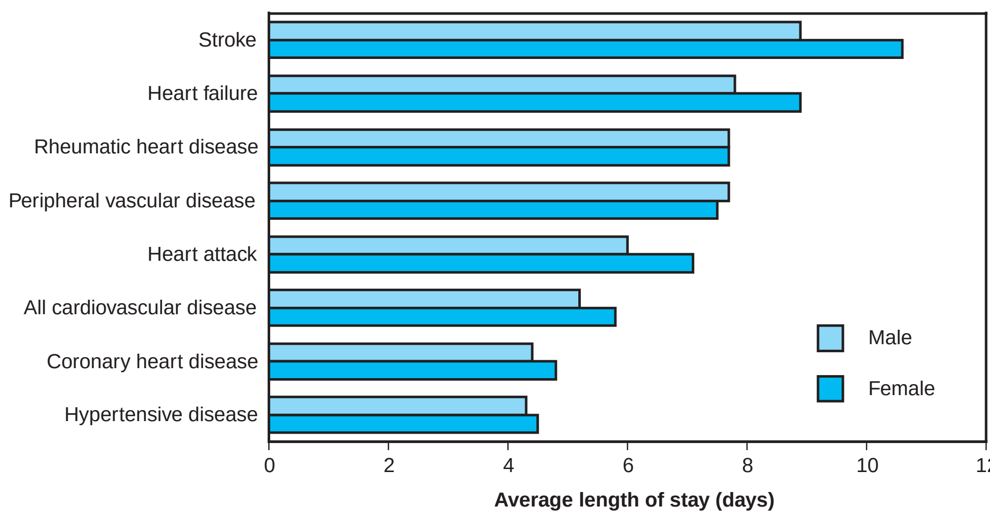
Hospitalisation for cardiovascular disease increased rapidly with age. Although those aged 55 years and over represent only 21% of the total population, they accounted for over three-quarters of hospital separations for cardiovascular disease. In the case of stroke, peripheral vascular disease and heart failure, over 88% of hospitalisations were for those aged 55 years and over.

The average length of stay in hospital for cardiovascular disease declined from 7.6 days in 1993–94 to 5.4 days in 1999–00. Over this period, there was an increase in the proportion of same-day patients, particularly for coronary heart disease, largely reflecting the much greater use of investigations in recent years. On average, those in hospital for stroke in 1999–00 tended to stay the longest (9.7 days), followed by heart failure (8.4), peripheral vascular disease (7.6), rheumatic fever and rheumatic heart disease (7.6), and hypertensive disease (4.4). Those in hospital for coronary heart disease tended to stay for a shorter period (on average 4.5 days) than those in hospital for other major cardiovascular diseases, diabetes, most cancers and mental disorders. The average length of stay for non-cardiovascular diseases was 3.7 days.

Although males were more likely than females to be in hospital for cardiovascular disease, females tended to stay in hospital longer (5.8 days compared with 5.2 days) (Figure 2.13). Length of stay in hospital for cardiovascular disease increased with age after age 30, with those aged 85 and over staying in hospital for 9.1 days on average compared with 2.8 days for 30–34-year-olds.

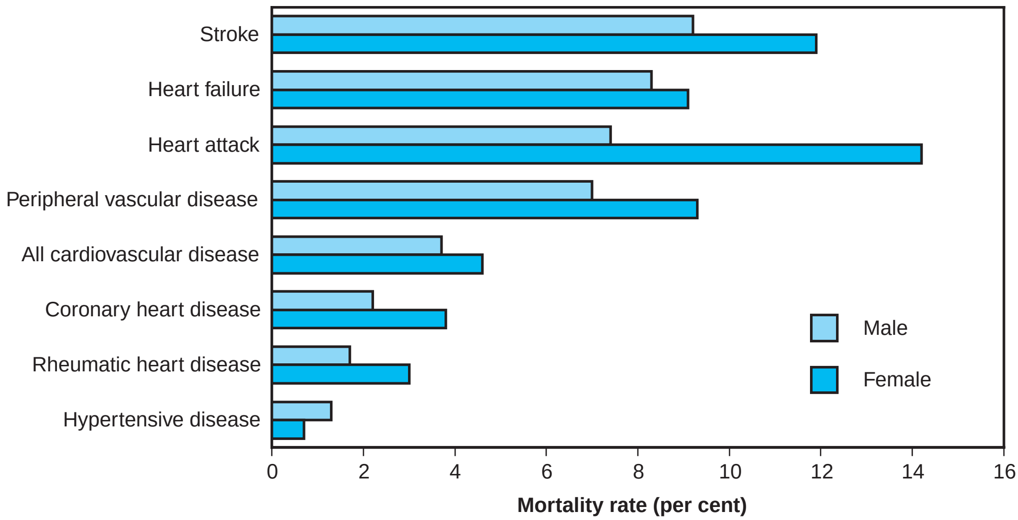
In 1999–00, there were 18,276 hospitalisations for cardiovascular disease where the patient died in hospital (4.1% of cardiovascular disease hospitalisations). Females in hospital for cardiovascular disease were more likely to die in hospital than males (4.6% compared with 3.7%) (Figure 2.14).

The in-hospital death rate for coronary heart disease was 2.8% of hospital separations for this disease; for heart attacks (a major form of coronary heart disease) the rate was over three times as high at 9.8% in 1999–00 (3,523 hospitalisations). Females in hospital for heart attacks were more likely to die than males (14.2% compared with 7.4%). Of the patients in hospital for stroke, 10.5% died in hospital, with females more likely to die in hospital than males (11.9% compared with 9.2%).



Source: AIHW National Hospital Morbidity Database.

Figure 2.13: Average length of stay for cardiovascular conditions, 1999–00



Source: AIHW National Hospital Morbidity Database.

Figure 2.14: In-hospital mortality rate for cardiovascular conditions, 1999–00

Cardiovascular procedures

There is a range of procedures to diagnose and treat cardiovascular disease (the main procedures are explained in Box 2.3).

Coronary angiography (also known as coronary arteriography) is a diagnostic procedure for coronary heart disease and provides an X-ray picture of the heart's arteries. In 1999–00 there were 77,158 angiograms.

Cardiac surgery and coronary angioplasty are the most common cardiac procedures undertaken in Australia. There has been a progressive increase in coronary artery bypass grafting since the 1960s. Coronary angioplasty was introduced in Australia in the 1980s and has grown rapidly since then. Coronary stenting, widespread in Australia since 1995, was developed to reduce the risk of early closure of the coronary artery following coronary angioplasty. In 1998, coronary angioplasty replaced coronary artery bypass grafting as the most common procedure in the treatment of coronary heart disease (Figure 2.15).

In 1999, there were 19,444 coronary angioplasty procedures with an in-hospital death rate of 1%. Of these procedures, 86% involved the placing of a coronary stent (16,626 procedures). The average length of stay for a coronary angioplasty procedure was 3.7 days.

In 1999, there were 17,321 coronary artery bypass grafting procedures, with 2.6% of patients dying in hospital. The average length of stay for this procedure was 11.8 days.

In addition, during 1999–00 there were 27,764 computerised tomographic (CT) scans of the brain for a diagnosis of stroke and 3,834 carotid endarterectomies to assist in making a diagnosis of stroke.

Box 2.3: Cardiovascular procedures

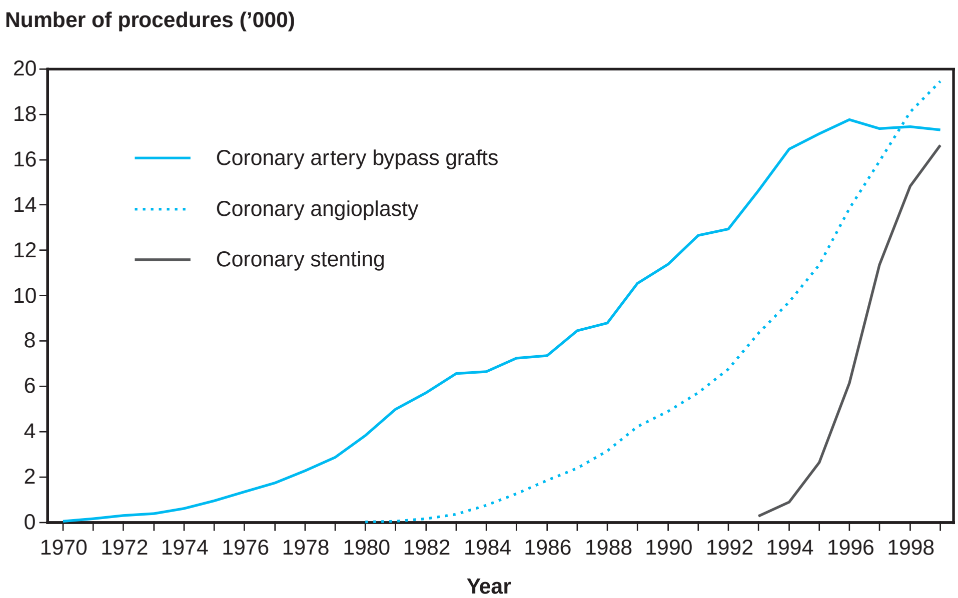
Coronary angiography *gives a picture of the heart's arteries, known as the coronary arteries. The procedure is used to diagnose coronary heart disease and is essential before either coronary artery bypass surgery or coronary angioplasty.*

Coronary angioplasty *involves inserting a catheter with a balloon into a major artery via the skin. The catheter is threaded through the circulation back towards the heart and into the coronary arteries to the area of the vessel blockage. The balloon is then inflated against the blocked area to create a wider passage for blood flow.*

Coronary stenting *involves expanding a metal mesh tube within the artery to form a supporting structure to hold the artery open at the point where there is narrowing. The development of this catheter-based technique was due to the risk of early acute closure of the coronary artery and a high rate of reblockage from coronary angioplasty.*

Coronary artery bypass grafting (CABG) *entails opening a patient's chest and using blood vessel grafts to bypass blockages in the coronary arteries and restore adequate blood supply to the heart muscle. CABG is not a cure for coronary artery disease, and there is a risk of blockage recurrence.*

Computerised tomographic (CT) *scans of the brain are used to guide treatment in acute stroke by distinguishing between major stroke types (either blocked blood supply to the brain, or bleeding within the brain or on its surface). The test is also done to confirm a clinical diagnosis of stroke.*



Note: Coronary angioplasty includes procedures with or without stents.

Source: AIHW/NHF National Cardiac Surgery and Coronary Angioplasty Registers.

Figure 2.15: Trends in coronary revascularisation procedures, 1970 to 1999

Mortality

Cardiovascular disease was the leading cause of death among Australians in 2000, accounting for 49,741 deaths or 39% of all deaths. Coronary heart disease was the major cardiovascular cause of death accounting for 53% of all such deaths, followed by stroke (25%), heart failure (5%) and peripheral vascular disease (5%). Cardiovascular mortality is higher among Indigenous Australians, in rural areas of the country and among socioeconomically disadvantaged groups (AIHW 2001c) (see Chapter 4).

Over the last three decades there has been a considerable decline (around 68%) in cardiovascular death rates. These declines are substantial, especially when compared with a decline of around 24% in the death rate for non-cardiovascular diseases. During the period 1989 to 2000, death rates for cardiovascular diseases fell 4.2% per year for males and 4.0% per year for females, a faster decline than for all causes combined (Table 2.13). Coronary heart disease death rates have been declining faster than death rates from stroke.

Declines in death rates for coronary heart disease and stroke have been influenced by reductions in the prevalence of some risk factors (high levels of blood pressure, tobacco smoking and saturated fat intake) and in medical interventions such as counselling, drug use, emergency care, medical and surgical treatment, and follow-up care. These gains have been achieved despite a significant increase in the prevalence of overweight and declines in physical activity levels (see Chapter 3).

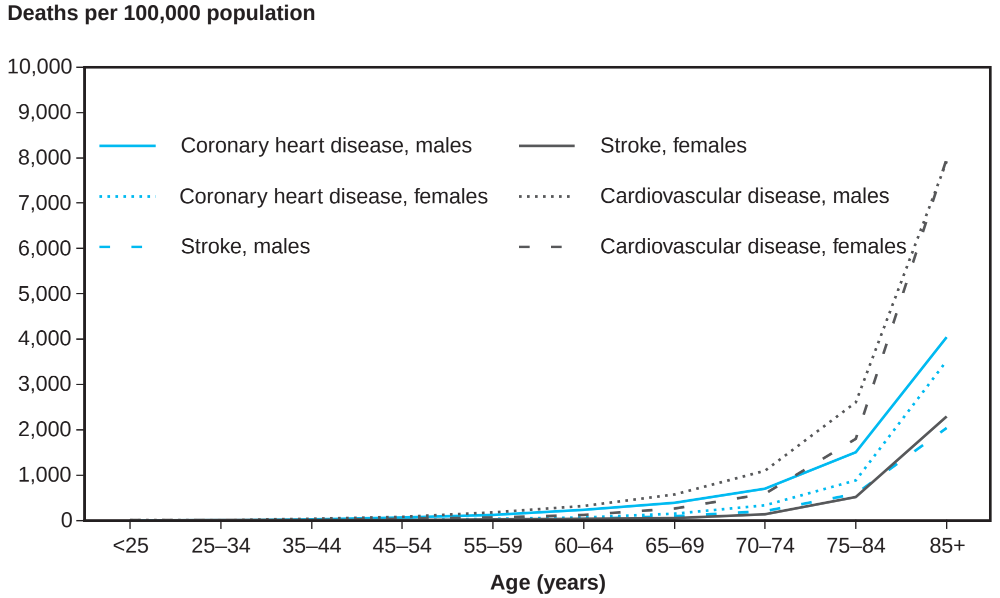
Table 2.13: Deaths from cardiovascular diseases, 2000

	Males			Females		
Cause of death (ICD-10 code)	**Number**	**Rate[(a)]**	**Annual rate of change[(b)] (per cent)**	**Number**	**Rate[(a)]**	**Annual rate of change[(b)] (per cent)**
All cardiovascular disease (I00–I99)	23,774	255.7	–4.2	25,967	172.9	–4.0
Coronary heart disease (I20–I25)	14,052	150.2	–4.8	12,469	84.0	–4.7
Stroke (I60–I69 and G45, G46)	4,931	53.7	–2.9	7,423	48.5	–3.1
Heart failure (I50)	982	10.9	–5.3	1,662	10.0	–5.3
Peripheral vascular disease (I71–I74)	1,108	11.9	–3.8	938	6.5	–1.8
Hypertensive disease (I10–I15)	449	4.9	–2.7	753	5.0	–2.3
Rheumatic fever and rheumatic heart disease (I00–I09)	101	1.1	–3.0	164	1.3	–3.0
All causes of death	**66,817**	**712.7**	**–2.5**	**61,474**	**450.7**	**–2.0**

(a) Age-standardised rate per 100,000 population.

(b) Annual change in the age-standardised death rate over the period 1989 to 2000.

Source: AIHW National Mortality Database.



Source: AIHW National Mortality Database.

Figure 2.16: Death rates for major cardiovascular diseases, 2000

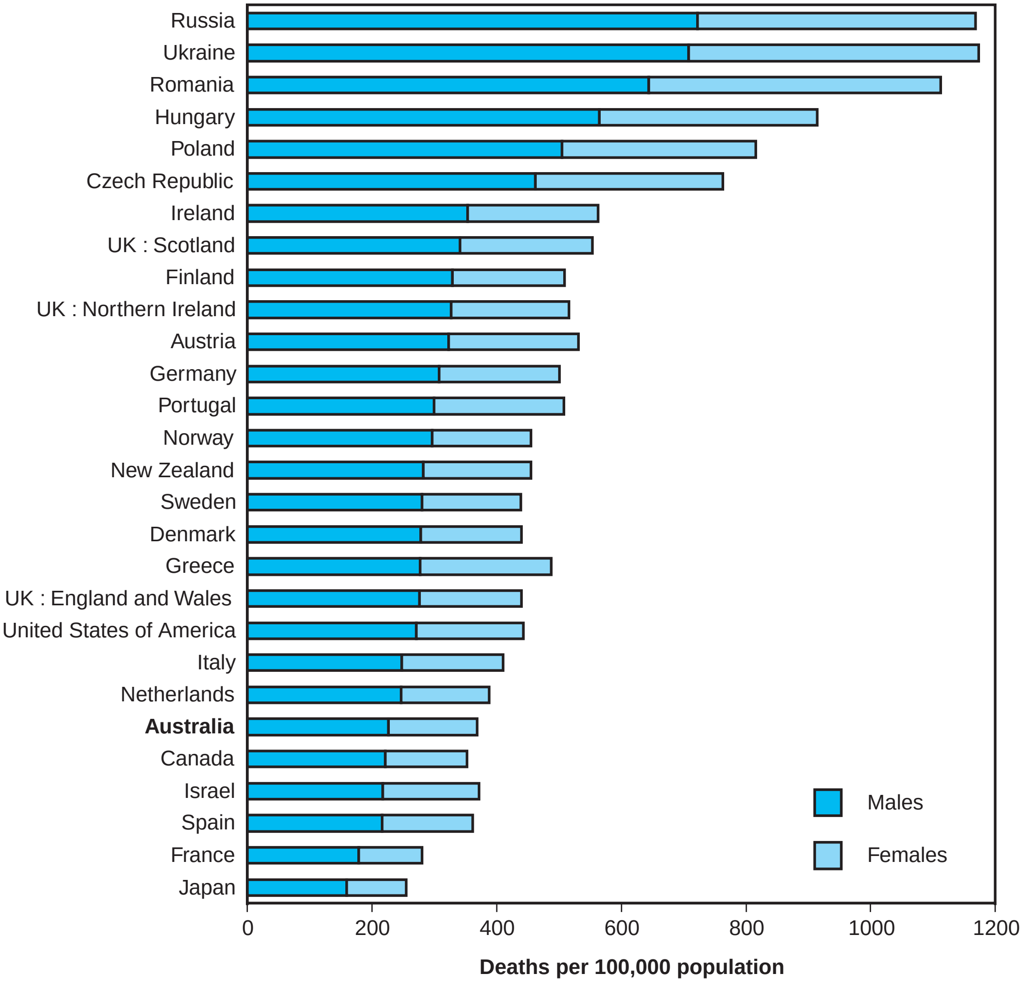
Males were more likely to die from cardiovascular disease than females across almost all age groups, with death rates among males aged 25–74 two to three times those of females in 2000. For coronary heart disease, the sex differential (difference between the sexes) was more marked than for cardiovascular disease overall, particularly in the 25–64 age group where death rates among males were three to four times those of females. For stroke, the sex differential was not as large as for coronary heart disease, with death rates across most age groups marginally higher for males than for females (Figure 2.16).

Death rates for cardiovascular disease increased dramatically with age, with over 80% of all such deaths occurring among those aged 70 years and over, compared with less than 5% for those aged under 60.

International comparisons

Cardiovascular disease is a major health and economic burden throughout the world, especially in developed countries. However, rates of cardiovascular disease are increasing dramatically in developing countries. It is estimated that coronary heart disease will become the single leading public health problem for the world by 2020 (AIHW 2001c).

Australian cardiovascular disease death rates ranked towards the lower end of the 28 countries compared in Figure 2.17 (sixth lowest for males and fifth lowest for females). Despite this, the Australian cardiovascular death rates for males and females were respectively 1.4 and 1.5 times the lowest rates—those of Japanese males and females.



Note: Death rates have been age-standardised to the World Standard Population.

Source: WHO 2001c; AIHW National Mortality Database.

Figure 2.17: Death rates for cardiovascular disease in selected countries, latest available year

The relative ranking of Australian death rates varies for the major components of cardiovascular disease. For coronary heart disease, Australian death rates ranked towards the middle of those compared (eleventh lowest for males and twelfth lowest for females), whereas for stroke Australian death rates were among the lowest of those compared (fourth lowest for both males and females).

Burden of cardiovascular disease

Cardiovascular disease was estimated to account for 22% of the disease burden in Australia in 1996, 33% of premature mortality and 9% of years of equivalent 'healthy' life lost through disease, impairment and disability (AIHW: Mathers et al. 1999a).

In 1993–94, cardiovascular disease accounted for the largest proportion of health system costs in Australia, $3.7 billion or 12% of total health system costs (AIHW: Mathers & Penm 1999a).

Cancers

Cancer is a diverse group of diseases in which some of the body's cells become defective, begin to multiply out of control, can invade and damage the area around them, and can also spread (metastasise) to other parts of the body to cause further damage.

In 2000, there were 35,628 deaths in Australia from cancer (malignant neoplasms), accounting for 27.8% of all deaths, with the proportion as high as 55.9% of deaths among 45–54-year-old females and 45.0% of deaths among 55–64-year-old males. The death rate for cancers as a whole peaked in the 1980s and has been declining slowly since then.

Information on cancers is collected by State and Territory cancer registries, and compiled by the AIHW in the National Cancer Statistics Clearing House (see Box 2.4).

With current knowledge of cancer risk factors, incidence and death rates for several major cancers can be greatly reduced. It has been estimated that 30% of cancers can be attributed to tobacco smoking, 30% to dietary influences, 2% to radiation exposure, 5–15% to infectious agents, and the remainder to other risk factors (Trichopoulos et al. 1996). The AIHW has estimated that 7,068 cancer deaths in 1998 were smoking-related and a further 307 were due to excessive alcohol consumption (AIHW & AACR 2001a). Many of the 979 deaths from melanoma can be attributed to excessive exposure to the sun.

Box 2.4: Cancer surveillance and monitoring in Australia

The registration of cancer is required by law in each of the States and Territories, usually under the Public Health Acts, where the data are collated by cancer registries. These registries collect clinical and demographic information about people with newly diagnosed cancer. This information is collected from hospitals, pathologists, radiation oncologists (cancer specialists), cancer treatment centres and nursing homes.

Agreement was reached in 1990 for all State and Territory cancer registries to supply the AIHW with records of all new cases of cancer from 1982 onwards, excluding non-melanoma skin cancer. This national collection is called the National Cancer Statistics Clearing House (NCSCH) and is operated by the AIHW under the supervision of the Australasian Association of Cancer Registries (AACR). Both the Australian Institute of Health and Welfare Act and Commonwealth privacy law provide for the protection of confidentiality of records supplied to the AIHW. As well as national statistics, the NCSCH also enables data to be released to researchers after a strict scientific and ethical review process which involves the AACR executive, the AIHW Ethics Committee and the State and Territory cancer registries. In December 2001 data for incidence were available to 1998 and for mortality to 2000.

In addition, the Registrars of Births, Deaths and Marriages collect information related to deaths from cancer. By combining information from these sources, statistics can be produced of cancer incidence, survival and mortality. These have disclosed high-risk groups and emerging incidence trends that have warranted a public health response.

Some risk factors are modifiable through lifestyle changes whereas others are inherited. Although some risk factors are unavoidable, risks of particular cancers may be reduced through clinical monitoring of people and their risk factors, and diagnosing and treating new cases early in their development.

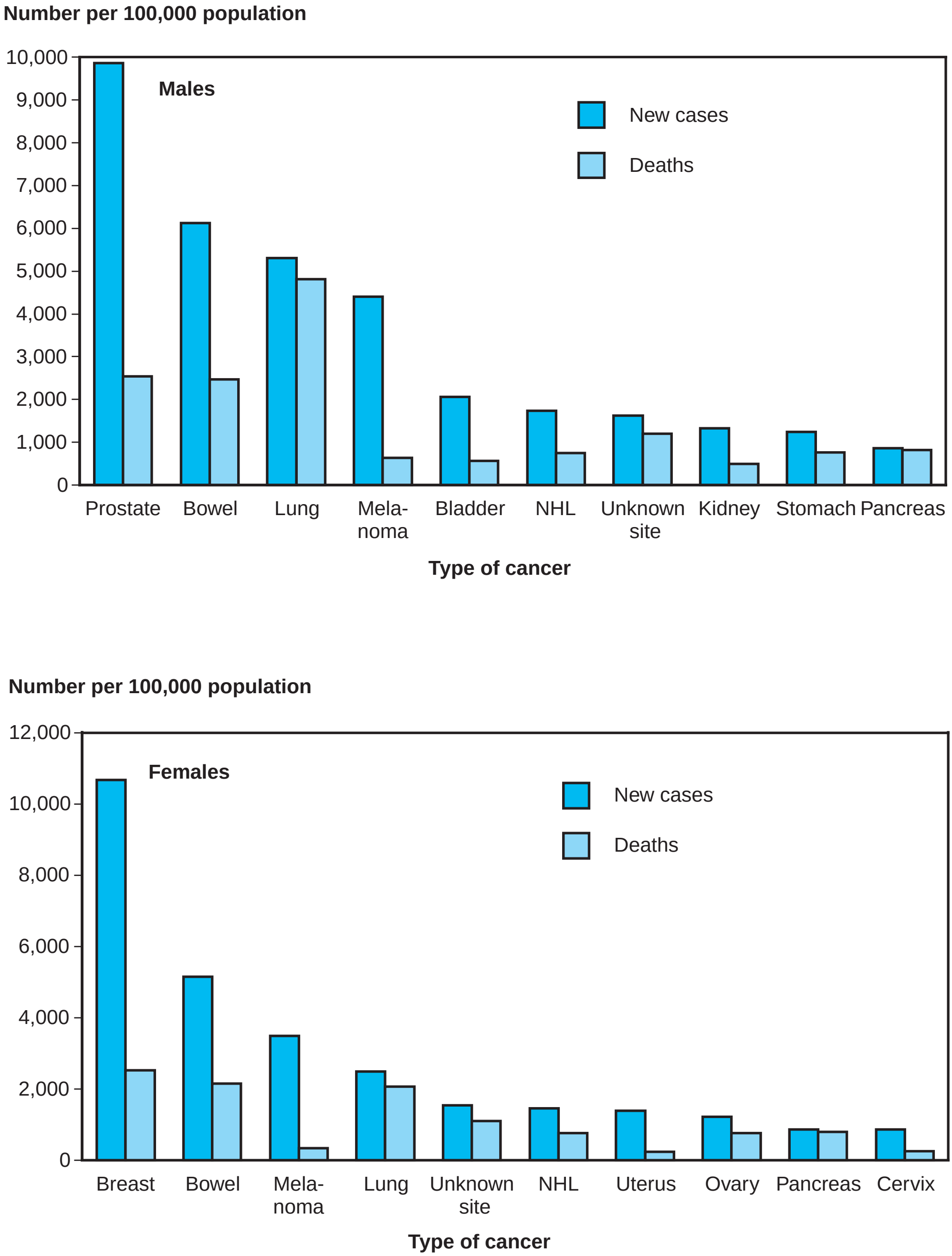
Each year, approximately 350,000 new cancer cases are diagnosed in Australia. A large proportion of these, approximately 270,000, are non-melanoma skin cancers (NMSC) which, if treated early, are much less life-threatening than most other cancers. Most of Australia's cancer registries do not record details of NMSC as most cases are not confirmed by histology, or not reported. These skin cancers are often self-detected and are usually removed in doctors' surgeries.

Cancer incidence

Excluding NMSC, there were 43,595 new cancers in males and 37,269 new cancers in females in Australia in 1998. This represented age-standardised incidence rates of 475 per 100,000 males and 347 per 100,000 females. At these incidence rates, it would be expected that 1 in 3 males and 1 in 4 females in Australia would be diagnosed with cancer in the first 75 years of life (AIHW & AACR 2001a).

In 1998 prostate cancer was the most common registrable cancer in males, with 9,869 cases diagnosed. It was followed by bowel cancer (6,131 new cases), lung cancer (5,307 new cases) and melanoma (4,398 new cases). Together these four cancers accounted for 59% of all registrable cancers in males. In females, breast cancer (10,665) was the most common registrable cancer, followed by bowel cancer (5,158), melanoma (3,493) and lung cancer (2,488), which in total accounted for 59% of all registrable cancers in females (Figure 2.18).

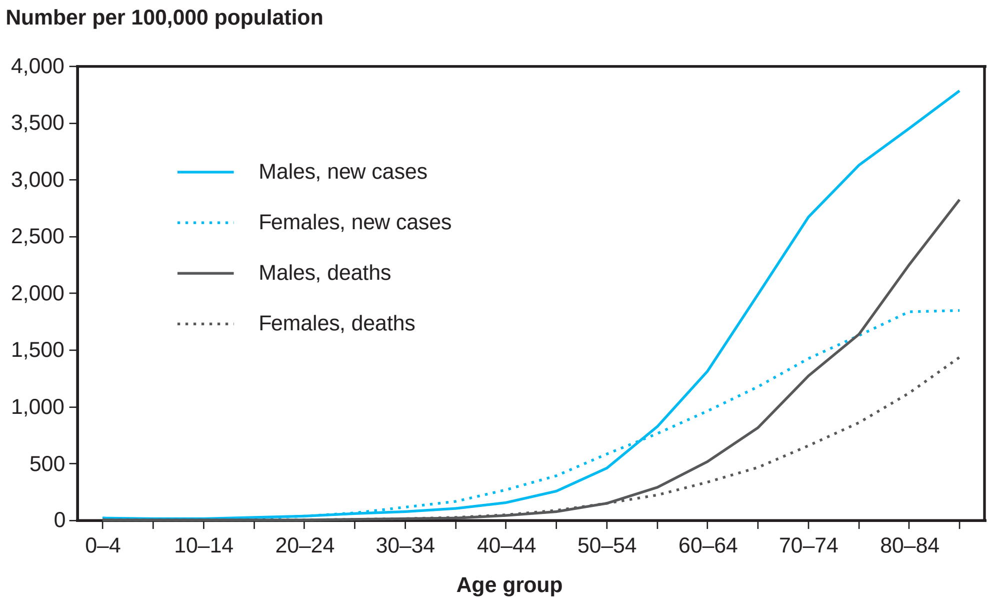
The overall incidence of cancer is lowest in late childhood. In adult life it increases with age (Figure 2.19). Males have a higher incidence than females beyond 55 years of age. Females have a higher overall incidence than males between ages 25 and 54 years because cancers of the cervix, uterus, ovary and breast have an incidence almost seven times that of cancers specific to males in this age range.



Note: NHL is non-Hodgkin's lymphoma

Source: AIHW & AACR 2001a.

Figure 2.18: Number of new cases and deaths from the most frequently occurring cancers (excluding non-melanoma skin cancer), 1998



Source: AIHW & AACR 2001a.

Figure 2.19: Age-specific incidence and death rates for cancers (excluding non-melanoma skin cancer), 1998

Between 1993 and 1998, age-standardised incidence rates for all registrable cancers combined declined for males by an average of 1.9% per year and rose for females by an average of 0.6% per year. These incidence rates have been strongly influenced by the steady rise in breast cancer incidence in females and the rise and fall of prostate cancer incidence during this period. Changes in prostate cancer incidence have been influenced by changes in diagnostic testing.

Cancers in males that showed an average annual increase for the period 1993 to 1998 include melanoma (2.1%), testis (3.4%) and kidney (1.6%). Lung cancer has shown a consistent decline since 1983, with an average annual decline for the period 1993 to 1998 of 1.8%. Other cancers in males recording an average decline during that period were stomach (–2.7%) and pancreas (–1.0%).

Among females, melanoma incidence had an average annual rise of 1.7% from 1993 to 1998. Non-Hodgkin's lymphoma (1.8% per year) and cancers of the kidney (1.7%), bladder (1.2%), pancreas (1.0%), breast (0.9%) and lung (0.8%) all showed an increase for this period. On the other hand, for the same period, cervical cancer showed the largest average annual decline in age-standardised incidence rate (–6.9%); cancer of the oesophagus (–1.5%) and leukaemia (–0.6%) also showed a decline for the period 1993 to 1998. Changes in cervical cancer incidence can be attributed to the national cervical screening program introduced in the early 1990s.

Improvements in detection of various cancers through the introduction and more widespread use of medical technologies has increased the number of cancers reported and improved the accuracy of determining their site of origin in the body.

Survival following cancer diagnosis

Survival after a diagnosis of cancer is an important measure in assessing the broad impacts of early detection methods such as screening and of treatment. Relative survival is the method commonly used by population-based cancer registries to measure and assess survival. It is the ratio between what actually happened to a group of people with cancer and what would normally have occurred to them in the absence of cancer. This discussion focuses on the 5-year relative survival proportion. This is the relative survival over the first 5 years following a diagnosis of cancer. A relative survival of 100% indicates that the disease has made no difference to survival of the group over this period. A survival proportion of less than 100% indicates that fewer members of the group survived for 5 years than would have been expected for similar people in the general population.

The average 5-year relative survival proportion for all registrable cancers diagnosed in Australia from 1992 to 1994 was 56.8% for males and 63.4% for females (Table 2.14). The cancers with the highest relative survival in males were cancer of the testis (95.4%) and melanoma (90.0%), and in females were cancer of the thyroid (95.6%) and melanoma (94.6%). Cancers with the lowest relative survival in both males and females were cancers of the pancreas (5.4% for males and 5.2% for females), and the lung (11.0% and 14.0%).

Relating to the diagnosis periods 1982–86 and 1992–94, 5-year relative survival for all registrable cancers increased on average from 43.8% to 56.8% respectively for males and from 55.3% to 63.4% for females. Most individual cancer sites showed an increase in relative survival over this period. The largest increases for males were in cancer of the prostate (59.3% to 82.7%) and cancer of the kidney (50.8% to 59.9%), and for females were in cancer of the breast (72.3% to 84.0%) and Hodgkin's lymphoma (73.8% to 84.4%). Cancers of the brain and bladder showed small decreases in relative survival over this period for both males and females, but these decreases were not statistically significant.

Mortality from cancer

In 2000, there were 20,153 deaths among males from cancer and 15,475 cancer deaths among females. This represented 30.2% of all deaths in males and 25.2% of all deaths in females. The age-standardised cancer death rates in 2000 were 211 per 100,000 males and 128 per 100,000 females. At these death rates, it would be expected that 1 in 7 males and 1 in 11 females would die from cancer by age 75 or younger.

Lung cancer accounted for 22.8% of cancer deaths among males in 2000, while prostate cancer accounted for 13.2% and bowel cancer accounted for 12.6%. The major causes of cancer death in females were breast cancer (16.2% of all cancer deaths), lung cancer (14.8%) and bowel cancer (14.1%).

From the age of 15, death rates for cancer increase with age. Further, Australia's ageing population has meant that older people make up a higher proportion of those dying from cancer. For example, in 1983, approximately 30% of all cancer deaths occurred in persons aged 75 years and over, but by 2000 this proportion was around 45%.

Table 2.14: Five-year relative survival ratios for all registrable cancers and selected individual cancer sites, Australia

	Diagnosis period		
Cancer site	1982–86	1987–91	1992–94
		Males (per cent)	
Testis	91.1	95.2	*95.4
Melanoma	83.0	87.2	*90.0
Thyroid	81.0	82.6	87.9
Prostate	59.3	64.3	*82.7
Hodgkin's lymphoma	74.1	79.1	*82.6
Bladder	71.2	71.6	70.8
Kidney	50.8	53.7	*59.9
Colon	50.2	54.7	*58.3
Rectum	48.7	51.2	*56.6
Non-Hodgkin's lymphoma	49.6	51.1	*54.6
Leukaemia	39.4	43.3	41.2
Brain	24.8	24.3	23.8
Stomach	19.2	21.6	*22.6
Unknown primary	11.7	13.0	13.4
Lung	9.3	10.7	*11.0
Pancreas	4.2	4.4	5.4
All registrable cancers	**43.8**	**48.1**	***56.8**
		Females (per cent)	
Thyroid	87.8	91.9	*95.6
Melanoma	90.9	93.5	*94.6
Hodgkin's lymphoma	73.8	79.9	*84.4
Breast	72.3	77.8	*84.0
Uterus	76.1	78.5	*81.4
Cervix	69.6	72.0	*74.6
Bladder	67.2	65.2	64.7
Rectum	52.3	56.0	*60.6
Colon	51.3	54.7	*58.7
Kidney	49.4	52.7	*57.5
Non-Hodgkin's lymphoma	49.9	54.6	*55.8
Leukaemia	39.4	44.2	*43.2
Ovary	34.4	37.7	*42.0
Stomach	21.1	21.8	*24.8
Brain	24.1	25.3	23.8
Lung	11.8	11.9	*14.0
Unknown primary	10.4	10.9	11.5
Pancreas	4.1	5.4	5.2
All registrable cancers	**55.3**	**59.1**	***63.4**

* Change between 1982–86 and 1992–94 is statistically significant at the 95% level.

Source: AIHW & AACR 2001b.

Males have similar or higher cancer death rates than females before age 35 and higher rates from age 55 onwards. The higher death rates among females aged 35–54 years reflect the impact of female breast cancer and the female-only cancers. However, the difference between the male and female death rates in this age group is not as large as that observed for incidence.

Between 1993 and 2000, total cancer death rates declined for both males and females by an annual average of 1.8% and 2% respectively. The decline in male lung cancer and prostate cancer deaths was the main contributor to the falling death rate for males.

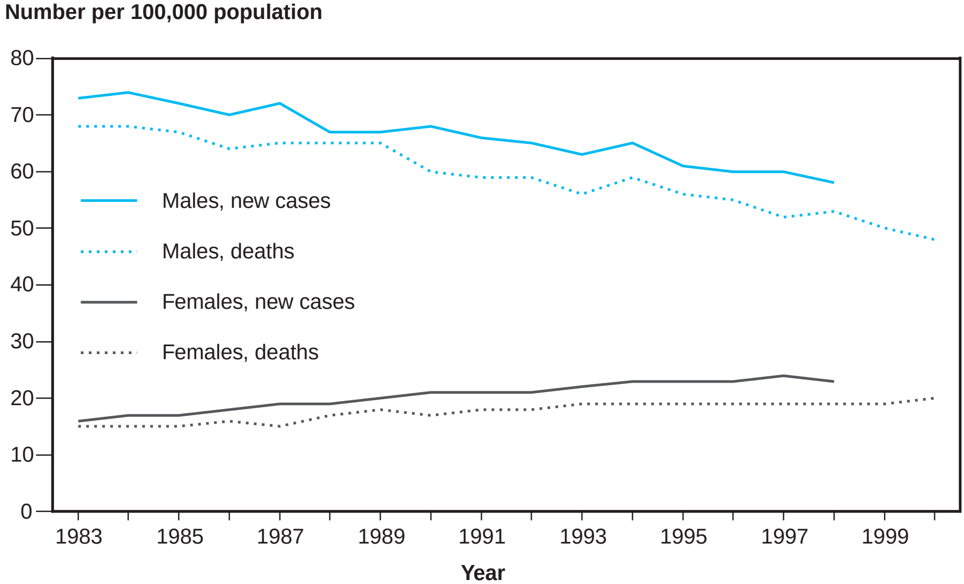
Specific cancers

Lung cancer, breast cancer, bowel cancer and prostate cancer are among the most commonly diagnosed cancers and have a significant impact on morbidity, mortality and health service use. Other common cancers, such as melanoma, have been the focus of discussion in previous editions of *Australia's Health*.

Lung cancer

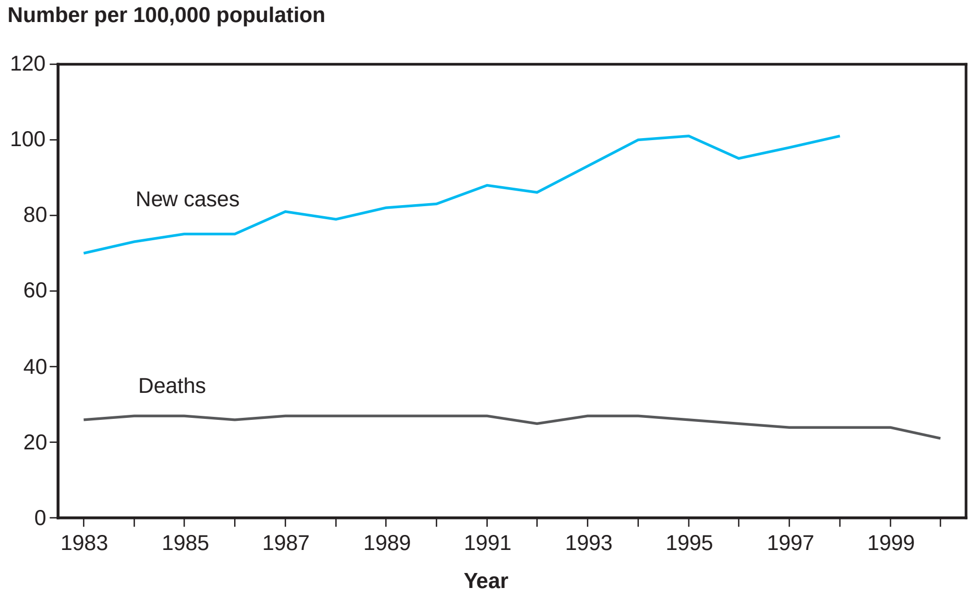
Lung cancer is the leading cause of cancer death in Australia. There were 5,307 new cases of lung cancer diagnosed in males in 1998 (58 new cases per 100,000 population) and 2,488 new cases diagnosed in females (23 new cases per 100,000). In the same year, there were 4,817 deaths (53.2 per 100,000) for males and 2,076 for females (14.0 per 100,000), with only a slight fall to 4,587 (48.0 per 100,000) for males and an increase to 2,291 (19.6 per 100,000) for females in 2000. Lung cancer currently accounts for 12% of all new cancer registrations in males and 7% in females, but for 22.8% of all male cancer deaths and 14.8% of all female cancer deaths. The 5-year relative survival proportion for people diagnosed with lung cancer during the period 1992–97 was 11% for males and 14% for females.

Smoking is responsible for approximately 90% of new cases of lung cancer in males and 65% in females (AIHW: Ridolfo & Stevenson 2001). Twenty-five years ago, smoking rates in males were almost double those in females. However, this is no longer the case, with the estimates for 2001 indicating that 21% of males and 18% of females aged 14 years or over are daily smokers (see Chapter 3). Current patterns of lung cancer incidence largely reflect smoking behaviour approximately 20 years ago, due to the time lag between exposure to cancer-causing agents in tobacco smoke and the onset of cancer. The changing prevalence of smoking in males compared with females is reflected in the trends for lung cancer incidence and mortality (Figure 2.20). Between 1993 and 1998, the incidence and mortality of lung cancer among males fell by an average of 1.8% and 1.9% respectively per year. The mortality falls in the years 1999 and 2000 followed a similar trend. In contrast, lung cancer incidence among females increased at an average rate of 0.8% per year from 1993 to 1998 and lung cancer mortality rose at an average rate of 0.4% per year from 1993 to 2000. This reflects rising levels of smoking among females during the 1970s, whereas male smoking levels were declining. The increase in lung cancer incidence is mainly in females aged 65 and over, whereas rates in younger females have generally remained stable or fallen. Despite these patterns, age-standardised male lung cancer incidence rates are still more than 2.5 times the female rates.



Source: AIHW & AACR 2001a; AIHW National Mortality Database.

Figure 2.20: Age-standardised incidence and death rates for lung cancer, 1983 to 2000



Source: AIHW & AACR 2001a; AIHW National Mortality Database.

Figure 2.21: Age-standardised incidence and death rates for breast cancer in females, 1983 to 2000

Breast cancer

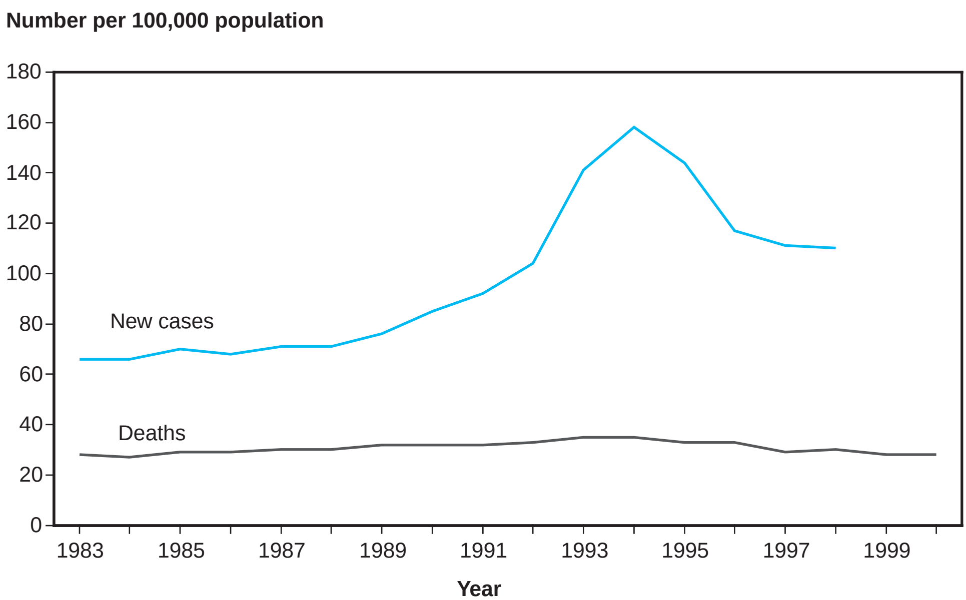
Apart from NMSCs, breast cancer is the most common cancer detected in Australian females, for which the lifetime risk of developing this disease before age 75 is 1 in 11. In 1998, 10,665 new cases of breast cancer were diagnosed in Australia. Breast cancer is also the most common cause of death from cancer in females with 2,511 deaths in 2000.

The incidence of breast cancer has been on the rise since the early 1980s. However, death rates due to breast cancer have remained relatively stable over the same period, at around 22 deaths per 100,000 females (Figure 2.21).

The 5-year relative survival proportion for females diagnosed with breast cancer during the period 1992–94 was 84%. The relative survival proportion increased over time, with those diagnosed in the 1980s having a relative survival proportion of 72%. Females aged between 40 and 69 years diagnosed with breast cancer during the period 1992–94 had the best relative survival proportion (86%).

Prostate cancer

Apart from NMSCs, prostate cancer is the most common cancer detected in Australian males, for which the lifetime risk of developing this disease before age 75 is 1 in 11. In 1998, there were 9,869 new cases of prostate cancer diagnosed. Prostate cancer is the second most common cause of death from cancer in males, after lung cancer, with 2,663 deaths in 2000.



Source: AIHW & AACR 2001a; AIHW National Mortality Database.

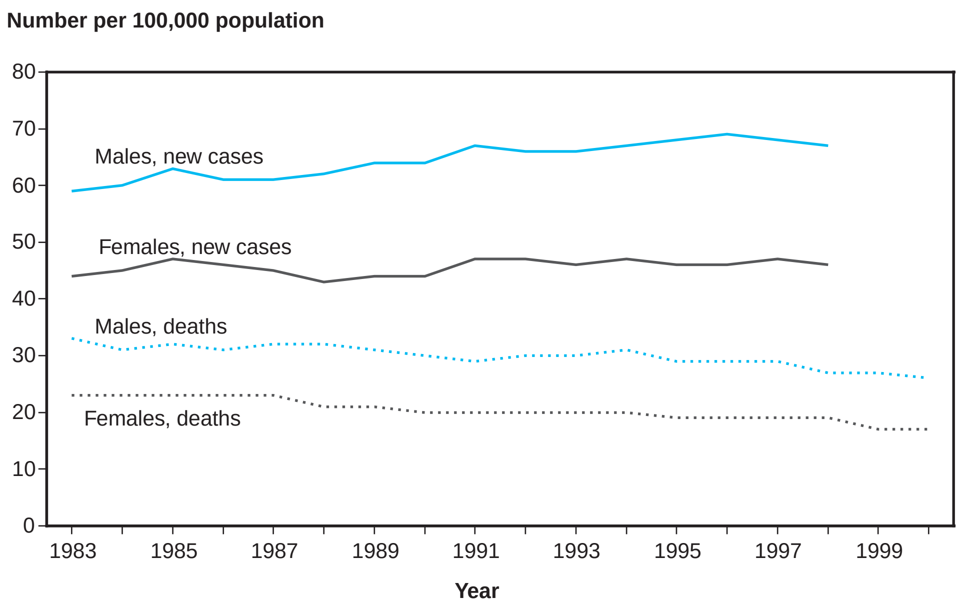
Figure 2.22: Age-standardised incidence and death rates for prostate cancer, 1983 to 2000

Between 1989 and 1994, there was a dramatic rise in the number of new cases of prostate cancer registered (Figure 2.22). Reported incidence rates have fallen substantially since then, although not to pre-1989 levels. The rise and then fall in prostate cancer incidence rates has been attributed to increased detection of the disease through increased investigation, particularly the introduction of prostate-specific antigen (PSA) testing around 1990. PSA tests are specifically designed to identify cancers before the onset of clinical symptoms. Many of these prevalent cancers may not show any symptoms, and therefore would not be detected except for PSA testing. The recent decline in the incidence rate indicates a return towards the underlying rate, removing the catch-up effect from previously undetected cases. The incidence rate is also declining because the number of PSA tests conducted is falling.

The 5-year relative survival proportion for males diagnosed with prostate cancer in the period 1992–94 was 83%.

Bowel cancer

Apart from NMSCs, bowel (colorectal) cancer is the second most common cancer in both Australian males and females. The lifetime risk of developing this cancer before the age of 75 is 1 in 17 for males and 1 in 26 for females. In 1998, there were 6,131 new cases of bowel cancer diagnosed in males and 5,158 new cases in females. Bowel cancer is the third most common cause of death from cancer in males, after lung and prostate cancers, and the third most common in females, after breast and lung cancers. In 2000 there were 2,533 bowel cancer deaths of males and 2,179 of females.



Source: AIHW & AACR 2001a; AIHW National Mortality Database.

Figure 2.23: Age-standardised incidence and death rates for bowel cancer, 1983 to 2000

For bowel cancer, both the male and female incidence rates have remained largely unchanged since 1993 while mortality rates have fallen steadily—the male rate decreased by 1.9% per year between 1993 and 2000, and the female rate by 2.3% per year (Figure 2.23). The bowel comprises the colon and the rectum. The 5-year relative survival proportion for both males and females diagnosed with colon cancer in the period 1992–94 was around 58%. For cancer of the rectum, the 5-year relative survival proportion for males diagnosed in the 1992–94 period was 57% and for females was 61%.

Injuries

Injury (used here to mean both injury and poisoning) is a significant cause of mortality and morbidity in Australia. It is the leading cause of death among young people and accounts for a range of physical, intellectual and psychological disabilities that affect the quality of life of injured people and their families, often seriously. Injury is a considerable source of healthcare cost, estimated to account for approximately 8% of the total direct cost of all diseases (DHFS & AIHW 1998).

Deaths

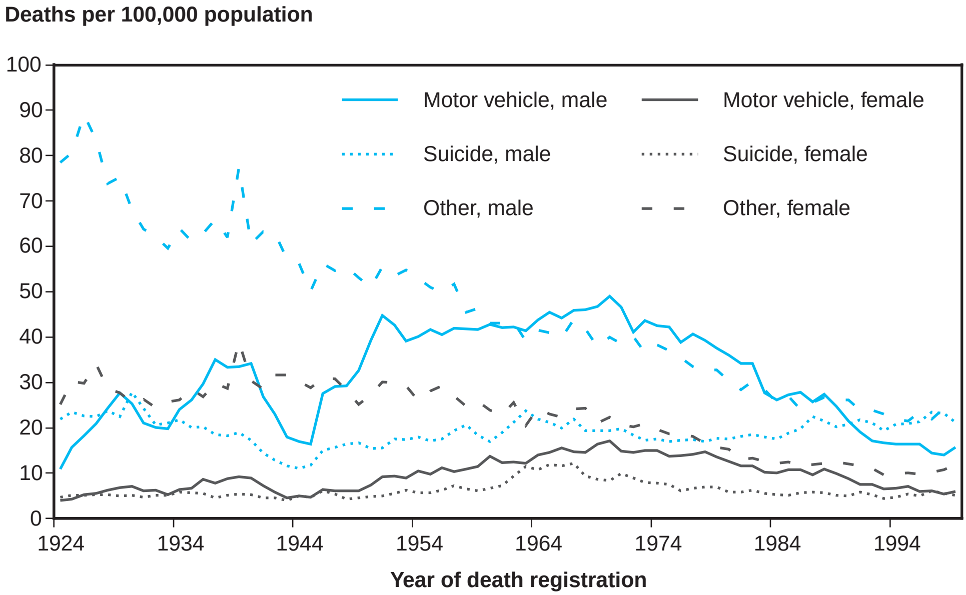
In 1999, injury was the fifth leading cause of death in Australia. A total of 8,361 deaths (5,868 males and 2,493 females) were the result of an external cause of injury, accounting for 6.5% of all deaths registered in that year. For people under 45 years, injury was the main cause of death, representing 51.3% of all deaths for people in that age group. Injury death rates are highest among young males and for both sexes in old age. Of all injury deaths, almost one-third were of males aged between 20 and 39 years.

Suicide accounted for the largest proportion of injury deaths (2,492 deaths or 29.8%) in 1999, followed by deaths due to road crashes (2,011 or 24.1%). Despite the large reduction in death rates from road crashes since 1970, they remain a major cause of injury-related deaths.

Trends in injury-related deaths

Over the past 20 years, age-standardised death rates due to injury decreased significantly but still less than overall death rates. Furthermore, during the middle and late 1990s, injury death rates remained more or less static, while all-cause death rates continued to decline. There was a 4% increase in the rates of injury deaths registered in 1999 compared with those registered in 1998. This apparent increase is likely to be largely a reflection of the introduction of the tenth revision of the International Classification of Diseases (ICD-10). This is because more deaths are generally coded as being due to external causes under ICD-10 than under ICD-9 (about 3% more when applied to 1998).

Trends in injury deaths differ for major types of external causes (Figure 2.24). A considerable increase in the suicide rate occurred in the 1960s when the rates due to the use of pharmaceutical substances (especially barbiturates) increased. Also, there was an increase in the all-ages male suicide rate from the early 1990s, although the rate has declined since 1997 from 23.4 per 100,000 males to 19.4 in 2000. Suicide (also see next page) has become a more common cause of male death than transport-related injuries in recent years. In the mid-twentieth century, deaths due to motor vehicle crashes accounted for a large proportion of injury deaths in Australia because of the emergence



Note: Age standardised to the Australian population at 30 June 1991.

Source: AIHW National Injury Surveillance Unit using mortality and population data from ABS.

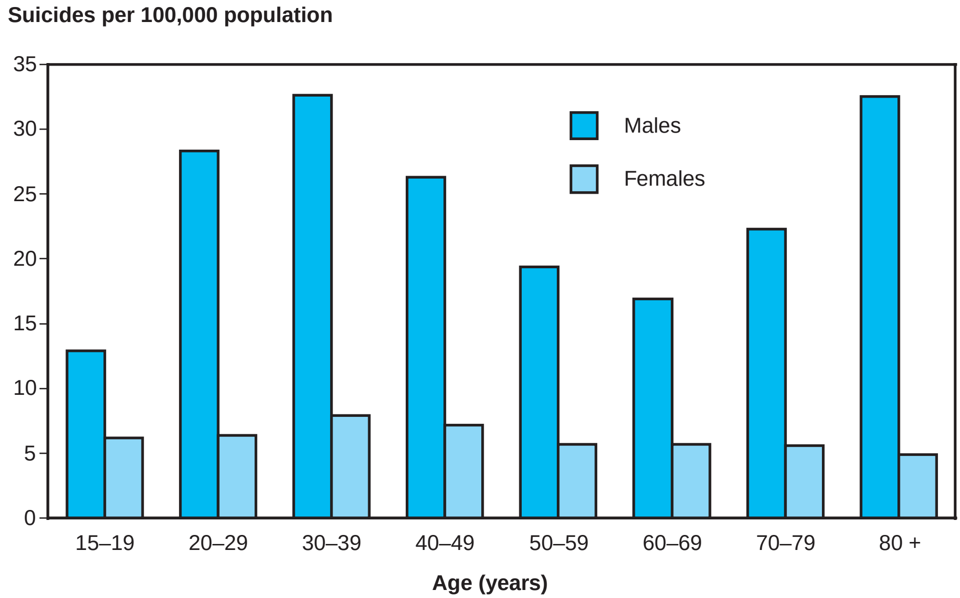
Figure 2.24: Injury mortality, 1924 to 1999

of this mode of transport. Since the early 1970s, road injury death rates and the actual number of deaths have declined significantly, even though vehicle numbers and the distance travelled have continued to increase. The reductions in deaths due to road injury may be attributed to a range of interventions designed to improve road safety (DHFS & AIHW 1998).

Suicide

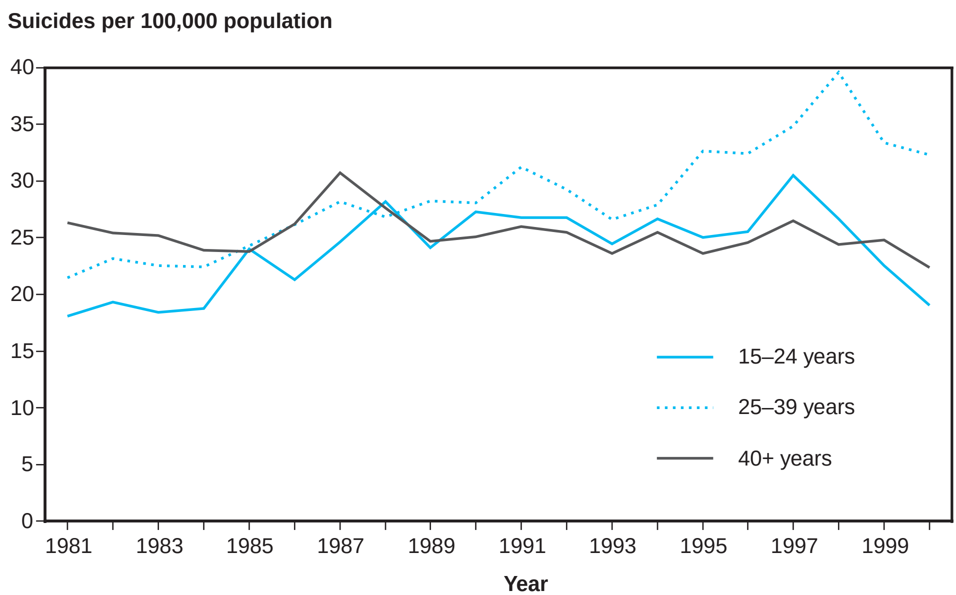
Suicide is a significant cause of death in Australia, responsible for 2,363 deaths registered in 2000 (1,860 males, 503 females) and 2,492 deaths in 1999 (2,002 males, 490 females). In both these years, the male suicide rate was considerably higher than the female rate across all age groups. Although the rate for adult females varied little by age, the male rate in 2000 was highest between ages 30 and 39 and at age 80 and over (Figure 2.25). For males, excluding deaths from road crashes, suicide deaths in 1997 exceeded those from all other injuries combined (Steenkamp & Harrison 2000). It has been reported that about one-third of those who committed suicide, and 40% of those who attempted suicide, were receiving psychiatric treatment before the episode (DHAC 1998).

Suicide became a matter of national public health concern in Australia during the 1990s. A focus on youth suicide was prompted by the observation that the rate for young males (i.e. 15–24 years) had risen about threefold during the 30 years to 1990, whereas the rates at older ages had tended to decline. During the 1990s, the rate for males aged 15–24 did not rise further and declined each year after 1997. In contrast, the rate for males aged 25–39 rose through most of the 1990s and remains markedly higher than that for males aged 15–24 or 40 and over (Figure 2.26).



Note: Age standardised to the Australian population at 30 June 1991.
Source: AIHW National Mortality Database.

Figure 2.25: Age-specific suicide rates, 2000



Note: Age standardised to the Australian population at 30 June 1991.
Source: AIHW National Mortality Database.

Figure 2.26: Suicide rates for selected male age groups, 1981 to 2000

Table 2.15: Mode of suicide, 1999 and 2000 (number)

	1999		2000	
Mode of suicide	**Males**	**Females**	**Males**	**Females**
Intentional self-poisoning (excluding carbon monoxide, motor vehicle exhaust, utility gas)	177	125	175	134
Exposure to carbon monoxide, motor vehicle exhaust, utility gas	473	98	441	97
Hanging, strangulation and suffocation	868	160	807	182
Firearm discharge and explosive material	257	13	213	10
Drowning and submersion	18	19	29	18
Sharp object	30	13	30	6
Jumping from a high place	73	25	56	16
Other specified and unspecified methods	106	37	109	40
Total	**2,002**	**490**	**1,860**	**503**

Source: AIHW National Mortality Database.

Death by hanging, strangulation or suffocation was the main method of suicide in Australia in 1999 and 2000, for both males and females (Table 2.15). Hanging has been the most common method of suicide for males since the early 1990s and for females since 1997. In 2000, along with strangulation and suffocation it accounted for 42% of all suicides. The use of firearms as a method of suicide, although less common than in the 1980s, is still very much a male phenomenon, accounting for 11.5% of male suicides in 2000 compared with 2% of female suicides.

More than three-and-a-half times as many males as females committed suicide in 2000. In 1999 the ratio was about four to one. On the other hand, females accounted for about 58% of hospital separations for attempted suicide and intentional self-harm attempts in 1999–00 (AIHW 2001a). A similar situation exists in the United States. The greater suicide rate among males may therefore reflect more violent methods, such as firearm use.

Hospital care

Injury is a major cause of hospitalisation. In 1998–99, injury or poisoning was the principal diagnosis recorded for 401,723 hospital separations, accounting for about 7% of all hospital separations. The age-standardised hospital separation rate for injury was 2,104 per 100,000 population and the rates for males and females were 2,505 and 1,671, respectively, for this period.

Accidental falls were the leading single cause of injury-related hospital admissions representing 28.6% of injury separations. These separations accounted for the largest proportion of bed-days (647,307 bed-days or 38.1%) with an average length of stay of 5.6 days. Falls were the reason for more than half of injury separations of people aged 65 years and over (52,125 bed-days), and for more than one-third of injury separations of children aged 0–14 years (25,668 bed-days).

About 12% of injury-related hospitalisations were due to transport-related incidents. Other unintentional injuries accounted for 26.9% of injury separations and for 14.0% of bed-days.

Medical misadventure, complications and so on were another common cause of injury-related hospital admissions in 1998–99, representing 16.7% of all injury separations and accounting for 428,146 patient bed-days (25.2% of all injury bed-days) with an average length of stay of 6.4 days. The 1994 Quality in Australian Health Care Study reported that 16.6% of admissions to 28 hospitals in New South Wales and South Australia were associated with an 'adverse event' caused by healthcare management and that 4.9% of these events resulted in death (Wilson et al. 1995).

Injuries to the head were a common principal diagnosis of injury-related hospital separations (60,366 cases or 15.0% of all injury hospitalisations). They were the most common principal diagnosis among injury-related hospital separations for children aged 0–14 years, representing 23.1% of injury separations in that age group. Head injury was the main diagnosis for 20.1% of injury separations of people aged 15–34 years.

Injuries to the wrist or hand were the main diagnosis for 10.4% of injury hospitalisations. Injuries to the elbow and forearm also made up 23.1% of injury separations among children aged 0–14 years. Injuries to the hip or thigh were the most frequent principal diagnosis of injury-related hospital care for females aged 65 years and over in 1998–99, accounting for 26.7% of female hospitalisations due to injury within this age group.

Mental health problems and disorders

A mental disorder is a disturbance of mood or thought that can affect behaviour and distress the person or those around them, so that the person cannot function normally. Mental disorders such as depression, anxiety and schizophrenia are common, affecting about one million Australians (ABS 1997a). They impose a heavy burden of human suffering including stigmatisation of those affected; they account for much disability, and contribute to the death of many Australians per year. For example, studies in Australia and overseas suggest that some form of mental disorder is a component in many suicides (see page 58). Mental disorders are also responsible for a large number of hospitalisations and incur high health system costs. Mental health has consequently been included as a National Health Priority Area for focused attention (AIHW & DHFS 1997).

Prevalence

Information on the national prevalence and types of mental health problems and disorders may be gathered from three major sources: the National Survey of Mental Health and Wellbeing, hospital separation data, and general practitioner consultation data.

Table 2.16: Prevalence of mental disorders in adults, 1997 (per cent)

Type of disorder	Males	Females
Any affective disorder	4.2	7.4
Any anxiety disorder	7.1	12.0
Any substance use disorder	11.1	4.5
Any mental disorder	17.4	18.0

Source: Andrews et al. 1999.

National Survey of Mental Health and Wellbeing

The National Survey of Mental Health and Wellbeing was conducted between 1997 and 1998 and had three components: adults, children and adolescents, and people with 'low prevalence' (psychotic) disorders. From the adult component of the National Survey of Mental Health and Wellbeing, an estimated 17.7% of adults in Australia had an anxiety, affective or substance use disorder, or a combination of these, in the 12 months preceding the survey (Table 2.16). Given the limited scope of the survey (disorders such as schizophrenia and dementia were not included, homeless people were not surveyed) and the 78% survey response rate, the overall prevalence of mental disorders among adults is likely to be higher. However, the pattern of mental disorder revealed by the survey is consistent with survey findings from Canada, the United States and the United Kingdom, despite differing methods (Andrews et al. 1999).

The 'low-prevalence disorders' component of the National Survey of Mental Health and Wellbeing was a study of people living with psychotic disorders in 'catchment areas' in the Australian Capital Territory, Queensland, Victoria and Western Australia. Although less common than disorders such as anxiety and depression, psychotic disorders such as schizophrenia represent a very serious group of illnesses that affect brain functioning, perceptions, emotions and communication. Overall, the prevalence of psychotic disorders in the urban adult population was estimated to be in the range of 4 to 7 per 1,000, depending on the area under study (Jablensky et al. 1999). The 1-month and 12-month prevalence rates by sex are shown in Table 2.17.

Of the participants in the child and adolescent component of the National Survey of Mental Health and Wellbeing, 14% were found to have mental health problems (Sawyer et al. 2000). A mental health problem was considered to exist if the number of emotional and behavioural problems experienced by an individual was in the range typically reported for children and adolescents attending mental health clinics. The prevalence of specific areas of mental health problems, expressed as a percentage of the sample, is shown in Table 2.18.

Table 2.17: Estimated 1-month and 12-month prevalence of psychoses in mainstream services, 1997 (per 1,000 estimated resident population)

	Area			
Prevalence period	**ACT**	**Qld**	**Vic**	**WA**
Males				
1-month rate	3.12	3.43	4.56	5.94
12-month rate	4.49	4.08	5.53	6.74
Females				
1-month rate	2.63	2.20	3.00	4.23
12-month rate	3.71	2.55	3.52	4.78
Persons				
1-month rate	2.88	2.81	3.75	5.10
12-month rate	4.10	3.31	4.49	5.78

Source: Jablensky et al. 1999.

Table 2.18: Prevalence of mental health problems in specific areas, 1998 (per cent)

		4–12 years		13–17 years	
Problem	**All children**	**Males**	**Females**	**Males**	**Females**
Somatic complaints	7.3	7.2	5.6	10.6	6.8
Delinquent behaviour	7.1	7.4	7.8	6.4	5.9
Attention problems	6.1	7.4	6.2	4.8	4.6
Aggressive behaviour	5.2	5.9	5.2	5.0	4.0
Social problems	4.6	6.5	3.9	3.8	3.0
Withdrawn	4.3	5.4	2.9	4.8	4.2
Anxious/depressed	3.5	4.1	2.9	3.6	3.6
Thought problems	3.1	3.2	2.7	3.4	3.1
Total problems	**14.1**	**15.0**	**14.4**	**13.4**	**12.8**

Source: Sawyer et al. 2000.

In addition to mental health problems, the child and adolescent component of the survey also looked at the prevalence of three mental disorders (with 'disorders' being defined differently from 'problems'). The prevalence of attention deficit/hyperactivity disorder was 11.2% in all adolescents and children compared with 3.7% for depressive disorder and 3% for conduct disorder. In adolescents aged 13–17 years, depressive disorder was found in 4.8% of males and 4.9% of females.

Hospital separations

Hospital separations reflect the more severe end of the spectrum of mental health problems and disorders. In 1999–00, mental disorders accounted for 244,857 hospital separations (Table 2.19). People diagnosed with depressive disorders, neurotic and stress-related disorders, and schizophrenia accounted for the highest proportion of separations for mental disorders in 1999–00 (24.6%, 17.9% and 11.1% respectively).

Professional consultations

Visits to GPs, psychologists, and psychiatrists are another source of information that may relate to the prevalence of mental health problems and disorders in Australia. The majority of mental health care in Australia is delivered through general practice. Furthermore, a person with a mental disorder, especially depression, is more likely to seek help from a GP than from any other health care provider (ABS 1998a).

According to the BEACH survey of general practice activity 1999–00, depression accounted for 2.3% of total problems and was the fourth most commonly managed health problem (340 per 1,000 encounters with a GP). Anxiety accounted for 1.2% of the total problems managed (170 per 1,000 encounters). The fourth most common scripts written (8% of the total) were for medications related to psychological problems (AIHW: Britt et al. 2000).

Co-morbidity

Co-morbidity refers to the occurrence of more than one disorder at the same time, and is common among people with mental disorders. An affected person may have one or more coexisting mental disorders, physical disorders, or a combination of these. Such co-morbidity may lead to a serious complication for the affected person. Failure to take

Table 2.19: Mental disorder hospital separations, 1999–00

Principal diagnosis or external cause		Separations	Per cent	Separations per 10,000 population
F00–F03	Dementia	6,911	2.8	3.63
F04–F09	Other organic mental disorders	5,058	2.1	2.65
F10	Mental, behavioural disorders due to use of alcohol	23,865	9.7	12.53
F11–F19	Mental, behavioural disorders due to other psychoactive substances use	15,829	6.5	8.31
F20	Schizophrenia	27,175	11.1	14.26
F21–F29	Other schizophrenic, schizotypal, delusional disorders	15,302	6.2	8.03
F30	Manic episode	1,150	0.5	0.60
F31	Bipolar affective disorders	15,104	6.2	7.93
F32–F33	Depressive disorders	60,314	24.6	31.66
F34–F39	Other mood (affective) disorders	4,084	1.7	2.14
F40–F48	Neurotic, stress-related and somatoform disorders	43,738	17.9	22.96
F50	Eating disorders	5,957	2.4	3.13
F51–F59	Other behavioural syndromes associated with physiological disturbances, physical factors	4,352	1.8	2.28
F60–F69	Disorders of adult personality and behaviour	9,255	3.8	4.86
F70–F79	Mental retardation	402	0.2	0.21
F80–F89	Disorders of psychological development	1,024	0.4	0.54
F90–F98	Disorders onset usually occurring in childhood, adolescence	4,979	2.0	2.61
F99	Mental disorder not otherwise specified	217	0.1	0.11
Z03.2	Observation for suspected mental and behavioural disorder	140	0.1	0.07
Z81, Z86.5	Personal or family history of mental and behavioural disorder	1	0.0	<0.01
Mental disorders total		**244,857**	**100**	**128.53**

Source: AIHW Hospital Morbidity Database 1999–00.

medication is common and can also lead to serious complications. Co-morbidity tends to be the rule in the case of mental disorders rather than the exception (Hall et al. 2001). In young people, drug and alcohol problems often coexist with other mental disorders (Raphael 2000).

Medication non-compliance among people with schizophrenia is associated with an increased risk of rehospitalisation, emergency room visits, homelessness and symptom worsening (Olfson et al. 2000). Violence and aggression have also been associated with schizophrenics who misuse substances (Soyka 2000). Asthma sufferers who develop depressive symptoms are at risk of medication non-compliance and even sudden death (Nejtek et al. 2001). In people with diabetes, depression is associated with poor control of blood sugar levels and may increase the risk of diabetic complications (Lustman et al. 2000). Co-morbidity involving alcohol or drug use is widespread and associated with poor treatment outcomes, severe illness course and high service use.

The adult component of the National Survey of Mental Health and Wellbeing reported that 61% of those with an affective disorder (e.g. depression) and 45% with an anxiety disorder also had one or more other mental disorders. Also, about 43% of people with a mental disorder had one or more physical conditions such as a heart problem, diabetes or cancer (ABS 1998a).

The National Survey of Mental Health and Wellbeing also examined co-morbidity in people with psychotic disorders. A common and serious problem among such people is the use of psychoactive drugs (substances that act on the brain) other than those medically prescribed.

Disability

Among participants of the adult component of the National Survey of Mental Health and Wellbeing, people with depression were unable to carry out their usual activities fully for an average 2.7 days in the previous month. For people with both a depressive disorder and a physical condition, the corresponding figure was 6.3 days (Andrews et al. 1999).

The National Survey of Mental Health and Wellbeing also found considerable disability among people with psychotic disorders. Only 38.2% of this group had carried out an occupational role (e.g. job, housework, study) in the previous 12 months and almost half (46.2%) of those had experienced dysfunction in their role. Among participants living with a family or household, 49.1% experienced obvious or severe dysfunction in daily family or household activities. Almost 30% of this sample exhibited problems with self-care, including personal hygiene, care for their own appearance and efforts to keep physically fit (Jablensky et al. 1999).

Mortality

Excluding dementia and suicide, a total of 978 deaths occurred in 2000 and 897 in 1999 where a mental disorder was listed as the underlying cause of death. Most of these deaths (853 in 2000 and 713 in 1999) were due to mental and behavioural disorders attributed to the use of one or more psychoactive substances, such as alcohol or heroin (Table 2.20).

Table 2.20: Deaths due to mental and behavioural disorders attributed to psychoactive substance use (ICD-10 F10–F19), 1999 and 2000

Substance	1999	2000
Alcohol	237	255
Opioids	272	296
Tobacco	90	70
Cannabinoids	3	2
Sedatives or hypnotics	1	6
Cocaine	2	2
Other stimulants, including caffeine	1	3
Volatile solvents	2	0
Other psychoactive substances	105	219
Total	**713**	**853**

Source: AIHW National Mortality Database.

Among males, the age-standardised death rate (deaths per 100,000 population) attributed to mental and behavioural disorders due to substance abuse was 6.9 in 2000, compared with 5.9 in 1999 and 8.0 in 1998. The rate among females was 2.0 per 100,000 population in 2000, 1.7 in 1999, and 2.0 in 1998.

Diabetes

Diabetes is a long-term (chronic) condition in which blood glucose levels become too high because the body produces little or no insulin or cannot use insulin properly. Insulin is a hormone produced by the pancreas that helps the body to use glucose.

Diabetes is the sixth leading cause of death in Australia (ABS 2001b), and contributes to significant illness, disability, poor quality of life and premature mortality. Over the course of the disease, diabetes can lead to long-term damage to various parts of the body, especially the heart and blood vessels, eyes, kidneys and nerves. Diabetes also contributes to many pregnancy-related complications for the mother and the baby, both before and after birth.

Types of diabetes

Because the common feature of diabetes is high blood glucose, it is often mistakenly thought to be a single disease. There are actually several types of diabetes, with different causal mechanisms. The three main types of diabetes are Type 1, Type 2 and gestational diabetes.

Type 1 diabetes is marked by a total or near-total lack of insulin. It results from the body destroying its insulin-producing cells in the pancreas. People with this form of diabetes require daily insulin therapy to survive. It is the most common cause of childhood diabetes and accounts for 10–15% of all people with diabetes.

Type 2 diabetes is marked by reduced levels of insulin, or the inability of the body to use insulin properly (insulin resistance). The disease is most common among people aged 40 years and over and accounts for 85–90% of all people with diabetes. Many people with this form of diabetes eventually need insulin therapy to control their blood glucose levels.

Gestational diabetes occurs during pregnancy in about 3–8% of females not previously diagnosed with diabetes. Screening tests for gestational diabetes are usually performed in weeks 24–28 of pregnancy. It is a temporary form of diabetes and usually disappears after the baby is born. However, it is a marker of increased risk of developing Type 2 diabetes later in life.

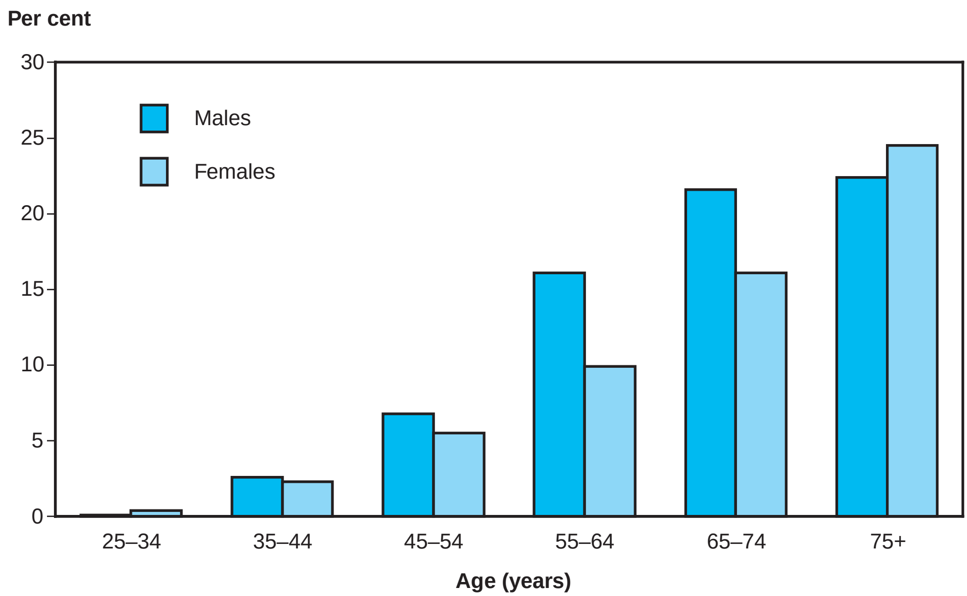
Diabetes shares several of the risk factors with, and is itself a risk factor for, cardiovascular disease. Both genetic and environmental factors contribute to the onset of diabetes. Type 1 diabetes is believed to be caused by particular biological interactions and exposure to environmental triggers in people genetically predisposed. In addition to ageing and genetic predisposition, the risk of developing Type 2 diabetes increases with body fatness. Regular physical activity, however, plays a protective role against the development of Type 2 diabetes (Manson et al. 1992; Perry et al. 1995). The risk factors for gestational diabetes are mostly similar to those for Type 2 diabetes and include the age of the mother, body fatness and ethnicity.

Box 2.5: How is diabetes detected?

The diagnostic test for diabetes is measurement of the plasma glucose level. This is expressed as the concentration of glucose in plasma (the fluid part of blood after blood cells are removed). The test may be performed in people with classical symptoms of diabetes, such as excessive thirst and urination. However, it is also used for screening for Type 2 diabetes among people identified as at higher risk of the disease.

A plasma glucose sample taken after fasting is preferred, but a random sample may be used if fasting is impractical. Diabetes is likely in people with a fasting plasma glucose concentration of at least 7.0 millimoles/litre (mmol/L), or more than 11.1 mmol/L based on a random sample.

An oral glucose tolerance test (OGTT) should be done if fasting results fall between 5.5 and 6.9 mmol/L or random results are between 5.5 and 11.0 mmol/L. In the OGTT an initial plasma glucose measurement is taken after a period of fasting. A second measurement is then taken 2 hours after consuming 75 g of glucose. The glucose levels should have returned to normal by then but they will remain high in a person with diabetes. The results of the OGTT should be interpreted using the 1999 WHO criteria (WHO 1999).



Source: Dunstan et al. 2001.

Figure 2.27: Age-specific prevalence of diabetes, 1999–00

Incidence and prevalence

From a national survey in 1999–00, the Australian Diabetes, Obesity and Lifestyle Study (AusDiab, see Box 3.4, Chapter 3) estimated that 938,700 Australians aged 25 or over had diabetes, 7.5% of the population. About half of these people were not aware that they had diabetes.

Among males aged 25 and over, the estimated prevalence of diabetes in 1999–00 was 8.0%, and among females of the same age it was 7.0%. The prevalence increased with age, from 0.3% among people aged 25–34 to 23.7% among those aged 75 years and over (Dunstan et al. 2001). This increase in prevalence occurs faster and earlier among males than among females (Figure 2.27).

There is a marked difference in the age profile of people with various types of diabetes. Type 1 diabetes is the most common form among children and young adults, because of its early onset, whereas Type 2 diabetes is the predominant form among middle-aged and elderly people because of the rapid increase in its prevalence after the age of 45.

Although the prevalence of gestational diabetes is generally not high, it may be as high as 20% in high-risk populations such as Aboriginal and Torres Strait Islander females.

Type 2 diabetes is more common in certain population groups, including Aboriginal and Torres Strait Islander peoples and people of Chinese, Vietnamese, Indian and Arab origin (Dowse et al. 1990; FECCA 1997). On the other hand, Type 1 diabetes is more common in populations of European origin.

Among the 1995 National Health Survey respondents who reported ever having had diabetes, 19% reported Type 1 diabetes, 42% reported Type 2 diabetes, and 6% reported gestational diabetes. Among the remaining third, i.e. those who did not report the type of diabetes, the majority were determined as having Type 2 diabetes (ABS 1997c).

There are no national data on trends in the prevalence of diabetes in Australia based on measurements. However, a comparison of the 1981 Busselton Population Survey and the 1999–00 AusDiab study suggests that the prevalence rate of diabetes in Australia

Box 2.6: National Diabetes Register

The National Diabetes Register was established in 1999 as part of the National Diabetes Strategy to collect information about Australians who have insulin-treated diabetes. The register is operated by the AIHW using data from the National Diabetes Services Scheme and the Australasian Paediatric Endocrine Group.

The register collects information about people who have been diagnosed with diabetes and who required insulin treatment since 1 January 1999. The first report on the register was released in October 2001 and gives a statistical profile of the people who consented to be on the register and began using insulin between 1 January 1999 and 31 December 2000.

Information contained in the register will help to monitor the incidence of insulin-treated diabetes in Australia (including Type 1, Type 2 and gestational diabetes). Researchers are now able to use the register as an important source of information for clinical and epidemiological studies of the causes and complications of diabetes.

may have doubled over the 20-year period (Dunstan et al. 2001). Dunstan et al. (2001) suggest that the increased prevalence of obesity in Australia has been a significant contributing factor in the increasing prevalence of diabetes, in particular Type 2 diabetes.

The AIHW has established the National Diabetes Register of people diagnosed with diabetes who require insulin treatment (see Box 2.6). In 2000, based on the register, the incidence of diabetes (predominantly Type 1) among people less than 15 years of age was estimated to be 18.9 new cases per 100,000 population (AIHW 2001d).

Among Aboriginal people in central Australia it has been estimated that the incidence rate of diabetes is 20.3 cases per 1,000 person-years (Daniel et al. 1999), which is among the highest in the world.

Diabetes-related complications

Diabetes can lead to a range of complications, including diseases of the large blood vessels (macrovascular disease) such as coronary heart disease, stroke and peripheral vascular disease as well as diseases of the small blood vessels (microvascular disease) such as kidney disease, nerve damage (possibly leading to limb amputation) and loss of vision. Macrovascular complications are more common in people with Type 2 diabetes whereas the risk of microvascular complications is similar in both Type 1 and Type 2 diabetes.

All types of diabetes are known to be associated with complications in pregnancy and childbirth. Poorly managed diabetes in pregnancy can lead to spontaneous abortions, stillbirths or difficult births.

Several factors are known to contribute to the risk of developing complications in diabetes. In addition to poorly controlled glucose levels, duration of the disease and age, these risk factors include obesity, high blood pressure, high blood cholesterol, tobacco smoking and genetic predisposition. Avoiding or reducing risk-increasing behaviours and conditions can delay the onset or slow the progression of complications.

According to the 1999–00 AusDiab study, the proportion of Australians aged 25 or over with diabetes who also had high blood pressure (69.3%) was 2.7 times that of people without diabetes (25.8%). Similarly, the proportions of people with diabetes who had ever been told that they had angina (16.9%), heart attack (11.8%) or stroke (9.3%) were 4.5, 4.3 and 5.5 times, respectively, those of people without diabetes (corresponding proportions were 3.8%, 2.7% and 1.7%).

Of those Australians aged 25 or over who reported ever having been told they had diabetes, 30.0% had been treated for or suffered from heart disease, 24.0% from poor circulation, 18.8% from retinopathy, 11.2% from kidney disease and 8.4% from nerve damage. Also, of those males who reported ever having been told they had diabetes, 30.2% had been treated for or suffered from impotence.

Evidence of the burden of kidney complications caused by diabetes is found in the Australia and New Zealand Dialysis and Transplant Registry, a register of people requiring kidney dialysis or a kidney transplant. In Australia during 2000, diabetic kidney disease (diabetic nephropathy) was the second most common cause of kidney failure, accounting for more than one in five kidney failure registrants (22%) (Russ 2001).

Table 2.21: GP consultations: top five 'other' problems managed at encounters where diabetes was managed, 2000–01

Males	Per cent[(a)]	Females	Per cent[(a)]
Hypertension	22.4	Hypertension	23.5
Lipid disorder	7.3	Lipid disorder	6.6
Coronary heart disease	4.1	Osteoarthritis	3.4
Immunisation[(b)]	2.9	Depression	3.4
Osteoarthritis	2.8	Immunisation[(b)]	2.9
Total number of complications	**1,682**	**Total number of complications**	**1,717**

(a) Listed condition as a proportion of all complications.

(b) Includes preventive immunisation medication for hepatitis, tetanus, influenza, and other non-specific conditions.

Source: AIHW: GPSCU unpublished.

Data from the 2000 National Association of Diabetes Centres survey agree with the findings above. People attending specialist diabetes services (diabetes centres and specialist endocrinologists in private practice) have a wide range of complications including erectile dysfunction, nerve damage, kidney problems, eye damage, circulatory problems in the limbs, heart attack and stroke.

Health services use

People with diabetes are more than twice as likely as those without diabetes to consult health professionals or use hospital services (ABS 1997c). This higher rate is related to treatment for blood glucose control, as well as for complications associated with diabetes.

GP consultations

In 2000–01, according to the BEACH survey, non-gestational diabetes represented 1.9% of all problems managed by GPs and was managed at a rate of 2.8 per 100 encounters (AIHW: Britt et al. 2001a). For people being managed for diabetes, the other main problems being managed were high blood pressure, lipid disorders and osteoarthritis (Table 2.21). Coronary heart disease was also a common problem managed for males, whereas depression was commonly managed for females with diabetes.

Hospital separations

In 1999–00, diabetes was the principal diagnosis in 24,417 hospital separations or 0.4% of all hospital separations for that period. Diabetes is often not reported as the principal diagnosis because the condition responsible for the hospitalisation, rather than diabetes, is recorded as the principal diagnosis even when it is a complication of diabetes. Diabetes is often reported as an additional diagnosis, particularly in association with primary diagnoses of coronary heart disease, stroke and kidney disease. When separations for diabetes as the principal diagnosis and as an additional diagnosis are combined, the total number of such separations rises to 336,976 or 5.7% of all hospital separations. This higher number better reflects the extent of diabetes-related morbidity in the population, and the need to manage it in a hospital setting.

The impact of diabetes on the health system is magnified by the long periods that patients with diabetes spend in hospital. The average length of hospital stay for people with diabetes as the principal diagnosis was 6.6 days in 1999–00. In comparison, the average length of stay for all people without diabetes as the principal diagnosis was 3.8 days. Diabetes also contributes to extended hospital stays for other related or non-related conditions. When separations for diabetes as an additional diagnosis were taken into account, the average length of hospital stay for people with diabetes increased to 7.0 days compared with 3.6 days for people without diabetes.

Mortality

On death certificates diabetes was listed as the underlying cause of 3,006 deaths, or 2.3% of all deaths in 2000. In addition, diabetes was listed as an associated cause of 7,124 deaths (ABS 2001b).

Diabetes is rarely listed as the only cause of death on death certificates. In 2000, where diabetes was listed as the underlying cause of death it was the only cause listed in less than 1.5% of such cases; conditions listed as associated causes of death included coronary heart disease (in 51.0% of the cases), kidney-related diseases (22.6%), stroke (21.4%) and heart failure (18.6%).

Of the deaths in 2000 where diabetes was listed as an associated cause of death, coronary heart disease was recorded as the underlying cause of death in 35.2% of cases. Other prominent underlying causes of death with which diabetes was associated included cancer (20.0%) and stroke (11.3%).

The death rate for diabetes (as an underlying cause of death) has shown an increase in recent years for males, with an average annual increase of 1.2% between 1989 and 2000. There has, however, been no consistent trend for females over this same period.

Burden of diabetes

In terms of premature mortality, diabetes was estimated to be responsible for almost 70,000 years of life lost in 1996—almost 5.3% of the estimated years of life lost for all causes. Diabetes and its complications were also responsible for much disability, with more than 53,000 years of equivalent ‘healthy’ life lost to disability in 1996, or 4.6% of the total years lost due to disability. Although the effect of diabetes on premature mortality was similar in both sexes, males lost more years of ‘healthy life’ to disability than females did (AIHW: Mathers et al. 1999a).

As a result of the high impact of the disease, a substantial proportion of healthcare expenditure goes on diabetes and its complications. The direct costs of diabetes and its complications in 1993–94 have been estimated at $681 million, or 2.2% of total health system costs that year (AIHW: Mathers & Penm 1999a).

Asthma

Asthma is an inflammatory disease of the lung’s air passages that makes them prone to narrow too easily and too much in response to ‘triggers’, causing episodes of shortness of breath and wheezing or coughing. The symptoms are usually reversible, spontaneously or with treatment. However, death can occasionally result if the asthmatic episode is severe enough and not managed properly (NHLBI 1992).

People with asthma can experience reduced quality of life and require a range of health services, from general practitioner care to emergency department visits or hospital in-patient care.

Morbidity

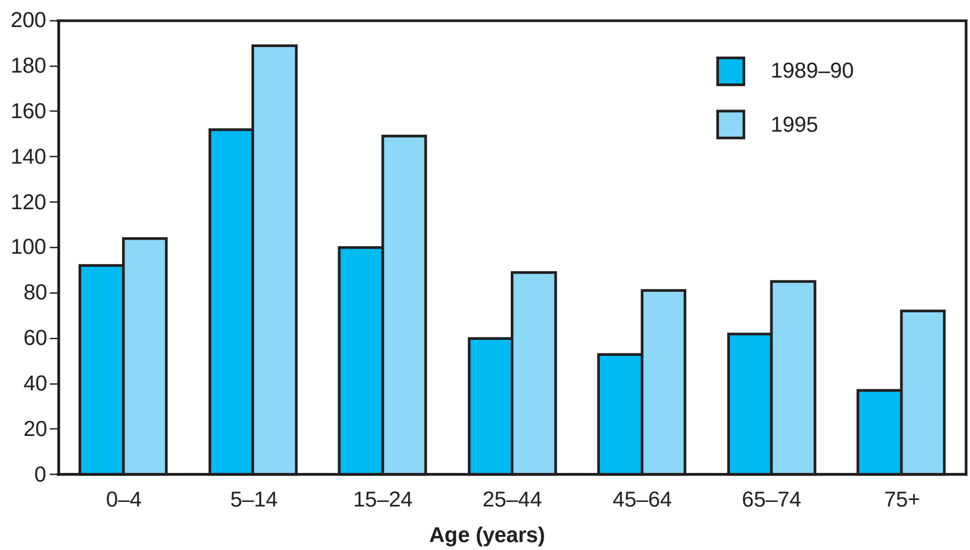
Prevalence

Asthma is highly prevalent in Australia. Based on self-reports in the 1995 National Health Survey, an estimated 11.3% of people had asthma as a recent or long-term condition. This is equivalent to approximately 2 million Australians (ABS 1997b).

Asthma prevalence was the highest among 5–14-year-olds at 19.2%. Prevalence was also high among 15–24-year-olds at 14.9%. Up to 15 years of age, asthma was more common among males than among females. In older age groups, however, asthma was more common among females than among males.

The age-related distribution of asthma was similar in the 1989–90 and 1995 National Health Surveys. However, between the two surveys there was a marked increase in the proportion reporting asthma in all age groups and among both adults and children (Figure 2.28).

The proportion of Australians who had asthma (as a recent illness or as a long-term condition) increased by one-third, from 85 per 1,000 in 1989–90 to 113 per 1,000 in 1995. (ABS 1997b). The increase in self-reported asthma was greater among adults aged 15 and over (41.4%) than among children aged 0–14 (17.3%). For both adults and children, the increase was greater among females than males (ABS 1999a).



Source: ABS National Health Surveys.

Figure 2.28: Age-specific prevalence of asthma, 1989–90 and 1995

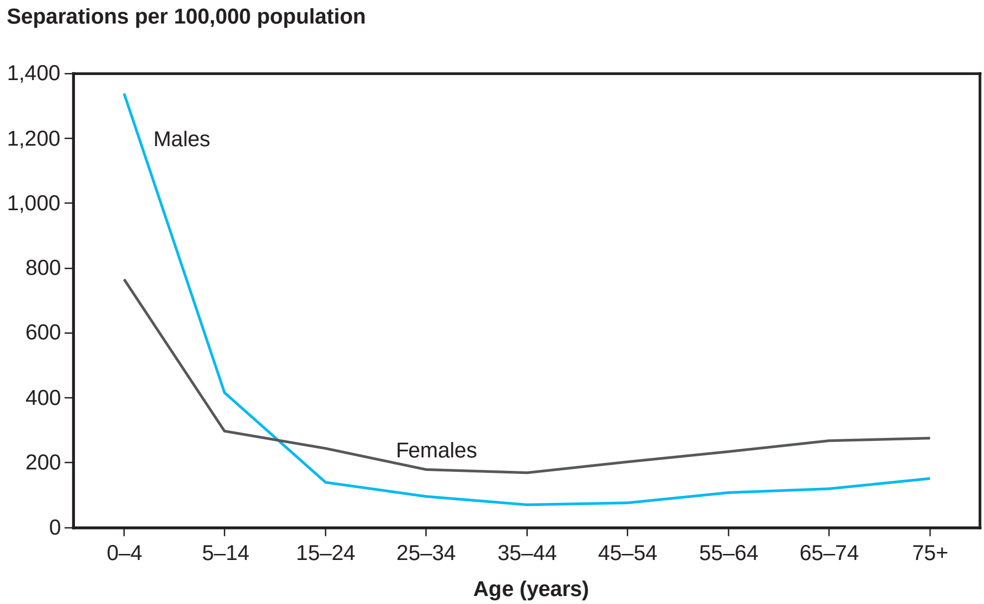
Compared with other countries, the prevalence of asthma among school-age children in Australia is high. The International Study of Asthma and Allergies in Childhood, which administered standardised questionnaires to school children in 56 countries, ranked Australia third highest in the prevalence of current wheeze (a symptom of asthma) among 13–14-year-olds and second highest among 6–7-year-olds (ISAAC Steering Committee 1998).

Hospital separations

In 1999–00, asthma was the principal diagnosis for 47,008 hospital separations, or 0.8% of all hospital separations, with an average length of stay of 2.7 days (AIHW 2001a). It was one of the most frequent reasons for hospitalisation among children aged 0–14. For example, the asthma hospital separation rate in early childhood (0–4 years) was 1,339 per 100,000 males and 765 per 100,000 females. After age 14, the hospital separation rates in both sexes decreased, reaching the lowest rates in the 35–44 age group (Figure 2.29).

Asthma is often reported as an additional diagnosis in hospital separations, notably with principal diagnoses of pneumonia, cataract and heart conditions such as angina.

Making a diagnosis of asthma can be problematic in very young children (0–4 years) and in adults aged over 50 years. In both these age groups, other breathing disorders may be difficult to distinguish from asthma. For this reason, hospital separation data in these age ranges should be treated with caution.



Source: AIHW National Hospital Morbidity Database.

Figure 2.29: Age-specific hospital separation rates for asthma, 1999–00

Emergency department visits

Asthma is one of the more common reasons for visits to a casualty/emergency department. In the 1995 National Health Survey, an estimated 8,870 people visited a hospital emergency department for their asthma in the 2 weeks before interview (or 6.4% of all visits); of these, 349 (3.9%) had more than one visit. Admission to a hospital emergency department was more common among the young, with about half (49.7%) of admissions for asthma occurring in those aged 0–9 years.

Doctor consultations

Asthma is a major problem managed in the primary healthcare setting, being the sixth most frequently managed problem by GPs. A survey of general practice in 2000–01 found that asthma was managed at a rate of 2.8 problems per 100 encounters, with females (55.0%) presenting more often than males (45.0%). The survey also found about two-fifths (41.4%) of asthma patients were aged under 25 (AIHW: Britt et al. 2001a).

Medications were by far the most common treatment for asthma prescribed by GPs, at a rate of 153 medications per 100 asthma encounters. Salbutamol was the most frequent medication prescribed at 52 prescriptions per 100 asthma encounters. Overall, it was the sixth most frequently prescribed medication by GPs (AIHW: Britt et al. 2001a).

Referrals for asthma were low (2.7 per 100 asthma problems) compared with other problems (7.2 per 100 problems). Referral to a respiratory physician (0.7 per 100 problems) was the most common referral type for asthma in 2000–01. Less than one (0.4) in 100 asthma problems was referred to a hospital (AIHW: Britt et al. 2001a).

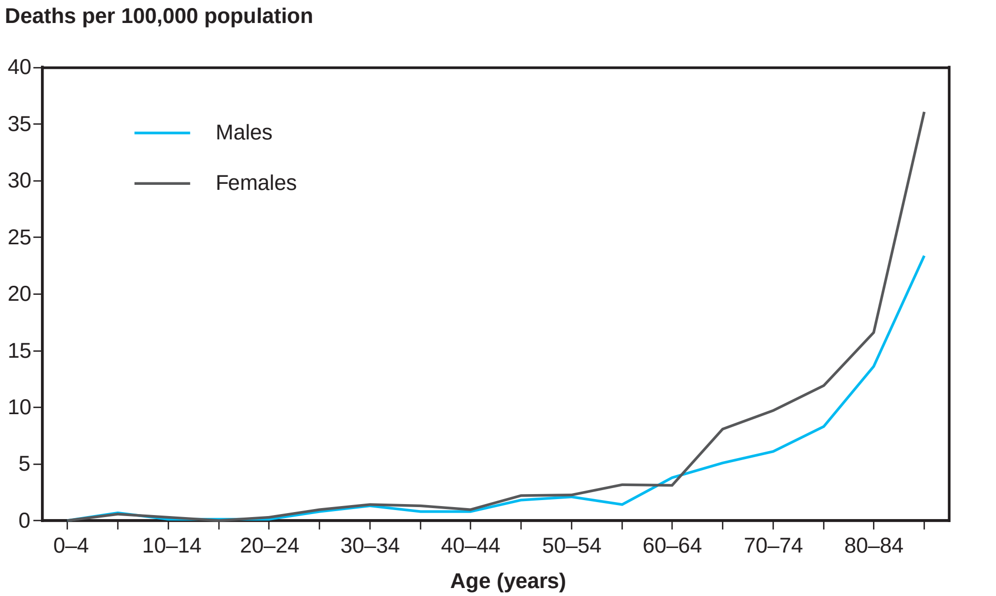
Health-related actions

From self-reports in the 1995 National Health Survey, an estimated 1.1 million people cited asthma as the reason for taking health-related actions, such as medications, days away from work or school, medical consultation or hospital episodes. This represented just over half (56%) of people who reported the disease (ABS 1997b).

Episodes of asthma often lead to interruptions in schooling and work. Based on the self-reports from the 1995 National Health Survey, approximately 12% of people who had asthma took days off from work or school in the 2 weeks preceding the survey compared with about 4% of the rest of the population (ABS 1997b). Asthma appears to have caused less disruption to the usual activities of adults than of children, with fewer than 1% of 25–64-year-olds with asthma taking a day off work (ABS 1999).

Disability

Asthma is a significant cause of disability and it can have a large impact on quality of life. From the 1998 Survey of Disability, Ageing and Carers, it was estimated that more than 400,000 people had asthma as one of the health conditions causing disability, resulting in restriction of daily living activities such as attendance at work or school. Of these, an estimated 170,902 had asthma as their main disabling condition. Furthermore, approximately 131,400 Australians had difficulties in undertaking specific activities related to self-care, mobility and communication due to their asthma (ABS 1999c and unpublished data).



Source: AIHW National Mortality Database.

Figure 2.30: Age-specific death rates for asthma, 2000

Mortality

In 2000, asthma was the underlying cause of 454 deaths, less than 1% of all deaths (128,291) in Australia that year.

The number of deaths attributed to asthma increases with age. Very few deaths in childhood are attributed to asthma. In 2000, the death rates among children aged 0–4, 5–9 and 10–14 years were less than 1 per 100,000. The rate remains low during early and middle adult life, then increases markedly after the age of 50, peaking at 32.2 deaths per 100,000 in the 85 and over age group. However, death from asthma among older people is often complicated by the presence of chronic obstructive pulmonary disease and hence attribution to asthma in this group may be problematic.

The difference between the male and female death rates for asthma was largest in the 65 and over age groups, with the rate higher among females. However, the death rates were very similar in both sexes aged under 55 years, with slightly higher rates among females in the 35–39 and 45–49 age groups (Figure 2.30).

Asthma was also recorded as an associated cause in a further 920 deaths. Of these deaths, 325 (35.3%) had ischaemic heart condition as the underlying cause of death. A further 63 deaths (6.8%) had cerebrovascular disease as the underlying cause, and 34 deaths (3.7%) had chronic obstructive pulmonary disease.

Notes

1. Age standardised to the Australian population at 30 June 1991.
2. The 1970–78 ICD-8 codes have been adjusted to be comparable with ICD-9 codes; ICD-9 code 493 was used for 1979–96; ICD-10 codes J45, J46 were used for 1997–000. Rates for 1970–96 have been adjusted by a factor of 0.75 to be comparable with 1997–00 rates.

Source: AIHW National Mortality Database.

Figure 2.31: Death rates for asthma, 1970 to 2000

Death rates for asthma in the total population fluctuated considerably from 1970 to 2000. The death rate for males decreased in the 1970s, whereas the rate for females remained steady. Both rates increased between 1980 and 1989, followed by a marked decline in the 1990s. The death rates in 2000 were 1.8 per 100,000 males and 2.4 per 100,000 females, the lowest male rate and third lowest female rate recorded in those three decades (Figure 2.31).

Similar to trends shown by males and females in the total population, the asthma death rate among those aged 5–34 years decreased by about half between 1986 and 1996 and gradually after 1998 (Figure 2.31). This is supporting evidence that deaths attributable to asthma fell during the period, because the accuracy of reporting asthma as the underlying cause of death on death certificates outside this age range is often questioned.

Chronic obstructive pulmonary disease

COPD is a permanent and typically progressive disease, where damage to the lungs obstructs oxygen intake and causes breathlessness with exertion and limitation of exercise capacity. In severe cases, breathlessness may occur with little or no exertion. COPD is a cause of substantial morbidity, disability and mortality in Australia. Smoking is the major risk factor for COPD.

Chronic bronchitis and emphysema are the two main components of COPD. Each condition can occur on its own, but they usually coexist in an individual (GOLD 2001).

Morbidity

COPD is a large source of morbidity. This is shown by its prevalence in the population and the large amount of hospital use and primary care required by sufferers.

Prevalence

The Australian Burden of Disease and Injury Study estimated that in 1996 there were almost 300,000 people with COPD in Australia, representing about 1.6% of the population, with more than 20,000 new cases every year (AIHW: Mathers et al. 1999a). The prevalence was higher in males than in females: 1,940 per 100,000 compared with 1,300.

It is difficult to obtain prevalence estimates for COPD that allow valid comparisons of rates over time and between population groups. There are major differences in how the disease is defined, the only consensus being the inclusion of chronic bronchitis and emphysema. Also, COPD prevalence based on self-reporting is underestimated because the disease is usually not diagnosed until it begins to restrict a person's lifestyle and is moderately advanced.

Hospital separations

COPD is one of the major causes for hospitalisation, especially among the elderly. In 1999–00, COPD was the principal diagnosis in 48,583 hospital separations, accounting for 0.8% of all separations. Hospital separations for COPD among the elderly, those aged 65 and over (37,024 separations), accounted for more than three-quarters of all COPD separations and 1.9% of all separations in the 65 and over age group. Male COPD separations were double those of females.

The average length of stay for COPD separations was 7.8 days during 1999–00.

Doctor consultations

COPD (defined in a way that excludes chronic bronchitis) is not among the top 30 problems managed by GPs. According to the 2000–01 BEACH survey of general practice activity, COPD was managed at a rate of 0.7 problems per 100 encounters (or 0.5% of all problems managed). It was the eighth most frequently managed disease of the respiratory system, accounting for 3.2% of all respiratory problems (AIHW: Britt et al. 2001a).

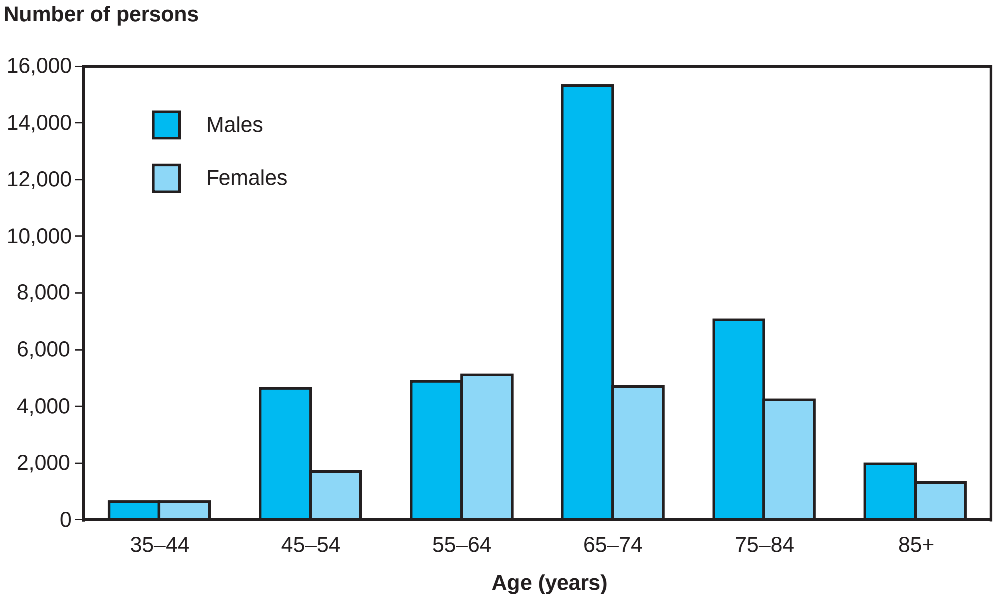
People in middle age or older with COPD required the most care by GPs. The survey showed that people aged 45 and over accounted for a large proportion of the COPD problems managed by GPs, some 96.5% of COPD problems managed.

Males accounted for 60.1% of COPD problems managed.

Disability

COPD is a significant contributor to disability, particularly among the elderly. According to the 1998 ABS Survey of Disability, Ageing and Carers, an estimated 52,906 people had COPD (emphysema or bronchitis/bronchiolitis) as their main disabling condition; two-thirds were males.

Older people (aged 65 and over) accounted for two-thirds (65.5%) of those reporting COPD as their main disabling condition (Figure 2.32).



Source: 1998 ABS Survey of Disability, Ageing and Carers.

Figure 2.32: Persons with COPD (emphysema or bronchitis/bronchiolitis) as their main disabling condition, 1998

Mortality

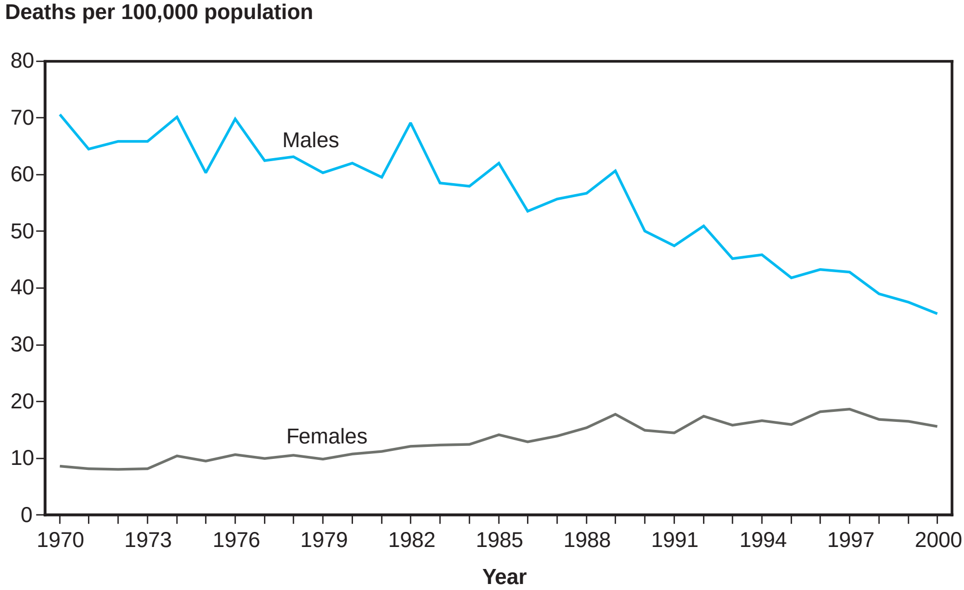
COPD is a major cause of mortality in Australia, being the fourth leading cause of death among males and sixth among females. In 2000, there were 5,296 deaths (24 per 100,000 people) with COPD recorded as the underlying cause. The age-standardised death rate was higher among males, with 35 deaths per 100,000 compared with 16 per 100,000 females.

COPD deaths occur mostly among older people, in particular those aged 70 and over (80.6% of deaths), mostly reflecting lifelong exposure to tobacco smoking.

The death rate for COPD has declined in Australia over the last three decades, reflecting changes in cigarette smoking. Almost all of the decrease is accounted for by reductions in male deaths. Death rates for COPD have also converged between the two sexes because, as the male rate decreased from 1970, the female rate increased between 1970 and 1990 and remained steady thereafter (Figure 2.33).

Risk factors

Tobacco smoking is the major known risk factor for COPD. It has been estimated that 77% of deaths from COPD are attributable to smoking (AIHW: Mathers et al. 1999a). Accordingly, about 4,080 COPD deaths in 2000 can be attributed to smoking alone. In addition, COPD may be a contributing factor in deaths from other smoking-associated causes.



Notes

1. Age standardised to the population at 30 June 1991.
2. The 1970–78 ICD-8 have been codes adjusted to be comparable with ICD-9 codes; ICD-9 codes 491,492,496 were used for 1979–96; ICD-10 codes J41, J42, J43, J44 were used for 1997–00. Rates for 1970–96 have been adjusted by a factor of 0.93 to be comparable with 1997–00 rates.

Source: AIHW National Mortality Database.

Figure 2.33: Death rates for COPD, 1970 to 2000

Exposure to agents in the environment, including air pollutants and occupational dusts and chemicals, is also known to contribute to the risk of developing COPD, either independently or in addition to tobacco smoking (Krzyzanowski & Kauffmann 1988; Goldring et al. 1993).

COPD symptoms can be aggravated by chest and viral infections, particularly the common cold, influenza and pneumonia.

Musculoskeletal disorders

Disorders of the musculoskeletal system (joints, muscles and bones) are among the most common health conditions and have a substantial influence on quality of life and use of resources. They affect almost every individual at some time in their lifetime. Many of these conditions are minor or transient, but some can cause lifelong disability. However, they are not immediately life threatening and have low associated mortality. The WHO (1998) has declared the first decade of the twenty-first century to be the Bone and Joint Decade in order to raise awareness of the impact of musculoskeletal disorders and encourage further research and development.

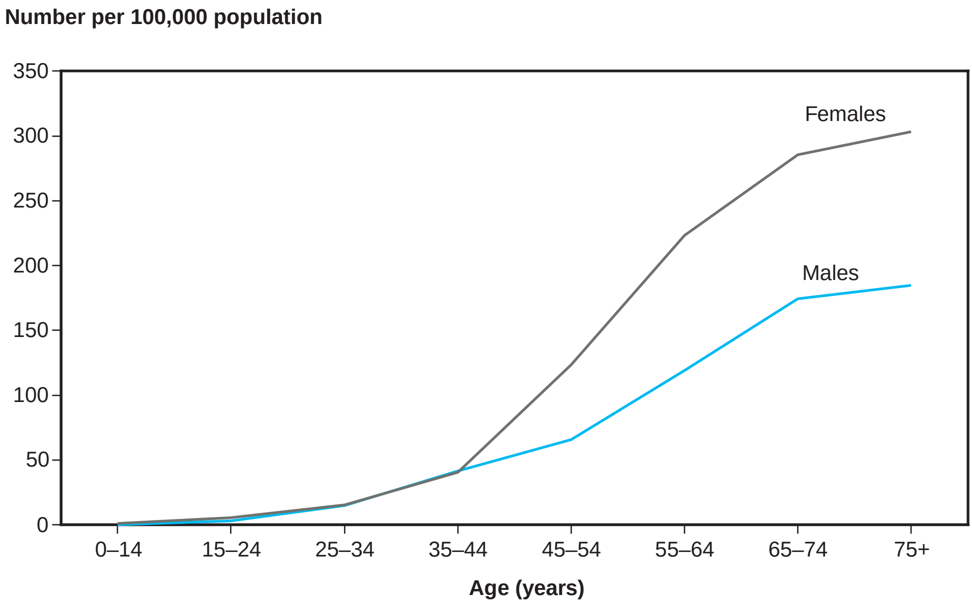
More than 100 diseases make up the spectrum of musculoskeletal disorders. Most of them are of unknown cause and allow little opportunity for prevention.

A major subgroup is arthritis, which refers broadly to inflammation of the joints with associated stiffness, pain and deformity. Arthritis imposes a heavy economic burden on the community, including in-patient and outpatient care, residential aged care, medications and lost productivity. From self-reported information obtained in the 1995 ABS National Health Survey, it has been estimated that over 2.6 million Australians, or nearly 15% of the population, have some form of arthritis, with about 60% of these being females. Arthritic conditions are among the most frequently managed problems in general practice, representing 2.4% of all problems managed in 1999–00.

Two significant musculoskeletal disorders, osteoarthritis and osteoporosis, are discussed in some detail below. Other musculoskeletal disorders were discussed in *Australia's Health 2000*.

Osteoarthritis

Osteoarthritis, the most common form of arthritis, is a degenerative condition due mainly to accumulated wear. It affects mainly the hands, spine and weight-bearing joints such as hips, knees and ankles. Based on self-reported information in the 1995 ABS National Health Survey, almost 1.2 million Australians had osteoarthritis, a prevalence rate of 64 per 1,000. Osteoarthritis constituted 1.5% of all problems managed by GPs in 2000, ranking it as the tenth most frequently managed problem (AIHW: Britt et al. 2000). Osteoarthritis is also the third most common problem for which imaging is ordered by GPs, after back pain and fracture, accounting for 4.1% of all imaging orders (AIHW: Britt et al. 2001b).



Source: AIHW analysis of ABS 1995 National Health Survey.

Figure 2.34: Age-specific prevalence of osteoarthritis, 1995

Hospital separations for osteoarthritis have increased 42% over the past 7 years, from 39,186 in 1993–94 to 55,758 in 1999–00. Average length of stay in hospital in 1999–00 was more than 6 days. Health system costs in 1993–94 were estimated to be $624 million, nearly half (48%) of which was for hospital services. A further 19% was for nursing home care, 13% for medical care (mainly GPs) and 9% for pharmaceuticals (AIHW: Mathers & Penm 1999b).

The prevalence of osteoarthritis increases sharply with age, and is greater in females at nearly all ages (Figure 2.34). By age 65, nearly 30% of females and 18% of males report having osteoarthritis.

Although it is known that increasing age and genetic factors predispose people to most forms of arthritis, behavioural risk factors have been identified only for osteoarthritis. The major modifiable risk factors are joint trauma, obesity and repetitive joint usage. A history of joint trauma is the strongest risk factor for osteoarthritis at either the knee or the hip. Obesity has been shown to be a weight-bearing factor in osteoarthritis of the knee. Occupations requiring knee-bending have been associated with knee osteoarthritis, and farming has been associated with hip osteoarthritis. Recreational activities, including running and other sports, have not been associated with the development of osteoarthritis among people who have not had previous joint injuries (Scott & Hochberg 1998).

On the basis of current knowledge, avoiding joint trauma, preventing obesity, exercising to strengthen bones and muscles, and modifying occupational-related joint stress through ergonomic approaches can all help prevent osteoarthritis (Scott & Hochberg 1998).

A number of drugs are used in the treatment of osteoarthritis. In advanced cases not responding to treatment, surgical joint replacement is a cost-effective intervention.

Osteoporosis

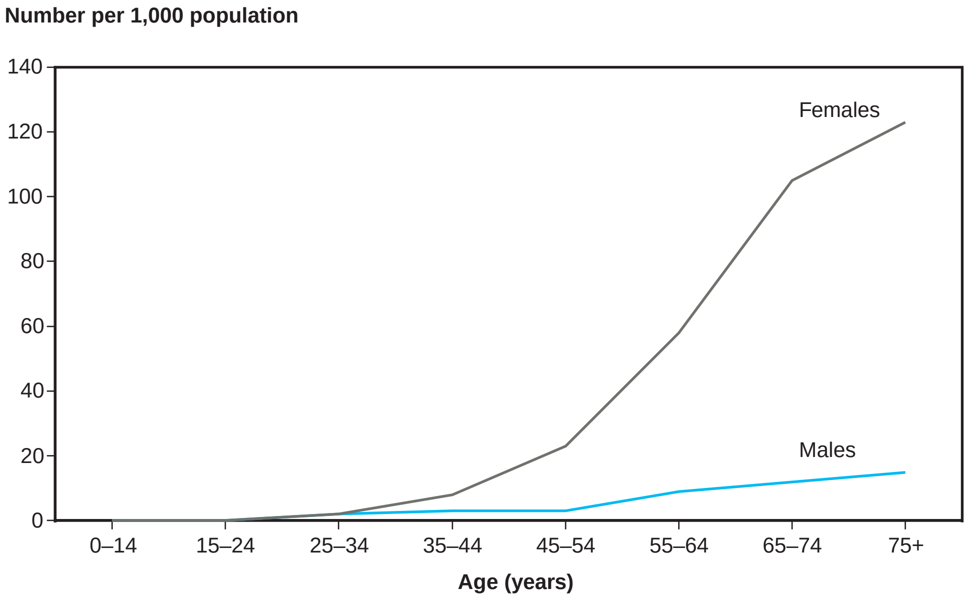
Osteoporosis, the progressive thinning of bone tissue, is a common condition among the elderly and a major contributor to fractures in this age group. An Australian study that used information obtained from radiology services, the Dubbo Osteoporosis Epidemiology Study, estimated that after age 60 about 56% of females and 29% of males suffer a fracture due to osteoporosis (Wark 1996). Osteoporotic limb fractures are usually precipitated by falls, whereas the precipitating factor in vertebral fracture is often being lifted or lifting a heavy weight. Back pain from compression fractures of the thoracic vertebrae is a common problem among the elderly.

Hip fractures are a particularly serious outcome of osteoporosis, as virtually all people with a hip fracture are hospitalised for treatment. The number of hospital separations for hip fractures from a fall among people aged 50 years and over, many of which would be due to osteoporosis, has increased steadily from 14,007 in 1993–94 to 18,351 in 1999–00. Two-thirds of people who fracture a hip do not return to their pre-fracture level of functioning, with many of these requiring nursing home care. Studies in Australia and the United States suggest that mortality within a year of hip fracture is 24%, and in the Australian study this was about five times higher than in an age-matched group who did not suffer a hip fracture (ANCC 1997; US CDCP 2001).

The prevalence of osteoporosis is difficult to estimate, because most people with the condition are not aware of it until suffering a fracture. Based on self-reports in the 1995 ABS National Health Survey, an estimated 248,000 people had osteoporosis. Osteoporosis is more common among females and the elderly. From the 1995 National Health Survey, the rate of osteoporosis among females was 105 per 1,000 for those aged 65–74, and 123 per 1,000 for those aged 75 and over (Figure 2.35). Comparable rates for males were 12 and 15 per 1,000.

Only a small number of deaths (93 in 1998) are recorded as being caused by osteoporosis. However, the number of deaths due to falls among the elderly, many of which can be attributed to osteoporosis, is large. The Burden of Disease and Injury Study, using attributable fractions by age and sex for six fracture sites, estimated that 523 Australian deaths in 1996 were attributable to osteoporosis (AIHW: Mathers et al. 1999a).

The two main causes of osteoporosis are an inadequate build-up of bone mass during growth and a rapid loss of bone mass with ageing. Although genetic factors account for much of the individual variation in these two phases, it is possible to increase peak bone mass and reduce bone loss by lifestyle changes. Adequate calcium intake and exercise are important in achieving a higher level of bone mass during growth and minimising loss of bone mass among the aged. Osteoporosis may also occur as a result of corticosteroid drug treatments, tobacco smoking and alcohol abuse.



Source: AIHW analysis of 1995 National Health Survey.

Figure 2.35: Age-specific prevalence of osteoporosis, 1995

A number of drug treatments, including hormone replacement therapy (HRT), are available to reduce loss of bone mass. For females, oestrogen replacement started at the time of menopause seems to retard or prevent bone loss and reduce fracture risk for as long as the oestrogen is taken. According to the 1995 ABS National Health Survey, 25% of females aged 45–54 and 30% of those aged 55–64 were using HRT (ABS 1997a). Testosterone replacement is appropriate for males with osteoporosis caused by hypogonadism (O'Neill 1997).

Diseases of the liver

Diseases of the liver are a significant cause of mostly preventable morbidity and mortality in Australia. The liver is a versatile production, processing and storage 'factory', with over 200 different functions. These include processing carbohydrates, proteins, fats, vitamins and minerals, and the disposal of poisonous waste products, toxins and drugs.

There are four main types of liver disease: cirrhosis, hepatitis, fatty liver and other or unspecified forms of liver disease. Major risk factors for liver disease are excess alcohol use and viral infections that cause hepatitis (DOH 2001; Stroup et al. 1993). This report focuses on cirrhosis, hepatitis and fatty liver.

Fatty liver is a condition of fat accumulation within the liver cells. It is often preventable and may be reversible. The major risk factor for fatty liver disease is alcohol misuse, with alcoholic fatty liver being present in nearly all heavy drinkers. Other important causes are obesity, diabetes, poor diet and illness. Typically symptomless, fatty liver may lead to inflammation and progress to cirrhosis.

Hepatitis is inflammation of the liver. Some types of hepatitis are reversible, but some can lead to cirrhosis. Risk factors for hepatitis include viruses, excess alcohol, certain drugs and chemicals, and auto-immune and inherited conditions.

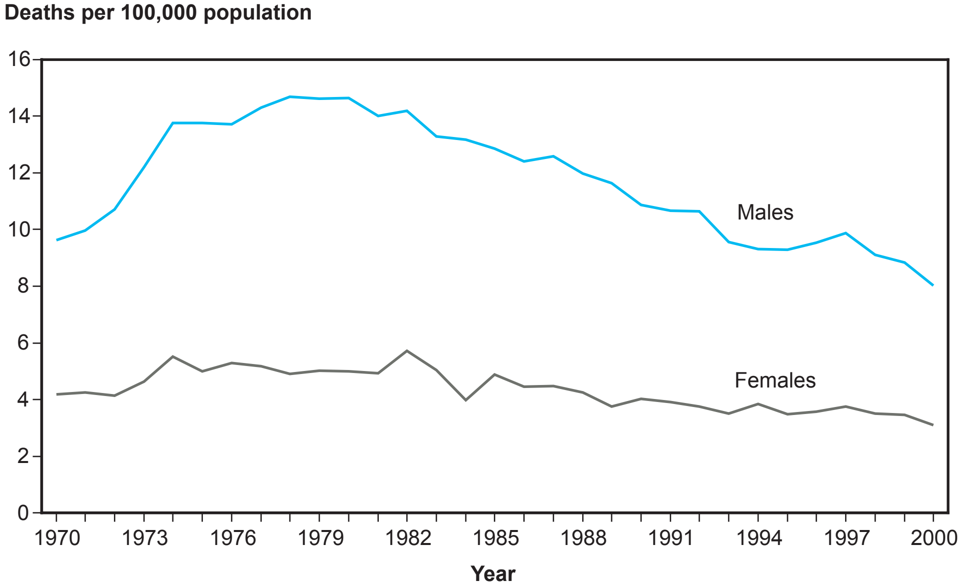
Cirrhosis, the final outcome for many types of liver disease, is a serious and irreversible form of liver damage. In people with cirrhosis, liver cells are progressively destroyed and replaced by scarred tissue. As the disease develops, the liver hardens, becomes distorted, and loses size. The major risk factor for cirrhosis is alcohol misuse; other risk factors include infections, toxins and other liver diseases.

Incidence and prevalence

Determining the incidence and prevalence of cirrhosis and other chronic liver diseases is difficult as most cases show no signs or symptoms until late in the development of the disease. The prevalence in 1996 has been estimated at about 70 per 100,000 males and 50 per 100,000 females (AIHW: Mathers et al. 1999a), indicating that more than 10,000 people in Australia were living with some form of liver disease. At the same time, the number of new cases was estimated to be 1,000 per year.

Hospital separations

In 1999–00, diseases of the liver were the principal diagnosis in 9,614 separations (6,199 males and 3,415 females). The hospitalisation rate for diseases of the liver was 61.7 per 100,000 males and 32.9 per 100,000 females. There were 63,903 patient-days for liver disease as a principal diagnosis, with the average length of hospital stay being 6.6 days. Alcoholic liver disease was the principal diagnosis in 40% of separations for liver disease.



Notes

1. Age standardised to the Australian population at 30 June 1991.
2. The mortality rates for 1970–96 (ICD-9) have been adjusted by a factor of 1.02 to be comparable with the ICD-10 classifications and 1997–00 rates.

Source: AIHW National Mortality Database.

Figure 2.36: Trends in mortality for liver disease, 1970 to 2000

Mortality

Liver disease is an important cause of death and illness. In 2000, diseases of the liver were the underlying cause of 1,162 deaths (805 males and 357 females). The death rates were 8 per 100,000 males and 3 per 100,000 females. Mortality due to liver disease rises with age in both sexes to a high in those aged 85 and over.

The death rate for diseases of the liver is declining in both sexes. After rising consistently for several decades, the combined rate peaked in the late 1970s (Figure 2.36). Since the early 1980s, the age-standardised death rates have declined from 14.7 and 5.7 per 100,000 males and females respectively, to 8 and 3.1 per 100,000 respectively in 2000. There has been a corresponding trend in per capita consumption of alcoholic beverages in Australia. Per capita consumption peaked in 1981, at 9.7 litres of pure alcohol per person, and has since declined to 7.5 litres per person in 1999.

Kidney (renal) failure

Kidney failure, where much or all of the kidney function is lost, is a large source of morbidity, disability and mortality. The condition may be acute (caused suddenly and typically reversible), or chronic and long-term (where kidney function is progressively and irreversibly lost). End-stage renal disease (ESRD) is the final stage in the progressive worsening of kidney function. Thereafter, dialysis or kidney transplantation is necessary to maintain life.

Statistical information on various stages of kidney failure and associated signs and symptoms is variable in quality. The profile of the disease described below relates mostly to ESRD, mainly because of the availability of suitable information.

Causes and risk factors

Several factors and conditions damage the kidneys and affect their functioning. Although some may cause short-term, acute damage which may be reversed if managed correctly, others cause long-term irreversible damage. Risk factors include infections, diabetes, high blood pressure, heredity, injury, excess weight, tobacco smoking, and use of certain analgesic compounds and related agents.

In Australia, a major cause of kidney failure is glomerulonephritis. This is a term for a group of kidney diseases in which there is inflammation of the glomeruli, a key part of each of the kidney's approximately one million filtering units. Diabetic kidney disease is another common cause of kidney failure.

The Australia and New Zealand Dialysis and Transplant Registry (ANZDATA), which maintains a database of all people who begin treatment for ESRD, also records the main (primary) kidney disease for all new cases. In the registry, the cause of 30% of the new cases in 2000 was glomerulonephritis (Table 2.22). Diabetic kidney disease was the cause of 22% of new cases.

Between 1993 and 2000, glomerulonephritis remained the main cause of ESRD, but diabetic kidney disease and high blood pressure assumed more prominence as causes. Analgesic kidney disease declined as a cause of ESRD.

Prevalence

The prevalence of kidney failure is difficult to estimate, although some national information on the indicators of kidney disease, such as elevated blood creatinine levels and protein or blood present in the urine, has become available recently. According to the Australian Diabetes, Obesity and Lifestyle report, in 1999–00 elevated blood creatinine was present in approximately 1.1% of the population, urinary protein in 2.5%, and 6.4% were estimated to have detectable blood in the urine (Dunstan et al. 2001).

Table 2.22: Main kidney disease in new cases of end-stage renal disease, 1993 and 2000

	1993		2000	
Cause	**Number**	**Per cent**	**Number**	**Per cent**
Glomerulonephritis	380	33	518	30
Diabetic kidney disease	181	16	381	22
Analgesic kidney disease	124	11	79	5
Long-term high blood pressure	105	9	239	14
Other	370	32	506	29
Total	**1,160**	**100**	**1,723**	**100**

Note: The data reported here have been supplied by the Australia and New Zealand Dialysis and Transplant Registry (ANZDATA). The interpretation and reporting of these data are the responsibility of the authors and in no way should be seen as an official policy or interpretation of ANZDATA.

Source: Russ 2001.

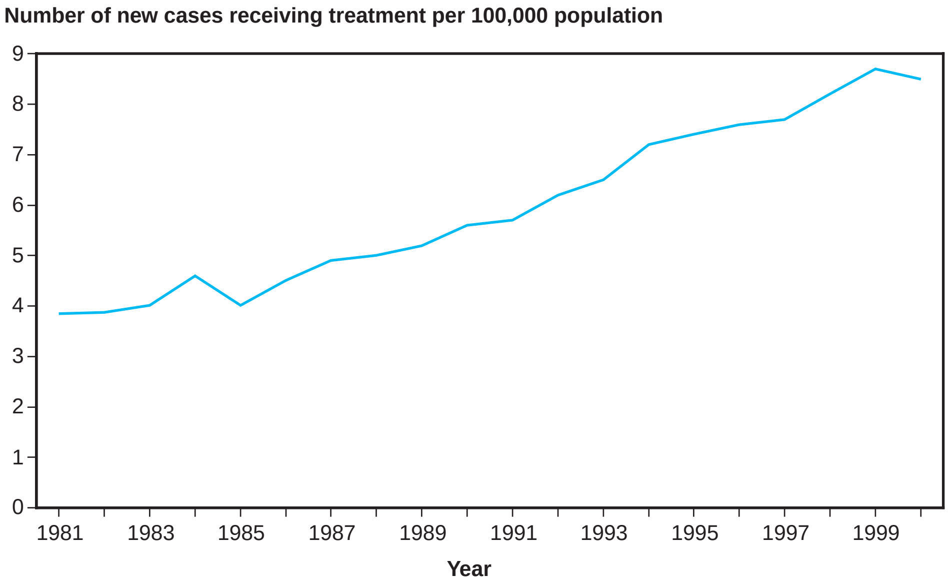
In addition, ANZDATA provides a proxy source for estimating the prevalence of the severe end of the spectrum of kidney failure. As at December 2001, there were 11,597 people (61 per 100,000 population) being treated for ESRD (Russ 2001). According to ANZDATA, 54% of these people (6,362) depended on regular dialysis and 46% (5,235) lived with functioning kidney transplants.

Using ANZDATA information, the number of people living with ESRD in Australia appears to be rising. Between 1989 and 2000, the number of cases in the ANZDATA registry increased from 30 to 61 per 100,000 persons. Although some of this increase may be due to increasing incidence of the disease, it is also thought to be due to longer survival of cases, improved management and technologies, and an increase in the number of older people undertaking treatment for ESRD.

Incidence

ANZDATA also publishes the number of new cases of kidney failure registered with it in Australia. This is only a proxy measure of the incidence of kidney failure, as not all people with kidney failure progress to ESRD; also, some of those with ESRD are not able to begin treatment, or choose not to, and are therefore not recorded with ANZDATA. In 2000, there were 1,723 new ESRD cases (983 males and 740 females) registered with ANZDATA, an incidence rate of 9 per 100,000 population (Figure 2.37).

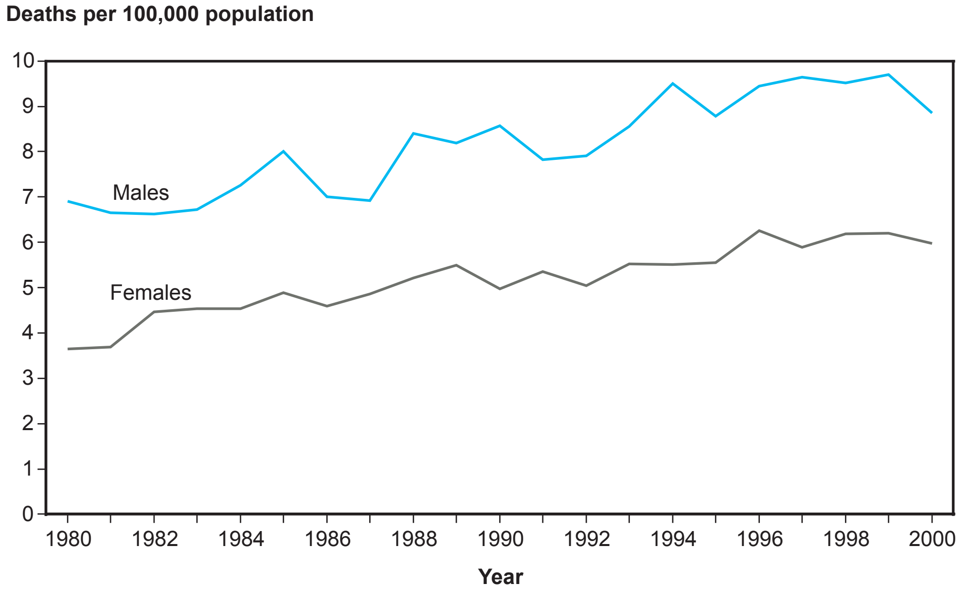
The average age of people beginning treatment for ESRD in 2000 was 61 years. In all age groups there were more males than females beginning treatment for ESRD. In both sexes, incidence of ESRD increased with age.



Note: Age standardised to the Australian population at 30 June 1991.

Source: Russ 2001.

Figure 2.37: Trends in new cases of end-stage renal disease, 1981 to 2000



Notes

1. Age standardised to the Australian population at 30 June 1991.
2. The mortality rates for 1980–96 (ICD-9) have been adjusted by a factor of 1.05 to be comparable with the ICD-10 classification and 1997–00 rates.

Source: AIHW National Mortality Database.

Figure 2.38: Trends in mortality for kidney failure, 1980 to 2000

Mortality

Kidney failure contributes significantly to mortality. In 2000, there were 1,715 deaths for which kidney failure was recorded as the underlying cause of death (803 males and 913 females). Death rates rise with age in both sexes, and are highest among those aged 75 and over.

Deaths following kidney failure have risen over the past 20 years. In 2000, age-adjusted death rates were 8.8 and 6.0 per 100,000 for males and females respectively, up from 7.0 and 3.7 two decades earlier (Figure 2.38).

Morbidity

Hospital separations

Kidney failure is a major reason for hospital visits. Most of these are for maintenance dialysis or kidney transplantation procedures.

In 1999–00, kidney failure was the principal diagnosis in 7,394 hospital separations. Males were more likely than females to have a separation for kidney failure, 42 per 100,000 males in comparison to 31.4 per 100,000 females. The average length of hospital stay was 8.6 days (8.4 days for males and 8.9 days for females).

In addition, in 1999–00, there were 535,451 separations for dialysis, up from 480,606 in 1998–99, and accounting for an estimated 10% of all hospital separations. Note that these represent a relatively small number of patients having multiple hospital admissions. Dialysis was the most common principal diagnosis in public hospitals in 1999–00 and the second most common in private hospitals. Males accounted for 58% of these separations, most of which were same-day separations.

Kidney failure among Indigenous Australians

Kidney failure among Indigenous Australians, in particular in the Northern Territory, is high and has been described as an epidemic (Spencer et al. 1998).

According to ANZDATA, new cases of ESRD in Indigenous Australians rose from 42 cases to 143 between 1991 and 2000. The rise has been most dramatic in the Northern Territory, where more than 80% of new cases in 2000 were in Indigenous Australians.

Currently, about 6% of ESRD registrants with ANZDATA are Indigenous Australians, who account for just 2% of the total population. In 2000, 710 Indigenous people were receiving dialysis or living with kidney transplants.

A significant difference between the Indigenous and other Australian populations is in the age of ESRD development. Indigenous people typically need treatment for ESRD at an earlier age than other Australians. More than 85% of new Indigenous patients are aged 64 or under. This contrasts with 55% of new patients in this age group among the rest of the Australian population.

The incidence of kidney failure in Indigenous people has been attributed to a number of factors, including high levels of glomerulonephritis following streptococcal infections and increasing prevalence of the 'metabolic syndrome' (e.g. high blood pressure, Type 2 diabetes, obesity and heart disease). Better ascertainment and greater acceptance of ESRD therapy by the Aboriginal community may also contribute to the increase in reported numbers (Thomas 1998).

Nervous system disorders

Introduction

Disorders of the nervous system are responsible for a significant proportion of the burden of disability in Australia. The Burden of Disease and Injury Study found that nervous system disorders (not including sense organ disorders) accounted for over 8% of years of life lost due to disability in Australia (AIHW: Mathers et al. 1999a). Nervous system disorders include dementia, epilepsy, Parkinson's disease, multiple sclerosis, motor neurone disease, Huntington's disease, muscular dystrophy and many others. Nervous disorders are distinguished from mental disorders partly through the presence of objective markers in the former, such as X-ray or laboratory abnormalities. However, the distinction becomes blurred with conditions such as dementia.

Information about incidence, prevalence, mortality, hospitalisations and health system costs for some of these has been given previously in *Australia's Health 2000*. This edition features a more detailed discussion of Alzheimer's disease, the main form of dementia.

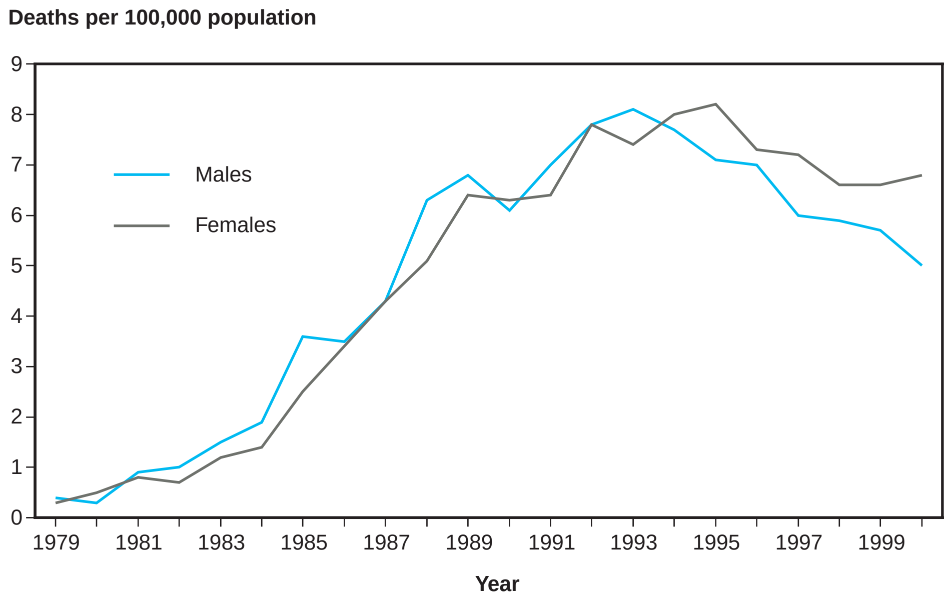
Alzheimer's disease

Alzheimer's disease is the most common form of dementia. Dementia is the progressive impairment of brain functions, including language, memory, perception, personality and cognitive skills. In 2000, there were an estimated 146,800 Australians aged 65 and over with dementia (AIHW 2001b), with over half of these having Alzheimer's disease (AIHW 2000).

The cause of Alzheimer's disease is not known, but it is not considered a part of normal ageing. Previous theories about the accumulation of aluminium, lead, mercury and other substances in the brain have been disproved. A diagnosis of Alzheimer's disease is based on characteristic symptoms and on excluding other causes of dementia. It can be confirmed by microscopic examination of a sample of brain tissue after death.

By causing both structural and chemical problems in the brain, Alzheimer's disease appears to disconnect areas of the brain that normally work together. Currently there is no proven way to prevent or cure Alzheimer's disease, and the impaired functions cannot be restored. The progression can be slowed but not stopped. Total disablement is common. The average length of life after diagnosis is 8 to 10 years, although some individuals live with the disease for 20 years or more (Hime 2001).

About 10% of all people aged over 70 have significant memory problems and about half of such cases are due to Alzheimer's disease. Because women usually live longer than men, they are more likely to develop Alzheimer's disease (US National Library of Medicine 2001).



Notes

1. Age standardised to the Australian population at 30 June 1991.
2. ICD-9 code 331.0 used for 1979–96; ICD-10 code G30 used for 1997–00. Rates for 1979–96 adjusted by a factor of 1.48 to be comparable with 1997–00 rates.

Source: AIHW National Mortality Database.

Figure 2.39: Trends in death rates for Alzheimer's disease, 1979 to 2000

Through the 1980s the number of deaths attributed to Alzheimer's disease increased rapidly because of heightened awareness among medical practitioners (Hime 2001). In 2000, there were 1,559 deaths in Australia attributed to Alzheimer's disease; over 50% of these were of people aged 85 years and over, and over 70% were of females. These figures have been relatively stable over the past 10 years.

The death rates for Alzheimer's disease have been fairly equal for males and females, and have been declining since peaking at around 8 per 100,000 in 1993 for males and in 1995 for females (Figure 2.39). This decline may be due to the coding of some deaths from Alzheimer's disease to pneumonia (AIHW 2000).

2.5 Communicable diseases

Communicable or infectious diseases are illnesses due to specific infectious organisms or their toxic products (Benenson 1995). The agent or toxic product can be transmitted (communicated) to humans by direct or indirect contact with other humans, animals or environments that carry the organism. This section begins with a brief overview giving summary statistics on the major groups of communicable diseases in Australia, followed by information on a range of specific categories.

Overview

This section discusses two major groups of communicable diseases, as classified in the International Classification of Diseases:

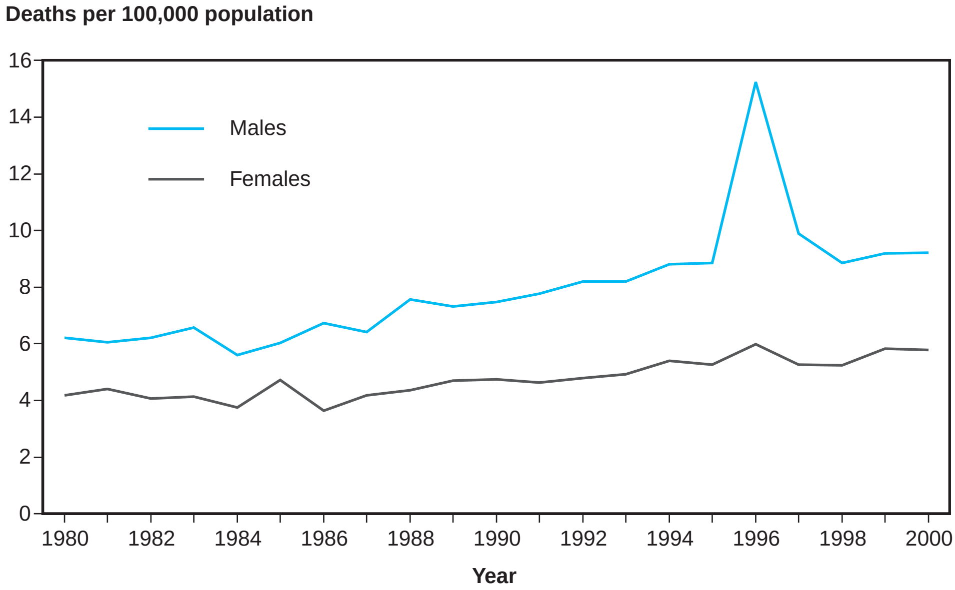
- infectious or parasitic diseases (ICD-10 codes A00–B99)
- acute respiratory infections which include influenza, pneumonia and other acute upper/lower respiratory tract infections (ICD-10 codes J00–J22).

Infectious and parasitic diseases

Deaths: In 2000, an infectious or parasitic disease was recorded as the underlying cause in 867 male and 779 female deaths in Australia, with age-standardised death rates of 9.2 and 5.8 per 100,000 respectively. In addition, there were 3,009 (12.2 per 100,000) deaths from an acute respiratory infection in Australia (see more detailed information later in this section).

Figure 2.40 shows death rates for infectious and parasitic diseases between 1980 and 2000. The apparent increase in rates for both males and females warrants further investigation, taking the following into account. First, AIDS was transferred to the infectious and parasitic disease category in 1996, adding more than 400 male deaths in that year. Second, the introductions of ICD-10 in 1997 and of automated coding of deaths have increased the identification of communicable disease deaths (AIHW 2002). (To allow analysis of trends, the ABS has introduced an adjustment method for these changes.)

Hospitalisations: In 1999–00, infectious and parasitic diseases were the principal diagnosis in 86,675 hospital separations; some 28,772 (33%) of these were for children 0–4 years of age. In addition, there were 125,724 hospital separations for influenza, pneumonia and acute upper/lower respiratory tract infections.



Notes

1. Age standardised to the Australian population at June 1991.
2. Infectious or parasitic disease was classified using ICD-9 codes 0001 to 139 with additional codes for compatibility to ICD-10 of 48283, 67004, 7713 and ICD-10 A00-B99. A 1.25 comparability factor was applied to the source data from 1980–96.

Source: AIHW National Mortality Database.

Figure 2.40: Death rates for infectious and parasitic diseases, 1980 to 2000

Notifications: In 2000, there were 89,788 notifications of communicable diseases to the National Notifiable Diseases Surveillance System (NNDSS), which is maintained by the Commonwealth Department of Health and Ageing and receives data from State and Territory health departments on more than 50 communicable diseases (Lin et al. 2002). The most commonly notified diseases were bloodborne diseases, followed by sexually transmitted diseases and gastrointestinal diseases.

Acute respiratory infections

Acute respiratory infections (ARIs) (ICD-10 J00–J22) are usually divided into upper respiratory tract infections affecting the mouth and nose, and lower respiratory tract infections affecting the trachea and lungs. This section presents summary data on ARIs and then more detailed information on influenza and pneumonia.

Deaths: ARIs contributed significantly to mortality during 2000 and were the underlying cause in 3,009 deaths, 1,339 male and 1,670 female with age-standardised death rates of 14.8 and 10.4 per 100,000 respectively. Deaths were concentrated in the older age groups with the average age being 82.5 years for males and 80.7 years for females.

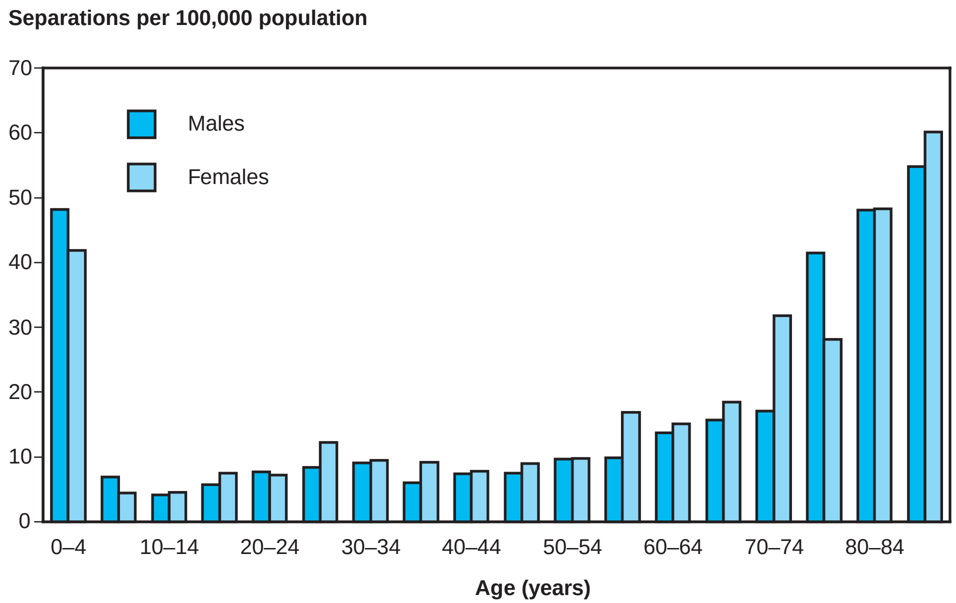
Hospitalisations: In 1999–00, there were 125,724 hospitalisations for influenza, pneumonia and acute upper/lower respiratory tract infections. Hospitalisations are concentrated among the young aged 0–4 years (43,832 separations) and those over 50 years (52,849 separations).

General practice: ARIs were the major contributor to respiratory problems, which were the most frequently managed problem by general practitioners in the BEACH survey of 2000–01 (22.5 per 100 encounters). Upper respiratory tract infection (4.4 per 100 encounters) and acute bronchitis (1.6 per 100 encounters) were also the most frequently managed new conditions (AIHW: Britt et al. 2001a).

Influenza and pneumonia

Influenza causes fever, sore throat, cough, headache, muscle pain and malaise lasting some days. Complications most commonly include lower respiratory tract infection, especially in people with pre-existing heart or lung illness (NHMRC 2000). Laboratory-confirmed cases of influenza became nationally notifiable from 1 January 2001.

Deaths: There were 67 deaths (40 males and 27 females) during 2000 with influenza as an underlying cause, compared with an average of 58 per year over the previous 3 years. The influenza age-standardised death rate was 0.3 per 100,000 for both males and females. Influenza and pneumonia often occur together (NHMRC 2000) and in 2000 there were 2,937 deaths (1,312 males and 1,625 females) with an underlying cause of death of either influenza or pneumonia. This was considerably higher than the previous 3-year period (average 2,055 per year). The age-standardised death rate in 2000 was 11.9 per 100,000 (14.5 per 100,000 for males and 10.1 for females). The vast majority of these deaths (93%) occurred in people aged 65 years and over. The average age at death was 78.6 years for males and 82.6 years for females.



Note: Influenza was classified using ICD-10 J10–J11.

Source: AIHW National Hospital Morbidity Database.

Figure 2.41: Age-specific hospitalisation rates for influenza, 1999–00

Table 2.23: Coverage of influenza vaccine in people age 65 years and over, 2000

Vaccination coverage	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
					Per cent				
Highest education obtained									
Secondary	74.6	76.6	70.0	74.9	80.9	78.1	85.0	65.8	74.9
Trade/diploma	74.2	73.4	68.5	75.2	77.8	78.2	78.7	63.9	73.3
Degree or higher	67.1	65.8	68.4	65.7	83.6	83.8	80.6	66.7	69.0
Annual household income									
Up to $20,000	72.9	76.2	68.6	76.0	77.8	78.1	86.9	65.2	73.8
$20,001 to $50,000	73.5	73.8	69.3	75.9	82.3	79.2	81.6	67.6	73.9
$50,001 to $80,000	75.5	62.8	75.2	63.1	85.0	79.7	76.0	53.6	71.6
More than $80,000[(a)]	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Not stated/don't know	80.9	78.9	73.7	73.6	87.4	77.7	75.2	64.5	78.4

n.a. Not available.

(a) Sample too small to provide reliable data.

Source: Taylor et al. 2000.

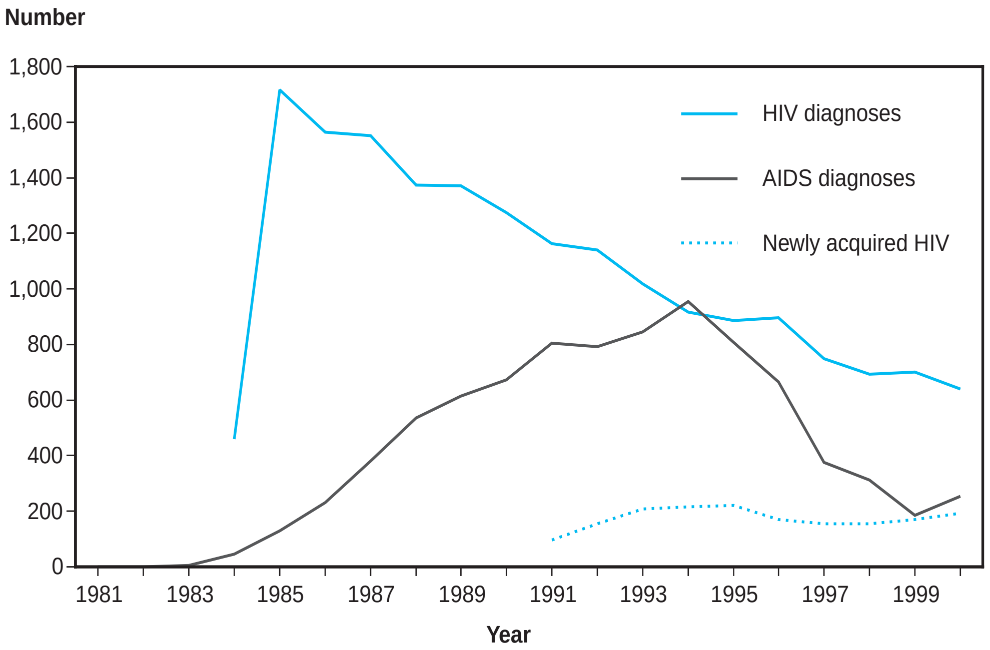
Hospitalisations: The number of hospital separations in 1999–00 with a principal diagnosis of influenza was 2,591 (1,202 males and 1,389 females), compared with an average of 3158 per year over the previous 3 years. Hospital separations were distributed evenly over most age groups (Figure 2.41) with a greater number in children aged 0–4 years (573, 22%) and in adults aged 65 years and over (725, 28%). The combined number of hospital separations caused by influenza and pneumonia in 2000 were 62,581 (33,155 males and 29,426 females). Half of these hospitalisations occurred in people aged 65 years and over, 16,048 males (48.4%) and 14,617 (49.7%) females.

Vaccination: Older Australians are at greater risk of illness from diseases such as influenza. In 1999, the federal government began funding the Influenza Vaccine Program for Older Australians. The program was designed to remove cost and physical barriers that had prevented older people from having influenza vaccines. Telephone surveys of Australians aged 65 years and over reported that influenza vaccination in Australia increased from 60.7% in that age group in 1998 to 74.1% in 2000. This increase occurred across all States and Territories. The survey shows no clear pattern in the relationship between an individual's highest education obtained or annual household income and the likelihood of being vaccinated to prevent influenza (Table 2.23). In New South Wales, Victoria, Queensland and the Australian Capital Territory, the highest vaccination coverage was observed for those with a secondary education, whereas in South Australia, Tasmania and the Northern Territory the highest coverage was observed in tertiary-educated respondents.

Bloodborne diseases

HIV/AIDS

The human immunodeficiency virus (HIV) causes a chronic infection that can be initially 'silent' in those infected. However, in time it usually leads to the clinical illness known as acquired immunodeficiency syndrome (AIDS), through destruction of key



Note: Adjusted for multiple reporting delay.

Source: State and Territory health authority reports to National Centre in HIV Epidemiology and Clinical Research.

Figure 2.42: HIV/AIDS diagnoses, 1981 to 2000

cells of the immune system. At the end of 2000, an estimated 12,730 people were living with HIV infection in Australia, including 2,700 who had developed AIDS.

Most cases of HIV infection in Australia (over 80% of those diagnosed in 2000) were transmitted by sexual contact between men, with relatively little transmission through other sources of exposure. HIV prevalence in Australian injecting drug users continues to be low, with the most recent estimated prevalence being 0.7% among people tested through needle and syringe programs in 2000 (NCHECR 2001).

For most cases of HIV there is a lag between infection and diagnosis. In other words, most newly diagnosed cases will not, in fact, be newly acquired. The National Centre in HIV Epidemiology and Clinical Research, allowing for such factors, estimates that the incidence of HIV infections declined rapidly from more than 2,500 new HIV infections in 1984 to around 500 per year in recent years. This is corroborated by a decline in the number of people newly diagnosed with HIV from a peak of over 1,700 in 1985 to around 650 in 2000 (Figure 2.42).

Illness and mortality associated with HIV infection have been dramatically reduced since 1996 in many countries by effective drug therapies. Of all people living with HIV infection in Australia, an estimated half received treatment with combination therapies in 2000. Even among those with AIDS, survival has increased from under 20 months for cases diagnosed in 1994 to 38 months for cases diagnosed in 1997. The number of reported AIDS diagnoses and deaths in Australia peaked in 1994, at 955 and 737 respectively, and had fallen to 255 (a 73% fall) and 157 (79% fall) by 2000 (Figure 2.42).

With generally low levels of HIV transmission, and an improved treatment outlook, Australia's epidemic of HIV infection and AIDS represents less of an immediate public threat than it did a decade ago. Nevertheless some population groups remain vulnerable. Surveys of homosexual men in several cities suggest that anal intercourse with casual partners has become more frequent since the mid-1990s and rates of sexually transmitted infections are increasing in this population. High rates of hepatitis C spread among people who inject drugs and widespread bacterial sexually transmitted infections in some Indigenous communities also suggest the potential for further HIV spread (NCHECR 2001).

Chronic viral hepatitis

Information on hepatitis B and C is given below. For both diseases, incident cases (new, recently occurring) can be diagnosed by specific blood tests. Incident cases are also determined when the symptoms are compatible with viral hepatitis and other causes have been excluded. Notifications of hepatitis B and C that do not meet the definition of an incident case are recorded as 'unspecified'.

Hepatitis B

Hepatitis B is transmitted through sexual contact, blood contact or from mother to baby. It can cause chronic infection leading to liver disease, mainly when exposure occurs at a young age. The number of new cases of hepatitis B reported to the NNDSS has increased from 213 cases in 1996 (a crude rate of 1.2 per 100,000) to 395 cases in 2000 (a crude rate of 2.1 per 100,000). The highest rate of new cases occurred in the 20–24 age group (7.6 cases per 100,000 population), constituting 26% of all cases. Overall, the male to female ratio was 1.6:1. Notifications of unspecified hepatitis B have been relatively stable over the period 1996–00 at approximately 40 cases per 100,000 annually (Lin et al. 2002; NNDSS 2002; Roche et al. 2001b).

Hepatitis C

Hepatitis C virus is transmitted mainly by blood contact and causes chronic infection in around 70% of cases. In Australia an estimated 90% of newly acquired hepatitis C cases are related to injecting drug use. Hepatitis C continues to be the most frequently reported notifiable infection in Australia. During 2000, 20,048 newly or previously acquired cases were notified to the NNDSS, bringing the total number of notified cases of hepatitis C in Australia to more than 160,000 since antibody testing became available in 1990. Notifications of hepatitis C between 1996 and 2000 remained relatively stable in the range of 18,000–22,000 per year. Notifications of hepatitis C include newly acquired (incident) cases, or unspecified cases, where the timing of infection is unknown.

Rates of hepatitis C notification between 1996 and 2000 doubled among people aged 15–19 years, from 54 per 100,000 in 1996 to 108 per 100,000 in 2000. Overall, the male to female ratio of notifications in 2000 was almost double. In the 15–19 year age group, however, approximately equal numbers of male and female cases were notified (Lin et al. 2002).

The number of notifications of newly acquired hepatitis C increased from 346 cases in 1998 to 441 cases in 2000 (Lin et al. 2002). Yet this number remains a small fraction of the estimated 11,000 cases of newly acquired hepatitis C infections that occur in Australia each year (Law 1999). In contrast to HIV, the hepatitis C prevalence in injecting drug users has remained high in Australia. Over the period 1996–00 the prevalence was relatively stable at approximately 50%, based on an annual survey of people attending needle and syringe program sites across Australia (NCHECR 2001).

Sexually transmissible infections other than HIV

The two most common sexually transmissible infections (STIs) in Australia are believed to be human papillomavirus and genital herpes, both of which are chronic viral infections. Their occurrence is difficult to monitor, as they are not notifiable.

The main bacterial STIs are reported through the NNDSS. Over the past 5 years, the rate of chlamydia diagnosis doubled, from 46 per 100,000 population in 1996 to 88 in 2000. The rate of gonorrhoea diagnosis has increased more gradually from 23 per 100 000 in 1996 to 30 in 2000 (Lin et al. 2002). The rates of notification of chlamydia and gonorrhoea in the Northern Territory were substantially higher (10 to 100-fold) than in other States or Territories. Increases in these STIs may be partly due to the increasing use of more sensitive diagnostic tests, more acceptable specimen collection methods and the introduction of screening programs.

In 2000 the rate of syphilis diagnosis was also substantially higher in the Northern Territory (90 cases per 100,000 population) compared with the national rate (9.2 cases per 100,000 population). In 2000, the male to female ratio of notifications was 0.7:1 for chlamydia, 2.1:1 for gonorrhoea and 1.2:1 for syphilis. In New South Wales and Victoria, there has been a steady increase over the past 5 years in the rates of gonorrhoea diagnosis among homosexual men. The national number of donovanosis cases diagnosed has declined over time, from 84 in 1995 to 12 in 2000.

Notifications of STIs for the Indigenous population during 1998 to 2000 combined were taken from data for South Australia, Western Australia and the Northern Territory. These rates were substantially higher than the rates for the total population (reported above). The notification rates for Indigenous persons per 100,000 were chlamydia 983.2, gonorrhoea 1,405.0, syphilis 233.2 and donovanosis 10.4 (ABS & AIHW 2001).

Gastrointestinal infections

Gastrointestinal infections are a major cause of morbidity in the developed world. In 2000, there were 21,304 notifications to the NNDSS of gastrointestinal infections. The majority of these notifications were for campylobacteriosis (13,595) and salmonellosis (6,151), although there were many notifications of other more serious illnesses potentially from food, including haemolytic uraemic syndrome. It is widely recognised that notified cases of gastrointestinal illness represent a small fraction of all gastrointestinal infections that occur in the community.

Attributing the causes of gastrointestinal infection to different sources is difficult, due to the unknown contribution from different modes of transmission. People may contract gastrointestinal infections via food, water, other people, the environment or animals. Despite the difficulties in identifying the causes, transmission from food is estimated to account for millions of cases of gastroenteritis each year in Australia (Veitch & Hogg 1997).

Although gastrointestinal infections are often mild and self-limiting, foodborne illnesses can result in hospitalisations and death. For example, listeriosis can cause septicaemia and meningitis in pregnant women, newborn infants and immunocompromised people. State and Territory health departments notified 33 cases of listeriosis in the first 6 months of 2001. There have been 19 deaths recorded due to listeriosis for the years 1997 to 2000. These figures are likely to be significant underestimates, due to coding issues and the opportunistic nature of the infections.

To obtain better estimates of the burden of foodborne disease in Australia, the Department of Health and Ageing established OzFoodNet in 2000. This is a collaborative program to enhance surveillance of gastrointestinal infections and conduct research.

Vectorborne diseases

This section presents NNDSS notifications of diseases transmitted by mosquitoes in Australia. The nationally notifiable vectorborne diseases include two caused by alpha viruses (Barmah Forest virus disease and Ross River virus disease), a flavivirus (dengue), malaria and a category for all other arboviruses (includes Murray Valley encephalitis, Kunjin viruses and Japanese encephalitis).

Ross River virus (RRV) disease: Ross River virus infection was the most commonly notified vectorborne disease in Australia in 2000, with 4,200 notifications (crude rate of 21.9 per 100,000 population). Crude rates were highest in the Northern Territory and Queensland. Ross River virus disease shows a seasonal pattern, with peak notifications in the first two quarters of every year.

Barmah Forest virus disease: There were 634 notifications (crude rate of 3.3 per 100,000 population) of Barmah Forest virus disease in 2000. The rates were highest in the Northern Territory and Queensland.

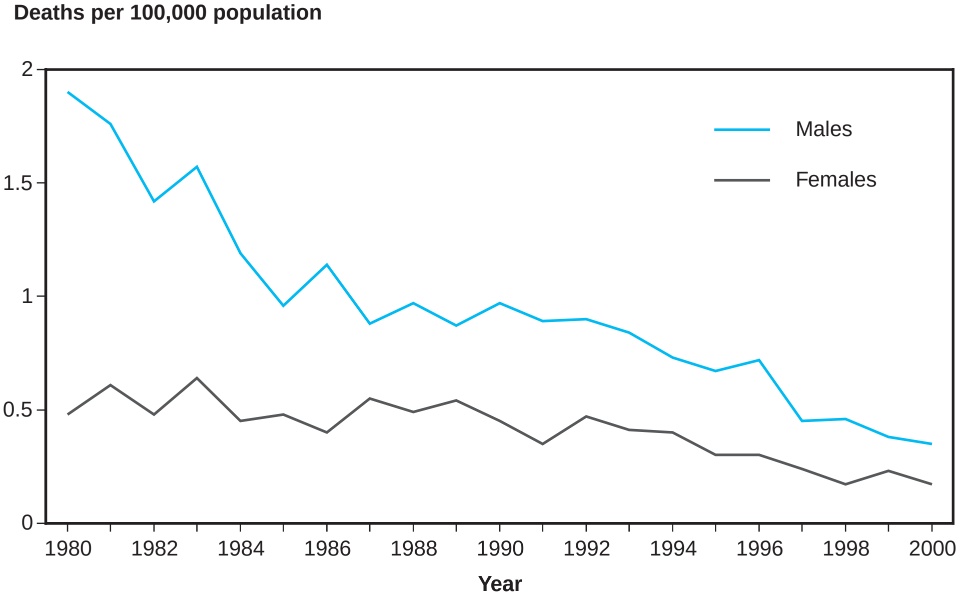
Dengue fever: A total of 215 cases were notified in 2000 (crude rate of 1.1 per 100,000 population) with the majority occurring in the Northern Territory and Queensland. Dengue is not endemic in Australia despite periodic outbreaks and the main vector being present in northern Queensland.

Malaria: Australia has been free of endemic malaria since 1981. Cases notified in Australia are from travellers returning from malaria-prone areas. Notifications remained stable in the period 1994–00 with 951 notifications in 2000 (Lin et al. 2002).

Tuberculosis

Australia has one of the lowest rates for tuberculosis (TB) notification internationally, with little change over the last 10 years. People born overseas account for more than 80% of all notified cases (Roche et al. 2001a).

Deaths: TB death rates have decreased over the past 20 years (Figure 2.43). The age-standardised death rates in 2000 of 0.2 per 100,000 males (33 cases) and 0.1 per 100,000 females (22 cases) were the lowest recorded.



Notes

1. Age standardised to the Australian population at 30 June 1991.
2. Comparability factor of 1.21 applied to data before 1997. ICD-9 codes 010 to 018, 137 and ICD-10 A15-A19 and B90.

Source: AIHW National Mortality Database.

Figure 2.43: Death rates for tuberculosis, 1980 to 2000

Hospitalisations: Between 1995–96 and 1999–00 there were 4,560 hospital separations with the principal diagnosis of TB, an annual average of 912 hospital separations. There were slightly more hospital separations for males (53%) than females (47%).

Notifications: In 2000, 1,024 cases (crude rate of 5.3 per 100,000 population) of TB were notified. Cases were more common among males (crude rate of 5.3 per 100,000) than females (4.8) and most were in the older age groups (Lin et al. 2002). The Australian Mycobacterium Reference Laboratory Network continues to report cases of drug-resistant TB but at a low prevalence (Dawson 2001).

Invasive meningococcal disease

Invasive meningococcal disease is due to an infection with the meningococcus bacterium (*Neisseria meningitidis*) that causes septicaemia and meningitis. The risk of invasive disease is increased if a person has had a recent upper respiratory tract illness or exposure to cigarette smoke. Australia does not have a vaccination program due to the relatively low risk of acquiring the disease and because the currently available vaccines target only some of the thirteen different types of the organism. There is no effective vaccination against meningococcal type B, which represented 56% of the infections in 2000 (Tapsall 2001).

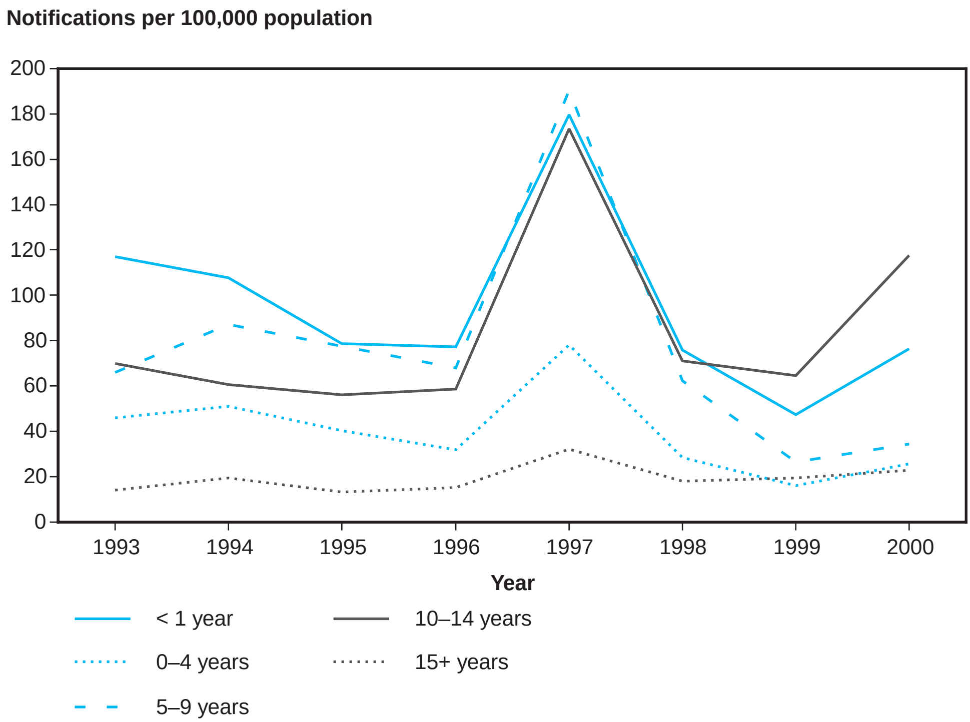
Notifications: In 1999, there were 568 notifications (crude rate of 3.0 per 100,000) and in 2000 there were 621 (crude rate of 3.2 per 100,000). Notification rates in both years were highest in the 0–4 and 15–24 year age groups. In 2000 the rate was 15.8 per 100,000 for 0–4-year-olds and 7.2 per 100,000 for 15–24-year-olds.

Hospitalisations: In 1999–00, there were 730 hospital separations for meningococcal disease. Over 90% of these hospitalisations were for meningitis or septicaemia.

Deaths: There were 29 deaths from meningococcal disease in 2000, 17 males and 12 females. Six of the deaths were from meningitis.

Vaccine-preventable diseases

Certain communicable diseases are regarded as 'vaccine preventable' and are therefore recommended by the NHMRC for routine vaccination/immunisation for children in Australia. The resulting Australian Standard Vaccination Schedule is implemented by the National Immunisation Committee. Recent changes occurred in May 2000, when universal immunisation against hepatitis B (at birth and in the first year of life) was added to the schedule. In October 2001 a vaccine was introduced for children at high risk of invasive pneumococcal disease, for those of Aboriginal or Torres Strait Islander descent or those with medical conditions predisposing to this disease.



Source: National Notifiable Diseases Surveillance System.

Figure 2.44: Notification rates for whooping cough, 1993 to 2000

Whooping cough (pertussis)

Notifications: Whooping cough remains the most frequently reported vaccine-preventable disease. There were 4,397 notifications (a crude rate of 23.2 per 100,000) in 1999 and 5,942 (a crude rate of 31.0) in 2000. The increase in 2000 represents the largest number of cases reported since 1997 (10,941 cases). In both years, the 10–14 age group had the highest rates, whereas in previous years the rates were highest in children under 1 year (Figure 2.44). Improved vaccination coverage for the first four doses of diphtheria, tetanus, pertussis (DTP) vaccine and the inclusion of a fifth dose at 4 years of age (in 1994) may explain the low rates for 1–9-year-olds in 1999 and 2000 compared with previous years.

Hospitalisations: The number of hospital separations with a principal diagnosis of pertussis was considerably lower in 1998–99 and 1999–00 (average of 302 per year) compared with the previous 5-year period (average 806 per year) (AIHW 2000; McIntyre et al. 2000). As in the past, the majority of hospitalisations (61%) were in children less than 1 year of age.

Deaths: One death from whooping cough was reported during 2000, in a child less than 1 year old.

Tetanus

Notifications: Since 1995 there have been fewer than 10 cases of tetanus notified each year in Australia, with two cases in 1999 and six in 2000. Six of these cases were female and seven were in people aged 50 years or older. To improve immunity in those most at risk, a tetanus booster is now recommended at age 50 unless one was received in the last 10 years (NHMRC 2000).

Hospitalisations: Over the 2 years 1998–99 to 1999–00 there were 36 separations with a principal diagnosis of tetanus, a similar number per year to the previous period (1993–94 to 1997–98) (AIHW 2000). The majority of separations (72%) were of people aged 50 years or over and there were fewer males than females (1:1.8). There were no separations for neonatal tetanus.

Deaths: There were no deaths in 1999 and two in 2000. Both were female and over 85.

Diphtheria

No cases of diphtheria have been notified in Australia since 1993. Despite this, diphtheria has the potential to re-emerge, as shown by a recent case in New Zealand (Baker et al. 1998) and an extensive outbreak in the former Soviet Union in the 1990s (Vitek & Wharton 1998).

Polio

The last confirmed case of polio arising in Australia was in 1967, with three possible cases notified in 1972 (DHAC 2000a). In October 2000, the WHO certified the Western Pacific Region, which includes Australia, polio-free (WHO 2000). The absence of natural polio from the region and the rare but definite risk of vaccine-associated poliomyelitis has prompted governments to consider following the United States in changing to an inactivated rather than live-oral vaccine. The inactivated vaccine does not cause vaccine-associated poliomyelitis.

Invasive *Haemophilus influenzae* type b disease

Invasive *Haemophilus influenzae* type b (Hib) disease can cause meningitis, epiglottitis or other illness (NHMRC 2000).

Notifications: The number of notified cases of invasive Hib disease has continued to decline following the inclusion of the Hib vaccine on the childhood vaccination schedule in 1993 (see Chapter 3, page 152). In 1999 there were 40 cases notified and in 2000 there were 28, the lowest number of notifications recorded since national surveillance began in 1991. In 1999 and 2000 there was a similar distribution of cases to previous years and cases occurred most commonly in the 0–4 age group (45%). Although rates have declined in all age groups since the introduction of the vaccine, the most dramatic decreases have been in those aged under 2 years. Even so, infants aged under 1 year continued to have the highest rate in 2000 (crude rate of 2.4 per 100,000).

Note that there are no specific hospital separation or death codes for Hib. Cases of *H. influenzae* meningitis and acute epiglottitis (unspecified cause) have been used as a measure of Hib morbidity. Before routine Hib vaccination began in late 1993, most of these cases were presumed to be caused by type b. However, this may no longer be valid and this should be considered when interpreting the following information.

Hospitalisations: In the 2-year period between 1998–99 and 1999–00 there were a total of 56 hospital separations with a principal diagnosis of *H. influenzae* meningitis and 273 for acute epiglottitis. Most separations for meningitis were of infants under 2 years (64%). Separations for acute epiglottitis were spread across all age groups with 83% being adults (aged at least 15 years).

Deaths: There was one death in 1999 and one in 2000.

Measles

Notifications: There has been a decline in the measles notification rate for Australia. This followed the introduction of a two-dose vaccination schedule in 1994 (Gidding et al. 2001), the Measles Control Campaign conducted in 1998 (Turnbull et al. 2001), and improved coverage as part of the routine childhood vaccination schedule. In 2000 there were 107 notifications (crude rate of 0.6 per 100,000), the lowest number since national surveillance began in 1991.

As in past years, rates were highest for 0–4-year-olds (crude rate of 6.1 per 100,000 in 1999 and 2.5 for 2000). In both 1999 and 2000, young adults aged 20–24 years accounted for 20% of all measles notifications and had the second highest notification rate (crude rate of 4.0 and 1.7 per 100,000 respectively).

Many outbreaks in 1999 and 2000 involved young adults (Lambert et al. 2000, Holland & Hall 2000) and a recent blood survey indicated that 11% of 18–22-year-olds were not immune to measles (Gidding & Gilbert 2001). In response, free vaccinations were provided to 18–30-year-olds from 2001 (Campbell 2000).

Hospitalisations: Hospitalisations due to measles have been declining since 1993–94. In 1998–99 there were 61 separations with a principal diagnosis of measles and in 1999–00 there were 50. The youngest age group (0–4) continued to have the highest hospitalisation rates in these 2 years (1.6 per 100,000 and 1.7). However, in 1998–99 there was a secondary peak in young adults aged 20–24 years (1.3 per 100,000).

Deaths: There were no deaths during 1999 and 2000.

Subacute sclerosing panencephalitis (SSPE): SSPE is a delayed complication of measles causing brain damage and invariably death, usually 10–15 years after the initial measles episode (NHMRC 1997a). Surveillance of SSPE by Australian paediatricians between 1995 and 1998 identified 6 cases aged less than 15 years (APSU 1999). From 1999 onwards, however, SSPE was no longer reported by this system. Over the 2-year period 1998–99 to 1999–00, there were 8 individual hospital separations with a principal diagnosis of SSPE. All were for people in the age range 13–18 years.

Mumps

Notifications: In 2000 there were 212 notifications of mumps (1.4 per 100,000) a slight increase on the 184 cases (1.1 per 100,000) reported in 1999. Although the notification rate overall has changed very little since 1997, rates for children (0–14 years of age) have been declining whereas those for adults (15 years and over) have been increasing. In 2000, 71% of notifications were from people aged at least 15 years.

Hospitalisations: In 1998–99 and 1999–00 there were 83 hospital separations with a principal diagnosis of mumps. The average annual rate over this 2-year period was 0.2 per 100,000. In 1999–00 rates were highest in the 0–4 (0.7 per 100,000) and 20–24 (0.7 per 100,000) age groups, with 67% of the admissions in people aged 15 years and over.

The increased mumps notification rate in young adults is important as adults can experience a higher rate of complications from infection with the mumps virus. This is evidenced by the high rate of hospitalisations in the 20–24 age group in 1999–00.

Rubella

Notifications: Cases of rubella have been declining each year since 1995. In 1999 there were 379 notifications (crude rate of 2.0 per 100,000) and in 2000 there were 322 notifications (crude rate of 1.7 per 100,000), the lowest number on record. As in most years, the highest rates in 2000 were for young adult males aged 15–24 (crude rate of 8.9 per 100,000). However, rates for this group have been decreasing in recent years due to the replacement of the schoolgirl rubella program with adolescent vaccination of both males and females between 1994 and 1998.

Hospitalisations: In 1998–99 and 1999–00 there were 38 hospital separations with a principal diagnosis of rubella (annual rate for 2-year period of 0.1 per 100,000). As in past years, the majority of hospitalisations (61%) were in children under the age of 5 years, especially infants under 2 years old.

Deaths: There were no rubella deaths in 1999 or 2000.

Congenital rubella: The major consequence of rubella infection in the community is children born with congenital rubella abnormalities due to maternal rubella during pregnancy. One case of congenital rubella infection was identified in 1999 and none in 2000. Between May 1993 and December 2000, 27 cases of congenital rubella infection were identified in Australian live-born children, an average annual rate of 1.3 per 100,000. The incidence of congenital rubella infection causing defects over this time was an average annual rate of 1.1 per 100,000 (APSU 2001).

Transmissible spongiform encephalopathies

Transmissible spongiform encephalopathies (TSEs) are a group of transmissible diseases in humans and animals marked by a spongy (spongiform) deterioration of the brain (encephalus). TSEs cause severe neurological symptoms and death. The most accepted scientific theory is that TSEs are caused by a self-replicating protein known as a prion.

The most important forms of TSEs are:

- Creutzfeldt-Jakob disease (CJD)
- variant CJD (vCJD)
- bovine spongiform encephalopathy (BSE, affecting cows).

Australia is free of BSE and other animal TSEs that affect sheep, goats, mink and cats.

CJD is a unique communicable disease because it can occur sporadically (90.4% of cases) and is also caused by genetic mutation (7.4% of cases) or transmitted by infection through medical care, such as through treatment with human brain tissue (2.2% of cases) (Boyd et al. 2001). The Australian National CJD Registry undertakes surveillance and diagnosis of CJD and monitors other human forms of TSEs. At the time of writing the registry had recorded 479 cases of CJD since 1970 (Masters et al. 2002).

Variant CJD (vCJD) was first recognised in the United Kingdom in 1995 and is linked to eating BSE-infected beef. No cases of vCJD have been reported in Australia and stringent measures have been taken to restrict the import of products that may have been exposed to BSE.

2.6 National Health Priority Areas diseases and conditions

Several diseases and conditions have been chosen for special attention by the Australian Health Ministers under the National Health Priority Areas (NHPA) initiative. The NHPA diseases and conditions are cardiovascular diseases, cancers, injuries, mental problems, diabetes mellitus and asthma. The NHPA initiative is a collaborative effort involving Commonwealth, State and Territory governments. It seeks to focus public attention and health policy on those areas that are known to contribute significantly to the burden of disease in Australia, and for which there is potential for health gain. The NHPA initiative recognises that in order to reduce the burden of disease, strategies need to be holistic, and to encompass the continuum of care from prevention through to treatment and management (AIHW & DHFS 1997).

This section provides a joint overview of the six NHPAs in terms of their prevalence, morbidity, disability and mortality towards the end of the twentieth century. Information is also provided on burden and costs to the health system. Time-series information for the NHPA indicators is contained in Tables S58 to S63.

The NHPAs account for much morbidity, disability and mortality in Australia. They also account for high health system costs.

Table 2.24: Prevalence of NHPA diseases and conditions, 1995

Priority area	Number ('000)	Per cent of total population
Cardiovascular disease or condition	2,795.5	15.5
Asthma	2,041.4	11.3
Injury and poisoning	1,153.9	6.4
Mental disorders	1,047.6	5.8
Diabetes	430.7	2.4
Cancer	379.6	2.1

Source: ABS 1997a.

- In 1995, over 40% of the Australian population suffered from an NHPA disease or condition.
- Over one in four problems managed by general practitioners relate to NHPA conditions.
- The six NHPAs accounted for about 1.8 million hospital separations, over 9 million patient-days, in 1999–00.
- The NHPA diseases and conditions were the cause of disability in almost 1.4 million people.
- NHPA-related diseases and conditions accounted for almost 78% of all deaths in 2000.
- Using the summary measure disability-adjusted life years, it is estimated that 70% of the burden of disease in Australia is attributable to the six NHPAs.

Morbidity

Prevalence

Population-based information on disease prevalence in Australia is based on various surveys, such as the National Health Survey and the National Survey of Mental Health and Wellbeing, both conducted by the ABS; and the AusDiab study. The 1995 National Health Survey estimated that over 40% of Australians suffer from an NHPA disease or condition, as either a recent or long-term health condition. In particular:

- From self-report, an estimated 2.8 million Australians, 15.5% of the population (Table 2.24), had a cardiovascular problem or condition in 1995, with high blood pressure the most common cardiovascular condition reported (ABS 1997a).
- Asthma was the second most common NHPA disease or condition reported, followed by injury and poisoning.
- The 1997 National Survey of Mental Health and Wellbeing revealed that approximately one in five adult Australians suffer from a mental disorder (ABS 1998b).
- From self-reports in the 1995 National Health Survey, over 430,000 Australians, 2.4% of the population, had been told they had diabetes. In addition, a similar number may have had the condition and been unaware of it (DHAC & AIHW 1999). The AusDiab survey, using biomedical measurements, estimated that in 1999–00 over

930,000 people aged 25 years and over (around 7% of that population) had diabetes, again about half of these unaware of their disease (Dunstan et al. 2001).

Problems managed by general practitioners

Another perspective of the impact of NHPA diseases and conditions is provided by visits to GPs. In Australia, GPs are usually the first point of healthcare contact. Consulting a doctor is actually the second most common action related to health care taken by Australians, after the use of medications (ABS 1997a).

According to the 2000–01 BEACH survey, over one in four problems managed by GPs relate to NHPA conditions, although the frequency of consultations varies with disease severity and condition (AIHW: Britt et al. 2001a). Circulatory and psychological problems are the most common NHPAs that GPs manage. Over the 12-month period (2000–01), out of a total of 143,528 problems managed by 999 GPs during 99,307 encounters:

- 11.1% were for circulatory problems
- 7.2% were for psychological problems
- 5.2% were for injuries
- 2.0% were for asthma
- 1.9% were for diabetes
- 0.6% were for malignant skin cancers.

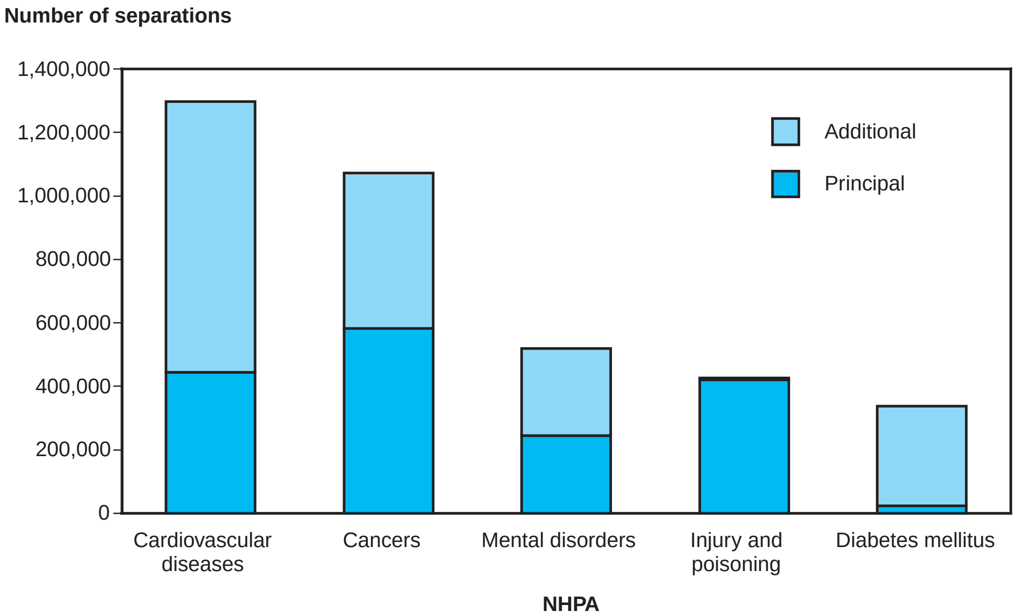
Four of the top ten problems managed by GPs in 2000–01 were in relation to an NHPA. Hypertension was the problem most frequently managed in general practice overall, accounting for 6.0% of all problems managed. Depression was the fourth most common problem managed (2.5%). Asthma and diabetes were the sixth and seventh problems most commonly managed.

Hospitalisation

Hospitalisation represents a different part of the spectrum of morbidity associated with various NHPA diseases and conditions. In 1999–00, principal diagnoses within the six NHPAs accounted for about 1.8 million hospital separations or around 30% of all separations, and about 9 million patient-days (41% of the total). Cancers (33% of the NHPAs), cardiovascular diseases (25%), injuries (24%) and mental disorders (14%) were the major contributors to NHPA-related hospital separations.

Over the period 1993–94 to 1999–00 the number of hospital separations increased for all NHPAs except asthma. The largest increases in separations were for mental disorders and cancers. Conversely, over the same period the average length of stay decreased for all NHPAs except mental disorders. The largest decreases in lengths of stay were for cardiovascular diseases, diabetes and cancers.

The average length of hospital stay for NHPA diseases and conditions in 1999–00 was 5.3 days, compared to 3.8 days for all hospital separations, probably reflecting the more serious nature of these conditions. Mental disorders and diabetes place the greatest burden on the hospital system in terms of hospital days per separation, with lengths of stays averaging 12.0 days and 6.6 days respectively in 1999–00.



Source: AIHW National Hospital Morbidity Database.

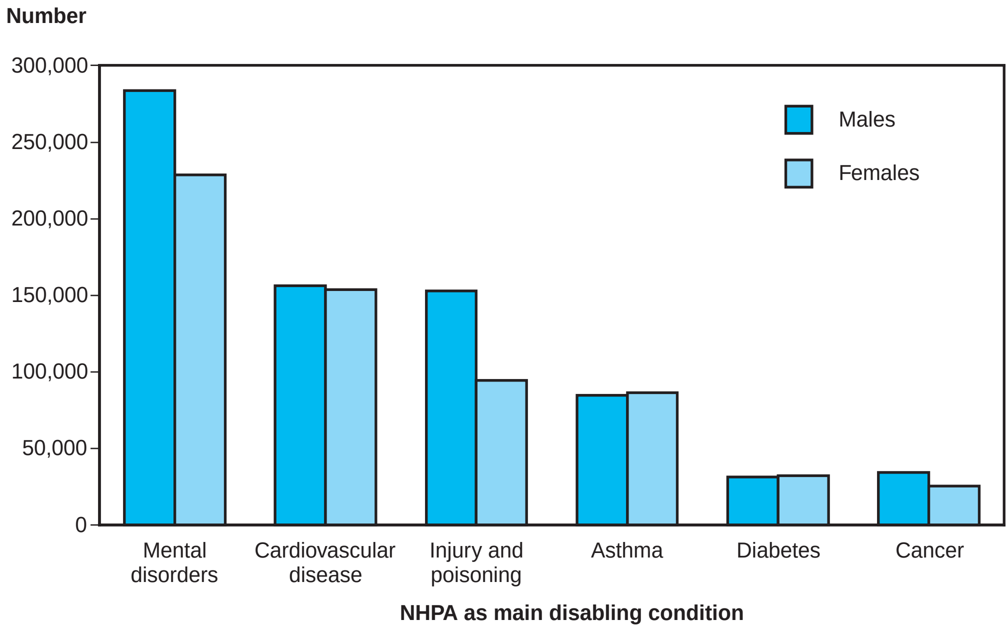
Figure 2.45: Hospital separations for NHPA diseases and conditions, 1999–00

Many of the NHPA diseases and conditions, as well as being the main reason for hospitalisation (principal diagnosis), may be contributors to separations for other causes; i.e. they were additional diagnoses (Figure 2.45). Diabetes in particular accounts for a much larger proportion of additional diagnoses than principal diagnoses, especially in relation to cardiovascular diseases. In almost 23% of separations with a principal diagnosis of cardiovascular disease, diabetes was listed as an additional diagnosis.

Disability

NHPA diseases and conditions entail significant disability. According to the 1998 Survey of Disability, Ageing and Carers, in almost 1.4 million cases (38% of people with a disability), NHPA diseases and conditions were the main reason for the disability (ABS 1999c). Over 36% of these people had profound or severe core activity restriction, and 27% had only mild core activity restriction.

Among the NHPAs, mental and behavioural disorders were the most common cause of disability (38% of NHPA disability), followed by cardiovascular diseases (23%), and injury and poisoning (18%). According to the survey, around 740,000 Australian males and 620,000 females had an NHPA disease or condition as their main disabling condition (Figure 2.46). As the main disabling conditions, mental and behavioural disorders, cardiovascular disease, injury and poisoning, and cancer were more common causes among males than females compared with the other NHPA conditions, whereas diabetes and asthma more common among females.



Source: 1998 ABS Survey of Disability, Ageing and Carers, unpublished data.

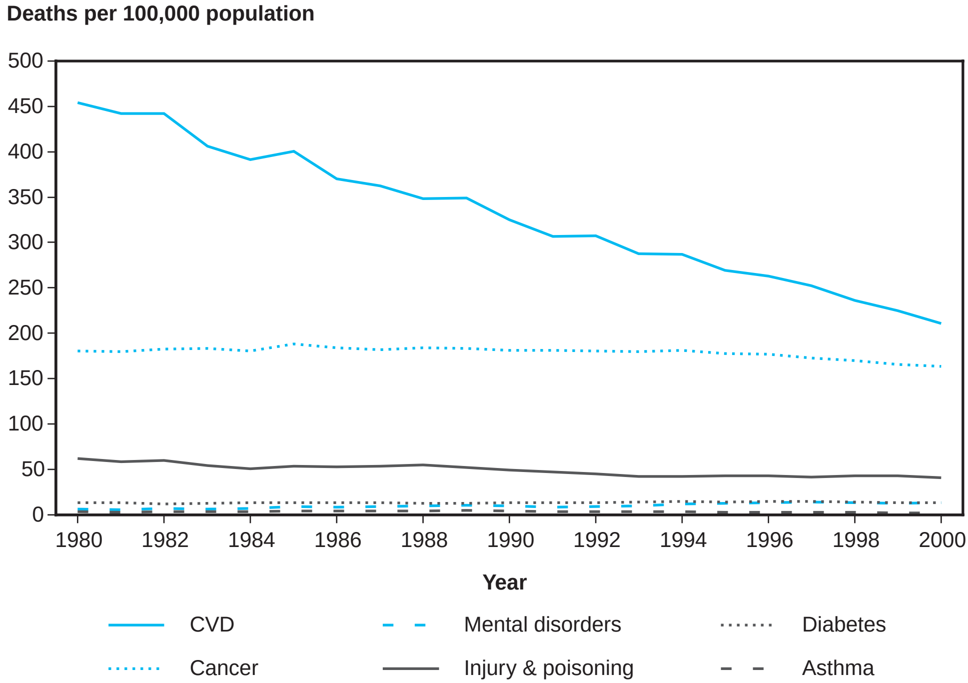
Figure 2.46: Disability associated with NHPA diseases and conditions, 1998

NHPA-associated disability occurs throughout the life cycle although the impact is more disease-specific. Over 68% of people with cardiovascular disease as their main disabling condition were over the age of 65. In contrast, over 50% of people with asthma as their main disabling condition were under the age of 30, and about 50% of people with diabetes as their main disabling condition were between 50 and 70 years. Disability associated with mental disorders was relatively common among children, whereas disability associated with injury was most common among middle-aged people.

Mortality

Although significant reductions have occurred in death rates for some NHPA diseases and conditions over the past several decades, they still are the primary cause of death in more than three out of four deaths in Australia. NHPA-related deaths accounted for about 100,000 or 78% of all deaths in 2000.

Cardiovascular diseases (50% of NHPA conditions) and cancers (36%) were the major causes of NHPA-related deaths, followed by injuries, mental disorders, diabetes and asthma. Diabetes accounted for a much smaller proportion as the underlying cause of death. However, in addition to being the underlying cause of death, it is considered to contribute indirectly to mortality associated with other diseases, particularly cardiovascular diseases.



Note: Age standardised to the Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

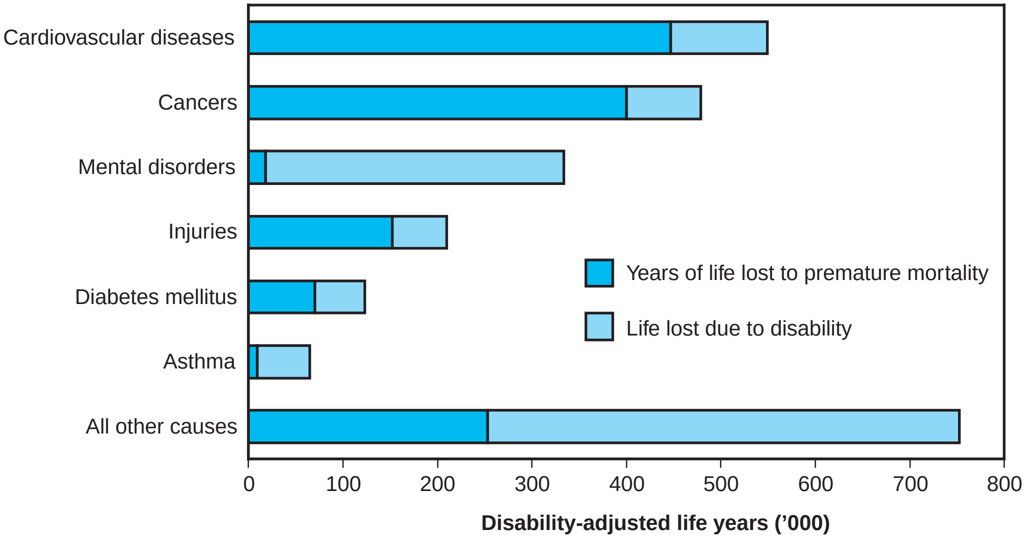
Figure 2.47: Trends in death rates for NHPA diseases and conditions, 1980 to 2000

Figure 2.47 presents trends in death rates for NHPA diseases and conditions over two decades, 1980 to 2000. Death rates from cardiovascular diseases decreased by over 50% over the period, and deaths from injury and poisoning fell by a third. In contrast, death rates for diabetes and mental disorders increased over the period, with rates for the latter increasing by over 4%, on average, annually.

The declines in death rates for cardiovascular diseases and cancers were greater among males than females, whereas females had greater reductions than males in death rates for injury and poisoning. Interestingly, although there were large increases in diabetes death rates for males over the two decades, no change in rate was noted among females.

Overall burden of NHPAs

Figure 2.48 presents a comparison of the burden of disease and injury across the six NHPAs in 1996. The six NHPAs accounted for 70% of the total burden of disease and injury in Australia in terms of disability-adjusted life years. The three largest contributors were cardiovascular diseases, cancers and mental disorders. Together, they accounted for around 77% of the burden associated with the six NHPAs.



Source: AIHW: Mathers et al. 1999b.

Figure 2.48: Disability-adjusted life years attributable to NHPA diseases and conditions, 1996

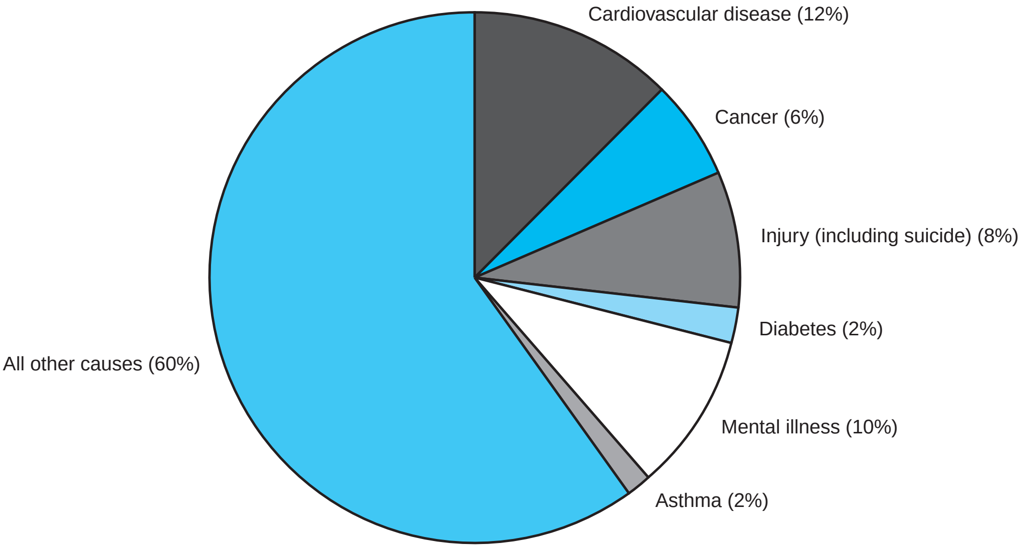
NHPAs accounted for 81% of the years of life lost to premature mortality and 57% of the equivalent years of 'healthy' life lost due to disability (AIHW: Mathers et al. 1999a). The main burden of cardiovascular diseases, cancers and injuries was due to premature mortality, whereas for mental disorders and asthma the burden was mostly in the form of years of 'healthy' life lost due to disability. For diabetes, the two components made similar contributions.

Mental disorders were the leading cause of years of 'healthy' life lost due to disability in 1996, accounting for nearly 30% of the total years of healthy' life lost due to disability in Australia, and they were the third leading cause of overall burden (14% of the total) after cardiovascular diseases (20%) and cancers (19%).

Health system costs

Data on health system costs provide an indication of the relative impact of the different priority areas in comparison to one another and to total health system costs.

Figure 2.49 presents a comparison of the direct health system costs associated with the health priority areas. Although the information is slightly dated, the figures provide a useful account of the impact of various NHPAs. The six NHPAs accounted for an estimated 40% of total health expenditure in 1993–94 (AIHW: Mathers et al. 1999a). The three largest contributors to health expenditure were cardiovascular diseases, mental illness and injuries. Together, those amounted to over $9.5 billion in health system costs in 1993–94 or around 30% of total health expenditure and 76% of expenditure associated with the six priority areas.



Source: AIHW: Mathers et al. 1999a.

Figure 2.49: Health system costs for NHPAs, 1993–94

Most health system expenditure for the six NHPAs was in the hospital sector (47% of all NHPA expenditure). This proportion is higher than that for health system expenditure overall. The proportion of NHPA expenditure that occurred in the medical sector (15%), which includes consultations with GPs and specialists as well as pathology tests and screening and diagnostic imaging services, was lower than that for the whole health system. Expenditure on NHPAs for pharmaceuticals was about the same.

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3 Determinants of health

The health of individuals and populations is influenced by many factors that may act alone or in conjunction with others (see Chapter 1). Information on the determinants of health is particularly important because it can help explain trends in health and why some groups have better or worse health than others. This knowledge can then guide the nature and focus of preventive activities. Prevention can occur through the efforts of individuals acting on their own behalf, through health professionals, and through governments and other agencies.

The health determinants outlined in this chapter relate to factors that can be measured in an individual (biomedical; lifestyle and behaviour; knowledge, attitudes and beliefs; genetic) or to broader environmental factors.

- **Biomedical factors**. Body weight, blood pressure, blood cholesterol and impaired glucose tolerance are among the important biomedical factors that affect health (Box 3.1). The levels of these factors in a person are the result of a complex interplay between the various influences on health described below. For example, within the context of a person's physical and social environment, knowledge of a family history of heart disease may induce behaviour change (e.g. improved diet, cessation of smoking, increasing physical activity) that may lower biomedical risks (e.g. high blood pressure and cholesterol levels).

- **Lifestyle and behaviour.** Use of tobacco and other drugs, patterns of eating and drinking, physical activity, sexual practice and other behaviours can all contribute to a person's health (Box 3.1). Along with genetic factors, lifestyle and behaviour influence biomedical factors that affect health.

- **Knowledge, attitudes and beliefs.** Knowledge, attitudes and beliefs influence a person's lifestyle and behaviour and so affect biomedical factors and health. They are influenced by broad social, economic and cultural factors.

- **Genetic factors**. Some diseases, such as muscular dystrophy, result entirely from a person's genetic make-up whereas many other diseases reflect the interaction between that make-up, environmental factors and behavioural factors.

- **Environmental factors**. These include physical, chemical, biological, social, economic, cultural and political factors. Physical, chemical and biological factors affect the quality and safety of air, water, soil and food by, for example, chemical pollution and waste disposal methods. Larger scale environmental disruptions, such as human-induced climate change, can have major health implications. The social environment is influenced by cultural customs, language, and religious, spiritual and personal beliefs. Socioeconomic factors such as education and employment can affect a person's ability and opportunity to make healthy choices and to sustain health-promoting behaviours.

Box 3.1: Some biomedical and behavioural risk factors associated with major causes of ill health, disability and death

In the health context, a risk factor is any factor that represents a greater risk of ill health, disability, disease or death. The risk factors included in this report are those which have been consistently found to meet accepted public health criteria of causation. Although they are presented separately, these factors often co-exist and interact. Although some factors may play an overwhelming role in some diseases, such as smoking and lung cancer, most diseases have many contributory causes.

Risk factors	***Associated cause of disease, disorder, disability, and death***
Biomedical	
Overweight and obesity	*Coronary heart disease, Type 2 diabetes, breast cancer, gallstones, degenerative joint disease, obstructive sleep apnoea*
High blood pressure	*Coronary heart disease, stroke*
Raised blood cholesterol level	*Coronary heart disease, stroke*
Impaired glucose tolerance	*Type 2 diabetes*
Behavioural	
Smoking	*Coronary heart disease; several cancers including lung, mouth and cervical cancers; stroke; chronic lung disease*
Poor diet and nutrition	*Coronary heart disease, stroke, breast and digestive system cancers, Type 2 diabetes, gallstones, osteoporosis, malnutrition, dental conditions*
Excess alcohol consumption	*Coronary heart disease, liver and pancreatic disease, stroke, high blood pressure, cancers of the digestive system, accidents, mental illness, violence*
Inadequate physical activity	*Coronary heart disease, stroke, Type 2 diabetes, colon cancer, osteoporosis, bone fractures, falls, mental illness, obesity*
Other drug abuse	*HIV/AIDS, hepatitis, renal failure, mental illness, suicide, violence, accidents*
Not vaccinated	*Measles, diphtheria, tetanus, pertussis, poliomyelitis,* Haemophilus influenzae *type b*
Excessive sun exposure[(a)]	*Melanoma and other skin cancers, premature ageing of the skin*
Unprotected sexual activity[(a)]	*HIV/AIDS, hepatitis, cervical cancer, infertility, pelvic infection, venereal disease*

(a) *These risk factors are not reported in this edition of* Australia's Health *but have been reported in previous editions.*

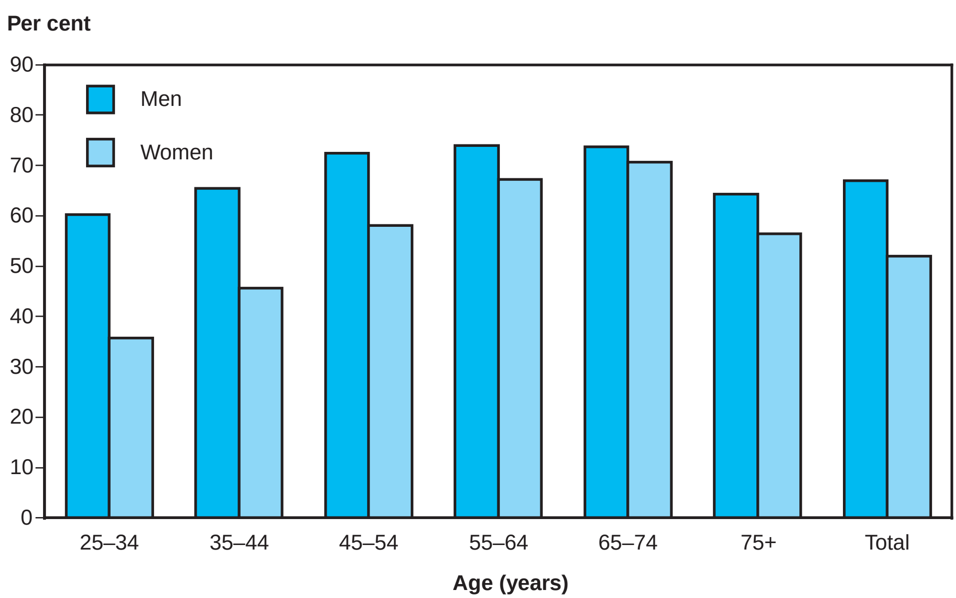
3.1 Biomedical factors

Body weight

The association between excess body weight and numerous health problems is well documented. People who are overweight or obese have higher mortality and morbidity rates for a number of diseases and conditions such as Type 2 diabetes, coronary heart disease, respiratory disease and some types of cancers. Other conditions associated with excess body weight are gall bladder disease, osteoporosis and ischaemic stroke. Among those who are overweight, weight loss reduces the incidence and severity of high blood pressure, high blood cholesterol, diabetes, osteoarthritis and some types of cancers (NHLBI 1998). In terms of overall disease burden, overweight and obesity has been estimated to account for over 4% of the total burden of disease in Australia in 1996 (AIHW: Mathers et al. 1999).

Being underweight is also associated with poor health, including conditions such as osteoporosis, ulcers, mental conditions such as depression, and eating disorders (Gilmore 1999).

Overweight and obesity is caused by an energy imbalance, where energy intake (diet) exceeds energy expenditure (physical activity) over a considerable period. Hence diet and physical activity are important in both weight loss and weight maintenance. Aside from underlying genetic factors, the physical environment, and social, economic and cultural factors can also affect overweight and obesity through their influence on dietary behaviours and physical activity patterns.



Source: AIHW analysis of the 1999–2000 Australian Diabetes, Obesity and Lifestyle Study (see Box 3.4).

Figure 3.1: Proportion of people who are overweight or obese, 1999–2000

Children and adolescents who are overweight or obese are at greater risk of becoming overweight or obese adults. They are also at greater risk of encountering obesity-related health problems usually associated with adult obesity. For example, it has recently been observed that the increase in Type 2 diabetes among children is due to the increasing prevalence of overweight and obesity among children (Ludwig & Ebbling 2001).

Body mass index (BMI) is the most common method used to estimate the prevalence of underweight, normal weight, overweight and obesity in a population. A person's BMI is assessed by dividing weight (kilograms) by height (metres) squared. For adults, a BMI less than 18.5 is considered underweight, 18.5 and less than 25 is healthy, 25 to less than 30 is overweight, and 30 or more is considered to be obese.

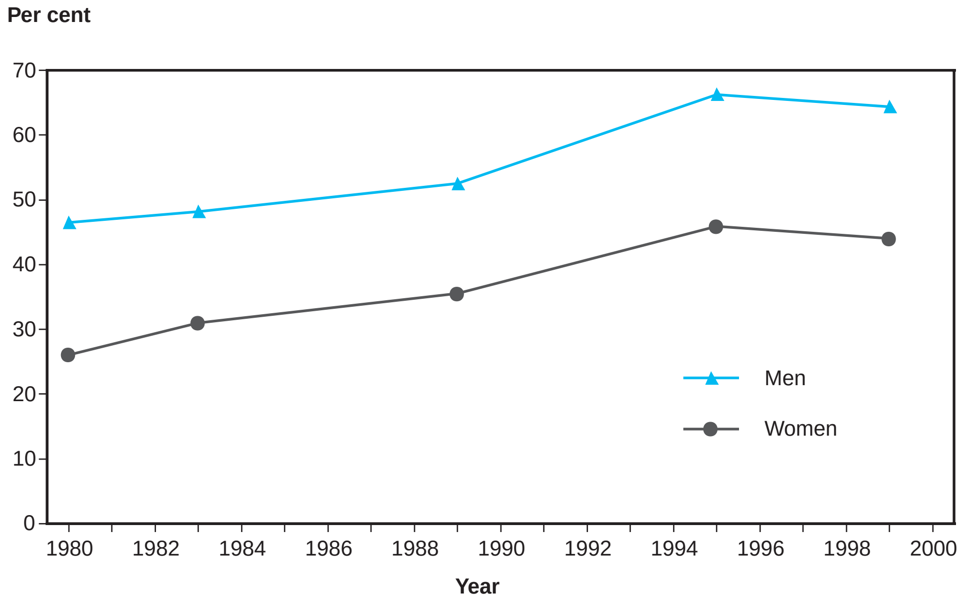
The 1999–2000 Australian Diabetes, Obesity and Lifestyle Study (AusDiab) (see Box 3.4, page 127) estimated that 7.5 million Australians aged 25 years and over (60%) were overweight or obese (BMI 25 and over). Of these, over 2.6 million (or 21% of the population aged 25 years and over) were obese (BMI 30 and over). Men (67%) were more likely to be overweight or obese than were women (52%). The proportion of overweight or obese people increased with age and peaked at 55–74 years for men (74%) and 65–74 years for women (71%) (Figure 3.1) (AIHW 2001).

There have been significant increases in the proportions of overweight or obese Australians over the last 20 years. Among urban adults aged 25–64 years, the prevalence of overweight or obese women increased from 26% in 1980 to 46% in 1995. This trend was also seen among urban men, where the prevalence of overweight and obesity increased from 47% in 1980 to 66% in 1995. AusDiab results in 1999–2000 were consistent with the 1995 estimates (44% for women and 64% for men) (Figure 3.2) (AIHW 2001).

In 1995, the proportion of overweight or obese children and adolescents aged 2–17 years was 21% for boys and 23% for girls (Booth et al. 2001). There have also been significant increases in childhood obesity in recent years. The prevalence of overweight or obese girls aged 7–15 years increased from 12% in 1985 to 16% in 1995. Similarly, the proportion of overweight or obese boys increased from 11% to 15% over this period. The proportion of obese girls aged 7–15 years increased dramatically from 1.2% in 1985 to 5.5% in 1995 and the proportion of obese boys increased from 1.4% to 4.7% (Magarey et al. 2001).

In 1999–2000, the proportion of underweight (BMI less than 18.5) men was less than 1%, and the proportion of underweight women was less than 2%, among people aged 25 years and over. Data from the 1995 National Nutrition Survey showed that underweight is more common among women aged 18–24 years, where the prevalence was over 6%. In 1995, the proportion of underweight children and adolescents aged 2–17 years was 6% for boys and 5% for girls.

Waist circumference is also a useful measure of increased disease risk due to overweight and obesity (NHLBI 1998). Fat located in the abdominal region is associated with greater risk of diabetes, coronary heart disease and high blood pressure, independent of BMI (Albu et al. 1997; Lemieux et al. 1996).



Notes

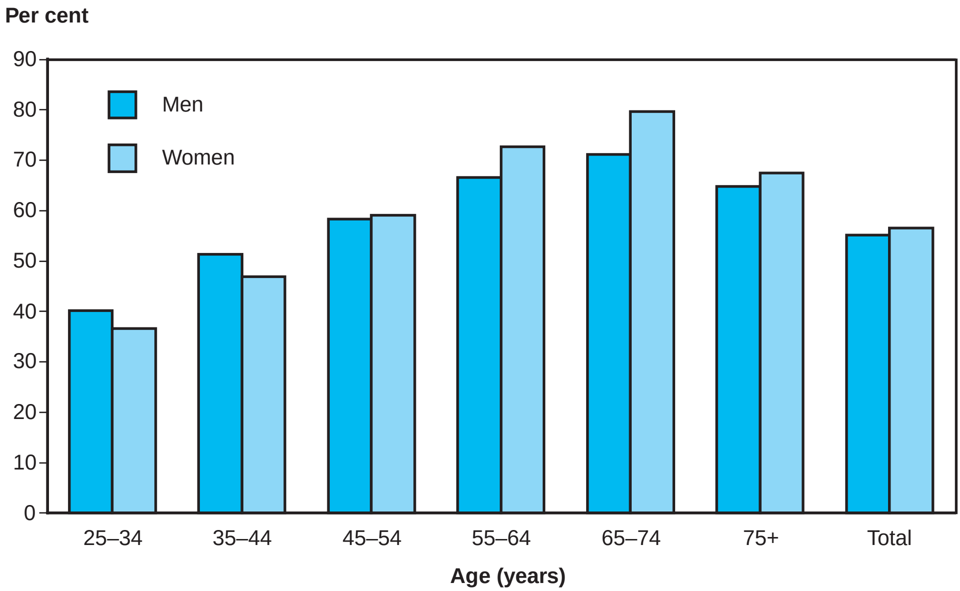
1. Age-standardised to the 1991 Australian population.
2. Capital cities only.
3. Includes people aged 25–64 years.

Sources: AIHW analysis of the 1980, 1983, 1989 Risk Factor Prevalence Surveys; 1995 National Nutrition Survey; 1999–2000 Australian Diabetes, Obesity and Lifestyle Study.

Figure 3.2: Proportion of people who are overweight or obese, 1980 to 1999–2000

Although there are currently no standard cut-offs for waist circumferences to indicate increased risk of obesity-related complications, current evidence suggests that, for Caucasians, waist circumferences greater than 94 cm in men and greater than 80 cm in women indicate increased risk (WHO 1997). Waist circumferences greater than 102 cm (men) and 88 cm (women) indicate substantially increased risk. In 1999–2000, 55% of men had a waist circumference greater than 94 cm and 57% of women had a waist circumference greater than 80 cm. Almost 27% of men had a waist circumference greater than 102 cm and 34% of women had a waist circumference greater than 88 cm. For both men and women, waist circumferences generally increased with age (Figure 3.3) (Dunstan et al. 2001).

Excess body weight is more prevalent among Aboriginal and Torres Strait Islander peoples than among other Australians. From data collected in 1994 (Aboriginal and Torres Strait Islander peoples) and 1995 (all Australians), there was little difference between the age-adjusted proportion of overweight or obese Aboriginal and Torres Strait Islander men and all Australian men (62% compared with 63%). However, almost 25% of Aboriginal and Torres Strait Islander men were obese, a rate somewhat higher than that for all Australian men (18%) (AIHW 2001).



Source: 1999–2000 Australian Diabetes, Obesity and Lifestyle Study.

Figure 3.3: Proportion of people with waist circumference > 94 cm for men and > 80 cm for women, 1999–2000

Almost 60% of Aboriginal and Torres Strait Islander women were overweight or obese, a rate much higher than that seen among all Australian women (49%). Rates of obesity among Aboriginal and Torres Strait Islander women were also much higher than among all Australian women (28% compared with 18%) (AIHW 2001).

Women in lower socioeconomic groups are also more likely to be overweight or obese. In 1995, around 53% of women in the lowest socioeconomic group were overweight or obese, compared with 44% of women in the highest socioeconomic group (AIHW 2001). Of women in the lowest socioeconomic group, 24% were obese, compared with 14% of women in the highest group. For men, there was no significant difference in the rate of overweight or obesity in the highest and lowest socioeconomic groups (around 61% for both groups). Similarly, there was no significant difference in the rate of obese men (around 18% for both the highest and lowest socioeconomic groups) (AIHW 2001).

In 1995, 53% of women living in remote areas were overweight or obese, compared with around 47% of women living in urban and rural areas. Of women living in remote areas, 22% were obese, compared with around 18% of women living in urban or rural regions. For men, there was no significant difference, with 65% of men living in remote and rural areas being overweight or obese, compared with 62% in urban areas. Of men living in rural and remote regions, 20% were obese compared with 18% of men living in urban areas (AIHW 2001).

Box 3.2: High blood pressure

Blood pressure represents the forces exerted by blood on the wall of the arteries and is written as systolic/diastolic, e.g. 120/80 mmHg, stated as '120 over 80' (AIHW 2001).

The continuous relationship between blood pressure levels and cardiovascular disease risk, and the 'arbitrary' nature of the definition of high blood pressure, has contributed to the variation in the definitions issued by various national and international authorities for population surveys and clinical guidelines.

New classifications for the clinical management of high blood pressure have recently been released by the World Health Organization (WHO 1999). These new guidelines define high blood pressure as:

- *systolic blood pressure (SBP) greater than or equal to 140 mmHg; and/or*
- *diastolic blood pressure (DBP) greater than or equal to 90 mmHg; and/or*
- *receiving medication for high blood pressure.*

For the purposes of this report, high blood pressure is defined using these guidelines.

Previously, in Australia, high blood pressure was defined as an SBP of 160 mmHg or greater and/or a DBP of 95 mmHg or greater and/or receiving medication for high blood pressure. Data published using this classification should not be compared with data using the new guidelines.

Blood pressure

High blood pressure (often referred to as hypertension, see Box 3.2) is a major risk factor for coronary heart disease, stroke, heart failure, peripheral vascular disease and renal failure. The risk of disease increases as the level of blood pressure increases. When high blood pressure is controlled by medication, the risk of disease is reduced, but not to the levels of unaffected people (Kannel 1991). High blood pressure is more likely to develop among people who are overweight or physically inactive, or have high dietary salt intakes. Acute mental or emotional stress can cause a temporary rise in blood pressure (see Box 3.3).

High blood pressure was the most commonly managed problem by general practitioners in 2000–01, accounting for 6% of all conditions managed (AIHW: Britt et al. 2001). The burden of disease in Australia that can be attributed to high blood pressure is estimated to be more than 5% of the total burden of disease among Australians (AIHW: Mathers et al. 1999).

Although high blood pressure can be defined as being above a particular level, there is in fact no threshold level of risk. Starting from quite low levels, as blood pressure increases so does the risk of stroke, heart attack and heart failure. In terms of predicting ill health, both systolic blood pressure (SBP) and diastolic blood pressure (DBP) are predictors of cardiovascular disease. Each reduction of 10–14 mmHg in SBP and 5–6 mmHg in DBP reduces the occurrence of stroke by two-fifths, of coronary heart disease by one-sixth, and of cardiovascular disease by one-third (Chalmers 1999).

Box 3.3: 'Stress' as a risk factor for cardiovascular disease

The American Heart Association reports a growing body of scientific evidence identifying 'stress' as a factor contributing to the risk of cardiovascular disease. However, too little is known of the possible mechanisms involved. One reason for this is the difficulty in measuring stress in the individual, particularly how, what and when it should be measured. The use of differing definitions or measures of 'stress' between studies also makes it difficult to compare results.

What is 'stress'?

All people feel 'stress', but each individual's reaction may be different. Physiologically, an acute stress response, or the 'fight or flight' response as it is commonly known, activates release of the hormones adrenaline, noradrenaline and cortisol. These hormones increase blood flow to the heart, muscles and brain and cause nutrients stored in muscles to become available to provide energy so that the threat, or perceived threat, can be dealt with.

Most people are well adapted to dealing with acute stress such as occurs in the 'fight or flight' response. However, the health implications of chronic stress, resulting in activation of the acute stress response repeatedly over long periods, are not well understood.

How might psychological stress contribute to cardiovascular disease?

In a recent study of patients in Melbourne, most study participants reported a recent stressful event before their heart attacks, although the majority of those involved were suffering from undiagnosed heart problems before their heart attack (Baker Medical Research Institute 2001). Whether chronic stress causes heart disease or just affects the timing of adverse events (as was observed in the Melbourne study), or both, remains uncertain.

The possible association between stress and cardiovascular disease appears to be related to the impact of emotional stress on some of the established major risk factors. For example, when people are stressed, the increased levels of adrenaline and noradrenaline circulating in the bloodstream cause blood pressure to increase and blood vessels to constrict. This may disrupt plaque in the artery walls and lead to restricted blood flow in vessels such as those supplying blood to the heart or brain. People under stress may also overeat, find it difficult to stop smoking or smoke more than they otherwise would (American Heart Association 2000).

Does reducing stress reduce your risk?

The answer is uncertain at this stage. Most of the evidence relating stress to cardiovascular disease is based on studies involving people who already have cardiovascular disease, so identifying causal mechanisms relies on the ability of participants to recall past events and behaviours. What is needed are studies involving large samples of healthy people followed over time (and using a standard measure of 'stress'), to clarify the role of stress in cardiovascular disease risk.

Source: American Heart Association 2000.

Box 3.4: Australian Diabetes, Obesity and Lifestyle Study

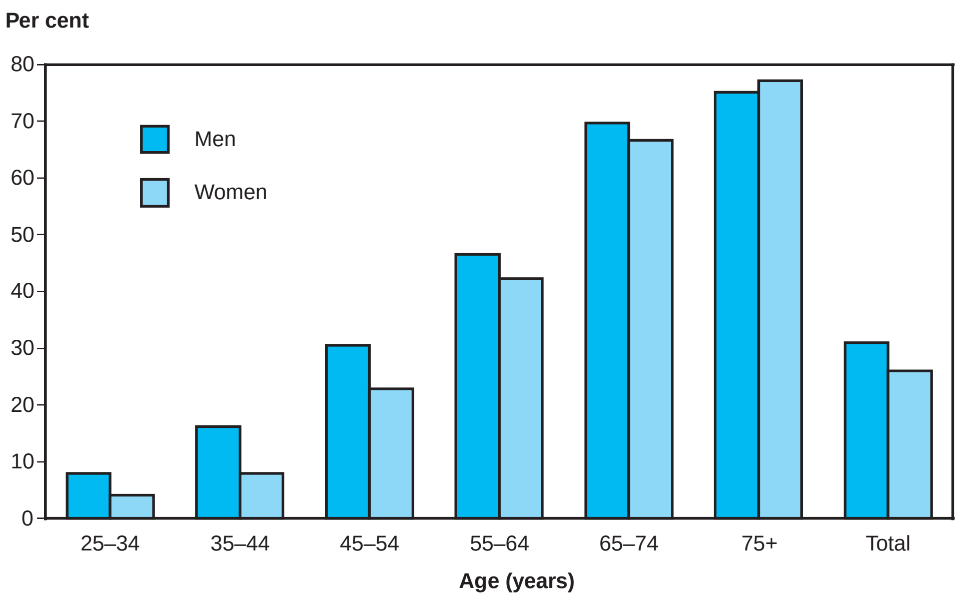
The Australian Diabetes, Obesity and Lifestyle Study (AusDiab) has been an important element of the Commonwealth Government's actions under the National Diabetes Strategy, which was endorsed by Australian Health Ministers in 1999.

The study was conducted during 1999 and 2000 to determine the prevalence of diabetes, obesity and other cardiovascular disease risk factors including behavioural and biomedical risk factors, such as high blood pressure and abnormal lipid profiles. It is the first nation-wide survey to collect blood lipid data since the National Heart Foundation conducted its Risk Factor Prevalence Survey in 1989.

AusDiab collected data from about 11,250 Australians aged 25 years or over, residing in 42 randomly selected urban and non-urban areas (Census Collector Districts) of the six States of Australia and the Northern Territory.

Approximately 50% of eligible households participated in the household interview, and 55.2% of eligible adults in these households took part in the physical examination. The effect of any non-response bias on estimates from AusDiab is yet to be determined.

The study has been used in this report to provide the latest data for biomedical risk factors and to contribute some estimates of disease prevalence in Chapter 2.



Note: Based on WHO definition of high blood pressure.

Source: AIHW analysis of the 1999–2000 Australian Diabetes, Obesity and Lifestyle Study.

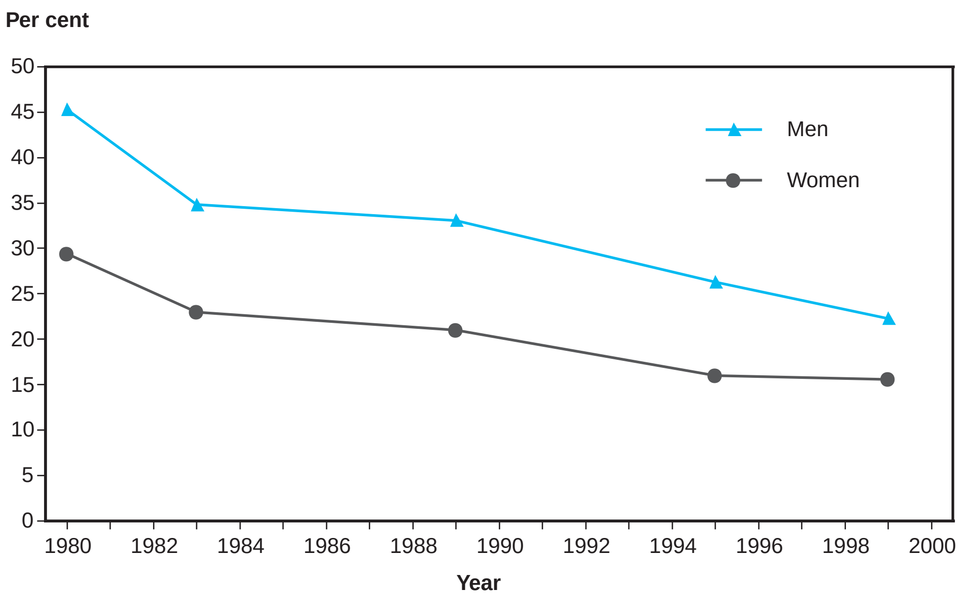
Figure 3.4 Proportion of people with high blood pressure, 1999–2000

Data from the 1999–2000 Australian Diabetes, Obesity and Lifestyle Study (see Box 3.4) suggest that 29% or 3.6 million Australians over the age of 25 had high blood pressure or were on medication for that condition—31% of men and 26% of women (AIHW 2001). The proportion of men and women with high blood pressure increases with age (Figure 3.4).

Since 1980 the prevalence of high blood pressure has decreased significantly for both males and females (Figure 3.5). The proportion of men (aged 25–64 years) with high blood pressure has more than halved from 45% in 1980 to 22% in 1999–2000 and has almost halved for women from 29% in 1980 to around 16% in 1999–2000. There has also been a substantial reduction in average blood pressure levels in this time.

At a population level, this decline has occurred among those not on medication for high blood pressure as well as those on treatment. The reason is not certain but is consistent with the greater availability of low-salt products in the food supply.

In 1995, there was no significant difference in the prevalence of high blood pressure between people in the lowest socioeconomic group and those in the highest (AIHW 2001).



Notes

1. Age-standardised to the 1991 Australian population.
2. All estimates based on the latest WHO definition (see Box 3.2).
3. Capital cities only.
4. Includes people aged 25–64 years.

Sources: AIHW analysis of the 1980, 1983, 1989 Risk Factor Prevalence Surveys; 1995 National Nutrition Survey; 1999–2000 Australian Diabetes, Obesity and Lifestyle Study (AusDiab).

Figure 3.5: Proportion of people with high blood pressure, 1980 to 1999–2000

There are no national data to assess the prevalence of high blood pressure among Aboriginal and Torres Strait Islander peoples. However, data from the Kimberley region of Northern Australia suggest that high blood pressure is up to three times as common among Indigenous people living there than among other Australians (Smith et al. 1992).

Biomedical and lifestyle factors that are major causes of high blood pressure include excess body fat, excessive alcohol consumption, physical inactivity, dietary salt intake and complex dietary patterns marked by a low intake of fruit and vegetables and a high intake of saturated fat. Stress raises blood pressure transiently but in the long term may have indirect effects by influencing eating, drinking, smoking and physical activity patterns (Beilin 1997). Cigarette smoking increases the risk of heart attack and stroke threefold in people with high blood pressure.

For high blood pressure to be managed, lifestyle modifications are essential. This is the case whether anti-hypertensive drugs are used or not. Modification of lifestyle can successfully diminish or eliminate the need for these drugs (NHF 1999).

Blood cholesterol

High blood cholesterol is a major risk factor for coronary heart disease and possibly for some types of stroke. It is one of the main causes of the process by which blood vessels become clogged (see Box 3.5). High blood cholesterol has been estimated to cause nearly 3% of the total burden of disease of Australians (AIHW: Mathers et al. 1999).

Box 3.5: High blood cholesterol

Cholesterol is a fatty substance produced by the liver and carried by the blood to the rest of the body. Its natural function is to provide material for cell walls and for steroid hormones. If levels in the blood are too high, this can lead to the artery clogging process known as atherosclerosis that can bring on heart attacks, angina or stroke. The risk of heart disease increases steadily from a low base with increasing blood cholesterol levels.

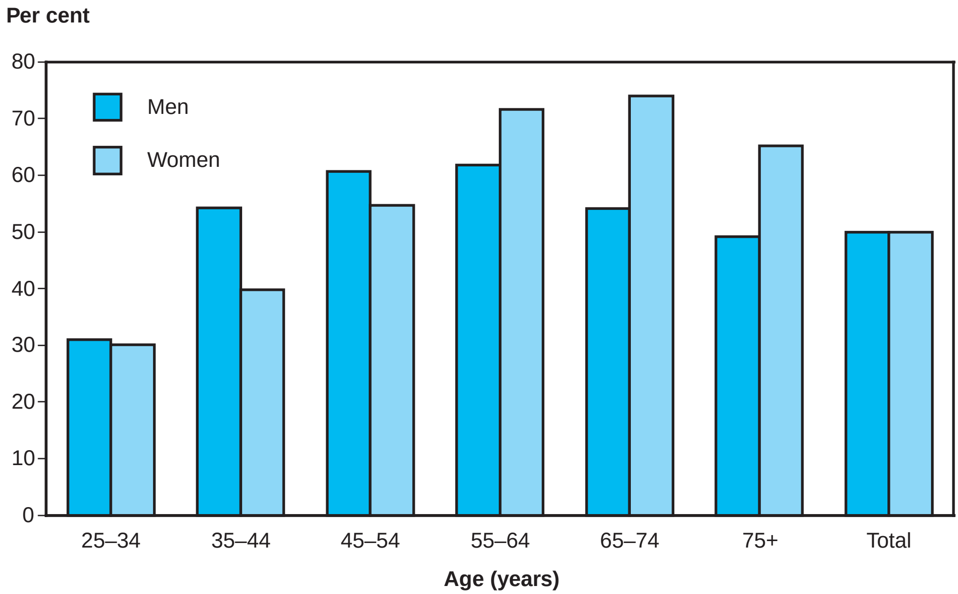
A total cholesterol level of 5.5 mmol/L or above is considered 'high', although a person's risk of cardiovascular disease also depends on other factors such as blood pressure levels and smoking.

Total cholesterol has several parts. They include

> *LDL cholesterol, which is often known as 'bad' cholesterol. Excess levels of LDL cholesterol are the main way that cholesterol contributes to atherosclerosis.*
>
> *HDL cholesterol, which is often known as 'good' cholesterol. High levels can have a protective effect against heart disease by helping to reduce atherosclerosis.*

Triglyceride (TG) is another form of blood fat that is made by the body and can fluctuate according to dietary fat intake. Under some conditions excess levels may contribute to atherosclerosis.

Sources: Barter P 2001; National Heart Foundation of Australia 1995.



Source: AIHW analysis of the 1999–2000 Australian Diabetes, Obesity and Lifestyle Study.

Figure 3.6: Proportion of people with high blood cholesterol, 1999–2000

For most people, saturated fat in the diet is regarded as the main factor that raises blood cholesterol levels. Cholesterol in foods can also raise blood cholesterol levels, but less than saturated fat does. Genetic factors can affect blood cholesterol—some people have high cholesterol levels regardless of their saturated fat and cholesterol intake and are at increased risk from coronary heart disease.

The 1999–2000 AusDiab study (see Box 3.4) assessed blood cholesterol levels in Australia. It was estimated that around 50% of both men and women had blood cholesterol levels greater than or equal to 5.5 mmol/L (see Box 3.5), i.e. over 6 million Australian adults aged 25 years and over. The prevalence increased with age, to age 74 in women and 64 in men (Figure 3.6) (AIHW 2001). In terms of people at high risk of coronary heart disease, 18% of men and women aged 20–69 years had blood cholesterol levels of 6.5 mmol/L or more.

Average blood cholesterol levels in 1999–2000 are very similar to those 20 years earlier for men and for women (Table 3.1). Although average cholesterol levels in Australia in 1999–2000 are 5.6 mmol/L for men and 5.5 mmol/L for women, it is biologically achievable for people to have lower cholesterol levels. Cholesterol levels in societies that follow a more traditional diet are much lower, as are their rates of cardiovascular disease (Forge 1999).

There has been no marked reduction in the prevalence of people with high blood cholesterol since 1980, when nationwide monitoring began (Figure 3.7) (AIHW 2001).

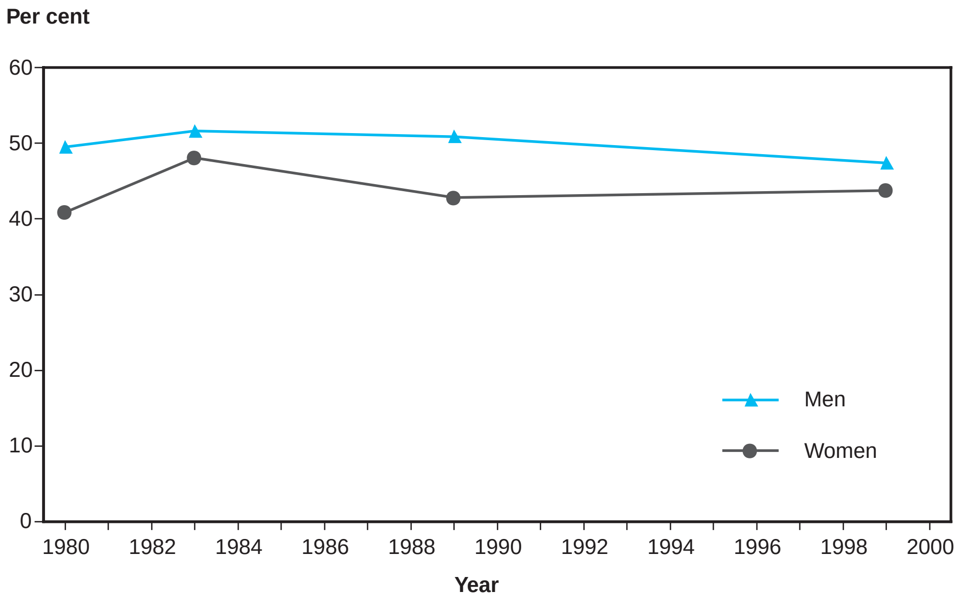
Table 3.1: Average blood cholesterol levels, 1980 to 1999–2000

Sex	1980	1983	1989	1999–2000
		mmol/L		
Men	5.6	5.7	5.6	5.6
Women	5.5	5.6	5.5	5.5

Notes

1. Age-standardised to the 1991 Australian population.
2. Includes persons aged 25–64.
3. For capital cities only.

Sources: AIHW analysis of the 1999–2000 Australian Diabetes, Obesity and Lifestyle Study (see Box 3.4); 1980, 1983 and 1989 Risk Factor Prevalence Surveys.



Notes

1. Age-standardised to the 1991 Australian population.
2. Capital cities only.
3. Includes people aged 25–64 years.

Sources: AIHW analysis of the 1980, 1983, 1989 Risk Factor Prevalence Surveys; 1999–2000 Australian Diabetes, Obesity and Lifestyle Study (AusDiab).

Figure 3.7: Proportion of people with high blood cholesterol, 1980 to 1999–2000

In 1989, there were no strong associations between cholesterol levels and socioeconomic status. However, a blood cholesterol level of 6.5 mmol/L or more (used in previous studies to indicate high risk) was more common among unemployed women (25–64 years) than among women in full-time employment. Men (25–64 years) living alone or previously married had around one-and-a-half-times the rate of high-risk blood cholesterol (6.5 mmol/L and above) than men with partners or dependants (AIHW 2001).

There are no national data on blood cholesterol levels among Aboriginal and Torres Strait Islander peoples. A New South Wales survey on cardiovascular risk factors showed that a greater proportion of Indigenous women in Wilcannia had cholesterol levels above 6.5 mmol/L compared with other Australian women. However, other studies have shown no difference in cholesterol levels between Indigenous Australians and other Australians (AIHW 2001).

Impaired glucose tolerance

Impaired glucose tolerance (IGT) is a metabolic stage between normal glucose tolerance and diabetes. As well as being a risk factor for Type 2 diabetes, IGT is linked to a greater risk of heart disease.

In people with IGT, blood glucose levels are higher than normal but less than the level required for a diagnosis of diabetes (see diagnostic criteria in Box 3.6). Blood glucose levels normally rise after eating a meal then gradually fall as the meal is digested, but in people with IGT these levels remain elevated. This is a result of reduced sensitivity of the body's cells to insulin with or without a reduction of insulin production by the pancreas (insulin is the hormone that enables the body to convert glucose to energy). Although many people with IGT may revert to normal glucose tolerance, one in three people with IGT are likely to develop Type 2 diabetes within 10 years (Harris & Zimmet 1992).

IGT is common in people who are physically inactive and obese, particularly with high fat deposits in the abdominal region, and is more common in older people because such risk factors are more widespread. With increasing age, the cells in the pancreas that make insulin—beta cells—become less efficient. This, combined with decreased physical activity and increased body weight, contribute to higher prevalence among older people (Table 3.2). Indeed, for similar reasons, Type 2 diabetes is also more common among older people. Genetic factors are also important; people who have a family history of diabetes are more likely to suffer from impaired glucose tolerance and to develop diabetes.

Table 3.2: Age-specific prevalence of impaired glucose tolerance, 1999–2000

Age (years)	Men	Women
	Per cent	
25–34	2.1	4.9
35–44	4.8	8.5
45–54	8.4	11.2
55–64	14.8	15.2
65–74	20.4	22.9
75+	25.5	20.7

Source: Dunstan et al. 2001.

Box 3.6: How is impaired glucose tolerance diagnosed?

Impaired glucose tolerance (IGT) is normally detected through an oral glucose tolerance test. In this test a blood glucose measurement is taken after a period of fasting, then an additional measurement is taken 2 hours after consuming 75 g of glucose. The blood glucose levels in a person with normal metabolism should have returned to normal by this time. In a person with IGT or diabetes mellitus, blood glucose levels will remain elevated.

The blood glucose measurement is expressed as the concentration of glucose in plasma, which is the fluid component of blood after blood cells are removed. People with IGT will have a fasting plasma glucose concentration of less than 7.0 mmol/L and between 7.8 and 11.1 mmol/L 2 hours after the oral glucose load.

For a diagnosis of diabetes, symptoms of diabetes are likely to be present and the plasma glucose concentrations greater than or equal to 7.0 mmol/L after fasting or greater than or equal to 11.1 mmol/L 2 hours after the glucose load.

Recently, a new category—'Impaired fasting glucose'—also considered to be predictive of diabetes, was introduced by the Australasian Working Party on Diagnostic Criteria for Diabetes Mellitus (Colman et al. 1999). This category is based on an abnormal blood glucose measurement after fasting. The impaired fasting glucose category covers fasting plasma glucose levels between 6.1 mmol/L and 7 mmol/L.

The 1999–2000 AusDiab study (see Box 3.4) found that 10.6% of Australians aged 25 years and over had impaired glucose tolerance (Dunstan et al. 2001). The condition was more common in women (12.0%) than in men (9.2%). The only earlier estimate of prevalence is based on the 1981 Busselton Population Survey (Welborn et al. 1989). Using the Busselton survey criteria for IGT, Dunstan et al. (2001) estimated that the prevalence of IGT has trebled (Table 3.3).

Dunstan et al. (2001) suggest that a corresponding increase in the prevalence of obesity in Australia has been a significant contributing factor to the increasing prevalence of diabetes. Given the links between obesity and IGT, this trend may also contribute to the escalating prevalence of IGT.

Poor glucose control can also lead to cardiovascular disease, particularly when a person has IGT in combination with cardiovascular risk factors such as obesity and high blood pressure. This clustering of inter-related risk factors is known as the Metabolic Syndrome (see Box 3.7).

Table 3.3: Trends in the age-standardised prevalence of impaired glucose tolerance, 1981 to 2000

Survey	Males	Females
	Per cent	
Busselton 1981	3.2	3.0
AusDiab 1999–2000	9.8	12.3

Note: Age-standardised to the 1998 Australian population.

Source: Dunstan et al. 2001.

Box 3.7: The Metabolic Syndrome

The World Health Organization has classified a specific clustering of risk factors as the Metabolic Syndrome (Syndrome X). Insulin resistance—either impaired glucose tolerance, impaired fasting glucose or diabetes—is thought to be the underlying defect in this syndrome. In addition to insulin resistance, a person with the Metabolic Syndrome will usually have one or more of the following risk factors: high cholesterol, high blood pressure or central obesity. The syndrome vastly increases a person's risk of developing Type 2 diabetes or cardiovascular disease.

As with many risk factors for Type 2 diabetes and heart disease, IGT is potentially avoidable. Improvements in glucose tolerance can be achieved through participation in regular physical activity and weight reduction. Clinical studies have shown that physical activity and physical fitness can increase insulin sensitivity and improve glucose tolerance (Takemura et al. 1999; Tuomilehto et al. 2001). In addition to controlling weight, physical activity also improves the body's sensitivity to insulin, helping to lower blood sugar. Even a single bout of vigorous physical activity will have an immediate effect on insulin sensitivity.

3.2 Lifestyle and behaviour

Tobacco smoking

Tobacco smoking contributes to more drug-related hospital separations and deaths than alcohol and illicit drug use combined. In addition, of all risk factors for disease, tobacco smoking is responsible for the greatest burden on the health of Australians. Although the number of deaths attributed to tobacco smoking has declined in recent years—from around 19,900 in 1996 to 19,000 in 1998—the number of hospital separations has increased from 126,000 in 1995–96 to 143,000 in 1997–98 (AIHW: Miller & Draper 2001).

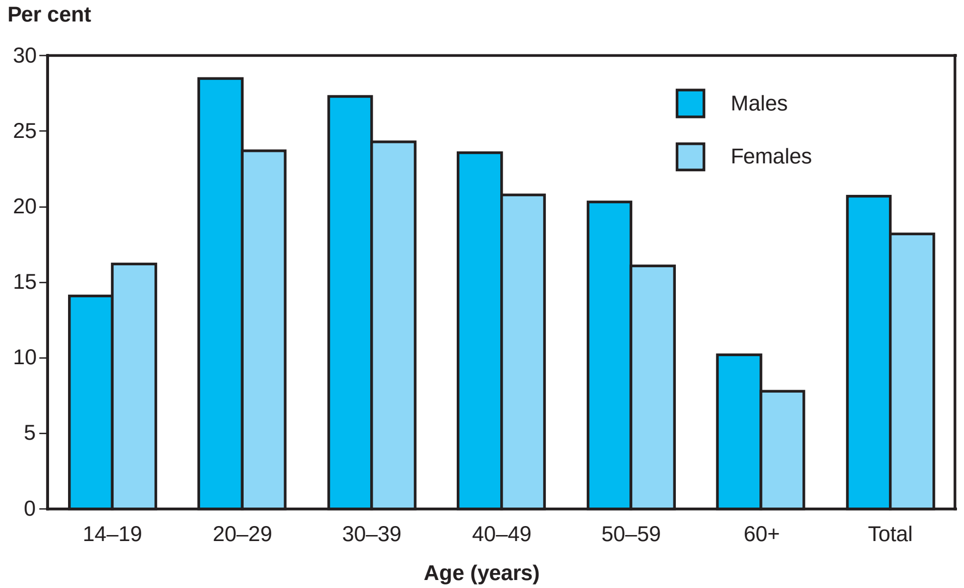
Tobacco smoking is a major risk factor for coronary heart disease, stroke, peripheral vascular disease, numerous cancers and a variety of other diseases and conditions. It has been estimated that in 1996 tobacco smoking was responsible for around 12% of the total burden of disease in males and 7% in females (AIHW: Mathers et al. 1999).

Estimates from the 2001 National Drug Strategy Household Survey (NDSHS) indicate that around 3.1 million Australians (19.5% of people aged 14 years and over) smoke tobacco on a daily basis.

A further 0.6 million (3.6%) smoke occasionally (not on a daily basis). These two categories combined were referred to as current smokers in *Australia's Health 2000*.

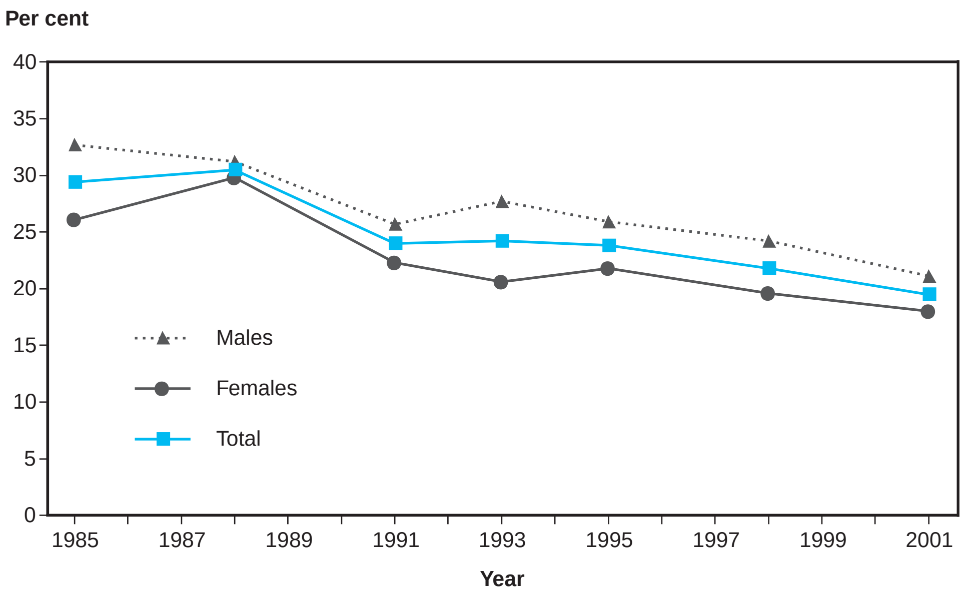
Males are more likely to be daily smokers (21%) than females (18%). The proportion of daily smokers was highest among males aged 20–29 (29%) and females aged 20–39 (24%) (Figure 3.8).

The same survey estimated that 26% are former smokers (30% of males and 23% of females) and 51% have never smoked (45% of males and 55% of females).



Source: 2001 National Drug Strategy Household Survey.

Figure 3.8: Proportion of people who are daily smokers, 2001



Note: Includes people aged 14 years and over.

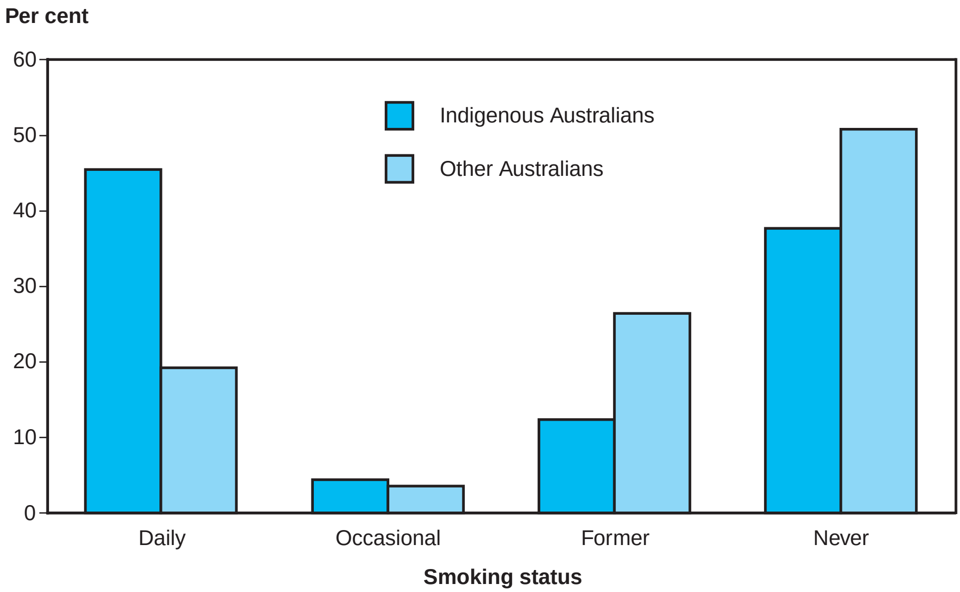
Sources: 1991, 1993 National Campaign Against Drug Abuse Household Survey; 1995, 1998, 2001 National Drug Strategy Household Survey.

Figure 3.9: Proportion of people who are daily smokers, 1985 to 2001

In Australia, smoking rates have been declining since the 1950s, when it was estimated that around 70% of males and 30% of females smoked. Since 1985, smoking rates have continued to decline and reached an important milestone in 2001, falling below 20% for the first time (Figure 3.9).

There were no statistically significant changes in daily smoking rates among adolescents, when compared with 1998. This is consistent with a 1999 study of school students that reported that smoking rates among male and female students aged 16–17 had not changed when compared with 1996, and had declined among students aged 12–15 years (Hill et al. 2002). The authors concluded that the rise in the prevalence of smoking among younger secondary students seen in the 1990s seems to have stopped.

Smoking is more common among Indigenous Australians than among other Australians. In the 2001 NDSHS, almost half of the Indigenous population surveyed reported that they smoked on a daily basis. In contrast, around one in five of the other Australian population reported that they smoked on a daily basis. Indigenous Australians were also less likely than other Australians to be former smokers or to have never smoked (Figure 3.10).

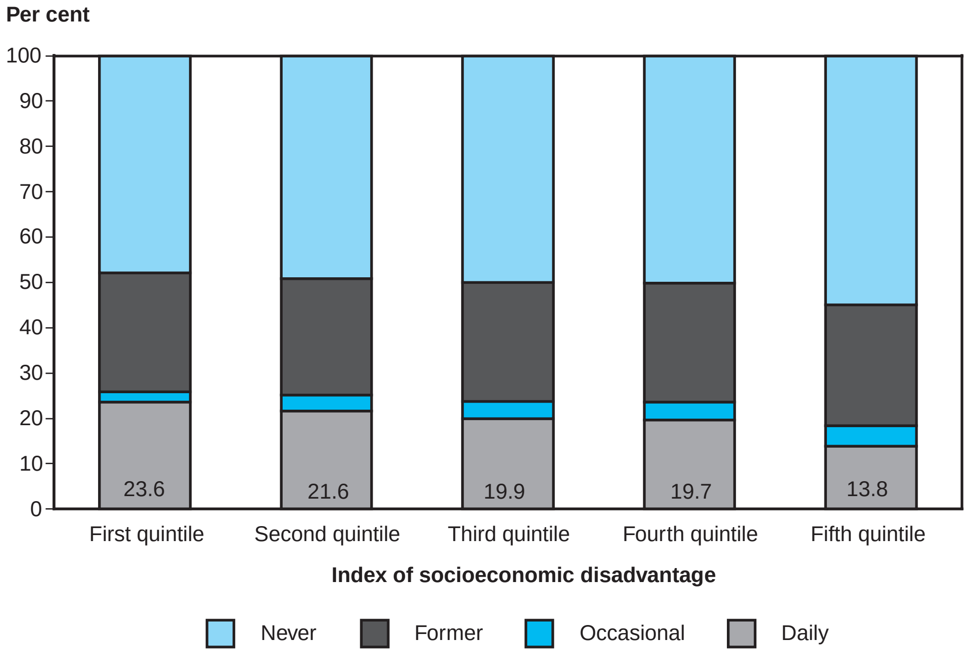


Notes

1. 'Occasional' means smokes less than daily; 'former' means (presently) no longer smoking; 'never' means having consumed no more than 100 cigarettes (or equivalent).
2. Includes people aged 14 years and over.

Source: 2001 National Drug Strategy Household Survey.

Figure 3.10: Smoking status, Indigenous and other Australians, 2001



Notes

1. First quintile is the most disadvantaged.
2. Includes people aged 14 years and over.

Source: 2001 National Drug Strategy Household Survey.

Figure 3.11: Smoking status by index of relative socioeconomic disadvantage, 2001

Smoking status appears to be strongly related to socioeconomic status, with those from lower socioeconomic backgrounds more likely to smoke than their higher ranked counterparts. In the 2001 NDSHS, about 24% of people from the most disadvantaged socioeconomic group smoked tobacco on a daily basis, compared with about 14% of those from the most advantaged group (Figure 3.11). Individuals from the most advantaged group were also more likely to never have smoked (55%) than were the most disadvantaged socioeconomic group (48%).

Dietary behaviour

There is considerable evidence linking dietary behaviours with protection against or reduced risk of developing many of the chronic diseases and their risk factors. Dietary guidelines developed by the National Health and Medical Research Council (NHMRC) (2001a, 2001b) recommend a high intake of plant foods (such as cereals, fruit, vegetables, legumes and nuts) and to limit saturated fat and moderate total fat intake to reduce the risk of coronary heart disease, several of the common cancers, and overweight and obesity. Other common diseases and risk factors where good nutrition may be protective or reduce risk include stroke, Type 2 diabetes, osteoporosis, tooth decay, high blood pressure and raised blood cholesterol (Table 3.4).

Table 3.4: Components of food which may provide protection against diseases and conditions of public health importance

Food	Diseases (or conditions) against which protection may be provided or for which risk may be reduced
High intake of plant foods, low intake of fat and saturated fat, high intake of dietary fibre	Coronary heart disease; angina; cancers of the colon, bowel, breast and prostate; overweight; obesity; high blood cholesterol
High intake of plant foods, low intake of salt	High blood pressure; stroke
High intake of plant foods	Type 2 diabetes; constipation; gastrointestinal cancers (including cancers of the colon, rectum, stomach, pancreas and oesophagus); lung cancer; cancers of the breast, prostate, cervix and bladder
Low intake of fat and saturated fat	Colorectal cancer
Low intake of alcohol	Most cancers; liver cirrhosis; brain damage; foetal alcohol syndrome
Adequate to high intake of calcium	Osteoporosis
Infrequent and low intake of sugar	Tooth decay

Source: Adapted from *The Australian Guide to Healthy Eating* (DHFS 1998).

The effect of good nutrition on health begins early in life. It has been known for many years that insufficient folate or folic acid (a B vitamin) in the diets of women of child-bearing age increases the risk of having a foetus develop spina bifida or other neural tube defects. The NHMRC (1994) recommends that women capable of becoming pregnant consume 400 µg per day of folate. Based on analysis of data from the 1995 National Nutrition Survey, only 1% of women aged 15–49 years consumed the recommended level from naturally occurring sources (excluding supplements) (Abraham & Webb 2000). To increase folate intakes, particularly among women of child-bearing age, voluntary (i.e. at the discretion of food manufacturers) fortification of selected staple foods with folate was introduced in 1995. However, by late 1998, it was estimated that voluntary fortification had had little effect on dietary folate intakes among the target population, due largely to the small number of foods that were fortified with folate (Abraham & Webb 2000).

Breastfeeding is an important contributor to infant health and influences health status as an adult. Evidence is accumulating that breastfeeding has a protective role in several chronic diseases including Type 1 diabetes, inflammatory bowel disease, allergic diseases and obesity (NHMRC 2001b). The World Health Organization (WHO) recommends that babies be exclusively breastfed for 6 months, with the introduction of complementary foods and continued breastfeeding thereafter (WHO 2001a). Although Australian breastfeeding rates were quite high at discharge from hospital (82% in 1995), only 57% were exclusively breastfed at 3 months (includes water and water-based drinks such as fruit juice) and just 19% were exclusively breastfed at 6 months (Donath & Amir 2000).

Although nutritional deficiency is uncommon among the Australian population in general, it remains a concern for some groups considered to be more vulnerable to poor nutrition such as the frail aged, people with disabilities, some Aboriginal and Torres Strait Islander communities, people on low incomes, the homeless, and those who suffer from alcoholism and some chronic diseases (SIGNAL 2001). Poor nutrition early in life has been associated with various health outcomes in adults. In particular, undernutrition (a deficiency of energy or nutrients) during pregnancy may contribute to an increased risk of coronary heart disease and the related disorders stroke, Type 2 diabetes and high blood pressure in adult life (Godfrey & Barker 2000).

In contrast, overnutrition and the rising prevalence of overweight and obesity in both children and adults is of concern (see section on body weight). A comparison of food and nutrient intake among Australian children aged 10–15 years showed that mean intake of energy (Table 3.5) and most nutrients (except fat, cholesterol and calcium) increased by 10% or more between 1985 and 1995 (the most recent national data) for both boys and girls (Cook et al. 2001). Intake of vitamin C decreased for both boys and girls between 1985 and 1995 but the decrease was statistically significant for girls only. The increases in energy intake were attributable mainly to an increased intake of carbohydrate from a range of foods including cereals and cereal-based foods, confectionery, non-alcoholic beverages, and sugar products and dishes. Children or adolescents who are overweight or obese are more likely in the short-term to develop gastrointestinal, endocrine or certain orthopaedic problems than children of normal weight and more likely in the longer-term to develop cardiovascular disease (Must & Strauss 1999).

Although changes in food and nutrient intakes among adults living in State capital cities followed similar patterns to those for children, they were generally of smaller magnitude. Between 1983 and 1995, intake of energy (Table 3.5) and most nutrients increased significantly, although protein intake remained unchanged, and fat, cholesterol and vitamin C decreased significantly (Cook et al. 2001).

The decrease in vitamin C intake among both children and adults between the mid-1980s and the mid-1990s is unexpected. The decline is largely due to a fall in fruit consumption in adults and fruit juice consumption in children (Cook et al. 2001). The

Table 3.5: Mean daily intake of energy among older children and adults, 1983, 1985 and 1995

Age (years)	1983	1985	1995
		Energy (kJ)	
Boys 10–15	. .	9,670	11,088
Girls 10–15	. .	7,586	8,488
Men 25–64	10,824	. .	11,195
Women 25–64	7,299	. .	7,624

Notes

1. Analysis of data for children: Adjustments for changes in the food composition database were made to enable estimates of 'real change' in food and nutrient intakes to be better assessed. However, adjustments could not be made for differences in the dietary methods between surveys, sample design differences (such as season and day of week) or demographic changes between the 1985 and 1995 surveys.
2. Analysis of data for adults: Adjustments were made for changes in survey design (relating to age, geographical coverage, season and day of week), changes in the food composition database and changes in the Australian population profile between 1983 and 1995 to enable estimates of 'real change' in food and nutrient intakes to be assessed.
3. Difference between estimated means for 1985 and 1995 (children) and 1983 and 1995 (adults) are statistically significant at the 0.01 level.
4. Adult data for State capital cities only.

Source: Cook et al. 2001.

NHMRC Core Food Groups guide recommends that Australian adults aged 19 years and over (excluding pregnant and lactating women) consume at least 300 g of vegetables (including legumes) and 300 g of fruit per day (Cashel & Jeffreson 1995) to meet recommended dietary intakes of nutrients largely derived from fruit and vegetables (Box 3.8).

Analysis by Baghurst et al. (1999) of data from the 1995 National Nutrition Survey showed that 42% of adults did not eat any fruit on the day of the survey and only 17% met the daily recommendation of 300 g (two serves, excluding fruit juice). About 16% of adults did not eat any vegetables (including potatoes) on the day of the survey and just 32% had over 300 g (four serves), the lower end of the range recommended by the NHMRC Core Food Groups guide.

It is estimated that inadequate fruit and vegetable consumption (less than five serves) was responsible for 3% of the total burden of disease and 11% of total cancer burden in Australia in 1996 (AIHW: Mathers et al. 1999). By comparison, the net harm associated with alcohol consumption in 1996 was around 2.2% of the total burden of disease. The effects of alcohol consumption on health are discussed later in this chapter.

High intakes of fat, especially saturated fats, are associated with elevated blood cholesterol levels, overweight and increased risk of heart attack. Total fat (including saturated, mono-unsaturated and polyunsaturated) accounts for about 33% of the total energy intake of Australian adults (ABS & DHFS 1997). Although total dietary fat intake has decreased from about 37% in the 1980s, the current level is still above the NHMRC's recommended level of 30% (NHMRC 1991).

Among Australian adults, saturated fat accounts for around 13% of total energy intake, higher than the recommended maximum level of 10% (AIHW 2001). The major sources of saturated fatty acids in the adult diet are dairy milk, meat, pastries, cheese, potatoes (due to added fats) and butter (ABS & DHAC 1999).

In some people, high salt consumption is associated with an increase in blood pressure and possibly cardiovascular illness and death. No national data exist to assess levels of salt consumption among Australians. However, in one study conducted in Hobart, only 6% of men and 36% of women were below the recommended maximum intake of 100 mmol per day (Beard et al. 1997).

Box 3.8: Definition of recommended dietary intakes

Recommended dietary intakes (RDIs) are the levels of intake of essential nutrients considered, in the judgement of the NHMRC, on the basis of available scientific knowledge to be adequate to meet the known nutritional needs of practically all healthy people. The RDIs are derived from estimates of requirements for each age/sex category and incorporate generous factors to accommodate variations in absorption and metabolism. They therefore apply to group needs. RDIs exceed the actual nutrient requirements of practically all healthy persons and are not synonymous with individual requirements.

Source: NHMRC 1991.

The evidence linking diet with preventable disease is recognised in Australia and internationally to provide sufficient reason for including improved nutrition as a major component of public health initiatives. The Strategic Inter-Governmental Nutrition Alliance (SIGNAL) was established in 1997 as part of a strategic plan to further the implementation of the National Food and Nutrition Policy (DHCS 1992). SIGNAL was responsible for the development of the National Public Health Nutrition Strategy 2000 to 2010 (referred to as Eat Well Australia). A complementary strategy for Indigenous Australians (the National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan) has also been developed by the National Aboriginal and Torres Strait Islander Nutrition Working Party.

Eat Well Australia focuses on areas where nutrition can bring the greatest health gain. These include promoting fruit and vegetable consumption, promoting healthy weight, promoting good nutrition for mothers and infants, promoting good nutrition for school-aged children, improving nutrition for vulnerable groups, and addressing structural barriers to safe and healthy food (SIGNAL 2001). Eat Well Australia links with other related public health strategies such as the National Breastfeeding Strategy which aims to encourage and support breastfeeding. The public health nutrition strategy for Indigenous Australians focuses on nutrition issues and diet-related disease affecting the health of Aboriginal and Torres Strait Islander peoples. These include food access, nutrition for mothers and babies, promotion of breastfeeding, infections and childhood growth, renal disease and dental health (NATSINWP 2001).

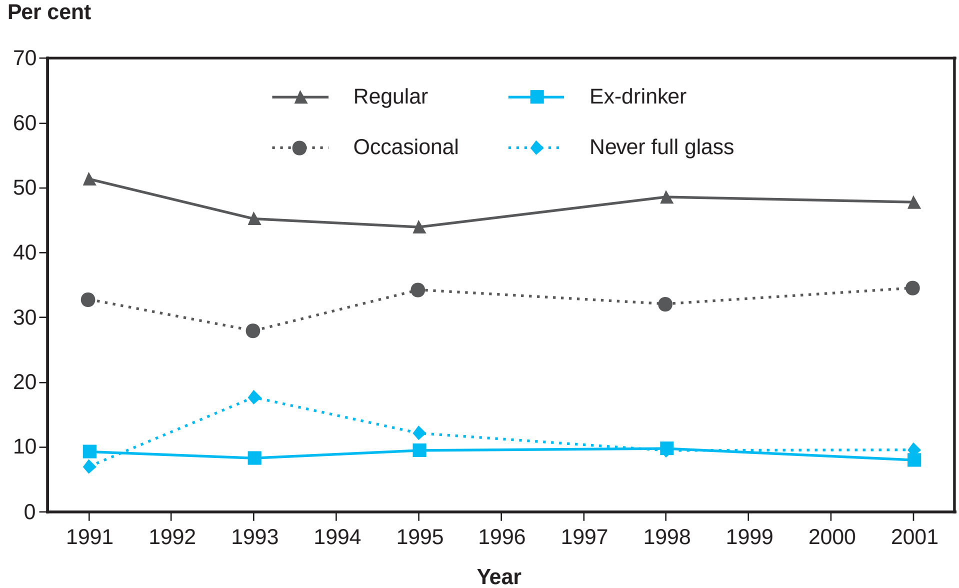
Alcohol consumption

Excessive alcohol consumption is a major risk factor for morbidity and mortality in Australia. The number of deaths attributable to the consumption of alcohol was estimated to be 3,271 in 1998 (AIHW: Miller & Draper 2001). The number of hospital episodes attributable to alcohol consumption in 1998 was about 43,000 (AIHW: Ridolfo & Stevenson 2001).

It has been estimated that the harm caused by excessive alcohol consumption accounts for 4.9% of the total burden of disease (AIHW: Mathers et al. 1999). Conditions associated with hazardous and harmful alcohol use include some cancers, liver disease, pancreatitis, diabetes and epilepsy. Alcohol is a significant factor in motor vehicle fatalities and injuries, and is associated with falls, drowning, burns, suicide and occupational injuries.

However, low to moderate levels of alcohol consumption can protect against hypertension, ischaemic heart disease, stroke and gallstones. The net harm associated with alcohol consumption, after taking into account these benefits, is around 2.2% of the total burden of disease. The distribution of harm and benefit varies with age. For both males and females, the harmful burden of disease is highest in the 15–24 age group, mainly due to road trauma and other injury. The largest protective effect is realised in persons over 65 years of age, because of the increased underlying risk of cardiovascular disease in this age group.

There are also social costs to the excessive use of alcohol. In 2001, around a quarter of adult Australians reported being either physically or verbally abused by someone under the influence of alcohol (AIHW 2002).



Note: Includes people aged 14 years and over.
Source: National Drug Strategy Household Surveys.

Figure 3.12: Alcohol drinking status, 1991 to 2001

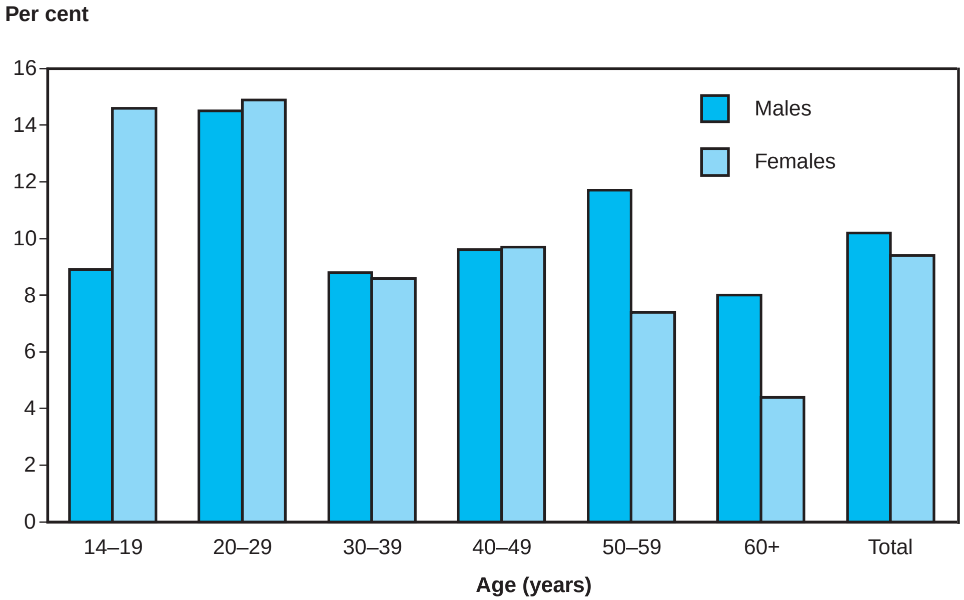
Based on results from the 2001 National Drug Strategy Household Survey, 9 in 10 Australians aged 14 years or more had tried a full serve of alcohol at some time in their lives, and around 8 in 10 persons reported drinking in the past 12 months (AIHW 2002).

Australia's drinking pattern has remained largely unchanged over the last decade (Figure 3.12). In 2001, around 48% of the population aged 14 years and over consumed alcohol regularly, i.e. on at least one day per week. A further 35% consumed alcohol less than once per week, and the remaining 17% either no longer drank alcohol or had never consumed a full glass of alcohol.

Although the drinking pattern has remained fairly constant since 1991, overall levels of alcohol consumption have decreased. In terms of pure alcohol, consumption decreased from 9.7 litres per person in 1981 to 8.2 litres in 1991, and then to 7.5 litres in 1998–99 (ABS 2000). In 1998, Australia ranked 19th in the world for per capita consumption of alcohol: 9th for beer consumption, 18th for wine consumption and 35th for spirits consumption (AIHW: Miller & Draper 2001).

The harm resulting from risky alcohol consumption can be summarised in three categories (NHMRC 2001c):

- alcohol dependence (e.g. loss of control, withdrawal symptoms, social disintegration)
- heavy regular-use problems (e.g. cirrhosis of the liver, cognitive impairment, pancreas damage, heart and blood disorders, ulcers, cancers)



(a) For males, the consumption of 29 or more standard drinks per week; for females, the consumption of 15 or more standard drinks per week.

Note: Includes people aged 14 years and over.

Source: 2001 National Drug Strategy Household Survey.

Figure 3.13: Proportion of the population at risk of alcohol-related harm in the long term[(a)], 2001

- intoxication and acute alcohol-related problems (e.g. alcohol-related violence, risky behaviour, road trauma, injury).

In the 2001 National Drug Strategy Household Survey, 10% of males and 9% of females aged 14 years and over reported drinking at levels which put their health at risk in the long term. Based on Australian alcohol guidelines (NHRMC 2001c, see Box 3.9), younger females (aged 14–19 years) were more likely than their male counterparts to drink above low-risk levels for long-term alcohol-related harm, with other age groups about the same or below the male rates (Figure 3.13).

The 2001 National Drug Strategy Household Survey also showed that 39% of males and 30% of females aged 14 years and over put their health at risk of harm in the short term during the preceding 12 months (Table 3.6). About 12% of females aged 14–19 years and about 15% of males aged 20–29 years consumed alcohol at risky or high-risk levels during short-term drinking episodes on at least one occasion each week.

The 2001 drugs survey showed that significantly higher proportions of Aboriginal and Torres Strait Islander peoples compared with other Australians drank at levels that put themselves at risk of harm in the short and long term. For example, 20% of Aboriginal and Torres Strait Islander peoples drank at levels that were risky or high risk for harm

Box 3.9: Australian alcohol guidelines for short-term and long-term patterns of drinking.

The following guidelines show the risks for various drinking levels for males and females of average or larger body size (e.g. above about 60 kg for men and 50 kg for women). Persons of smaller than average body size should drink within lower levels.

Risk of alcohol-related harm in the short term (standard drinks per drinking occasion)

	Low risk	Risky	High risk
Males	up to 6	7 to 10	11 or more
Females	up to 4	5 to 6	7 or more

The short-term risk pattern of drinking assumes that:

- *a person drinks on a maximum of three occasions per week and remains within the levels for long-term harm*
- *a drinker is not about to drive or operate machinery, is not on medication, does not have a condition which is exacerbated by drinking, and is not pregnant*
- *a person is pacing drinks over time to moderate the rate of alcohol consumption (e.g. for males, no more than two standard drinks in the first hour and one per hour thereafter; and for females, no more than one standard drink per hour).*

Without these qualifications the risk to health is increased.

Risk of alcohol-related harm in the long term (standard drinks)

	Low risk	Risky	High risk
Males			
on an average day	up to 4	5 to 6	7 or more
overall weekly level	up to 28	29 to 42	43 or more
Females			
on an average day	up to 2	3 to 4	5 or more
overall weekly level	up to 14	15 to 28	29 or more

The long-term risk pattern of drinking presumes the same assumptions for the short-term risk pattern of drinking, and that:

- *a drinker does not have a family history of alcohol-related problems, is not on medication, does not have a condition that is made worse by drinking, is not pregnant, and is not in a high-risk category for breast cancer.*

Without these qualifications the risk to health is increased.

Source: NHMRC 2001c.

Table 3.6: Proportion of the population at risk of alcohol-related harm in the short term[(a)], 2001

Age (years)	Abstainers[(b)]	Low risk	Risky and high risk: At least yearly	At least monthly	At least weekly
Males			Per cent		
14–19	27	30	13	20	10
20–29	8	27	22	28	15
30–39	10	40	22	20	8
40–49	11	51	17	13	8
50–59	12	59	12	8	8
60+	20	67	6	4	4
Total	**14**	**47**	**16**	**15**	**9**
Females					
14–19	25	28	13	21	12
20–29	11	32	20	27	9
30–39	16	47	19	13	5
40–49	16	55	15	9	5
50–59	22	62	9	4	3
60+	33	62	2	1	1
Total	**21**	**50**	**13**	**12**	**5**

(a) For males, the consumption of 7 or more standard drinks on one occasion. For females, the consumption of 5 or more standard drinks on one occasion.

(b) Alcohol not consumed in the last 12 months.

Source: 2001 National Drug Strategy Household Survey.

in the long term, compared with 10% of other Australians. Further, 49% of Aboriginal and Torres Strait Islander peoples had at least one drinking episode in the past year that was risky or high risk for short-term harm, compared with 34% of other Australians.

Physical inactivity

Participation in physical activity is an important factor in maintaining good health. People who participate in moderate to vigorous levels of physical activity have a lower mortality rate and lower incidence of a number of diseases and conditions than those who are physically inactive. Physical inactivity ranks second only to tobacco smoking in terms of the burden of disease from risk factors in Australia. It accounts for 6% (second highest burden for men) of the total burden of disease and injury among males and 8% among females (highest burden for women) (AIHW: Mathers et al. 1999).

The strongest evidence for the benefits of physical activity is in reducing the risk of mortality and morbidity from cardiovascular disease, particularly heart attack and other forms of coronary heart disease. People who are physically inactive are nearly twice as likely to have a fatal or non-fatal coronary event than those who do moderate levels of activity (Blair et al. 1996).

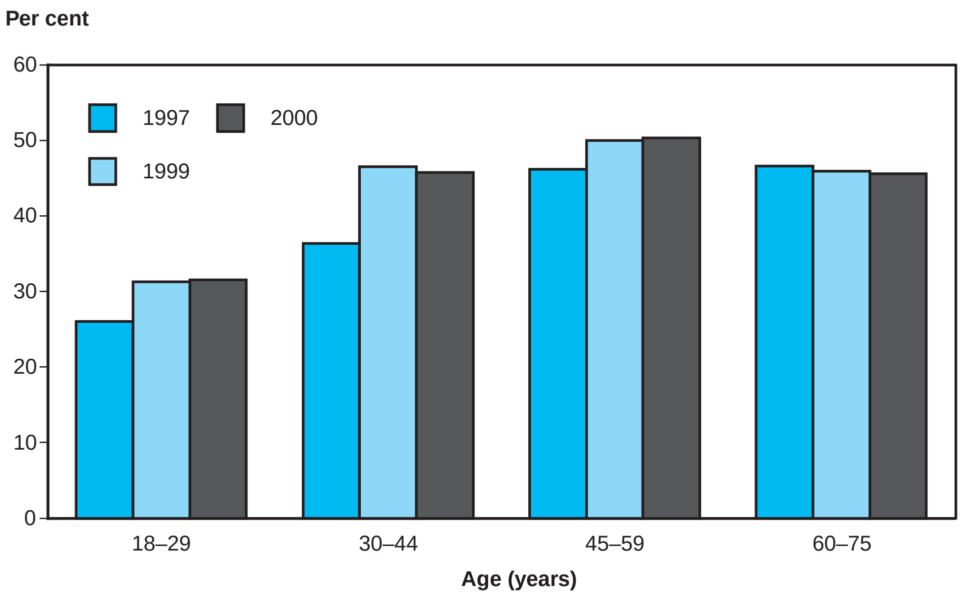
Physical inactivity is an independent risk factor for cardiovascular disease, and is also associated with other cardiovascular risk factors such as high blood pressure, high blood cholesterol levels, and overweight and obesity (Bauman & Owen 1999; USDHHS 1996).

Participation in physical activity is beneficial in the prevention and treatment of Type 2 diabetes, especially among people already at risk. It is estimated that appropriate levels of physical activity could prevent 30–50% of new cases of Type 2 diabetes. However, the benefits of physical activity for preventing and treating diabetes occur only with regular sustained physical activity patterns (Manson & Spelsberg 1994).

People who are physically inactive are nearly twice as likely to develop colon cancer (Colditz et al. 1997). Physical activity is also associated with around a 30% reduction in the risk of women of all ages developing breast cancer (Thune & Furberg 2001).

Additionally, studies show that participation in physical activity is associated with improvements in musculoskeletal health and is also beneficial to mental health, reducing symptoms of depression and possibly stress and anxiety (Dunn et al. 2001).

The measurement of physical activity in populations is a challenging task. Physical activity for health benefit comprises several components (e.g. intensity, frequency, duration) that can be carried out in different settings (e.g. during leisure time, at work, for daily living or mode of transport). Measurement is further complicated because there are several dimensions of physical activity related to health, such as energy expenditure, aerobic intensity, strength and flexibility. For example, physical activity for the prevention of cardiovascular disease may be different from that required for prevention of musculoskeletal problems.



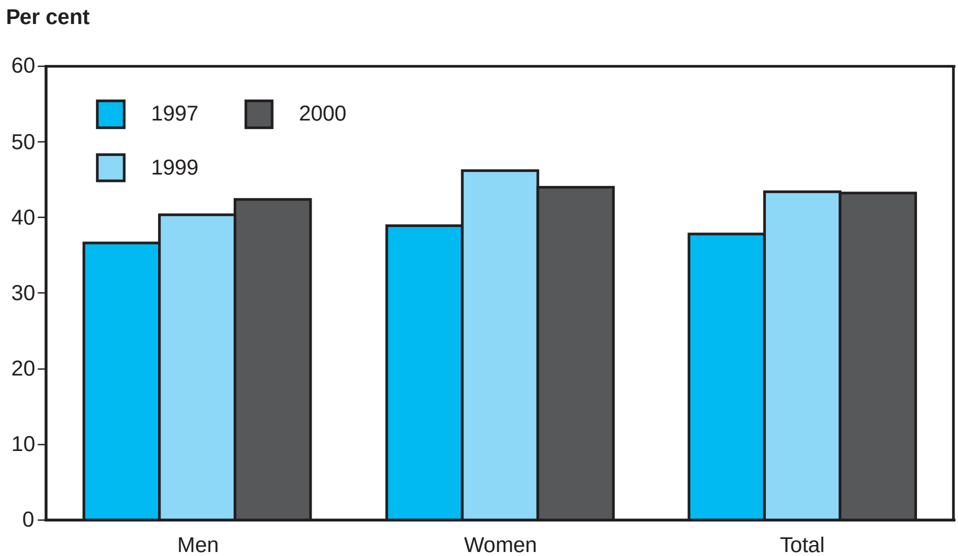
Note: Age-standardised to the 1991 Australian population.

Sources: AIHW: Armstrong et al. 2000; Bauman et al. 2001.

Figure 3.14: Proportion of people who were physically inactive, by age, 1997, 1999 and 2000

The National Physical Activity Guidelines for Australians (DHAC 1999) recommend the accumulation of at least 30 minutes of at least moderate-intensity physical activity on most days of the week (interpreted here as 5 days) as the minimum amount required to achieve a health benefit. This equates to participation in at least 150 minutes of moderate-intensity activity per week. For this report, anything less than this is defined as physical inactivity. Moderate-intensity physical activity is generally defined as activities that use the large muscle groups and are performed with an intensity of at least three times the basal or resting metabolic rate. Examples are brisk walking, gentle swimming, cycling, social tennis and taking the stairs at work. Participation in more vigorous types of physical activity such as jogging and aerobics (around seven to nine times the basal or resting metabolic rate) provide further health benefits (AIHW: Armstrong et al. 2000).

The 2000 Active Australia National Physical Activity Survey was undertaken in November, about 6 weeks after the close of the Sydney Olympic Games. This survey indicated that around 5.7 million Australians aged 18–75 years (43% of that population) did not undertake physical activity at the levels recommended to achieve health benefits. Rates of physical inactivity in 2000 were highest among 45–59-year-olds (50%) and lowest among 18–29-year-olds (32%) (Figure 3.14). More than 15% of people did no leisure-time physical activity at all and around 28% did some activity, but not enough to achieve a sufficient level to obtain health benefits (AIHW 2001; Bauman et al. 2001).



Notes

1. Age-standardised to the 1991 Australian population.
2. Includes people aged 18–75 years.

Sources: AIHW: Armstrong et al. 2000; Bauman et al. 2001.

Figure 3.15: Proportion of people who were physically inactive, by sex, 1997, 1999 and 2000

Physical inactivity levels appear to have increased in recent years. Between 1997 and 2000, rates of physical inactivity among Australians increased significantly (from 38% in 1997 to around 43% in 1999 and 2000) (Figure 3.15). This increase in physical inactivity was seen among men and among all age groups with the exception of those aged 60–75 years, among whom activity levels remained constant. Rates of physical inactivity among women also increased between 1997 (37%) and 1999 (46%) and remained steady in 2000 (44%). This increase in physical inactivity occurred across all education levels, most significantly among people with tertiary qualifications (29% in 1997 to 38% in 2000).

People in the lowest socioeconomic groups and Indigenous Australian adults are more likely than other Australian adults to report no physical activity in their leisure time. The National Health Survey in 1995 indicated that 37% of men and 40% of women in the lowest socioeconomic groups performed no leisure-time physical activity compared with 27% and 29% of men and women in the highest group. Furthermore, 40% of Indigenous Australian adults reported no leisure-time physical activity, compared with 34% of other Australians in 1995 (AIHW 2001). Additionally, data from the 1999 Physical Activity Survey showed that people with less than 12 years of education were almost twice as likely to be physically inactive as people with a Higher School Certificate or equivalent, or with tertiary qualifications (AIHW: Armstrong et al. 2000).

Use of illicit drugs

Illicit drugs are drugs that are illegal to possess (such as heroine or cocaine) or drugs that are not illegal to possess but whose inappropriate use is illicit, such as non-medical use of prescription drugs, or the use of volatile substances such as glue, solvent or petrol as inhalants. Illicit drug use is, directly and indirectly, a major cause of death and ill health. It is through high-risk injecting behaviour that bloodborne viruses are transmitted. Medical conditions associated with illicit drug use are overdose, HIV/AIDS, hepatitis C (HCV), low birth weight, malnutrition, infective endocarditis (i.e. inflammation of lining of the heart), poisoning, suicide and self-inflicted injury.

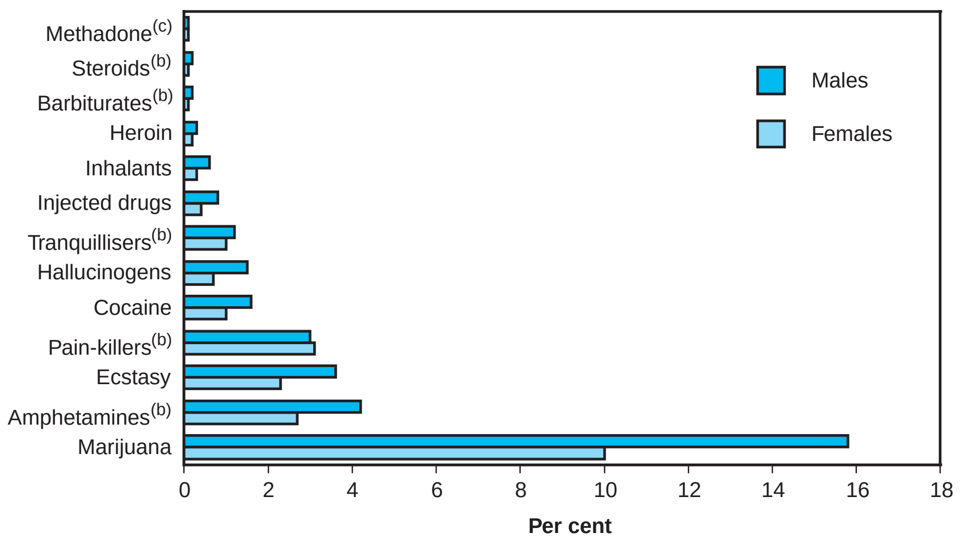
The burden of disease attributed to illicit drug use was 1.8% of the total burden of disease in 1996 (AIHW: Mathers et al. 1999). The age-specific burden of diseases associated with illicit drug use peaks in the age group 25–34 years. About 14,500 hospital separations were related to illicit drug use in 1997–98, and over 1,000 people died in 1998 due to illicit drug use (AIHW: Ridolfo & Stevenson 2001).

Data from the 2001 National Drug Strategy Household Survey estimate that about 5.7 million Australian people aged 14 years and over have used an illicit drug, with no clear trend in the use of illicit drugs apparent between 1995 and 2001 (Table 3.7). One-third of Australians aged 14 years and over have used marijuana in their lifetime. Amphetamines are the next most common drugs, with 9% of the population aged 14 years and over reporting use in their lifetime. Males are more likely than females to have used an illicit drug (40% compared with 34% respectively).

Table 3.7: Summary of illicit drug use, 1995 to 2001

	Ever tried[a]		Ever used[a]	Recent use[b]		
Substance	**1995**	**1998**	**2001**	**1995**	**1998**	**2001**
			Per cent			
Amphetamines[c]	6	9	9	2	4	3
Barbiturates[c]	1	2	1	0	0	0
Cocaine	3	4	4	1	1	1
Ecstasy/designer drugs	2	5	6	1	2	3
Hallucinogens	7	10	8	2	3	1
Heroin	1	2	2	0	1	0
Inhalants	2	4	3	1	1	0
Injected drugs	1	2	2	1	1	1
Marijuana/cannabis	31	39	33	13	18	13
Pain-killers/analgesics[c]	12	12	6	4	5	3
Steroids[c]	1	1	0	0	0	0
Tranquillisers/sleeping pills[c]	3	6	3	1	3	1

(a) In 1993–98 the question was 'ever tried', in 2001 the question was 'ever used'.
(b) Used in the past 12 months.
(c) For non-medical purposes.
Notes: Includes people aged 14 years and over.
Sources: 1995, 1998 National Campaign Against Drug Abuse Household Survey; 2001 National Drug Strategy Household Survey.



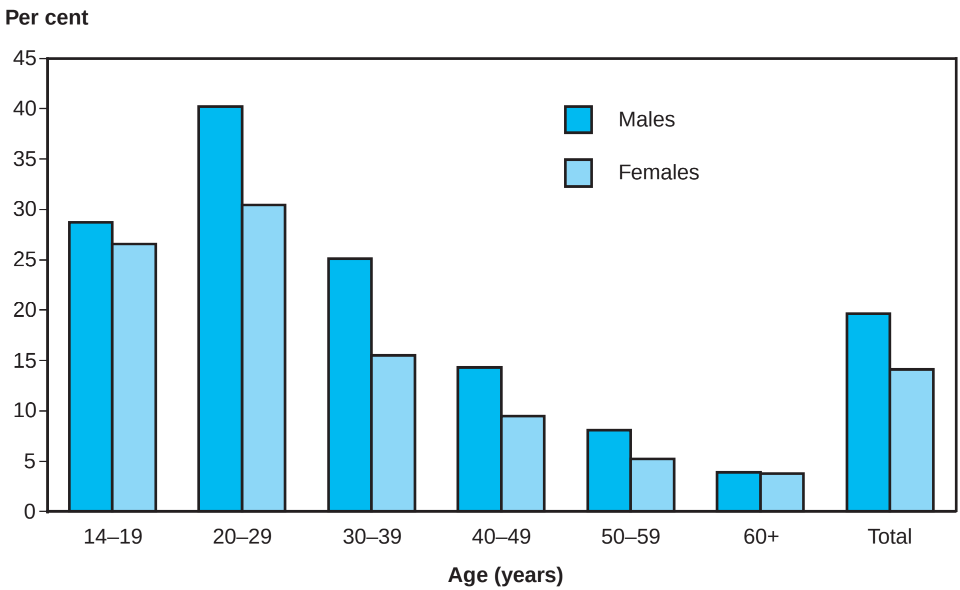
(a) Use in the past 12 months.
(b) For non-medical purposes.
(c) Non-maintenance.
Note: Includes people aged 14 years and over.
Source: 2001 National Drug Strategy Household Survey.

Figure 3.16: Recent use[a] of selected illicit drugs, 2001

The data also show that there is a gender difference in the recent use of illicit drugs, with more males reporting recent use of illicit drugs compared with females (20% compared with 14%). Males were more likely than females to have used the selected illicit drugs, with the exception of recent use of pain-killers for non-medical purposes (Figure 3.16).

Use of illicit drugs varies with age. Males and females aged 20–29 years are most likely to have used any illicit drug in the past 12 months (Figure 3.17). At every age group, the proportion of males reporting recent use of any illicit drug is higher than for females. The trend of decreasing recent use with age, after the peak at 20–29 years, applies to both males and females.

Among Aboriginal and Torres Strait Islander peoples, rates of recent illicit drug use were higher than for other Australians: 32% of Aboriginal and Torres Strait Islander peoples aged 14 years and over had used an illicit drug in 2001 compared with 17% of other Australians. Most of this difference was associated with cannabis use (28% for Aboriginal and Torres Strait Islander peoples compared with 13% for other Australians), although recent use of any illicit drug other than cannabis was also significantly higher (13% compared with 8% for other Australians).



(a) Use in the past 12 months.

Note: Includes people aged 14 years and over.

Source: 2001 National Drug Strategy Household Survey.

Figure 3.17: Recent use[(a)] of illicit drugs, by age, 2001

Table 3.8: Summary of recent illicit drug use by usual area of residence and socioeconomic status, 2001

Characteristics	Males		Females	
	Any illicit drugs	Any illicit drugs other than marijuana	Any illicit drugs	Any illicit drugs other than marijuana
	Per cent			
Usual area of residence				
Urban	19.8	10.0	14.6	7.9
Rural/remote	19.2	7.3	12.8	6.1
Socioeconomic status[(a)]				
1st quintile (most disadvantaged)	18.6	7.7	13.4	6.6
2nd quintile	18.9	8.8	13.4	7.1
3rd quintile	21.1	9.9	15.0	8.2
4th quintile	20.9	10.7	14.4	7.5
5th quintile (least disadvantaged)	19.2	9.6	14.6	7.6

(a) Index of socioeconomic disadvantage for usual place of residence.

Note: Includes people aged 14 years and over.

Source: 2001 National Drug Strategy Household Survey.

The data from 2001 NDSHS also show that there is some association between a person's usual area of residence and use of drugs (Table 3.8). Females living in urban areas are more likely than those living in rural and remote areas to have used an illicit drug in the past 12 months. When marijuana use is excluded, recent use of other illicit drugs is also higher in urban areas compared with rural and remote areas, for males and females.

There is no clear trend for illicit drug use and socioeconomic disadvantage (Table 3.8). Persons who are in the middle category of socioeconomic status (between those most and those least disadvantaged) are more likely to have used an illicit drug in the past 12 months.

Table 3.9: Prevalence of HIV or HCV antibodies among injecting drug users[(a)], by history of injecting drug use, 2000

History of injecting drug use	Tested positive to HIV antibody			Tested positive to HCV antibody		
	Males	Females	Persons[(b)]	Males	Females	Persons[(b)]
	Per cent					
Less than 3 years	1.9	—	1.2	25	28	26
3–5 years	1.3	—	0.8	33	48	39
6–10 years	0.5	—	0.3	47	54	50
10 or more years	1.6	—	1.2	73	74	73
History not reported	—	—	—	40	61	47
Total	**1.3**	**—**	**0.9**	**52**	**55**	**53**

(a) Survey of all clients attending 35 needle and syringe program sites during one week in October 2000.

(b) Includes people whose sex was reported as transgender and people whose sex was not reported.

Source: NCHECR 2001.

Studies of drug use behaviour indicate that the duration of injecting drug use is associated with the transmission of bloodborne viruses. A survey of injecting drug users in 2000 showed that more than half tested positive to the HCV antibody, and the data show a clear association between a history of injecting drug use and the presence of HCV antibody. The test for HCV antibody was positive for 73% of drug users who had been injecting drugs for the last 10 years or more, compared with 26% of those injecting for less than 3 years (Table 3.9).

Vaccination status

Vaccination is the administration of a vaccine to protect children and adults against some infectious diseases. There are two main purposes of vaccination. First, immunisation is the most effective way of providing individual protection against diseases. Second, if enough people are vaccinated at a population level, infections cannot spread and the disease can be eliminated. For example, through vaccination, smallpox has been eradicated worldwide and poliomyelitis has been eradicated from many countries (DHAC 2000). Australia was declared polio-free in October 2000.

Childhood vaccination has been routinely used for over 50 years in Australia and has had a significant impact on the morbidity and mortality associated with many diseases (Gidding et al. 2001). In the late 1800s, vaccines were developed against smallpox, plague and typhoid and were used extensively throughout Australia. Over time, new vaccines have been developed for a range of infectious diseases and large-scale vaccination programs have been implemented. Diseases that can currently be prevented by childhood vaccination in Australia are diphtheria, tetanus, whooping cough (pertussis), poliomyelitis, measles, mumps, rubella, *Haemophilus influenzae* type b (Hib) and hepatitis B. A schedule of vaccination is provided in the *Australian Immunisation Handbook* (NHMRC 2000) and sets out the time frames (from birth) for when a vaccination provider (usually a local council, health clinic and/or general practitioner) administers the respective vaccine for each of the above-mentioned diseases.

In 1997, to improve vaccination coverage in Australia, the Commonwealth Government initiated the Immunise Australia campaign. The main goals of the program were:

- to achieve greater than 90% immunisation coverage of children at 2 years of age for all diseases specified in the schedule
- to achieve near universal coverage at school entry
- to achieve near universal coverage of girls and boys under 17 years of age for measles, mumps and rubella.

To achieve these goals, the Seven Point Plan was implemented which included initiatives for parents (Maternity Allowance and Childcare Assistance Rebate), a larger role for general practitioners (through the introduction of the General Practitioner Immunisation Incentives) and measles eradication.

Vaccination coverage

Vaccination coverage in Australia is monitored through the Australian Childhood Immunisation Register (ACIR). The Health Insurance Commission (HIC) has been operating the ACIR since 1 January 1996, with the cooperation of the State/Territory health departments. The HIC collects vaccination data for Australian children under

Table 3.10: Children aged 12–15 months[(a)] fully immunised against specific diseases, by States and Territories, 2001

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Number of children	20,721	15,119	11,641	6,074	4,375	1,453	990	778	61,151
Diphtheria, tetanus and pertussis (%)	91.0	92.2	91.8	90.1	91.5	93.1	92.9	88.9	91.5
Poliomyelitis (%)	90.9	92.3	91.8	90.0	91.5	93.2	92.8	89.6	91.4
Haemophilus influenzae type b (%)	94.3	95.3	94.4	93.6	95.0	95.6	95.4	94.0	94.6
Fully immunised (%)[(b)]	**90.7**	**92.1**	**91.4**	**89.5**	**91.4**	**92.6**	**92.7**	**88.6**	**91.2**

(a) Aged 12–15 months at 31 December 2000.

(b) Fully immunised = No. children vaccinated/No. children on register x 100.

Source: Australian Childhood Immunisation Register.

Table 3.11: Children aged 24–27 months[(a)] fully immunised against specific diseases, by States and Territories, 2001

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Number of children	21,388	15,618	11,504	6,279	4,501	1,609	1,085	781	62,765
Diphtheria, tetanus and pertussis (%)	87.2	88.5	90.4	86.4	89.7	91.4	89.6	81.9	88.3
Poliomyelitis (%)	92.1	94.0	93.5	91.9	94.5	95.3	93.9	93.0	93.1
Haemophilus influenzae type b (%)	94.4	95.5	94.7	93.5	95.5	95.5	94.9	93.6	94.7
Measles, mumps and rubella (%)	91.4	93.0	93.3	91.2	94.1	94.3	93.0	91.2	92.4
Fully immunised (%)[(b)]	**82.6**	**85.1**	**87.8**	**82.6**	**87.5**	**89.7**	**87.6**	**78.9**	**84.7**

(a) Aged 24–27 months at 31 December 2000.

(b) Fully immunised = No. children vaccinated/No. children on register x 100.

Source: Australian Childhood Immunisation Register.

7 years of age, which forms the basis of the ACIR. The register is updated from Medicare enrolments to obtain the total number of children in Australia under 7 years of age. The vaccination status of each child is updated when a vaccination provider administers the age-appropriate vaccination and notifies the ACIR of this vaccination encounter. Estimates of vaccination coverage are reported as the percentage of a 3-month cohort of children who are up-to-date for the relevant vaccinations according to the immunisation schedule by the time they are 12 months and 24 months of age.

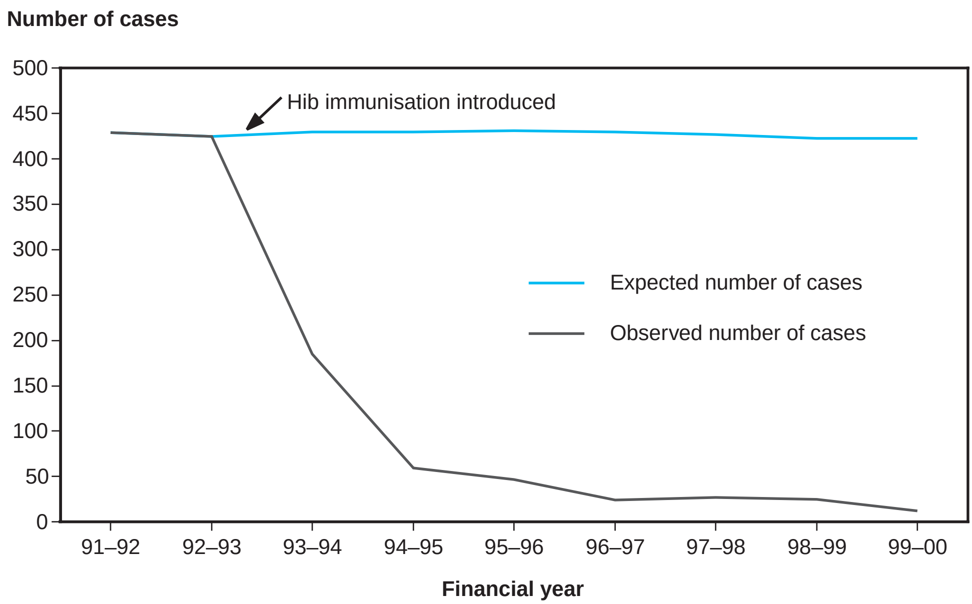
Table 3.10 shows that vaccination coverage at one year of age calculated at 31 March 2001 for Australia as a whole was 91.2%. The Northern Territory had the lowest proportion of children fully vaccinated at one year of age at 88.6% and the Australian Capital Territory had the highest proportion at 92.7%. Vaccination coverage for Australia at one year of age was highest for the Hib vaccine (94.6%) and lowest for the poliomyelitis vaccine (91.4%). Coverage for all individual vaccines was greater than the 90% coverage target.

Vaccination coverage at two years of age for Australia was considerably lower at 84.7% (Table 3.11). Tasmania had the highest percentage of children fully vaccinated at two years of age at 89.7% and the Northern Territory the lowest at 78.9%. Coverage for diphtheria, tetanus and pertussis vaccine at two years of age was the lowest at 88.3%, whereas coverage was highest for Hib vaccine at 94.7%.

Invasive Hib disease as an example of the effectiveness of immunisation

Haemophilus influenzae is a bacterium that can cause a range of clinical illnesses (see Chapter 2). The most important are those classified as 'invasive' which include meningitis (infection of the lining of the brain), epiglottitis (infection of the epiglottis in the windpipe) and septicaemia (blood poisoning). Before the introduction of immunisation, Hib was the cause of nearly all cases of serious disease caused by *Haemophilus influenzae*.

Hib is predominantly a disease of childhood with over 80% of cases worldwide occurring in children aged less than 5 years (Peltola 2000). In Australia the case fatality ratio for invasive Hib disease is estimated to be between 2.5% and 3.5%. In addition, around 4% of survivors of Hib meningitis suffer profound neurological disability (Gilbert et al. 1990; Bower et al. 1994). Compared with other Australian children, Aboriginal children have a higher incidence of this disease and, following Hib meningitis, have a higher case-fatality ratio and higher rate of disability.



Notes

1. Expected number of cases calculated by multiplying the age-specific incidence rates derived from the aggregated data of 91–92 and 92–93 by the person-years at risk in each age stratum for the years 93–94 to 99–00. Age strata used were 0, 1, 2, 3, 4 years.
2. Age-standardised to the 1991 Australian population.

Source: National Notifiable Disease Surveillance System.

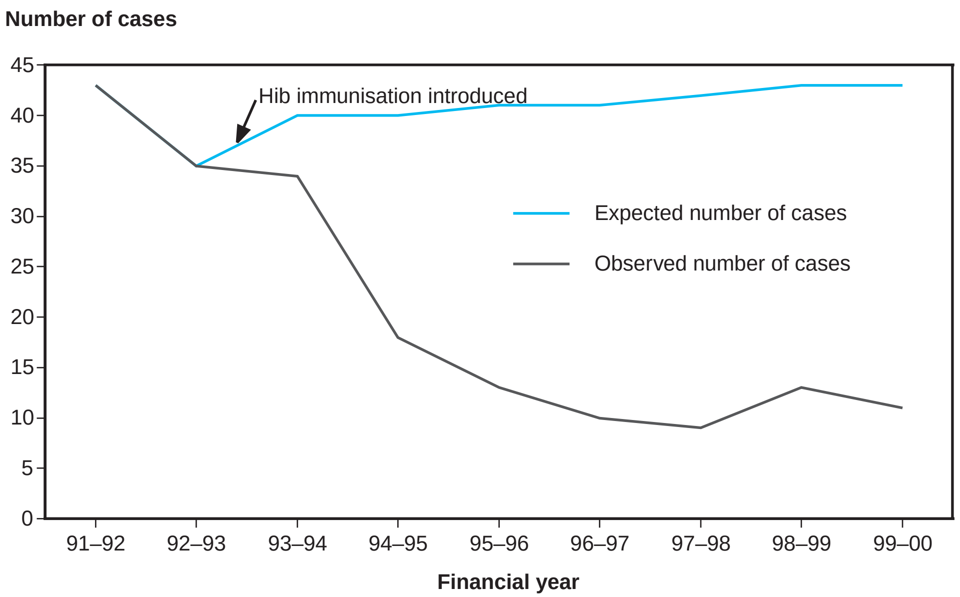
Figure 3.18: Observed and expected cases of invasive Hib disease in children under 5 years

Vaccines developed from the sugar coat (polysaccharide) of the Hib organism were first developed in the 1970s but these vaccines did not protect children aged less than 18 months. Linking the polysaccharide to a protein was found to improve the immune response to the vaccine and Hib vaccines suitable for use in children aged less than 18 months were licensed in Australia in January 1993.

In May 1993, reimbursement for Hib vaccine was introduced for children born after February 1993 (McIntyre et al. 1995). In July 1993 a fully funded infant Hib vaccination program was launched and in August 1993 a catch-up vaccination program for all children aged less than 5 years was funded.

The introduction of routine immunisation against Hib disease has been followed by a dramatic reduction in the incidence of this disease. In the target population, children aged less than 5 years, the immunisation program has resulted in a 94% reduction in the number of cases (see Figure 3.18).

An unexpected bonus of the Hib immunisation program has been the extent to which circulation of the organism has been reduced in age groups ineligible for the immunisation program. Following the introduction of immunisation, there has been a 68% reduction in cases of invasive Hib disease in individuals aged 15 years or older, even though they are not eligible for the immunisation program (see Figure 3.19).



Note: Expected number of cases calculated by multiplying the age-specific incidence rate derived from the aggregated data of 91–92 and 92–93 by the person-years at risk for the years 93–94 to 99–00.

Source: National Notifiable Disease Surveillance System.

Figure 3.19: Observed and expected cases of invasive Hib disease in people aged 15 years and over

Overall, if the age-specific incidence rates observed in financial years 1991–92 and 1992–93 were to have occurred during the period July 1993 to June 2000, 3,602 cases of invasive Hib disease would have been expected. However, only 572 cases were reported during this period, 84% less than expected. This means that over the last 7 years, Hib immunisation has prevented more than 3,000 cases of invasive Hib disease. Of these, it would have been expected that around 90 (3%) children would have died as a consequence of their infection. Or put another way, Hib immunisation prevents at least 430 cases and 13 deaths each year in Australia.

3.3 Knowledge, attitudes and beliefs

People's knowledge, attitudes and beliefs are among the many influences on health-related behaviour, and therefore on health itself. Documenting and tracking these cognitive factors among Australians may help to explain overall health levels and trends. It may also help shed light on differences in the lifestyles and health of different groups in the population.

The knowledge, attitudes and beliefs people have regarding certain behaviours (such as smoking, alcohol consumption, physical activity and diet) are frequently included in population-based surveys as a means of assessing the impact of health promotion campaigns or as a way of understanding barriers to behaviour change. Although no exact formula exists, the likelihood of individuals being motivated to adopt health-enhancing behaviours, rather than those which are health-compromising, is a function of the level of knowledge, attitudes and skills which the person possesses in relation to the health risk. These are influenced by factors external to the individual (environmental factors) and factors intrinsic to the individual (genetic factors) (Egger et al. 2001). The knowledge, attitudes and beliefs among target populations regarding secondary prevention services such as cervical and mammographic screening may be assessed in a similar way.

Knowledge, attitudes and beliefs about specific health issues

Data are available on Australians' knowledge, attitudes and beliefs about major health issues such as diet, physical activity, alcohol, drug use and childhood immunisation. For example, a 1988 survey of Australian adults in major urban centres of Western Australia, South Australia, New South Wales and Queensland found that about two-thirds were able to link fat intake with heart disease and just under half linked sodium to hypertension but there appeared to be confusion about the roles of simple carbohydrate and dietary fibre and ill health (Crawford & Baghurst 1990). In recent years there has been considerable effort aimed at increasing the knowledge among women of child-bearing age of the link between adequate folate intake and neural tube defects such as spina bifida. Combined results from three surveys assessed by the Australia New Zealand Food Authority (ANZFA 2000), as part of their evaluation of the folate health claim pilot, showed that among women who had heard of folate, about 46% were aware of the association in 1999.

Table 3.12: Proportion of people who find regular drug use by adults acceptable, 2001

Drug	Males	Females	Persons
		Per cent	
Alcohol	81.4	68.0	74.7
Tobacco	42.5	36.8	39.7
Cannabis/marijuana	27.4	20.1	23.8
Pain-killers/analgesics[(a)]	6.7	5.8	6.3
Ecstasy/designer drugs	5.3	2.6	4.0
Tranquillisers/sleeping pills[(a)]	4.5	3.2	3.8
Naturally occurring hallucinogens	5.3	2.4	3.8
Amphetamines	4.1	2.3	3.2
LSD/synthetic hallucinogens	3.4	1.6	2.5
Cocaine	2.9	1.5	2.2
Steroids[(a)]	2.8	0.9	1.8
Barbiturates[(a)]	1.6	0.7	1.1
Heroin	1.5	0.6	1.1
Inhalants	1.1	0.5	0.8

(a) Non-medical use.

Note: Includes people aged 14 years and over.

Source: 2001 National Drug Strategy Household Survey.

There is considerable awareness of the benefits of physical activity to health among the Australian population. Results from the 1999 National Physical Activity Survey showed that 88% of people believe that their health could be improved by being generally more active, although this belief was not reflected in participation rates (see Section 3.2). There was also an increase in the overall knowledge of the health benefits of physical activity and awareness of physical activity messages between 1997 and 1999 (AIHW: Armstrong et al. 2000).

Despite the well-documented and widely promoted adverse health effects of tobacco use, the 2001 National Drug Strategy Household Survey found that regular use of tobacco by adults is considered acceptable by 40% of Australians (Table 3.12); about the same proportion correctly identified tobacco as the leading cause of drug-related deaths. Over 90% of survey respondents believe that non-smokers who live, work or socialise with smokers may one day develop health problems themselves because of other people's tobacco smoke.

Around 24% of Australians consider the regular use of cannabis/marijuana acceptable. For other drugs (except tobacco and alcohol), less than 10% of Australians believe that regular use by adults is acceptable. The legalisation of cannabis/marijuana is supported by 29% of Australians, whereas less than 5% support the legalisation of heroin, cocaine or amphetamines.

Sex and age differences

Although Australian data are limited, differences in attitudes and beliefs relating to health are evident between males and females, and between younger and older age groups. For example, men believe that increasing physical activity is an important healthy behaviour, whereas women focus more on social, environmental and dietary changes (Welsh et al. 1998). Further, older Australian men are more likely to highlight the importance of 'keeping busy' and 'having some purpose in life'. In contrast, older women appear to share the hope of 'slowing down more' after being busy with the multiple roles of paid work, household duties, children and grandchildren. Women are more likely to see 'rest and relaxation' as important for good health (Brown et al. 1999).

Men are also more likely than women to consider regular use of cannabis/marijuana and alcohol to be acceptable. Across all illicit substances, acceptability of adult use mirrored consumption patterns. Approval was strongest among 20–29-year-olds, with a gradual decline in approval occurring with increasing age.

Although most young people are well informed about the transmission of HIV/AIDS, knowledge about other sexually transmitted diseases (STDs) is low. In a 1997 study of secondary school students, only 29% of year 10 girls and 42% of year 12 girls knew that chlamydia could lead to sterility. Knowledge about pelvic inflammatory disease (PID) was poor, with fewer than half of the students correctly identifying PID as an STD. Young men in year 12 were least likely to do so (Lindsay et al. 1997).

3.4 Genetic factors

Genetic factors play an important role in human health and disease. A person's genetic make-up (the genome) sets the main features and boundaries within which life is to be experienced, and provides the blueprint for how the human body interacts with the environment. In addition, the genome is programmed to protect its own molecular structure and to repair any damage caused to it by environmental factors.

Human health can also depend on the genetic make-up of other life forms, especially organisms that infect humans. Therefore, human health may be seen as the outcome of our environment (including the genetic make-up of other life forms), our genes, our lifestyle and behaviour, and their interactions.

Genetic basis of disease

Understanding how genetic mechanisms cause disease or provide the basis for susceptibility to disease requires an understanding of genetic organisation and the way various genes interact with each other as well as with the environment. For explanation of various genetic terms and a description of the organisation of the human genetic material, see *Australia's Health 2000*.

Broadly, the major types of genetic diseases/disorders are monogenetic disorders, chromosomal abnormalities and multifactorial diseases.

Monogenetic (single gene) disorders are genetic defects that result from a change (mutation) in the structure of the gene and can be traced through families. About 2% of the population will have a monogenic problem or condition, with some of the problems showing up at birth and others showing up later in life. Common examples of monogenic disorders are muscular dystrophy, cystic fibrosis and haemophilia.

Chromosomal abnormalities are caused by structural changes in the chromosomes or the gain or loss of whole chromosomes (or parts of chromosomes), some of which can be related to specific clinical syndromes. Chromosomal anomalies are a large source of chronic disease, disability and premature mortality. These anomalies arise through changes in the physical structure of the chromosomes (deletion or addition of fragments of genetic material from/to a chromosome), or changes in the number of chromosomes (departure from the optimal number, also called aneuploidy). Common examples are Down syndrome, Klinefelter's syndrome, and Turner's syndrome. In 1996 there were 312, 17 and 28 notifications for these chromosomal abnormalities respectively, which equates to 121, 7 and 11 notifications per 100,000 births respectively.

There is a genetic component to many of the diseases that are considered to be multifactorial in origin. A variety of mechanisms lead to these diseases and conditions, but they result mostly from the effect of environmental factors, such as diet, chemical exposure and lifestyle, acting on genetically susceptible individuals. Common examples are cancers and various chronic diseases such as asthma, diabetes and Alzheimer's disease. These particular diseases are responsible for a large burden of disease in Australia, mainly because of their high prevalence in the population. Various genes make a contribution to a person's susceptibility to these and other chronic diseases.

On their own, genes are rarely the cause of disease levels or trends in populations but they do affect the chances of individuals having some diseases or risk factors under certain environmental conditions.

Genetic basis of health risk factors

Genetic make-up can play a role in the initiation, maintenance and response to some health risk factors. There are genetic connections to a variety of health risk factors, including behavioural and biomedical risk factors, that are generally considered modifiable:

- Some behaviour studies suggest a genetic contribution to some unhealthy behaviours such as the initiation and cessation of smoking, and emerging findings suggest an influence in alcohol-drinking behaviour and chronic alcoholism (Omenn 2000).
- Biomedical risk factors such as high cholesterol and high blood pressure have a genetic contribution. Diet–gene interactions such as vitamin metabolism and obesity are of current interest (Rock et al. 2000).

Factors affecting genetic resistance

A variety of factors may influence our inherited resistance to disease, such as age, nutrition and socioeconomic factors. Variation in the capacity and mechanism for DNA repair may also lead to differences in the survival of harmful mutations.

The genetic complexity of the invading organisms is another important factor. The genetic preparedness of the human host to resist disease is influenced by the genetic ability of the invading organism to bypass the resistance mechanisms. Quite often, human parasites evolve in step with the disease-resistance mechanisms of the host. Host–parasite interactions therefore present a good example of how environmental interactions between species influence health and disease processes. Many of the genetic traits observed today, in either host or parasite, are likely to result from this co-evolution.

For a fuller description of the factors that increase genetic vulnerability to disease, see *Australia's Health 2000*.

3.5 Environmental factors

Australia's present social, economic and physical environment generally provides access to good-quality food and water, housing and places for recreation as well as education and employment. These contribute to an overall standard of living and health that compares well with other developed countries (enHealth 1999; AIHW: de Looper & Bhatia 1998).

Despite this, some Australians such as many Indigenous peoples have generally poor social and economic conditions, and poor health. In addition, significant changes to Australia's physical environment since European settlement have been at considerable cost to natural resources such as soil, rivers and aquifers, and biodiversity (State of the Environment Advisory Council 1996). Also, material released into Australia's atmosphere and the oceans contributes to environmental changes that could have significant population health impacts in Australia and worldwide (Epstein 1999; McMichael & Powles 1999).

Recently the World Health Assembly endorsed the new International Classification of Functioning, Disability and Health (ICF) which recognises that a person's functioning and disability is a dynamic interaction between health conditions and environmental and personal factors (WHO 2001b). The ICF recognises that environmental factors may be either facilitators or barriers to a person's functioning.

Unfortunately, although environmental factors are increasingly seen as important and relevant to health, there are presently insufficient data to monitor nationally the levels and changes in many of these factors or to accurately estimate their effect on current or future health.

Physical, chemical and biological determinants

Over the past decade there has been growing interest in the links between health and human surroundings and living conditions. Humans have a large and growing capacity to affect the life support systems of this planet such as water, agricultural land and climate, and must use this capacity to manage the environment for better health outcomes.

Australia currently has no system of monitoring to provide regular national data about issues such as the quality of drinking water, food, sewerage, soil health and biodiversity. The National Environmental Health Strategy 1999 identifies the need for an effective environmental health information system to be established. The types of information needed for such a system includes:

- scientific research on environmental hazards and potential human exposure to them
- epidemiological research on the links between exposures and health outcomes

- ongoing surveillance of environmental hazards and health outcomes
- information about the processes and practices undertaken by environmental health managers
- evaluation reports of environmental health interventions.

Pressures on the Australian environment continue to grow. Some concerns are the degradation of lands and waters due in part to increasing salinity, broadacre land clearing and the overuse of water; the high and increasing per capita energy usage leading to increase in greenhouse gas emissions; and the high level of (hazardous) waste (Australian State of the Environment Committee 2001).

Health indicators of environmental effects

The environment's contribution to health is often likely to be indirect, subtle, complex and delayed. It is therefore very difficult to estimate the full range and size of the health effects that can be linked to the environment, and so to plan and intervene appropriately. In common with many other countries, Australia's ability to report on health-related environmental issues (except for certain communicable diseases) is poorly developed. This situation is being remedied by a project of the enHealth Council (a subcommittee of the National Public Health Partnership Group) to develop indicators of environmental health.

The current lack of environmental health indicators in Australia and elsewhere is due partly to the difficulty of determining what constitutes key environmental health issues and partly to the paucity of data. Five environment-related human health issues for which data exist are vectorborne diseases, skin cancer, food, air pollution and low-level lead exposure of children.

A number of communicable diseases are influenced by environmental conditions, involve environmental agents, or are kept in check by the efforts of environmental health officers and other health workers. These diseases include Ross River virus disease, Murray Valley encephalitis, Japanese encephalitis, dengue fever, Barmah Forest virus disease, foodborne illnesses and legionellosis. The prevalence of diseases influenced by environmental conditions fluctuates considerably with changes in the weather and the prevalence of insect vectors such as mosquitoes. Changes in the climate and the environment, as may be associated with global warming, may affect the numbers and geographic distribution of some vectorborne diseases within Australia.

Development of melanoma and other skin cancers is related to exposure to the ultraviolet radiation in sunshine. Although the death rate from melanoma has remained relatively unchanged, the incidence of new cases is growing steadily.

The amount of lead in the atmosphere has been a large concern because of the various potentially serious health effects associated with exposure to lead, especially for young children. The introduction of unleaded petrol in the mid-1980s and the banning of lead in paint sold today have substantially decreased the amount of lead in the environment (NSW Environment Protection Authority 2000). Research suggests that people who live in heavily industrialised areas or in older homes (which probably contain deteriorating lead-based paint) are most likely to have elevated blood lead levels (Australian Institute of Environmental Health 2000; Kaufman et al. 2000).

Social, economic, cultural and political determinants

The strong association between health and social and economic factors has become increasingly recognised and documented. However, the mechanisms behind that association are less clear (Yen & Syme 1999). Much of the research on the social and economic bases of health focuses on the observation that people in poor circumstances generally have worse health than those in more advantaged conditions. Social and economic disadvantages (e.g. poor education, unemployment and few assets) tend to occur together, and magnify the negative effects on health (WHO 1998; McMichael 2001). Social and economic circumstances can also cause anxiety, low self-esteem and social isolation which in turn can influence health-related behaviours and health itself.

In Australia, men and women with lower socioeconomic status (as measured by education level, occupation, family income and areas of socioeconomic disadvantage), including many Indigenous peoples, bear a higher burden of disease (see Chapter 4).

Social, economic and cultural determinants of health are closely related. Social circumstances affect behaviour, and socioeconomically disadvantaged people may be influenced by economic and cultural reasons in their choice of behaviours that affect health. In Australia, people in lower socioeconomic groups are more likely to exhibit behaviours, such as smoking and heavy use of alcohol, that place them at higher risk (DHAC & AIHW 1999). Other factors leading to unhealthy behaviour include lack of knowledge, feelings of hopelessness, fatalistic attitudes and the desire for immediate gratification in the absence of other rewards.

Cultural factors may influence health because of traditions, attitudes, beliefs and customs. Family life, parental support and social exclusion are other factors that cross the social and cultural boundaries and may affect health in various ways. There are also related issues of 'social capital', a concept developed to explain the apparent benefits of social ties within communities. Migrants, minority groups and refugees may be susceptible to ill health due to social isolation, and often have few social support networks (Kawachi et al. 1996; Wilkinson & Marmot 1998). Despite this, overseas-born Australians, especially those born in southern Europe, generally have lower death rates than people born in Australia (Giles et al. 1995; Kliewer & Butler 1995).

3.6 Determinants and risk factors for NHPA diseases and conditions

The National Health Priority Areas (NHPA) initiative covers major chronic diseases and conditions, as well as injuries. Its focus is on those areas that are known to contribute significantly to the burden of disease in Australia and for which there is potential for health gain. The initiative recognises that strategies need to cover the continuum of care across prevention, treatment and management. Accordingly, the factors that lead up to and influence the NHPA diseases and conditions have been clearly identified. The determinants and risk factors that broadly relate to the six priority areas are as follows:

- **Cardiovascular health.** Most cardiovascular diseases and conditions follow long-term exposure to unhealthy factors and disease processes, and often have chronic outcomes. Both environmental and genetic factors contribute to various harmful mechanisms leading to the development of cardiovascular problems. Prominent among the behavioural and biomedical risk factors are tobacco smoking, unhealthy diet, physical inactivity, excess weight, hypertension, high blood cholesterol and high blood sugar.

- **Cancer control.** Although some cancers have risk factors in common, most cancers have specific risk factors that may be responsible for their onset. However, the principal risk factors amenable to primary prevention of the eight NHPA cancers are smoking, excessive alcohol consumption, physical inactivity, exposure to sunlight and a high-fat diet. Cancer control can be further advanced through programs such as screening and early detection, which improve the management of cancer.
- **Injury prevention and control.** The main focus of injury prevention and control is injuries caused by exposure to external agents, regardless of intent. This includes exposure to acute mechanical, thermal, chemical, and radiant energy-related factors as well as occupational injuries sustained over time through regular use. Factors that create the situation or environment in which injuries occur, both structural and personal, also need to be identified. However, unlike cardiovascular diseases and cancers, the time from exposure to damage is usually short and the factors are more readily identified.
- **Mental health.** Mental health problems and disorders result from a complex interplay of biological, genetic, developmental, social and cultural factors, and identifying precise causes is difficult. Prevention and early intervention to identify and manage the risk factors that increase people's vulnerability to mental problems and disorders is important, as is early treatment to decrease the length of illness, and the identification of high-risk populations.
- **Diabetes mellitus.** Diabetes mellitus has a variety of risk factors ranging from genetic susceptibility to auto-immune mechanisms to behavioural and biomedical risk factors such as physical inactivity and obesity. Disturbances of fat, protein and glucose metabolism also mean that diabetes is a risk factor for a variety of diseases and complications. It is not uncommon to treat risk factors of Type 2 diabetes in common with cardiovascular diseases, in particular because of its involvement in coronary heart disease and peripheral vascular disease. However, the ways in which diabetes and cardiovascular diseases develop are quite different and require specific strategies.
- **Asthma.** Risk factors for asthma include tobacco smoking and excess weight in common with other NHPAs, but the triggers for asthma are quite specific. It is a chronic disease that has a low fatality rate but responds to a variety of different stimuli through the course of the disease. The triggers that continue to present regular threats after the initiation of the disease include infectious agents, allergens, drugs, industrial and occupational chemicals, air pollutants and physical activity. These stimuli can trigger severe airway narrowing with associated coughing, wheezing and difficulty in breathing.

Most of the risk factors that are relevant to NHPA diseases and conditions and for which suitable monitoring information is available are described in the preceding sections of this chapter. It is also important to view these risk factors across the stages of the life cycle, as well as in the context of social factors and structures that influence health outcomes. This information is provided in Chapter 4.

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4 Population health

4.1 Introduction

This chapter focuses on examining health issues across a number of populations. In previous chapters, the focus has been mainly on diseases, their risk factors, complications, management and outcomes. This chapter describes disease patterns peculiar to population groups and variations from the general community patterns.

This chapter covers the first tier of the National Health Performance Framework, focusing on its equity issues (NHPC 2001) (described in Chapter 6). It also discusses a number of the core functions of public health (NPHP 2000).

The population groups identified in this chapter follow a life-course pattern of mothers and babies, children and young people, and older people. Population groups with some significant features are then described: Indigenous peoples, people from rural and remote locations, overseas-born people and people of various socioeconomic backgrounds. Veterans and prisoners have also been identified as areas of interest where there are specific patterns of health and systems dedicated to their particular needs.

4.2 Mothers and babies

Live births

The annual number of live births in Australia has continued to decline since 1992. There were 249,636 live births registered in Australia in 2000 (ABS 2001b), a decline from the peak annual registration of 276,362 live births in 1971, although there was a slight increase in registered live births between 1979 (223,129) and 1992 (264,151).

The crude birth rate in 2000 was 13.0 live births per 1,000 population compared with 21.7 per 1,000 in 1971.

Age-specific birth rates

Age-specific birth rates express the number of live births to women in a particular age group as a proportion of the number of women of the same age group in the population in a given year.

A very clear trend is emerging in the analysis of age-specific groups of mothers. Among mothers aged less than 30 years, the birth rates are in a long-term decline. However, this is partly offset by mothers in their late thirties and early forties whose birth rates are increasing.

Among teenage mothers aged 15–19 years, the birth rate declined from a rate of 55.5 births per 1,000 women in 1971 to a present low of 17.4 in 2000. Even in the last few years, the decline has been large, down from 22.1 in 1991 to 18.4 in 1998. When compared with the 1971 rate, the 2000 rate represents an overall decline of 68.5%.

This trend is more pronounced among women in the 20–24 year age group. The birth rate decreased from 225.8 births per 1,000 women in 1961, 181.9 in 1971, 107.5 in 1981, 75.0 in 1991 to 56.5 in 2000, representing an overall decline of 75.0% in birth rates over the period 1961–2000.

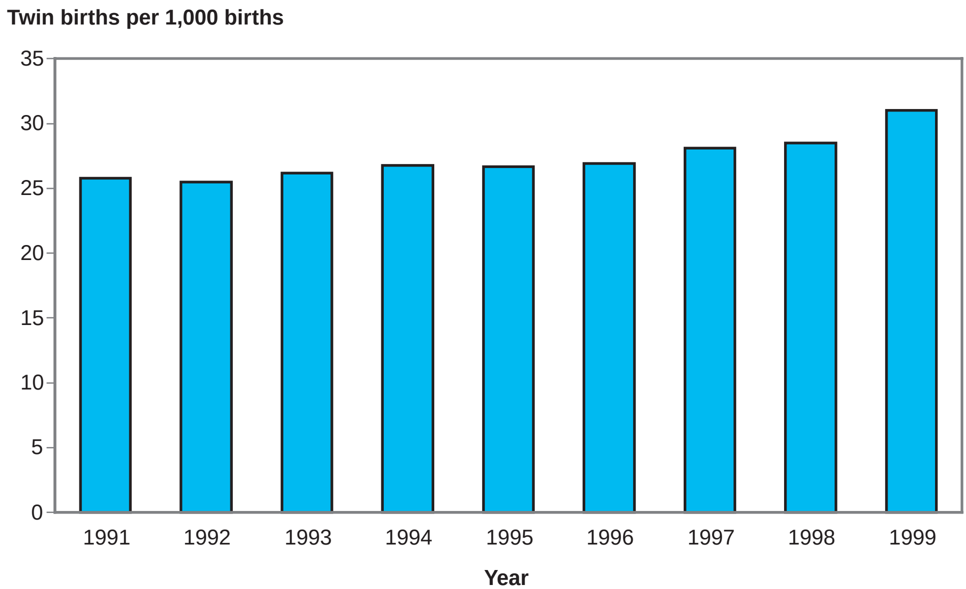
Women aged 35–39 years experienced the lowest birth rates in 1978 with 23.5 per 1,000 women giving birth, gradually increasing to a historical high of 49.1 in 2000, representing an increase of over 100% in the age-specific birth rate for this group.

The birth rate for women aged 40–44 years showed a similar trend with rates doubling over the period 1983–2000. In 1983, there were 4.3 births per 1,000 women compared with 8.8 per 1,000 women in 2000.

In 2000, for the first time since the early 1960s, the peak birth rate among all age groups shifted from ages 25–29 (107.0 births per 1,000 women) to 30–34 (110.5). This trend in delayed child-bearing can be attributed to a number of factors including social, educational and economic factors, increased access to assisted reproductive technology and longer reproductive life expectancy (Table S2).

Multiple births

The increasing incidence of multiple births in Australia continued in 1999. There were 7,642 twin and 329 triplet and higher order multiple births in 1999, representing 3.0% and 0.1%, respectively, of all births in Australia (AIHW: Nassar et al. 2001). The associated multiple birth rate in 1999 was 31.0 per 1,000 births, increasing 15.7% from 26.8 per 1,000 births in 1991.



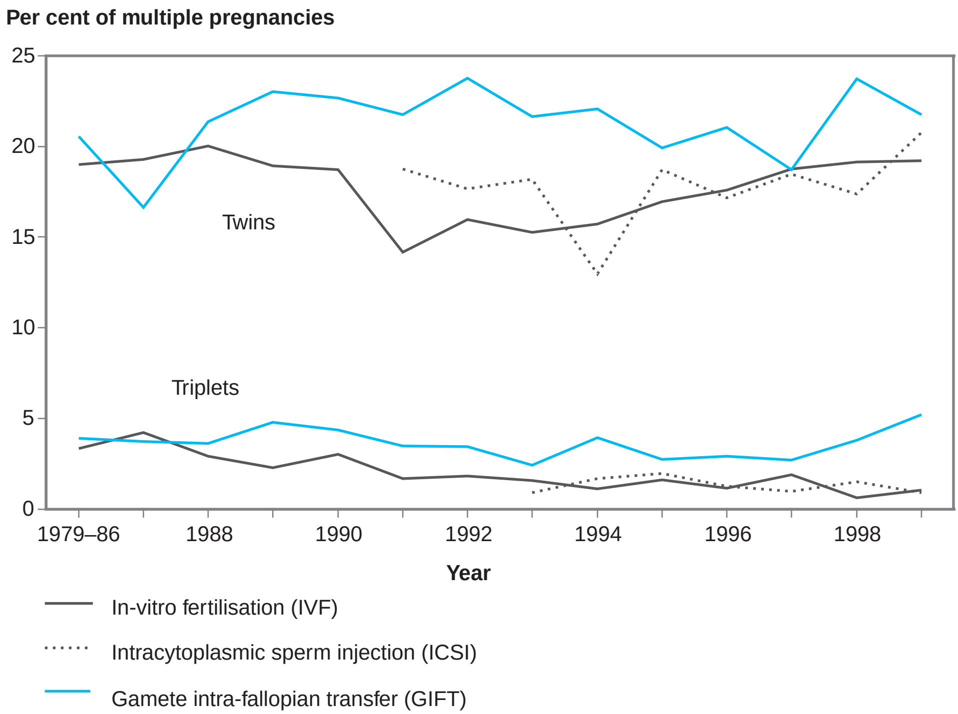
Source: AIHW National Perinatal Statistics Unit, Perinatal data collection, 2001.

Figure 4.1: Twin birth rate per 1,000 births, 1991 to 1999

The twin birth rate has steadily increased from 25.8 twins per 1,000 births in 1991 to 29.7 twins per 1,000 births in 1999. This represents a 15.1% increase in the twin birth proportion over this period (Figure 4.1).

Several factors have influenced the rising incidence in multiple births, including the change in the maternal age distribution (more older mothers) and the increased use of fertility drugs and assisted conception to treat infertile couples.

In 1999, assisted conception accounted for 18.5% of twin pregnancies and 42.3% of triplet pregnancies in Australia. Assisted conception began in Australia in 1979, and in the 21 years to 1999 nearly 29,000 pregnancies resulted in births. Among these births, 18.8% were twins, 2.1% were triplets and 0.1% were higher order multiple births (Figure 4.2). These multiple births usually follow transfer of more than one embryo or egg into the uterus or fallopian tube. In the past decade, there has been a policy of reducing the number of embryos and eggs transferred during assisted conception aimed at reducing the incidence of multiple births (AIHW: Hurst & Lancaster 2001).



Source: AIHW National Perinatal Statistics Unit, Assisted Conception Database, 2001.

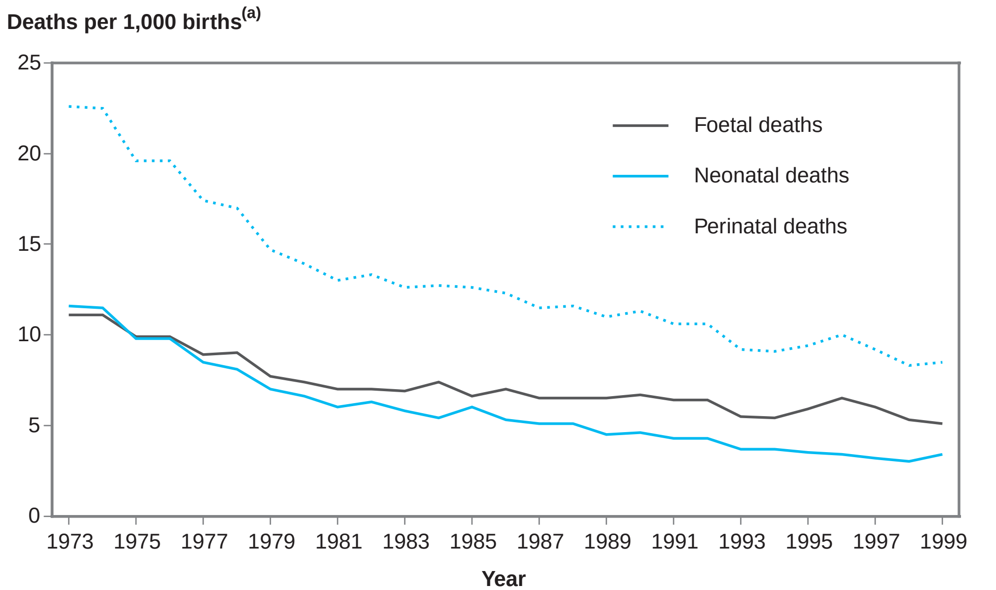
Figure 4.2: Multiple pregnancies of at least 20 weeks gestation after assisted conception, Australia, 1979 to 1999

Termination of pregnancy

Currently, only South Australia, Western Australia and the Northern Territory collect data on induced abortions and only South Australia publishes its data. In 1999, there were 5,605 induced abortions reported by South Australia at 17.8 per 1,000 women aged 15–44 years. The associated pregnancy rate was 76.0 per 1,000 women and almost one in four (23.4%) pregnancies resulted in abortions. More than half (54.4%) of all teenage pregnancies in South Australia were terminated (Chan et al. 1999).

Maternal mortality

Maternal deaths occur infrequently in Australia (approximately 30 per year). Between 1994 and 1996 the maternal mortality rate was 13.0 per 100,000 confinements, an increase on the rate reported in the previous 3-year period (10.9 deaths per 100,000) (AIHW & NHMRC 2001). The main causes of maternal death include pulmonary embolism, amniotic fluid embolism, cardiovascular disease and injury. Deaths from pregnancy complications accounted for almost half (46%) of all maternal deaths, and deaths from pre-existing diseases accounted for 20%. In the remaining 34%, the pregnancy was unlikely to have contributed significantly to the death, such as in the case of motor vehicle accidents or unrelated cancer (e.g. melanoma).



(a) Per 1,000 total births for foetal deaths and perinatal deaths. Per 1,000 live births for neonatal births.

Note: Perinatal deaths include all babies who died within 28 days of birth and all foetuses weighing at least 400 grams or, when birthweight is unavailable, having a corresponding gestational age of at least 20 weeks.

Source: AIHW National Perinatal Statistics Unit, derived from ABS perinatal deaths data, 2001.

Figure 4.3: Foetal, neonatal and perinatal death rates, Australia, 1973–1999

Perinatal mortality

Perinatal deaths include stillbirths (foetal deaths) and deaths of infants within the first 28 days of life (neonatal deaths). In 2000, more than 40% of foetal deaths were not allocated a specific cause of death. The main causes of perinatal deaths include respiratory conditions (intra-uterine hypoxia, birth asphyxia and other respiratory conditions) (21.9%), congenital malformations, deformations and chromosomal abnormalities (19.6%), and disorders related to length of gestation and foetal growth (12.9%) (ABS 2001c).

Overall, the perinatal death rate has declined markedly in the last decade from 11.3 deaths per 1,000 births in 1990 to 8.3 in 2000 (ABS 2001c) (Figure 4.3). Foetal deaths (5.2 per 1,000 total births) accounted for 62.7% of perinatal deaths, and neonatal deaths (3.1 per 1,000 live births) for 37.3%. The perinatal death rate for males (8.8 per 1,000 total births) was higher than that for females (7.7 per 1,000 total births).

Perinatal deaths were more likely to occur among babies born to substantially younger and older mothers. In 2000, the perinatal death rate was 14.3 deaths per 1,000 births among women aged less than 20 years and 9.2 deaths per 1,000 births among women aged 40 years or over. In contrast, the perinatal death rates among births to women aged 25–29 and 30–34 years were 7.4 and 7.1 deaths per 1,000 births, respectively.

Birthweight

A key indicator of infant health is the percentage of babies having a birthweight of less than 2,500 grams. These low-birthweight babies have a greater risk of dying, require a longer period of hospitalisation after birth, and are more likely to develop significant disabilities.

In 1999, the mean birthweight of all liveborn and stillborn babies was 3,360 grams. There were relatively more male babies (63,613; 48.2%) than females (46,552; 37.2%) with a birthweight of 3,500 grams or over. The mean birthweight of males (3,420 grams) was slightly higher than that of females (3,297 grams) (AIHW: Nassar et al. 2001).

In 1999, there were 17,208 low-birthweight babies, representing 6.6% of all births. This represents an increase of 0.4% from 6.3% in 1991. Low birthweight was more likely among female babies (7.2%) than males (6.2%). Low birthweight is more common in the Northern Territory due to the relatively high proportion of Indigenous births. In 1999, there were 8,930 births to Indigenous mothers, with 13.0% of these classified as being of low birthweight.

Type of delivery

The method of birth in two-thirds (66.2%) of all confinements was spontaneous vaginal deliveries in 1999, 21.9% involved caesarean section deliveries and 11.8% involved forceps, vacuum extraction and/or vaginal breech delivery. Obstetric intervention is implemented if serious complications arise during pregnancy or labour. However, there is much debate about the most appropriate type of intervention. There was considerable variation among the States and Territories in the rates of forceps deliveries and the use of vacuum extraction (Table 4.1). Victoria recorded the highest rate of forceps delivery (7.9%), and the Northern Territory recorded the lowest (3.9%). The rate of vacuum extraction varied, ranging from 1.8% of deliveries in the Northern Territory to 9.2% of deliveries in Western Australia.

Table 4.1: Type of delivery, States and Territories, 1999

	NSW	Vic	Qld	WA	SA	Tas[(a)]	ACT	NT	Aust
					Number				
Total confinements	85,967	61,587	48,042	25,378	18,233	5,996	4,599	3,550	253,352
					Per cent				
Spontaneous vaginal	68.6	63.9	67.4	62.1	62.3	70.4	68.9	72.6	66.2
Forceps	4.9	7.9	4.1	4.7	7.1	5.7	6.1	3.9	5.6
Vacuum extraction	6.0	4.7	4.5	9.2	5.2	2.1	4.7	1.8	5.5
Vaginal breech	0.9	0.8	0.5	0.6	0.5	0.6	0.7	0.5	0.7
Caesarean section	19.7	22.8	23.4	23.4	24.9	21.0	19.6	21.2	21.9
Other/unknown	—	—	0.0	—	—	0.2	—	—	0.0

(a) Data for Tasmania in 1999 unavailable; 1998 data used as an estimate.

Source: AIHW: Nassar et al. 2001.

Caesarean birth rates have increased markedly from 17.3% in 1989 (AIHW: Lancaster & Pedisich 1993) to 21.9% in 1999 (AIHW: Nassar et al. 2001), an increase of 26.6% in the 11-year period. South Australia had the highest caesarean rate (24.9%) in 1999, and the Australian Capital Territory had the lowest rate (19.6%). The caesarean rate for Indigenous mothers was 18.4%, slightly less than for all mothers. However, teenage Indigenous mothers had relatively higher caesarean rates compared with other Australian mothers. Indigenous mothers aged less than 20 years had a caesarean rate of 16.0% compared with 12.3% of all teenage mothers.

Congenital malformations

Congenital malformations pose a significant public health problem, and are a major reason for admission to hospital during infancy and childhood, often resulting in disabilities, handicaps and, in some cases, death. All States and Territories notify infants born with major congenital malformations to the national data system. Between 1981 and 1997, the malformation rate was highest in the musculoskeletal structures (49.2 per 10,000 births), the heart and circulatory system (41.8), the genital organs (24.6) and chromosomal abnormalities (20.6). The high rates in these systems were mainly from congenital dislocation of the hip (20.8 per 10,000 births), hypospadias (20.2), ventricular septal defect (16.2), cleft lip/palate (14.9) and Down syndrome (12.4) (Table 4.2) (AIHW: Hurst et al. 2001).

Box 4.1 Congenital malformations

Congenital malformations can be grouped into the main anatomical systems, based on the International Classification of Diseases, or can be tabulated individually.

The main anatomical components in which major malformations occur are the musculoskeletal structures, cardiovascular system and genital organs.

Chromosomal abnormalities, particularly trisomy 21, account for the majority of terminations of pregnancy.

Table 4.2: Selected congenital malformations, Australia, 1981–1997

ICD-9 code	Congenital malformation	Number	New cases per 10,000 births
740.0	Anencephalus	1,153	2.8
741	Spina bifida	2,294	5.5
742.3	Hydrocephalus	1,609	3.9
745.1	Transposition of great vessels	1,474	3.6
745.4	Ventricular septal defect	6,703	16.2
749	Cleft lip and/or cleft palate	6,180	14.9
750.3	Tracheo-oesophageal fistula, oesophageal atresia and stenosis	1,243	3.0
751.2	Atresia and stenosis of large intestine, rectum and anus	1,362	3.3
752.60, 3–5	Hypospadias	8,350	20.2
753.0	Renal agenesis and dysgenesis	1,473	3.6
754.30	Congenital dislocation of hip	8,613	20.8
756.61	Diaphragmatic hernia	1,158	2.8
758.0	Down syndrome	5,123	12.4

Source: AIHW: Hurst et al. 2001.

Anencephalus, spina bifida and encephalocele are serious malformations of the brain and spine, known collectively as neural tube defects (NTDs), which often result in death or major disability and handicap. From 1991 to 1997 the reported malformation rate for NTDs was 11.5 per 10,000 births. Studies have shown a relationship between folate deficiency and NTDs. The National Health and Medical Research Council (NHMRC) has made a series of recommendations on periconceptional folic acid supplementation for women likely to become pregnant and for those with a close family history of NTDs (NHMRC 1993). A validation study on all NTDs was conducted in 2000. It established baseline figures for the years 1991–1997 to enable monitoring of the effects of folate fortification of foods (AIHW: Lancaster & Hurst 2000).

4.3 Children and young people

Compared with children in many other parts of the world, the majority of Australian children enjoy good health. Nevertheless, it is important to continue to monitor the health status of Australian children in order to ensure that their good health is maintained and to identify groups of children within Australia who are not as healthy as the majority.

For the purposes of monitoring the health and wellbeing of Australian children, children are defined as those aged 0–14 years and young people as those aged 12–24 years. The overlap in ages is intentional, and reflects the fact that the transition from childhood to adulthood is a gradual process, which does not occur at the same age for all individuals.

Demographic profile

In June 2000, there were around 3.9 million Australian children aged 0–14 years—2 million boys and 1.9 million girls. Children accounted for 20.5% of the total Australian population of 19.2 million people. The distribution of children in the three age groups

0–4, 5–9 and 10–14 years was 32.3%, 33.9% and 33.8% respectively. Infants (i.e. children under 1 year) made up 6.3%, and 25.9% were aged 1–4 years. In the same year there was an estimated 2.95 million people aged 12–24 years who made up 15.2% of the Australian population.

The information presented in this section is guided by the National Child and Youth Health Information Framework. This framework was developed for the management of national information to improve the monitoring of the health and wellbeing of Australian children and young people. The framework recognises that the attainment of a healthy life is a complex process influenced by biological, social, cultural and environmental factors, and knowledge and attitudes to health, as well as access to and availability of medical services and interventions. It also recognises that health in adulthood is influenced by attitudes and behaviours learnt during childhood. One important outcome of organising information within the framework is that gaps and deficiencies in information become evident, and the national effort to collect data can be improved.

Children

This section covers risk and protective factors among children, measures of health status and some information on health differentials by subpopulation groups. Most of the information on children is derived from *Australia's Children: Their Health and Wellbeing 2002* (AIHW: Al-Yaman et al. 2002).

Risk and protective factors

As well as monitoring the health status of Australian children, it is important also to identify health risk factors. Some of these may not cause ill health until later in life. Information on health risk factors for children is not as easy to obtain as measures of health status. Risk factors for poor health outcomes, particularly in the years before school, can include personal factors such as difficult temperament and factors related to the social and family environment such as parental mental illness, harsh parenting, abuse and neglect, family conflict, low socioeconomic status, poor links with the community and social isolation. Biological and behavioural risk factors can also influence health and these include low birthweight, lack of breastfeeding, lack of physical activity and inappropriate nutrition leading to conditions of overweight and obesity, lack of protection from the sun and not being vaccinated. Safety-related strategies influence the chances of incurring an injury and associated disability and include policies encouraging fenced swimming pools, car restraints and helmet use for cyclists.

The health status of Australian children has generally improved over the last decade. For example, there has been a decline in the incidence of vaccine-preventable diseases, which has been associated with an improvement in vaccination coverage. Vaccination coverage at 1 year of age increased from 74.9% in 1996 to 91.4% in 2000 and at 2 years of age from 63.8% to 88.0% (Australian Childhood Immunisation Register and Health Insurance Commission unpublished data). The latest available data on use of sun protection among children (Australian Bureau of Statistics (ABS) 1995 National Health Survey) indicate that the majority of Australian children (87%) aged 0–14 years usually or always used some form of sun protection when they were in the sun. This has been enforced at schools by the 'no-hat no-play' program.

Death rates due to motor vehicle accidents and accidental drowning have also fallen with the compulsory installation and use of child restraints in cars for children of all ages, legislation to reduce speed limits in specific areas and to enforce existing speed limits, and the mandatory fencing of private swimming pools. Between 1991 and 2000, the death rate due to motor vehicle accidents declined from 3.7 to 2.7 per 100,000 children and the death rate from accidental drowning declined from 2.1 to 1.8 per 100,000 children.

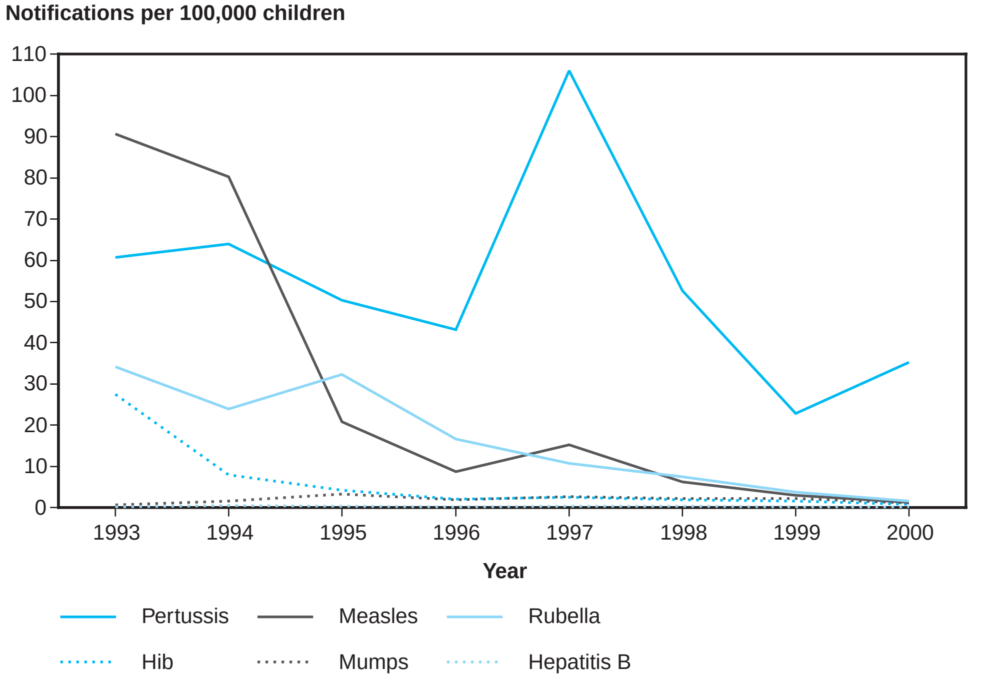
Although these risk factors and their outcomes have shown some improvement, not all is well. Overweight and obesity among children is on the rise. A recent analysis of the 1995 National Nutrition Survey using age- and sex-specific body mass index cut-off points indicates that, among children aged 0–14 years, 14.3% of boys and 16.4% of girls are overweight and a further 3.7% of boys and 5.6% of girls are obese. This is of concern, not only because of the health consequences in these children, but also because of the greater risk they have of being obese in adulthood (Power et al. 1997). The increased prevalence of overweight and obesity in Australian children may be attributed to decreasing physical activity and increasing food energy intake (Magarey et al. 2001).

Health status

In the last decade, the prevalence and seriousness of communicable diseases in children has continued to decline, particularly those diseases that are preventable by vaccination. The decline in the incidence of vaccine-preventable diseases has been the outcome of a number of measures. These include the introduction of new vaccines (*Haemophilus influenzae* type b (Hib) in 1993 and hepatitis B vaccine in 2000) and the modification of existing vaccination schedules to improve the effectiveness of existing vaccines (measles and rubella vaccines). The use of more refined vaccines which minimise side effects following vaccination has also led to better compliance with the vaccination schedule and enhanced vaccination coverage rates.

For children aged 0–4 years between 1993 and 2000, the notification rate for pertussis (whooping cough) declined by 42% from 60.7 to 35.3 per 100,000 children, and the notification rate for Hib declined by 97% from 27.4 cases to less than 1 case per 100,000 children (Figure 4.4). Notification rates for other diseases also declined. For all children aged 0–14 years, the notification rate for measles declined by 99% from 96.8 per 100,000 children in 1993 (during a period in which there was a measles epidemic) to 1.2 cases per 100,000 children in 2000, and for rubella by 95% from 34.2 cases in 1993 to 1.6 cases in 2000. In the year 2000, with the exception of pertussis, the notification rates for all vaccine-preventable diseases among children aged 0–14 years were below 2 per 100,000 children.

Although the incidence of vaccine-preventable diseases has been declining over the decade, the prevalence of some chronic diseases among Australian children is on the rise. Asthma is the leading cause of disease burden among children. Over the last two decades, the prevalence of asthma (measured as a ‘current wheeze’) has been estimated to be increasing at a rate of 1.4% per year (Woolcock et al. 2001). Australia ranks among the highest prevalence rates for childhood asthma in the world (Robertson et al. 1998). The latest estimate from the 1995 National Health Survey indicates that the prevalence of asthma is around 20% in school-age children.



Note: Notifications for pertussis and Hib are for children aged 0–4 years. Notifications of measles, mumps, hepatitis B and rubella are for children aged 0–14 years.

Source: Communicable Diseases Network Australia—National Notifiable Diseases Surveillance System, personal communication.

Figure 4.4: Notifications of vaccine-preventable diseases in children aged 0–14 years, 1993 to 2000 (per 100,000 children)

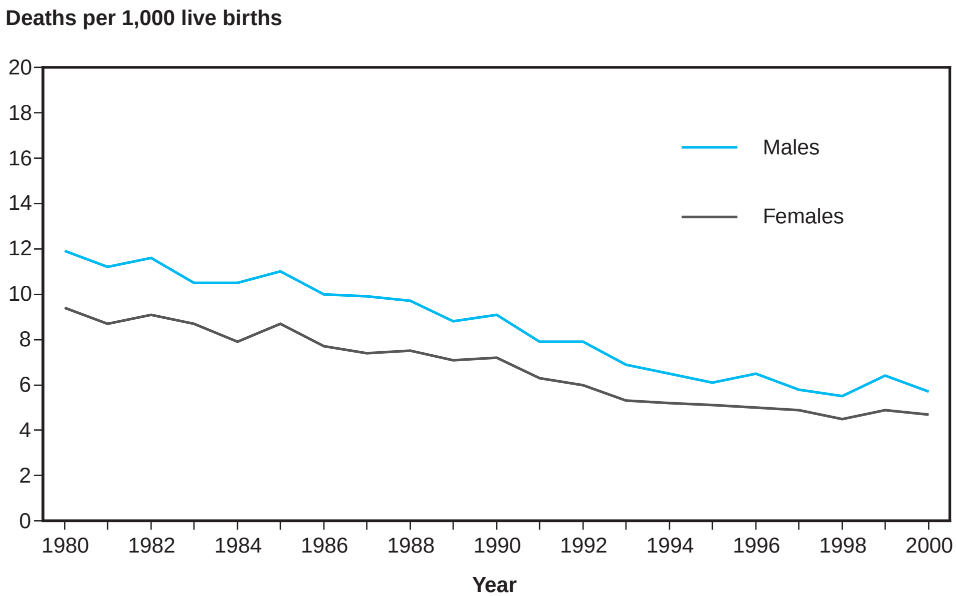
Childhood diabetes is also on the rise. Data from the New South Wales Diabetes Register indicate that between 1992 and 1996 the incidence of Type 1 diabetes has increased at a rate of 3% annually, from 17.1 per 100,000 children in 1992 to 21.6 per 100,000 children in 1996 (Handelsman & Jackson 1999). The latest available national data on the incidence of Type 1 diabetes in children comes from the National Diabetes Register (a register of people who use insulin). In 2000, the incidence of Type 1 diabetes in children was estimated to be 18.6 per 100,000 children (AIHW 2001e).

Type 2 diabetes, which is usually seen only in adults, is increasingly being reported in children in the United Kingdom, United States and other countries (Ehtisham et al. 2001; American Diabetes Association 2000). The emergence of Type 2 diabetes in children has been linked to lifestyle factors such as a lack of physical activity and obesity in children from certain ethnic groups (American Diabetes Association 2000). Although the incidence and prevalence of Type 2 diabetes in Australian children are unknown, similar risk factors apply here.

The prevalence of mental health and behavioural problems among children aged 4–12 years is also of concern and is estimated to be around 14%. The prevalence of attention-deficit hyperactivity disorder (ADHD), and depressive and conduct disorders is consistently higher for boys aged 6–12 years than for girls of the same age. About 1 in 5 boys (19.3%) were identified to have ADHD compared with a prevalence of 8.8% among girls. The prevalence of depressive disorder and conduct disorder among boys was 3.7% and 4.8% respectively. The corresponding prevalence for the same disorders in girls was 2.1% and 1.9% (Sawyer et al. 2000).

Hospitalisations

In 1999–00, there was a total of 542,245 hospitalisations of children aged 0–14 years in Australia, 9.2% of all hospitalisations. Of these, 58% were of boys and 42% of girls. Over a quarter (26%) of these hospitalisations were of infants. The hospitalisation rate for infants was 55,667 per 100,000 infants, and the rate for those aged 1–14 years was 11,043 per 100,000 children aged 1–14. The most common reasons for hospitalisations of children aged 0–14 years were respiratory conditions (chronic tonsillitis and asthma were the main specific diagnoses) and injury (fracture of lower end of both ulna and radius). Conditions originating in the perinatal period (pre-term infants born between 28 and 37 weeks of gestation), digestive problems (dental caries) and infectious diseases (diarrhoea and gastroenteritis of presumed infectious origin, and viral infection) were also common reasons for hospitalisations.



Source: AIHW National Mortality Database.

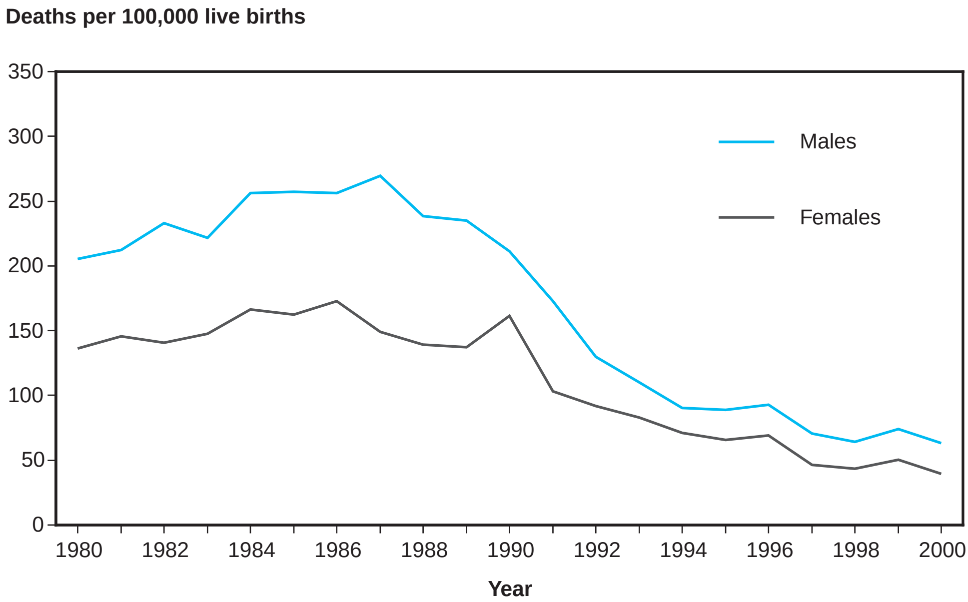
Figure 4.5: Infant mortality rates, 1980 to 2000 (per 1,000 live births)

Mortality

In 2000 in Australia, 1,931 children aged 0–14 years died, accounting for 1.5% of all deaths in that year. Of these child deaths, 1,290 (66.8%) were infants.

Despite the decline in the infant mortality rate over the last two decades, Australia's infant mortality rate (5.2 per 1,000 live births) is high compared with other developed countries and, in 1999, ranked nineteenth among OECD countries. In the same year, Iceland ranked number 1 with an infant mortality rate of 2.4 per 1,000 live births. Infant mortality in Australia is influenced by high death rates among Indigenous infants.

One of the reasons for the decline in post-neonatal mortality has been the decline in deaths from sudden infant death syndrome (SIDS). In 2000, the SIDS death rate was 51.7 per 100,000 live births, compared with 171.6 in 1980—a decline of 69.9% (Figure 4.6). Most of the decline in the SIDS death rate occurred in the 1990s. The decline followed the 1991 National SIDS Council of Australia's public education campaign on the sleeping position of infants.[1]

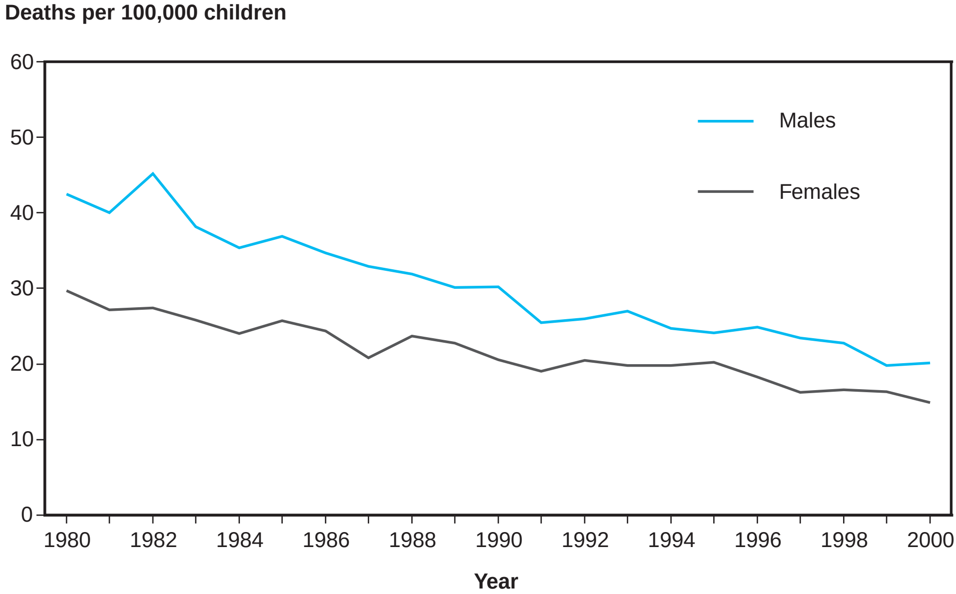


Note: ICD-9 code for SIDS 798.0 (1980 to 1996) and ICD-10 code (1997 to 2000).

Source: AIHW National Mortality Database.

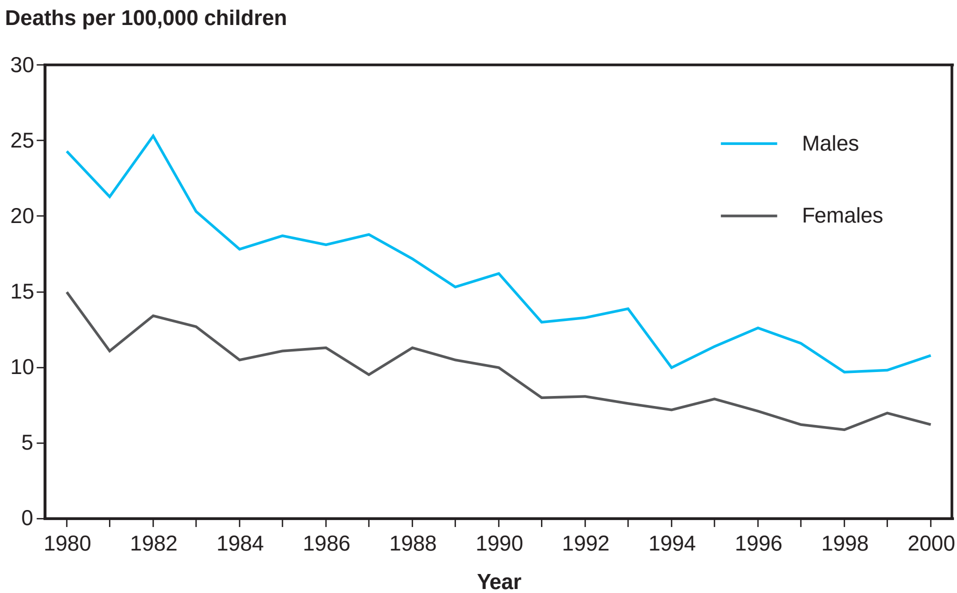
Figure 4.6: Mortality rate from SIDS for infants under 1 year, 1980 to 2000 (per 100,000 live births)

1 NHMRC guidelines (1991) suggests that babies be placed on their back or on their side in such a way that they cannot roll onto their stomach, to sleep.



Source: AIHW National Mortality Database.

Figure 4.7: Mortality rate for children aged 1–14 years, 1980 to 2000 (per 100,000 children)



Note: ICD-9 codes E800–E999 and 800–999 (1980 to 1996) and ICD-10 codes V01–Y999 (1997 to 2000).

Source: AIHW National Mortality Database.

Figure 4.8: Injury mortality rate for children aged 0–14 years, 1980 to 2000 (rate per 100,000 children)

In the last two decades there has also been a large decline in mortality among children aged 1–14 years. Between 1980 and 2000, the mortality rate declined by 52.7% for boys, from 42.5 to 20.1 per 100,000 boys, and by 49.8% for girls, from 29.7 to 14.9 per 100,000 girls (Figure 4.7). Injury and poisoning remain among the leading causes of deaths of children aged 1–14 years and in 2000 were responsible for 285 deaths (7.8 per 100,000). Other common causes of deaths in this age group include neoplasms including cancer (105 deaths, or 2.9 per 100,000), diseases of the nervous system including cerebral palsy and epilepsy (65 deaths, or 1.8 per 100,000), and congenital malformations (54 deaths, or 1.5 per 100,000).

The main causes of death from injury were motor vehicle, bicycle and pedestrian accidents (38.9%), accidental drowning (20.5%), other accidental threats to breathing (9.3%) and physical assault (7.8%). However, deaths from injury for both boys and girls declined between 1980 and 2000, by 55.6% for boys (from 24.3 to 10.8 per 100,000 boys) and by 58.7% for girls (from 15.0 to 6.2 per 100,000) (Figure 4.8).

Health differentials

Many of the health concerns described above affect particular groups of children more than others. The health of children is strongly associated with the socioeconomic status of their family. Children from families with lower socioeconomic status tend to have poorer health. Aboriginal and Torres Strait Islander children have a higher risk of disease and injury and have higher death rates than other Australian children. Between 1998 and 2000, the infant mortality rate of Indigenous babies was 14.9 deaths per 1,000 live births, almost three times that of the total infant mortality rate (4.8 per 1,000 live births). The disparity between the infant mortality rate for the native population and that of the total population is more pronounced than in the United States and New Zealand where the infant mortality rates of the native populations in these countries are substantially lower than in Australia (ABS 2001d). Low socioeconomic status and poor living conditions associated with higher rates of pre-term and low-birthweight babies all contribute to the higher mortality rates. There are also regional disparities in health status. The substantially higher proportion of Indigenous children who live in remote areas and their generally lower health status mean that the overall health status of children in remote areas is affected by the health status of Indigenous children.

Young people

Young people in Australia in general enjoy good health, but they are also vulnerable to particular conditions and diseases.

Risk and protective factors

There are areas of concern in relation to risk factors among young people. Social and economic disadvantage (poor education and unemployment) and problems such as social isolation have been shown to have negative effects on health. There is evidence from the Mental Health Survey of Young People that among adolescents, mental health problems and disorders are more prevalent in blended families, one-parent families, families with low incomes and families where one or both parents are unemployed (Sawyer et al. 2000).

In 1999 only 69% of people aged 18–29 years participated at a 'sufficient' activity level to maintain health benefits, with 74% of males and 64% of females being sufficiently physically active (AIHW: Armstrong et al. 2000).

Tobacco smoking also remains high among young people. National data from the 2001 National Drug Strategy Household Survey (NDSHS) showed that among those aged 14–19 years, 14% of males and 16% of females smoked daily. This proportion increased to 29% and 24% for males and females aged 20–29 years respectively.

Alcohol consumption by young people can also be detrimental to their health. The 2001 NDSHS showed that 31% of males and 25% of females aged 14–19 years drank alcohol on a weekly basis. These proportions increase to 55% and 39% for males and females aged 20–29 years respectively. Applying the new NHMRC guidelines on alcohol consumption in Australia, around 12% of teenagers drank at risky or high-risk levels for long-term harm, and 45% drank at levels risking short-term harm at least once in the past year. Among young adults aged 20–29 years, 15% were risking harm in the long-term, and 60% were risking harm in the short term.

Young people experience a greater risk of developing harmful drug use behaviours and experiencing drug-related harm. Data from the 2001 NDSHS indicates that about 2.4 million Australians aged 14–29 years have used an illicit drug. Marijuana use was relatively high: 27% of males and 23% of females aged 14–19 years recently used the drug and these proportions increased to 35% for males and 23% for females aged 20–29 years. From the 1999 survey of secondary schools, almost 1 in 5 young people aged 12–17 years had used inhalants (19% of males and 20% of females) and 1 in 10 had used tranquillisers (10% of males and 11% of females). Amphetamines use was estimated to be around 5–6% (AIHW: Miller & Draper 2001).

Health status

There is much evidence that young people are in good health compared with Australians in other age groups. Two-thirds of young Australians rate their own health as 'excellent' or 'very good'. Mortality rates among young people are lower than those of all other age groups, with the exception of children aged 1–14 years (ABS 2001d). Disability rates are also low in this age group. In 1998, the proportion of people with a severe or profound activity restriction needing assistance was lowest among those aged 15–19 years and 20–29 years: 2.3% and 1.7% respectively (AIHW 2001a). Furthermore, the health status of young people is improving. Death rates have fallen, due mainly to a reduction in deaths from motor vehicle accidents. HIV notification rates for young people have declined. Among young people aged 12–24 years, the number of new HIV diagnoses in males fell from 10.9 to 3.1 per 100,000 between 1991 and 2000. The female rate remained much lower at about 1 per 100,000 over the same period (NCHECR 2000, unpublished data).

However, areas of concern remain. Young people aged between 12 and 24 years pass through a period of life characterised by physiological and psychological uncertainty. Mental health problems, including drug dependence disorders, are the major burden of disease for this age group. Of people aged 13–17 years, 13.4% of males and 12.8% of females were diagnosed with a mental health problem (Sawyer et al. 2000). In 1997, the prevalence of a mental disorder among those aged 18–24 years was 27% (ABS 1998b).

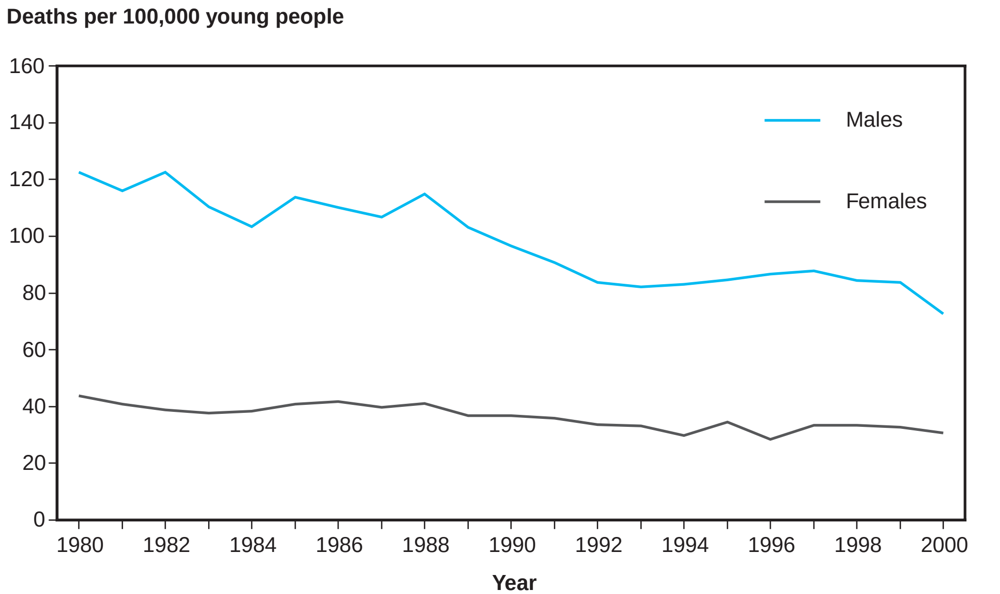
Notifications for the main sexually transmitted diseases, except syphilis, increased for young people in the 1990s. Among people aged 12–24 years, notification rates for chlamydia increased from 92.6 to 268.2 per 100,000 between 1991 and 1999 and for gonococcal infections from 47 to 68.8 per 100,000, and for donovanosis from 55.9 to 74.3 per 100,000 (Communicable Diseases Network Australia—National Notifiable Diseases Surveillance System, personal communication 2002).

Hospitalisations

In 1999–00, there were 530,347 hospitalisations of young people aged 12–24 years (317,109 females and 213,238 males). The higher number of hospitalisations of females was for pregnancy and childbirth (104,400 hospitalisations). The overall hospitalisation rate for young people aged 12–24 years was 15,414 per 100,000. The hospitalisation rates increased with age—8,779, 14,681 and 19,675 hospitalisations per 100,000 for those aged 12–15, 16–18 and 19–24 years respectively. The main reasons for hospitalisations of young people aged 12–24 were injury (fracture of nasal bones and head injuries were the main diagnoses), diseases of the digestive system (impacted teeth, acute appendicitis and non-infectious gastroenteritis and colitis), and mental and behavioural disorders (depressive episode, anorexia nervosa, and mental and behavioural disorders due to use of opioids).

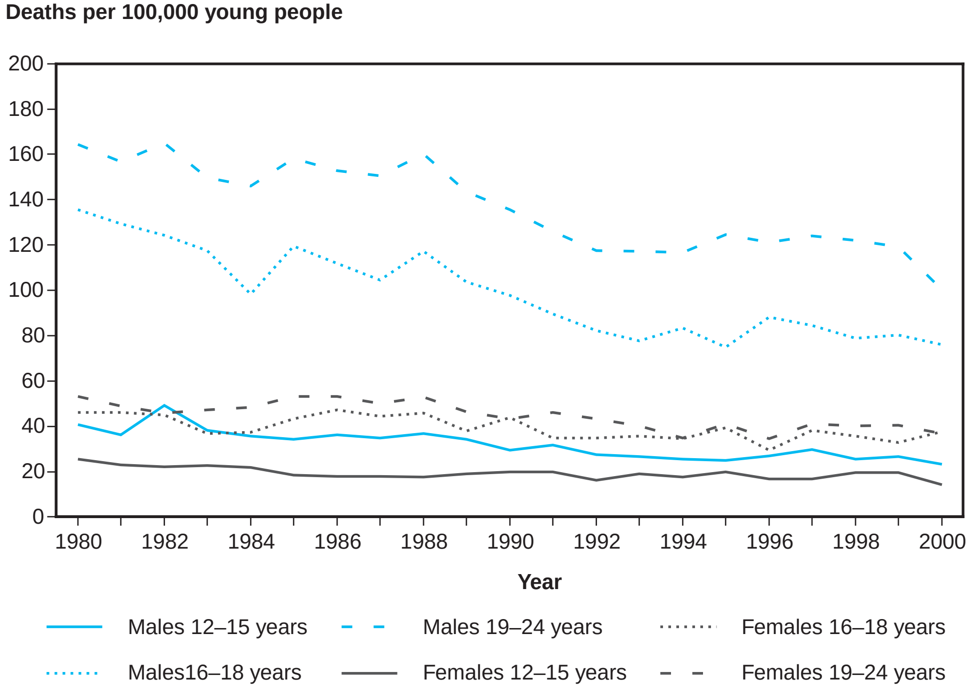
Mortality

Mortality rates among young people have declined over the last two decades. Death rates among those aged 12–24 years declined by 37.8% from 83.7 in 1980 to 52.1 per 100,000 in 2000. Throughout this period, the mortality rate was higher for males than for females. Mortality rates for males declined by 40.7% from 122.5 deaths per 100,000 in 1980 to 72.7 in 2000 compared with a decline for females of 30% from 43.7 deaths per 100,000 in 1980 to 30.6 in 2000 (Figure 4.9).



Source: AIHW National Mortality Database.

Figure 4.9: Death rates for people aged 12–24 years, 1980 to 2000 (rate per 100,000)



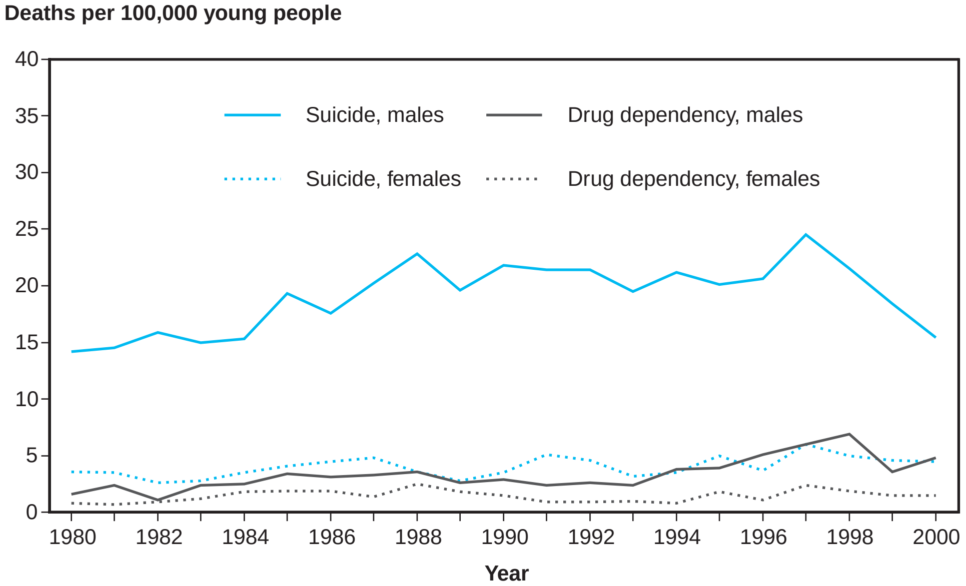
Source: AIHW National Mortality Database.

Figure 4.10: Death rates for people aged 12–24 years, 1980 to 2000 (deaths per 100,000 population)

The highest mortality rates occurred among males aged 19–24 and 16–18 years (Figure 4.10). In the year 2000, there were 1,795 deaths of people aged 12–24 years. The main causes of death for young people are indicative of the problems of this age group. In 2000, injury was the leading cause of death for people aged 12–24 years, with 68.1% (1,222) of all deaths attributed to some form of injury. The majority of injury cases (93.4%) were related to motor vehicle accidents. Self-harm was the second leading cause of death, representing 19.2% of all deaths in this age group.

However, when specific causes of death were considered, suicide by hanging, strangulation and suffocation was the main leading cause of death for those aged 12–24 years (198 deaths, 154 males and 44 females). Vehicle driver killed in collision with a stationary object (99 deaths) and death from taking opioids (drug dependence, 72 deaths) were also leading specific causes of death in this age group.

Although suicide rates increased between 1980 and 1997, the rate has been declining in the past few years. The suicide rate declined from 24.5 per 100,000 males aged 12–24 years in 1997 to 15.4 in 2000 while that for females of the same age group declined from 6 per 100,000 in 1997 to 4.5 in 2000 (Figure 4.11). In comparison, between 1921–1925 and 1996–1998, the biggest increases in death rates due to suicide occurred in males aged 15–19 and 20–24 years, where the rates more than tripled.



Notes: ICD-9 codes for suicide are 950–959 (1980 to 1996) and ICD-10 are X60–X84 (1997 to 2000). ICD-9 codes for deaths related to drug dependence are 303–304 (1980 to 1996) and ICD-10 codes are F102, F112, F132, F152, F162, F182, F192 (1997 to 2000).

Source: AIHW National Mortality Database.

Figure 4.11: Suicide and drug dependency mortality rates among young people aged 12–24 years, 1980 to 2000 (rate per 100,000)

Death rates attributed to drug dependence rose sharply between 1993 and 1998, but the rate declined in the following 2 years. In 2000, drugs were responsible for 108 deaths of young people aged 12–24 years (83 males and 25 females). These accounted for 6% of all deaths of young people. The rate of deaths related to drug dependence for young males in 2000 was over 3 times that for young females (Figure 4.11). For males the rate increased by 200% from 1.6 per 100,000 males aged 12–24 years in 1980 to 4.8 in 2000, compared with an increase of 88% from 0.8 per 100,000 females aged 12–24 years in 1980 to 1.5 in 2000.

Considerable differences exist in the health status of male and female young people. Male deaths outnumber female deaths by almost 3 to 1 with the difference highest in the age group 20–24 years. Car accidents and suicides of males account for most of this difference. Differences also occur between socioeconomic groups. In males, the differences in death rates between the lowest socioeconomic group (which has the highest death rates) and the highest socioeconomic group increased between 1985–1987 and 1995–1997. Males in the lowest socioeconomic group quintile died at 1.7 times the rate of males in the highest socioeconomic quintile in the period 1995–1997 (AIHW 2000). For females in the same socioeconomic groups, the differences were less marked.

In contrast, females have three times the male rate of depressive illnesses. Females are hospitalised at higher rates than males in all age groups for parasuicide (self-harm not resulting in death), although completed suicide rates for males are higher.

Death rates among Aboriginal and Torres Strait Islander young people are of particular concern. In 2000 the age-specific death rate was 168.1 per 100,000 young Indigenous people aged 15–24 compared with 59.9 per 100,000 other Australians of the same age group.

4.4 Older people (aged 65 and over)

The Commonwealth, State and Territory Strategy on Healthy Ageing (Healthy Ageing Task Force 2000) highlights the improved health and wellbeing of older Australians as a major goal for the next 5 years. This growing recognition of the concept of healthy ageing goes hand in hand with a continuing appreciation of the impact of the ageing of the Australian population. In 2001, there were 2.4 million people aged 65 and over in Australia, and this number is projected to be 5.4 million in 2031 (AIHW 2001a). Also, declining mortality rates and increased life expectancy have led to an extended period of life which is spent in 'old age', and greater acknowledgment of the many different activities, opportunities and contributions which can characterise this phase of the life cycle.

The strategy suggests that priority should be given to health promotion, prevention of disease and rehabilitation programs for older people. It also emphasises the importance of encouraging older people to remain active in their communities and hence to improve their health and wellbeing. Initiatives to assist groups such as older people from culturally and linguistically diverse backgrounds, those with disabilities, and the Indigenous population were identified as important areas for action (Healthy Ageing Task Force 2000). Broader social factors are also significant contributors to good health in old age. A lifetime of higher education, higher labour force participation and income, supportive personal and social environments, good medical care and good superannuation entitlements all contribute to better life chances in old age and thus to a higher likelihood of maintaining good health at advanced ages.

Life expectancy

Life expectancy at birth increased for both men and women throughout the twentieth century. Whereas most of the gains earlier in the twentieth century resulted from a reduction in death rates at younger ages, the latter part of the century saw an increase in life expectancy at older ages. At age 65 in 2000, males can expect to live a further 16.6 years and women 20.2 years.

In recent years, the life expectancy of males has been increasing at a faster rate than that of females. In the last 20 years, the life expectancy of males at birth has increased from 71.2 in 1980 to 76.5 in 2000 (an increase of 7.4%), and that at age 65 has increased from 78.8 to 81.6 years (an increase of 3.6%). For females, life expectancy at birth has increased from 78.3 to 81.9 (4.6%) and from 83.0 to 85.2 years (2.7%) at age 65. The faster increase in life expectancy among men has resulted in an increase in the male to female sex ratio for people aged 65 and over from 0.73 in 1980 to 0.79 in 2000. The numerical predominance of older women is declining.

Table 4.3: Disability status of primary carers, 1998

Age	Core activity restriction: Profound or severe	Moderate	Mild	All with specific restrictions	All with disability
			Males (number)		
Under 65	*4,102	14,970	11,884	30,956	39,243
65 and over	*4,807	*7,285	*7,342	19,434	21,522
Total	***8,909**	**22,255**	**19,226**	**50,390**	**60,765**
			Females (number)		
Under 65	24,466	15,041	28,056	67,563	84,785
65 and over	*8,500	11,050	9,303	28,853	31,969
Total	**32,966**	**26,091**	**37,359**	**96,416**	**116,754**
			Males (per cent of all carers with a disability)		
Under 65	*2.3	8.4	6.7	17.4	22.1
65 and over	*2.7	*4.1	*4.1	10.9	12.1
Total	***5.0**	**12.5**	**10.8**	**28.4**	**34.2**
			Females (per cent of all carers with a disability)		
Under 65	13.8	8.5	15.8	38.1	47.8
65 and over	*4.8	6.2	5.2	16.3	18.0
Total	**18.6**	**14.7**	**21.0**	**54.3**	**65.8**

Note: Estimates marked * have an associated relative sampling error of between 25% and 50%. These estimates should be interpreted accordingly.

Source: AIHW analysis of ABS Survey of Disability, Ageing and Carers confidentialised unit record file.

Disability levels

The proportion of the population with a severe or profound core activity restriction, as defined by the Australian Bureau of Statistics in their 1998 Survey of Disability, Ageing and Carers (ABS 1999a), is a good indicator of need for assistance. It includes those who sometimes or always require assistance with self-care, mobility or communication. In the population aged 65 and over, 83.7% of men and 75% of women did not have a profound or severe core activity restriction. The proportion of older people with a severe or profound disability is quite low among older people until age 75. For men, the proportion with a severe or profound core activity restriction increased from 7.8% at age 65–69 to 19.0% at age 75–79, and to 56.0% at age 85 and over. For women the comparable figures at the three ages were 9.2%, 24.9% and 68.8% (AIHW 1999). Women had higher rates of profound or severe core activity restriction than did men, particularly at older ages. At age 80 and over, 51.1% of women and 36.5% of men had a profound or severe core activity restriction.

Looking at the proportion of people with a 'disability', as defined by the above ABS survey, it is important to understand the meaning of disability as used in that survey. Disability is defined as having one or more of 17 limitations, restrictions or impairments. These range from conditions such as 'loss of speech' to 'any…long-term condition that restricts everyday activities'. Importantly, having a 'disability' does not imply a need for assistance.

It is interesting to note that a significant proportion of primary carers themselves have a disability (Table 4.3). Of those carers with a disability, 65.8% were female and 34.2% were male. The majority of carers with a disability (82.7%) had a specific restriction. Of carers with a specific restriction, 31.8% had a mild restriction, 27.2% had a moderate restriction and 23.6% had a severe or profound restriction. The proportion of older carers who were classified as having a severe or profound core activity restriction was 2.3% for males and 13.8% for females aged under 65, and 2.7% for males and 4.8% for females aged 65 and over.

Table 4.4: Patients aged 65 and over—separations for the most frequently occurring principal diagnoses, 1999–00

Principal diagnosis	Separations
Care involving dialysis	227,902
Other medical care	87,127
Other cataract	74,424
Care involving use of rehabilitation procedures	65,026
Angina pectoris	54,958
Other cancer of skin	38,204
Heart failure	36,229
Other chronic obstructive pulmonary disease	33,939
Senile cataract	30,735
Pneumonia, organism unspecified	26,385
Diverticular disease of intestine	23,192
Acute myocardial infarction	21,282
Pain in throat and chest	20,921
Atrial fibrillation and flutter	20,387
Follow-up examination after treatment for cancer	20,302

Source: AIHW National Hospital Morbidity Database.

Table 4.5: Patients aged 65 and over—separations for the most frequently occurring principal procedures, 1999–00

Principal procedure	Separations
Generalised allied health interventions	712,158
Haemodialysis	230,732
Extracapsular crystalline lens extraction by phacoemulsification	93,757
Transfusion of blood and gamma globulin	92,936
Intravenous chemotherapy	81,939
Panendoscopy with excision	70,737
Fibreoptic colonoscopy	67,092
Computerised tomography of brain	59,004
Injection or infusion of therapeutic or prophylactic substance	53,028
Fibreoptic colonoscopy with excision	49,516

Source: AIHW National Hospital Morbidity Database.

Main reasons for hospitalisation

In 1999–00 there were 1.9 million hospital separations for people aged 65 and over (AIHW 2001b). Tables 4.4 and 4.5 report on the principal diagnoses and the main procedures performed on the patients while in hospital care. In 1999–00, the most common reason for admission for older Australians was dialysis (227,902 separations), followed by other medical care (87,127). Diagnoses associated with heart disease represented one-third of the top 15 principal diagnoses (a total of 153,777 separations). The most commonly reported procedures for older Australians during hospitalisation were generalised allied health interventions (712,158 separations), followed by haemodialysis (230,732) and extraction of eye lens (93,757 separations).

Main causes of death

The main causes of death for both men and women aged 65 and over were diseases of the circulatory system, cancers and diseases of the respiratory system. Together, these three categories accounted for about three-quarters of deaths among people aged 65 and over. Among men aged 65 and over, circulatory diseases accounted for 40.7% of all causes of death, and cancer and respiratory diseases accounted for 30.3% and 10.8% respectively. The proportion of women aged 65 and over dying from circulatory diseases was higher than that for men, at 47.5%, whereas deaths from cancer (21.4%) were fewer and deaths from respiratory diseases (8.8%) differed only slightly. These patterns were not unlike those appearing in the total population.

Deaths from injury and poisoning are of particular interest, due to the common occurrence of falls in older people. Female deaths from injury and poisoning were quite similar in both the 65 and over age group and the total population. For males, however, there was a marked difference, with the percentage of deaths from injury and poisoning in the total population being more than three times that of men aged 65 years and over (Table 4.6).

Table 4.6: Selected major causes of death in the total population and for people aged 65 and over, 2000

	65 and over		Total population	
Cause of death	**Males**	**Females**	**Males**	**Females**
		Number		
Circulatory disease	19,960	24,466	23,756	25,931
Cancer	14,874	11,003	20,153	15,475
Respiratory disease	5,276	4,509	5,923	4,984
Injury and poisoning	1,128	1,162	5,517	2,581
All causes	**49,012**	**51,462**	**66,817**	**61,474**
		Per cent of all causes		
Circulatory disease	40.7	47.5	35.6	42.2
Cancer	30.3	21.4	30.2	25.2
Respiratory disease	10.8	8.8	8.9	8.1
Injury and poisoning	2.3	2.3	8.3	4.2

Source: AIHW National Mortality Database.

Table 4.7: Selected specific causes of death per 100,000 people aged 65 and over, 1991 and 2000

	Males		Females	
Cause of death	**65–74**	**75+**	**65–74**	**75+**
		1991		
Cerebrovascular disease	198.7	535.0	141.5	1,139.9
Prostate cancer	112.9	228.3	—	—
Breast cancer	1.3	0.7	96.4	143.2
Emphysema	30.3	43.0	9.8	20.7
Accidental falls	9.2	18.2	5.4	27.4
		2000		
Cerebrovascular disease	148.7	853.0	95.5	987.1
Prostate cancer	109.8	434.6	—	—
Breast cancer	0.3	1.9	74.4	132.3
Emphysema	22.7	73.2	11.4	19.1
Accidental falls	6.6	32.2	4.4	29.2

Source: AIHW National Mortality Database.

Looking within these broad groupings at more specific causes of death among older people, falls, cerebrovascular disease (stroke), prostate cancer, breast cancer and emphysema all account for a high proportion of deaths. Death rates per 100,000 people aged 65–74 show that males have a higher rate from accidental falls, stroke and emphysema than females. In people aged 75 and over, however, females have a higher rate of death from stroke, and a slightly lower rate of death from falls. The death rate of males from emphysema is almost four times that of females (Table 4.7).

The death rate from breast cancer in older females has dropped from 96.4 per 100,000 women aged 65–74 in 1991 to 74.4 per 100,000 in 2000, while for females aged 75 and over the decrease during the same period has been from 143.2 to 132.3. Death rates from prostate cancer have fallen slightly during this time from 112.9 to 109.8 per 100,000 men aged 65–74. For men aged 75 and over, however, there has been a large increase in deaths from prostate cancer, from 228.3 in 1991 to 434.6 in 2000. For both men and women, the death rate from accidental falls is substantially higher in the 75 and over group, compared with the 65–74 age group (Table 4.7).

Falls in older people

One of the major areas of interest in the health of older people is the impact of falls and their prevention. Falls are responsible not only for pain and suffering in older persons, but also for a significant number of deaths. Typically the consequences of falls are cuts, bruising and occasional burns. The more serious conditions reported are fractures to the upper limbs, lower limbs, neck and trunk. Death as a result of falls occurred on 1,104 occasions in 1998. It has been reported (AIHW: Cripps & Carman 2001) that there were 45,069 episodes of hospital care as a result of falls in 1997–98 in those over age 65. Analyses show several key factors:

- the risk of hospitalisation resulting from a fall increases with age
- falls predominantly occur through stumbles or trips on same-level surfaces (39%)

Box 4.2: Fall-prevention strategies

There are a number of fall-prevention strategies targeted at older people. The National Falls Prevention in Older People Initiative (Department of Health and Ageing) seeks to draw together a number of elements, although there are a number of prevention strategies implemented by health authorities across all levels of government and non-government organisations.

These strategies include interventions such as home assessment and modification, which have been shown to be beneficial, e.g. installation of hand-rails, improved lighting, non-slip strips, repair of risk items. These home-based hardware solutions can also be supplemented by more personal solutions such as walking aids, non-slip footwear, hip protectors, glasses and hearing aids. Another area of personal intervention relates to the assessment of medications and their potential contribution to falls.

Exercise programs are operated by a range of government and non-government organisations to increase strength, agility and balance in older persons. These programs aim to improve a person's ability to avoid falls, minimise the impact of falls or recover from them more quickly. These programs also have benefits which extend to improving risks of other health conditions, e.g. heart disease, osteoporosis. Education of older persons is an important element in the fall-prevention strategy, encouraging awareness of the risks and the consequences of falls. These messages are often incorporated in interactions with community nurses, doctors, health centres, community activities and broader public health messages.

The activation of strategies in this area has been recent. It is expected that their impact will be shown over the next 3–5 years, and they will be important as a greater proportion of Australia's population moves into this higher risk age group.

- trends over the period 1993–94 to 1997–98 show an increased number of hospitalisations as the aged population increases, but a relatively stable hospitalisation rate
- trends in deaths rates have fallen significantly between the 1980s and 1990s.

It is well recognised that the circumstances leading to falls are complex and varied, but the main factors contributing to falls are related to the person at risk, taking into account their physical ability, medical conditions, walking ability, the effect of medications and alcohol, their familiarity with the activity and the physical environment (e.g. surfaces, lighting).

Given these contributing factors, the pattern of occurrence is relatively stable. The majority of falls take place in the home (49%), in public spaces (17%) and in residential care environments (14.8%) (AIHW: Cripps & Carman 2001). It is this distribution and the contributing factors described above that drive a number of strategies to prevent falls in older persons and/or minimise their impact.

4.5 Overseas-born people

Australia is an ethnically diverse nation. The 1999 ABS population estimates show that about 25% of Australians were born overseas. More than half of these Australian residents were born in a non-English-speaking country.

Box 4.3: Country of birth categories

Countries classified according to the Australian Standard Classification of Countries for Social Statistics are grouped here into four birthplace groups:

United Kingdom and Ireland: *Form a distinct category that is not easily separated in population statistics.*

Other Europe: *Continental Europe including Eastern Europe, former USSR and Baltic states.*

Asia: *North-East, South-East and Southern Asia, Middle East and Northern Africa.*

Other: *Southern Africa, the Americas, New Zealand and the Pacific Region. New Zealand is the largest source country, constituting around 30% of this group.*

Migrants bring to Australia their own unique health profiles. The stringent health requirements for immigration ensure that most migrants enjoy good health, if not better health than the Australian-born population. This is known as the 'healthy migrant effect'. Immigrants generally have lower death rates and hospitalisation rates, as well as lower prevalence of certain lifestyle-related risk factors. There are also variations in the health status of migrants according to birthplace, age, socioeconomic status, fluency in the English language and satisfaction with their job and life in Australia (Kliewer & Jones 1998). However, Young (1992) has shown that as length of residence in Australia increases the relative advantage that migrants have over Australian-born people decreases. It is important to remove this age effect so that clear comparisons of country of birth and length of residence can be made.

For purposes of health comparison, immigrants may be grouped into four broad regional groups—the United Kingdom and Ireland, Other Europe, Asia and Other (Box 4.3). These regional groups exhibit significant variation in their age structures, depending on the period in which they arrived. Migrants from Asia and Other regions, for example, are mainly young, with large numbers aged between 20 and 44 years, whereas migrants from the United Kingdom and Ireland and Other Europe have median ages around 50 years. To enable meaningful comparisons to be made, variation in the health status among these populations due to different age structures has been adjusted by age-standardisation.

Mortality and morbidity

Mortality differentials are measured in terms of rate ratios. Table 4.8 compares the death rates for the overseas-born with the Australian-born for the period 1997–1999 using standardised mortality ratios. The standardised mortality ratios for all causes are lower for both males and females in all four birthplace categories than in the Australian-born. Death rates among migrants from the United Kingdom and Ireland were closest to the rates for Australian-born people. In comparison, migrants from Asia and North Africa have much lower standardised mortality ratios, with death rates 27% lower among males and 20% lower among females than their Australian-born counterparts.

Table 4.8: Mortality differentials by birthplace, people aged 15 years and over, 1997–1999

	Males					Females				
		Standardised mortality ratio[a] (Australian-born = 1.0)					Standardised mortality ratio[a] (Australian-born = 1.0)			
Cause of death	**Deaths**	**UK and Ireland**	**Other Europe**	**Asia**	**Other**	**Deaths**	**UK and Ireland**	**Other Europe**	**Asia**	**Other**
Infectious	1,934	*0.76	1.05	*1.81	1.01	1,989	1.04	*1.27	*1.50	1.07
AIDS[b]	567	*0.74	*0.56	*0.62	*1.80	49	1.37	—	2.61	2.10
Cancers	59,726	*0.95	*0.88	*0.69	*0.85	46,178	*1.04	*0.86	*0.79	*0.94
Lung	13,811	*1.17	1.03	*0.79	*0.87	6,209	*1.43	*0.68	*0.77	1.07
Skin	2,552	*0.41	*0.33	*0.15	*0.53	1,369	*0.52	*0.32	*0.15	*0.72
Prostate	7,522	*0.82	*0.64	*0.45	*0.77	n.a.	n.a.	n.a.	n.a.	n.a.
Breast	n.a.	n.a.	n.a.	n.a.	n.a.	7,648	*1.11	*0.84	*0.71	1.04
Cervix	n.a.	n.a.	n.a.	n.a.	n.a.	772	0.96	0.88	1.28	*1.64
Diabetes mellitus	4,454	*0.84	*1.28	*1.39	0.91	4,344	*0.79	*1.62	*1.66	*1.27
Cardiovascular	75,420	*0.87	*0.85	*0.76	*0.86	80,090	*0.88	*0.83	*0.81	*0.90
Ischaemic	45,527	*0.89	*0.86	*0.75	*0.86	39,198	*0.89	*0.84	*0.76	*0.91
Stroke	14,650	*0.83	*0.83	*0.82	*0.87	22,043	*0.78	*0.78	*0.92	*0.90
Respiratory	16,018	*0.93	*0.62	*0.59	*0.73	13,147	*1.09	*0.49	*0.59	*0.85
Digestive	6,097	*0.87	*0.85	*0.72	*0.70	5,979	1.02	*0.75	*0.71	*0.79
Injury and poisoning	16,278	*0.92	*0.82	*0.56	1.01	7,001	*0.87	0.94	*0.81	1.04
Motor vehicle	4,071	0.87	*0.71	*0.60	0.97	1,552	*0.90	1.04	0.94	1.01
Suicide	6,221	0.91	*0.78	*0.40	1.01	1,574	*0.79	1.00	*0.72	1.08
Homicide	561	0.76	1.12	*1.38	1.19	282	0.65	1.29	1.15	0.97
All causes	197,022	*0.90	*0.84	*0.73	*0.85	179035	*0.95	*0.83	*0.80	*0.91

* Significantly different from 1.00 at the 5% level.

(a) The standardised mortality ratio (SMR) is a measure of death from a specific condition in the overseas-born population relative to the Australian-born population. The ratio for Australian-born is 1.00, and ratios that exceed 1.00 indicate a relatively greater mortality in that population than for the Australian-born. Likewise, ratios less than 1.00 indicate a lower death rate for a given cause of death than for the Australian-born.

(b) All deaths where AIDS is mentioned on the death certificate, regardless of whether it is identified as the primary cause of death.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

Mortality by cause of death shows significant variation between overseas-born population groups. Table 4.8 shows that migrant groups in Australia have lower levels of cardiovascular mortality compared with the Australian-born population. However, studies show that rates tend to increase after the migrants' first 10 years of residence in Australia (NHF 1996). Research also indicates that physical inactivity, a risk factor for cardiovascular disease, is more common among people from southern, northern and eastern Europe, Asia, the Middle East and North Africa, in comparison with their Australian-born counterparts. Exercise levels are reported to increase with length of stay in Australia (NHF 1996).

Deaths from cancers also show variation. Death rates from lung cancer for both males and females born in the United Kingdom and Ireland, and for males born in Other Europe were higher than for males and females born in Australia. Females born in the

United Kingdom and Ireland had higher death rates for breast cancer. Cervical cancer death rates among women born in Asia and Other countries were higher than among Australian-born women. However, Australian-born males had higher death rates for prostate cancer than all other birthplace groups. Immigrants from all regions have much lower death rates for skin cancer compared with Australian-born persons. Smoking, diet, sun exposure, alcohol consumption, and utilisation of health care services such as screening programs all play a role in creating the differentials related to cancer risk. Development of culturally appropriate models of preventive healthcare delivery are some of the most effective ways to overcome access and equity concerns regarding the health of overseas-born people (DHFS & AIHW 1998b).

Table 4.9: Standardised hospital separation ratios by principal diagnosis, people aged 15 years and over, 1999–00

	Males					Females				
		Standardised hospital separation ratio[(a)] (Australian-born = 1.0)					Standardised hospital separation ratio[(a)] (Australian-born = 1.0)			
Principal diagnosis	**Seps.**	**UK and Ireland**	**Other Europe**	**Asia**	**Other**	**Seps.**	**UK and Ireland**	**Other Europe**	**Asia**	**Other**
Infectious	62,641	*0.75	*0.70	*0.89	*0.89	23,520	*0.79	*0.68	*0.81	*0.90
Tuberculosis	62,641	*0.75	*0.70	*0.89	*0.89	23,520	*0.79	*0.68	*0.81	*0.90
Cancers	197,173	*0.70	*0.72	*0.53	*0.77	200,670	*0.80	*0.77	*0.67	*0.85
Skin	3,579	*0.42	*0.26	*0.06	*0.61	2,948	*0.50	*0.25	*0.15	*0.53
Lung	10,870	1.02	1.01	*0.71	0.90	5,489	*1.29	*0.69	*0.62	*0.79
Prostate	12,555	*0.68	*0.61	*0.44	*0.80	n.a.	n.a.	n.a.	n.a.	n.a.
Breast	n.a.	n.a.	n.a.	n.a.	n.a.	19,183	0.98	*0.81	*0.70	0.97
Cervix	n.a.	n.a.	n.a.	n.a.	n.a.	2,021	*0.85	*0.83	*1.42	*1.62
Diabetes mellitus	11,682	*0.69	*0.77	*0.60	*0.74	10,294	*0.58	*0.87	*0.66	*0.64
Mental	101,823	*0.66	*0.60	*0.36	*0.61	115,609	*0.79	*0.74	*0.33	*0.70
Cardiovascular	235,536	*0.78	*0.86	*0.75	*0.87	179,975	*0.82	*0.94	*0.76	*0.88
Ischaemic	100,147	*0.79	*0.82	*0.82	*0.90	53,030	*0.82	*0.88	*0.79	*0.94
Stroke	20,490	*0.71	*0.88	*0.81	*0.79	18,488	*0.78	*0.88	0.95	0.93
Respiratory	110,330	*0.77	*0.74	*0.62	*0.78	105,452	*0.81	*0.62	*0.57	*0.77
Asthma	5,234	*0.65	*0.38	*0.58	*0.87	11,238	*0.68	*0.42	*0.66	0.92
Digestive	304,357	*0.78	*0.78	*0.68	*0.79	330,384	*0.82	*0.80	*0.66	*0.80
Injury and poisoning	187,953	*0.73	*0.64	*0.45	*0.79	144,344	*0.83	*0.73	*0.56	*0.81
All causes	**2,334,979**	***0.73**	***0.83**	***0.73**	***0.81**	**2,854,911**	***0.77**	***0.82**	***0.75**	***0.87**

* Significantly different from 1.00 at the 5% level.

(a) The standardised hospital separation ratio is a relative measure of hospital use between the overseas-born and Australian-born populations. The ratio for Australian-born is 1.00, and ratios that exceed 1.00 indicate relatively greater hospital use in that population than for the Australian-born. Likewise, ratios less than 1.00 indicate less hospital use due to a given cause than for the Australian-born population.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Morbidity Database.

Standardised mortality ratios for diseases of the respiratory system and diseases of the digestive system among people born overseas are lower than in the Australian-born population across all regions, except for females born in the United Kingdom and Ireland. Mortality rates for diabetes are higher for those born in Other Europe, Asia and Other countries relative to the Australian-born population. The prevalence of diabetes is high for certain immigrant groups compared with the Australian-born group, particularly among people of European, Pacific Islander and Asian origin (DHAC & AIHW 1999b). There is a need to provide information and education for effective self-management of diabetes, since poor glycaemic control is common and more marked among migrant groups (FECCA 1997).

Motor vehicle accident and suicide death rates are much higher among Australian-born males compared with their overseas-born counterparts.

Morbidity is presented in terms of hospitalisations for various diseases. Hospitalisation rates for 1999–00 for overseas-born people generally reflect the corresponding mortality patterns, and indicate lower morbidity compared with Australian-born people for both males and females (Table 4.9).

Asian-born migrants had the lowest hospitalisation rates in 1999–00. However, the hospitalisation rates for tuberculosis among Asian-born migrants were much higher than for other population groups. The hospitalisation rates for cancer of the cervix among females from Asia (rate ratio 1.42) and Other countries (rate ratio 1.62) were also higher than for the Australian-born females. Lung cancer among females born in the United Kingdom and Ireland (rate ratio 1.29) was the only other principal diagnosis among immigrant groups having a significantly higher rate than the Australian-born population.

One of the most notable differences was for skin cancer, for which the hospitalisation rate for the overseas-born population was less than half that of the Australian-born. Among the overseas-born groups, the Asian-born males and females had less than one-tenth of the rate of their Australian-born counterparts. Risk factors for skin cancer include increased exposure to sun early in life, fair complexion, freckles and ease of sunburn.

Contrary to the usual association between mortality and hospitalisation, there were some contradictions. For example, for infectious diseases, Asian-born males had a lower hospitalisation rate but a higher death rate than did Australian-born males. Similarly, for diabetes mellitus, Asian and Other European-born groups had lower hospitalisation rates and higher death rates than their Australian-born counterparts.

4.6 Aboriginal and Torres Strait Islander Australians

Aboriginal and Torres Strait Islander peoples suffer a greater burden of ill health than other Australians. Indigenous people are more likely to experience disability and reduced quality of life due to ill health, and die at younger ages (see ABS & AIHW 2001 for a detailed report). Census data indicate that the Indigenous population is disadvantaged across a range of socioeconomic factors that have an impact on health outcomes. In 1996, Aboriginal and Torres Strait Islander peoples reported lower incomes than other Australians, higher rates of unemployment, poorer education outcomes and lower rates of home ownership (ABS 1998a). However, socioeconomic status alone does not explain the variations in health status that exist between Indigenous and other Australians. Health risk behaviours (e.g. smoking, alcohol misuse) and other health risk factors (e.g. poor housing, exposure to violence) are also important determinants of health, but even these do not fully explain the differential burden of disease between population groups. Research suggests that the social environment partially explains health outcomes, including the immediate local or neighbourhood environment, social connections with friends, family and the community, the extent of control and perceptions of mastery in the workplace and wider society (ABS & AIHW 2001). A recent qualitative analysis of the health of the Yolgnu Indigenous people of north-east Arnhem Land identified the loss of control as leading to hopelessness, the loss of the will to live and, ultimately, to high levels of sickness and mortality (Trudgen 2000). Although the incomplete recording of Indigenous status in administrative records and the experimental nature of Indigenous population estimates remain barriers to the production of a true picture of Indigenous health in Australia, an increased emphasis on the inclusion of an Indigenous identifier in a range of surveys and administrative data sets is a key strategy in providing good-quality information about the health of Indigenous Australians in the future (ATSIHWIU 1997). Even though a comprehensive picture of Indigenous health is not yet available, this section provides information on Aboriginal and Torres Strait Islander peoples where data are of adequate reliability.

Coverage of the Indigenous status of people in birth and death registration is improving in Australia, but the data collected from deaths registrations is not yet of high enough quality in all States and Territories, and cannot provide national estimates. Thus, data from Queensland, Western Australia, South Australia and the Northern Territory are used to provide indicative information.

Records of hospital use or general practice encounters cannot provide an understanding of the prevalence of particular diseases in the Indigenous population, and the extent of undercounting of Indigenous people in these data sources is not known. However, information from hospitals and general practitioners provides broad indications of the burden of chronic conditions and acute illnesses in comparison to the rest of the Australian population. At present, there is no national data source for conditions treated by primary healthcare providers such as Aboriginal health workers or nurses. Other sources of data have the ability to identify Indigenous peoples such as the Aboriginal Medical Services, disease registers and national household surveys with supplementary Aboriginal and Torres Strait Islander samples. Such data sources provide detailed information on specific diseases, risk factors and living conditions.

The Indigenous population

The Indigenous population in Australia is estimated at 386,049, based on 1996 Census figures, representing 2.1% of the total Australian population. Approximately 11% of Indigenous people counted in the Census reported that they were of Torres Strait Islander origin. More than half of all Indigenous people live in New South Wales and Queensland, with the majority residing in urban areas. New South Wales has the greatest number of Indigenous people (110,000) and the Northern Territory has the highest proportion of Indigenous people, at approximately 28% of all residents. Almost 20% of the total Indigenous population live in areas that are classified as very remote, compared with only 1% of the other Australian population.

The Indigenous population is much younger than the general population. In 1996, the median age for Indigenous people was 20 years, compared with a median age of 34 years for the total Australian population. Fertility is higher for the Aboriginal and Torres Strait Islander populations and Indigenous women give birth at younger ages than other Australian women. In the period 1996–1998, over 80% of Indigenous mothers had babies before the age of 30. The comparable figure for other Australian mothers was 54%. The estimated life expectancy at birth for Aboriginal and Torres Strait Islander males and females is 19–20 years lower than for other Australians. In the period 1997–1999, the life expectancy at birth for the Indigenous population was estimated to be 56 years for males and 63 years for females. In contrast, the life expectancy at birth for all Australians was 76 years for males and 82 years for females. The 1997–1999 Indigenous life expectancies are similar to life expectancy for the total male population in the period 1901–1910, and for the total female population in the period 1920–1922 (ABS 2000c).

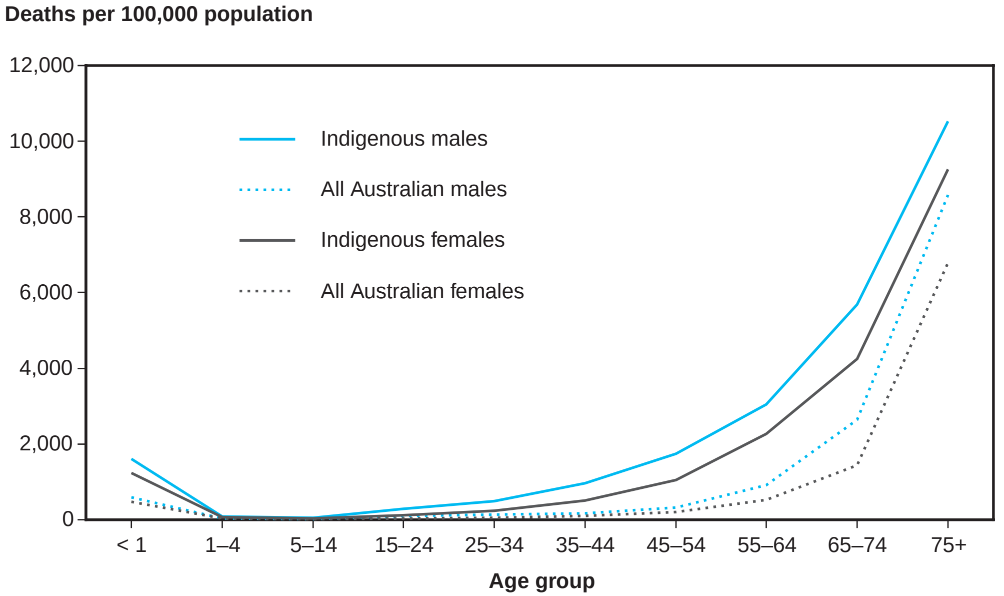
Measures of health status

Mortality

In the four jurisdictions where mortality data are reliable, the 1997–1999 age-specific death rates for Aboriginal and Torres Strait Islander peoples were higher than the all-Australian rates in every age group (Figure 4.12). The largest relative differences in age-specific death rates occurred for ages 35–54, where Indigenous rates were 5–6 times higher than all-Australian rates. There were also substantial differences between the 25–34 and 55–64 age groups, where the Indigenous age-specific death rates were 3–5 times higher than the all-Australian rates.

After adjusting for age difference, death rates were higher for Indigenous people than for Australians as a whole for almost all causes of death. Diseases of the circulatory system, deaths resulting from external causes (predominantly accidents, self-harm and assault), neoplasm (cancers), respiratory diseases, and endocrine/metabolic diseases accounted for the greatest numbers of deaths among Indigenous people in the period 1997–1999 (Table 4.10). These were also the leading causes of death among the Australian population as a whole, accounting for about 75% of all deaths. However, both Indigenous males and Indigenous females had higher death rates, and were more likely to die at younger ages from these causes, than the general population.

Infant mortality rates reported here are produced from data provided by all States and Territories for the 3-year period 1996–1998 (ABS & AIHW 2001). During that period, babies of Indigenous mothers were twice as likely to die at birth and during the early post-natal phase than babies born to other Australian mothers (Figure 4.13). Although it is difficult to assess trends due to uncertainties about the extent to which women are identified as Indigenous in the perinatal collections, the overall infant mortality rate for this period is similar to that for 1994–1996.



Note: Data are for deaths identified as Indigenous for usual residents of Queensland, South Australia, Western Australia and Northern Territory combined, based on year of registration.

Source: ABS Deaths Registration Database.

Figure 4.12: Age-specific death rates, 1997–1999

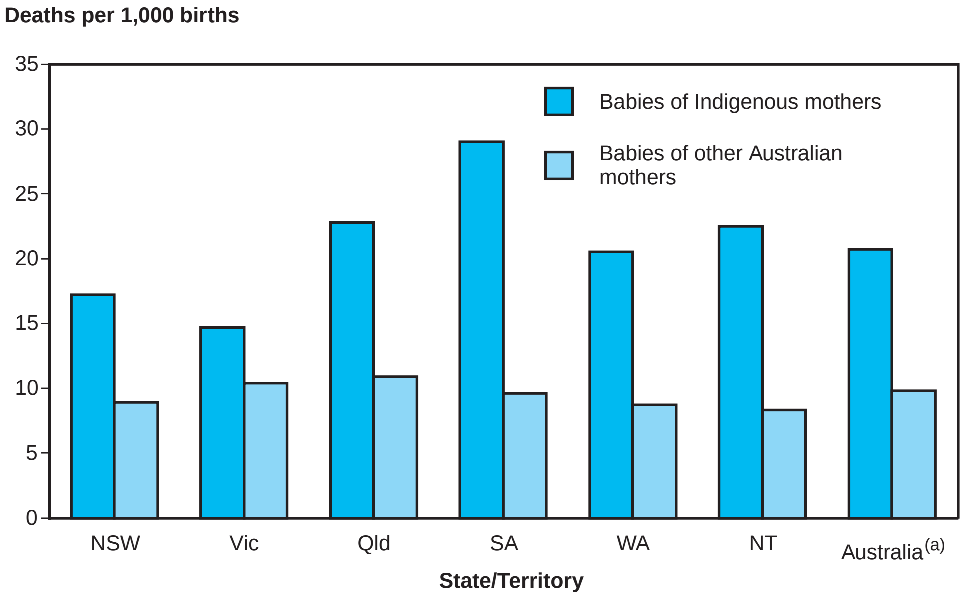
Table 4.10: Deaths from selected causes in Indigenous people, 1997–1999[(a)]

	Indigenous males		Indigenous females	
Cause of death	**Number**	**SMR[(b)]**	**Number**	**SMR[(b)]**
Circulatory disease	750	3.1	568	2.8
External causes	496	2.8	205	3.3
Neoplasms	320	1.4	267	1.4
Respiratory diseases	206	4.1	159	4.0
Endocrine/metabolic conditions	169	7.2	202	9.4
Digestive diseases	119	4.7	96	4.9
Mental disorders	62	2.4	34	2.3
Genitourinary diseases	58	5.8	85	7.6
Infectious/parasitic diseases	58	4.2	45	5.4
Nervous system disorders	55	2.3	39	1.8
Ill-defined causes	76	6.0	43	5.3
All causes	**2,515**	**2.9**	**1,864**	**2.9**

(a) Data from Queensland, South Australia, Western Australia and the Northern Territory combined, based on year of registration.

(b) Standardised mortality ratio (SMR) = observed deaths divided by expected deaths, based on all-Australian age-, sex- and cause-specific rates.

Source: ABS Death Registration Database.



(a) Australian figures include Tasmania and Australian Capital Territory.

Note: Data for Tasmania and the ACT are not presented due to small numbers.

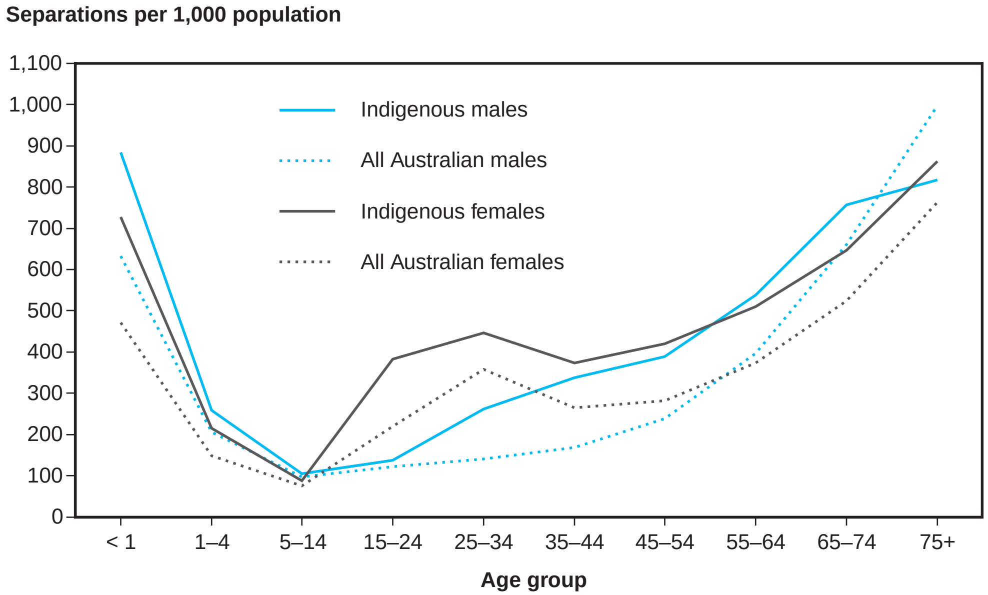
Source: AIHW National Perinatal Statistics Unit, perinatal collection, 2001.

Figure 4.13: Perinatal death rates, 1996–1998

The infant mortality rate for babies born to Torres Strait Islander mothers in Queensland (21.8 per 1,000 births) was similar to that for babies born to Aboriginal mothers (22.6 per 1,000 births), but twice as high as the rate for babies born to other Australian mothers (10.6 per 1,000 births) (Perinatal Data Collection, Queensland Health). A study that examined 10 years of Queensland perinatal data showed a higher rate of neonatal mortality (death before 28 days) for babies of Torres Strait Islander mothers, and suggested that this outcome for the babies may be related to the high prevalence of diabetes among the mothers (Coory 2000).

Common diseases

In 1998–99, Indigenous people in every age group were more likely than other people to be hospitalised for most diseases and conditions, indicating a higher occurrence of illness at more acute levels (Figure 4.14). Excluding hospital episodes for dialysis, which is the highest frequency treatment in hospital for Indigenous people, the main reasons for Indigenous males to be hospitalised during this period were injuries and poisoning (13% of Indigenous male hospital stays), respiratory disease (12%), digestive diseases (7%) and mental and behavioural disorders (6%). For Indigenous females, pregnancy and childbirth were common reasons for hospitalisation (17% of all hospital stays for Indigenous women), followed by respiratory diseases (9%), injury and poisoning (8%) and digestive diseases (5%).



Note: Data are from public and most private hospitals.

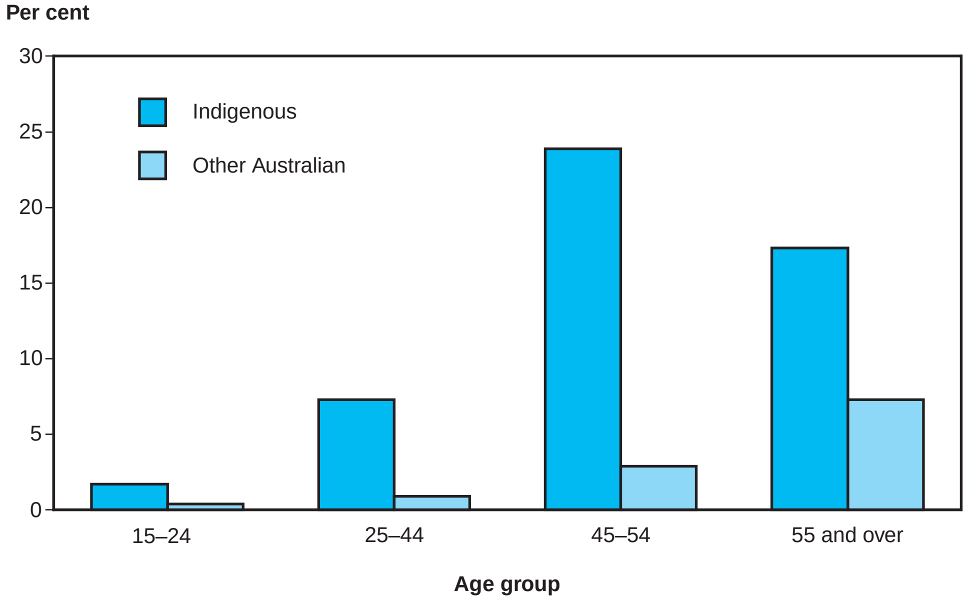
Source: AIHW National Hospital Morbidity.

Figure 4.14: Hospital separation rates, all causes excluding dialysis, 1997–98

The six most frequent problems managed by GPs for Indigenous patients between April 1998 and December 2000 were upper respiratory infection, diabetes, hypertension, asthma, acute bronchitis/broncholitis and acute otitis media/myringitis. This compares with the six most common problems, hypertension, upper respiratory infection, immunisation, depression, asthma and acute bronchitis/bronchiolitis managed for other Australian patients (AIHW General Practice Statistics and Classification Unit, unpublished).

Kidney disease is more prevalent among Indigenous people than among other Australians. Deaths from kidney failure are eight times greater for Indigenous males and five times greater for Indigenous females than for the general population. The most common principal diagnosis in Australian hospitals in the period 1998–99 for both Indigenous males and females was for 'care involving dialysis', haemodialysis being the most common procedure. Patients with end-stage renal disease may be admitted to hospital several times a week for treatment. When compared with all patients receiving haemodialysis, there were over six times as many procedures for Indigenous males and eleven times as many for Indigenous females (ABS & AIHW 2001).

People with end-stage renal disease may also require a kidney transplant for survival, but Indigenous people are less likely than other people to receive a transplant. In 1999, 46% of all patients registered with the Australian and New Zealand Dialysis and Transplant Registry had a functioning kidney transplant, but for Indigenous people



Notes

1. Age-standardised. Excludes people living in remote areas.
2. Some data values too small to graph.

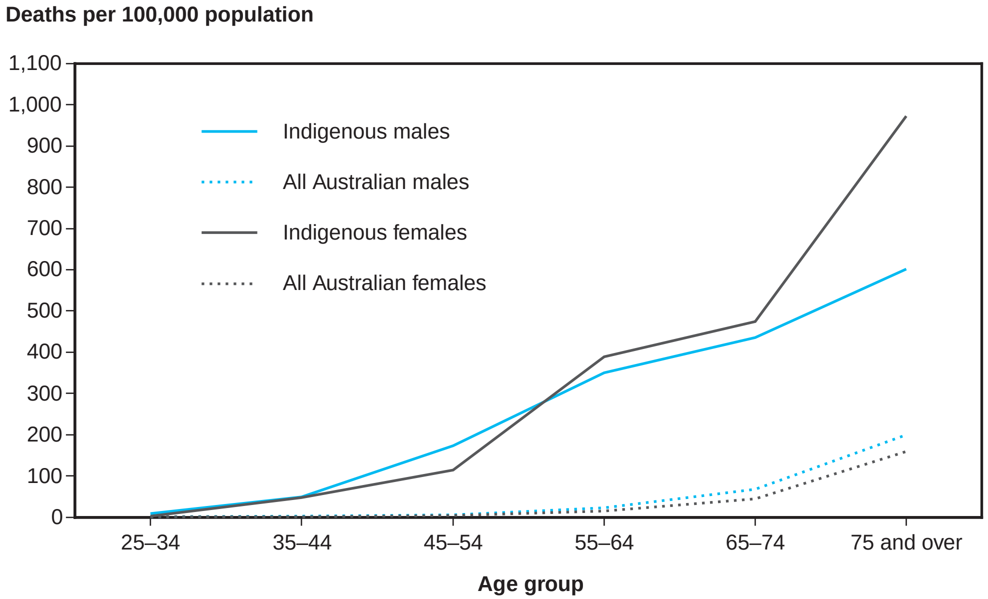
Source: ABS National Health Survey 1995.

Figure 4.15: Reported diabetes, 1995

identified on this registry only 18% had functioning transplants. Some of the reasons Indigenous patients are less likely to receive a transplant include having multiple illnesses, being less likely to find a suitable donor, or being too ill to undergo the surgery required (ABS & AIHW 2001).

Diabetes is a significant health problem for Aboriginal and Torres Strait Islander peoples. Indigenous people who have Type 2 diabetes often develop the disease earlier than other Australians and often die at younger ages. In 1995, the reported rate of diabetes was four times higher among Indigenous people aged 15 years and over living in metropolitan and rural areas than for the general population (Figure 4.15) (ABS 1999c). In 1998–99, there were 10–15 times more hospital separations for Indigenous patients with Type 2 diabetes than occurred for other patients (ABS & AIHW 2001).

Diabetes can cause serious complications such as cardiovascular disease, kidney disease, nerve damage, eye damage, ulceration and gangrene. There are a number of health risk factors associated with diabetes, including obesity, poor nutrition, lack of physical activity and, as yet, unspecified genetic factors. Type 1 diabetes (early onset and insulin-dependent) is relatively rare in the Indigenous population, but there is a very high prevalence of Type 2 diabetes (late onset, non-insulin-dependent). In 1998–99 about 75% of Aboriginal and Torres Strait Islander peoples who received hospital treatment for diabetes had Type 2 diabetes.



Notes

1. Based on underlying cause of death.
2. Data are for the years 1997–1999 combined, based on year of registration.
3. Indigenous data are for usual residents of Queensland, South Australia, Western Australia and the Northern Territory combined.

Source: ABS Deaths Registration Database.

Figure 4.16: Diabetes mellitus age-specific death rates, 1997–1999

The number of deaths associated with diabetes provides an indication of the differential burden of the disease in the Indigenous population. Age-specific death rates for 1997–1999, where diabetes was recorded as an underlying cause in those jurisdictions where Indigenous identification in mortality data is reliable, show that, from age 25 onwards, the death rate for diabetes in the Indigenous population is higher than that for the total population (Figure 4.16). This reflects the earlier onset of diabetes in this population group. Causes of death where diabetes was an underlying cause included ischaemic heart disease (41% of Indigenous deaths where diabetes was an underlying cause), other forms of heart disease (26%) and renal disease (38%). The earlier onset of Type 2 diabetes among Indigenous people has serious implications for diabetic complications (O'Dea 1992).

Mental health

At present, there are no national data sources which provide information about the incidence or prevalence of mental disorder for Aboriginal and Torres Strait Islander peoples in the community. Data on hospitalisation and mortality due to serious mental disorders and illnesses are the main sources of information that can provide an indication of mental health conditions in the Indigenous population.

In 1998–99, Aboriginal and Torres Strait Islander peoples were hospitalised for conditions classified as 'mental and behavioural disorders' at a higher rate than that experienced by the general population. The rate of hospitalisation for Indigenous people diagnosed with mental disorders due to psychoactive substance use and organic disorders such as dementia was three times higher than the rate for the all-Australian population. The rate for psychotic disorders was twice as high (ABS & AIHW 2001). Mortality data for 1997–1999, from Queensland, Western Australia, South Australia and the Northern Territory combined, show that there were over twice as many deaths associated with mental disorders among Indigenous people than for other Australians. The majority of these deaths in the Indigenous population (78%) were attributed to mental disorders due to psychoactive substance use. There were five times more deaths from assault for Indigenous males, and ten times as many for Indigenous females, than for males and females in the general population.

Rates of intentional injury, whether self-inflicted or caused by assault, may be an indicator of psychological illness and distress in the community. The rate of hospitalisation for Indigenous males due to assault was six times higher than the general population, and for Indigenous females almost 19 times higher. The rate of hospitalisation due to self-harm for both Indigenous males and Indigenous females was twice as high as that for the general population.

Suicide accounted for almost three times as many deaths for Indigenous males and twice as many deaths for Indigenous females than for the general population. The highest age-specific death rate from suicide was 108 per 100,000 Indigenous males in the 15–24 age group compared with 27 per 100,000 for males in the same age group in the general population. In the 25–34 age group, deaths by suicide occurred at a rate of 96 per 100,000 Indigenous males compared with 38 per 100,000 for all males. For Indigenous females, the highest rate was 18 per 100,000 in the 15–24 age group compared with 6 per 100,000 for all females.

Oral health

Information on the oral health of Indigenous adults has been limited to data from the Commonwealth Dental Health Program which ceased in 1996, and data from a small sample of Indigenous people in the 1994–1996 National Dental Telephone Interview Surveys (AIHW DSRU 1995; AIHW: Brennan & Carter 1998). While indicative only, these data suggested that dental problems, tooth extraction and edentulism are more common among Indigenous people than other Australians. A more recent study of oral health in the Anangu Pitjantjatjara lands of South Australia found that the children had a high and increasing prevalence of dental caries in their deciduous teeth, and that edentulism among adults had increased over the last decade, from no recorded cases in 1987, to ten cases by the year 2000 (Endean et al. forthcoming). There is an association between periodontal disease and diabetes (Taylor et al. 1996) and all of the edentulous adults on the Anangu Pitjantjatjara lands also had a diagnosis of diabetes (Endean et al. forthcoming).

The oral health of Indigenous children is poorer than that of other children. Comparative data from the 1998 Child Dental Health Survey for children in the Northern Territory show that Indigenous children are more likely than other children to have decayed, missing or filled deciduous teeth ('baby' teeth). Between the ages of 6 and 13, there is a decline in the proportion of all children with healthy permanent teeth, but this decline is more pronounced among Indigenous children than other children. Data for New South Wales, although based on small numbers of Indigenous children, show a similar though less marked pattern (AIHW Dental Statistics and Research Unit, unpublished data).

Health risk factors

Low birthweight

In the period 1996–1998, babies of Indigenous mothers were nearly twice as likely as babies of other Australian mothers to be of low birthweight (i.e. a weight of less than 2,500 grams at birth). Low birthweight may be a result of premature birth, foetal growth retardation, or a combination of the two (Alberman 1994). Factors influencing a baby’s birthweight may include socioeconomic disadvantage, the size and age of the mother, the number of babies previously carried, the mother’s nutritional status, smoking and other risk behaviours, illness during pregnancy, and the duration of pregnancy. Low-birthweight babies are more prone to ill health during childhood, and may be more vulnerable to illness, such as kidney disease, in adulthood (Alberman 1994; Barker & Clark 1997).

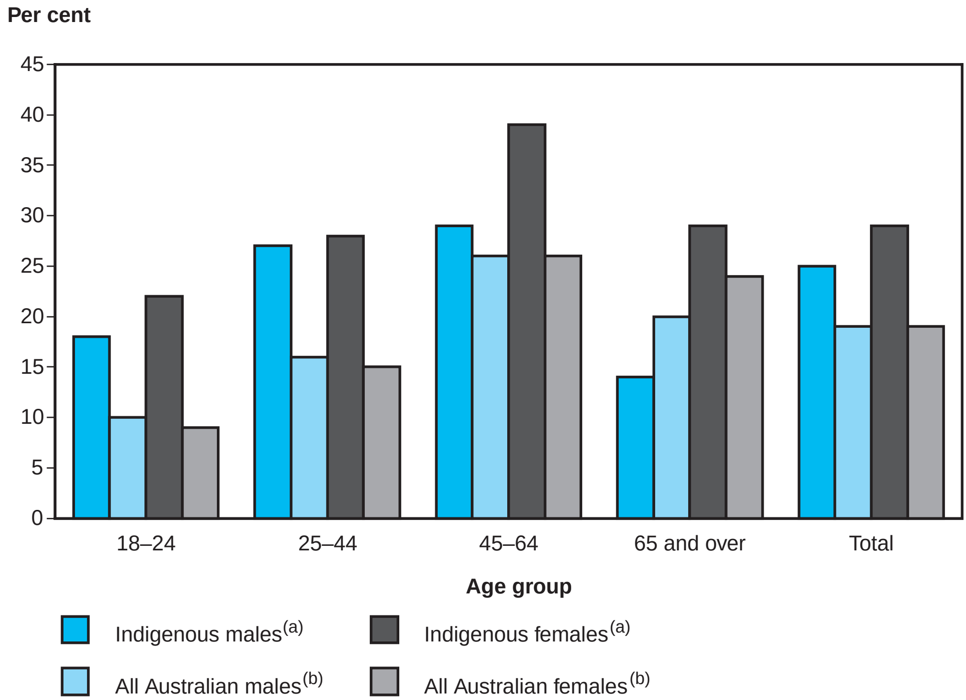
Obesity

There is a greater level of obesity among Aboriginal and Torres Strait Islander adults than in the general Australian population, based on body mass index, putting this population group at greater risk for kidney disease, Type 2 diabetes and cardiovascular disease. Results of two national surveys, the 1994 National Aboriginal and Torres Strait Islander Survey and the 1995 National Nutrition Survey, provide comparative data on obesity for Indigenous and other Australian adults (Figure 4.17). Approximately 25% of adult Indigenous males and 29% of adult Indigenous females were classified as obese compared to about 19% of both other Australian adult males and adult females.

Poor nutrition

Many Aboriginal and Torres Strait Islander peoples do not have access to a healthy diet. Indigenous people who live in remote areas do not have the same opportunities as people living in metropolitan and regional centres to obtain affordable, healthy food. In areas where healthy food is available, factors such as competing priorities for limited family incomes, restricted access to traditional foods, lack of knowledge of the nutritional value of certain foods and lack of culturally appropriate information on healthy food can lead to inadequate nutrition (Public Health Services 2001).

The diet of many Aboriginal and Torres Strait Islander peoples has undergone rapid change, from a fibre-rich, high protein, low saturated fat ‘traditional’ diet to one which is high in refined carbohydrates and saturated fats. This kind of diet creates a predisposition to obesity, Type 2 diabetes, cardiovascular disease and renal disease (NHMRC 2000; O’Dea 1992), conditions which, as noted above, are prevalent in the Indigenous population. Maternal undernutrition is a factor linked to low birthweight and a risk factor for infant death and ill health in childhood, and may also predispose babies to cardiovascular diseases and Type 2 diabetes in later life (Barker & Clark 1997).



(a) 1994 National Aboriginal and Torres Strait Islander Survey. Data from NATSIS are for adults aged 18 years or more.

(b) 1995 National Nutrition Survey. Data from NNS are for adults aged 19 years or more.

Note: Based on body mass index.

Sources: ABS National Aboriginal and Torres Strait Islander Survey 1994, ABS National Nutrition Survey 1995.

Figure 4.17: Obesity in adults, Australia 1994, 1995

Alcohol and other drug use

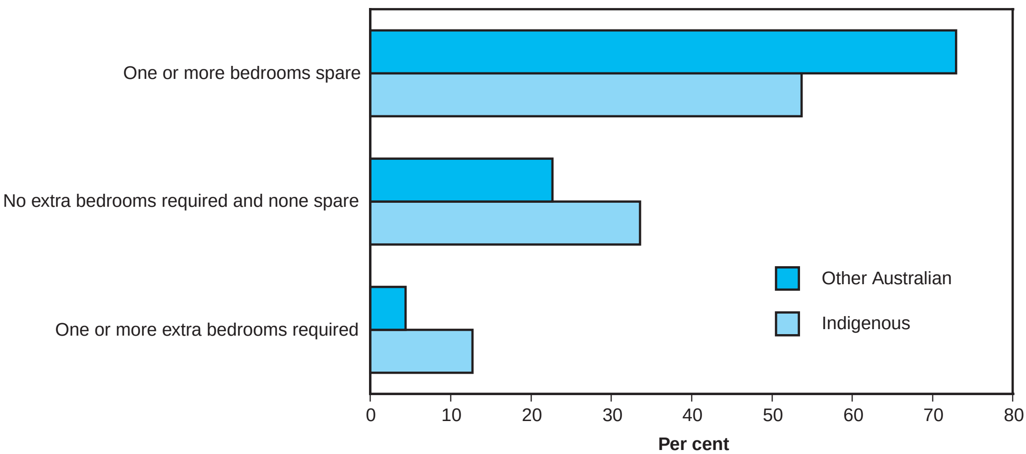
Several surveys have shown that Indigenous people are less likely than other people to drink alcohol, but those who do so are more likely to consume it at hazardous levels (ABS & AIHW 2001). The hazardous use of alcohol is related to conditions such as alcohol-dependence syndrome, alcoholic liver disease, high blood pressure, stroke and some cancers (Anderson 1996). Alcohol is frequently a contributing factor to injuries, accidents, assault and self-harm (Unwin et al. 1994), and may contribute to social problems such as family breakdown, domestic violence, and financial and legal problems (Davis 1998).

The most recent national data on alcohol consumption among Indigenous people come from the 2001 National Drug Strategy Household Survey (NDSHS). The survey found that 20% of Indigenous peoples drank at levels that were risky or high risk for long-term harm, compared with 10% of other Australians. Further, 49% of Indigenous people compared with 34% of other Australians had at least one drinking episode in the past year that was risky or high risk for short-term harm.

Cigarette smoking is associated with the increased incidence of and mortality from various types of cancer, including lung, cervical, bladder and pancreatic cancers, coronary heart disease, stroke, chronic respiratory tract diseases, and pregnancy-related conditions (English et al. 1995). Data from the 2001 NDSHS show that there is a high prevalence of smoking among Aboriginal and Torres Strait Islander peoples, with the rate being approximately twice that for other Australians, placing them at an increased risk for diseases and conditions described above.

Indigenous people are also at risk of ill health through the use of illicit substances such as marijuana, heroin, amphetamines and inhalants (petrol, glue, aerosols). The 2001 NDSHS found that the rates of recent illicit drug use among Indigenous people were higher than for other Australians: 32% of Aboriginal and Torres Strait Islander peoples aged 14 years and over had used an illicit drug in 2001 compared with 17% of other Australians. Most of this difference was associated with cannabis use (28% for Aboriginal and Torres Strait Islander peoples compared with 13% for other Australians), although recent use of any illicit drug other than cannabis was also significantly higher (13% compared with 8% for other Australians).

There are no reliable national data collected on petrol sniffing, but case studies indicate that the practice continues to be a major problem in some Indigenous communities. Petrol sniffing causes confusion, aggression, lack of coordination, hallucinations, respiratory problems and chronic disability including mental impairment. It is practised mainly by young people, but the problems associated with it extend to families and the wider community (d'Abbs & MacLean 2000).



Source: Australian Housing Survey, 1999.

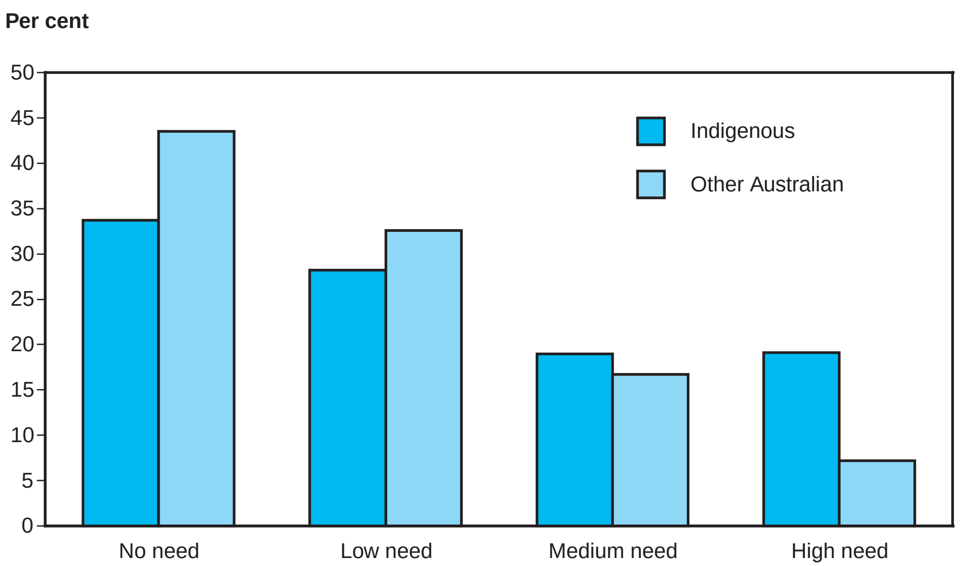
Figure 4.18: Housing utilisation, 1999

Housing and living conditions

Housing has been identified as a major factor affecting the health of Aboriginal and Torres Strait Islander peoples. Many Indigenous people live in housing which does not satisfy the basic requirements of shelter, safe drinking water and adequate sewerage provisions—conditions which are considered unacceptable by general Australian standards (Neutze 1998).

Overcrowded living conditions increase the risk of the spread of infectious diseases such as meningococcal disease, rheumatic fever, tuberculosis and respiratory infections (Waters 2001). Aboriginal and Torres Strait Islander peoples experience overcrowded living conditions more commonly than other Australians. Results from the 1999 Australian Housing Survey showed that 13% of Indigenous households in urban areas and major regional centres did not have enough bedrooms to meet their needs, compared with 4% of other Australian households (Figure 4.18) (ABS 2001a).

Results from the 1999 Australian Housing Survey also indicated that Indigenous households in urban areas and major regional centres were almost three times more likely than other households to report their homes to be in high need of repair (19% compared with 7%). A higher proportion of other Australian households reported no need for repairs (44% compared with 34%) (Figure 4.19). The 1999 Community Housing and Infrastructure Needs Survey (CHINS) also investigated the number and condition of houses in discrete Indigenous communities in urban, rural and remote areas. Findings from the CHINS indicate that the housing conditions of Indigenous people are generally poorer in rural and remote communities than in urban areas, with a third of the 14,667 community-owned or managed permanent dwellings in these communities requiring major repairs (23%) or replacement (10%) (ABS 2000d).



Source: Australian Housing Survey 1999.

Figure 4.19: Need for repairs to dwelling, 1999

Table 4.11: Water testing, Indigenous communities not connected to town water supply[a]

Water tested	Community population		Total	Reported population
	50–199	200 or more		
Failed testing	14	44	58	25,322
Did not fail testing	47	53	100	36,918
All communities with water testing[b]	68	101	169	65,829
Water not tested	50	14	64	11,135
Total communities	**118**	**115**	**233**	**76,964**

(a) Communities with a population of 50 or more.

(b) Includes 'not stated'.

Source: Community Housing and Infrastructure Needs Survey 1999.

Inadequate and poorly maintained infrastructure adversely affects many Indigenous communities, particularly those in remote and rural areas of Australia. It is recognised that improving basic environmental health conditions, such as access to clean water and adequate sanitation, are critical issues that need to be confronted if better health outcomes for Aboriginal and Torres Strait Islander peoples living in these communities are to be achieved.

Water is a basic necessity, and ready access to safe drinking water is an essential public health requirement. Regular water testing and treatment are necessary to ensure that water is free from microorganisms hazardous to human health (NHMRC 2001). The 1999 CHINS collected information on water treatment and testing from a sample of 233 discrete Indigenous communities that were not connected to a town water supply. Of these, 64 communities (representing a population of approximately 11,100 people) had not had their water tested in the 12 months before the survey. Of those tested, 58 communities (representing a population of approximately 25,300 people) had failed water testing at least once in the same period. Chlorination was the most common type of treatment reported.

Most discrete Indigenous communities had wastewater and sewerage systems, but a high proportion reported problems with these systems and a large number of communities reported unsafe ponding; 204 communities reported sewage overflows or leakage in the 12 months before the 1999 CHINS, some indicating chronic sewerage problems. Methods of wastewater disposal from bathrooms, laundries and kitchens were considered to be undesirable by Australian public health authorities in 41 communities. Ponding, where large pools of stagnant water collect and remain for more than a week, is commonly caused by rain, overflow from blocked drains; and sewage overflows and leakage. It is a major health risk associated with the increased risk of vectorborne diseases (diseases spread by insects such as mosquitoes). Fifty-six communities, representing a population of approximately 13,500 people, reported problems with ponding on five or more occasions during the 12 months before the 1999 survey.

Almost all (93%) discrete communities reported some form of organised rubbish disposal to the 1999 CHINS. Fenced or unfenced tips located on community land were the most commonly reported form of rubbish disposal (62% of communities). A further 18% used rubbish tips located outside community land, and 10% of communities incinerated their rubbish.

Health service provision, access and use

In 1998–99, an estimated $1,245 million was spent on health services by, and for, Aboriginal and Torres Strait Islander peoples (AIHW 2001c). This amount represents 2.6% of total health expenditure by Commonwealth, State and local governments as well as expenditure from private sources such as private health insurance and out-of-pocket expenses. Per capita, $3,065 was spent on each Indigenous person, compared with $2,518 for each other Australian.

Indigenous people experienced lower levels of access to health services than the general population, even though they were twice as likely to be hospitalised. Compared with the general population, Indigenous people are nearly twice as likely to live outside urban centres and are therefore more likely to live further from a range of health services and facilities. A considerable number of the Indigenous communities included in the 1999 CHINS did not receive visits from a wide range of health professionals. Other factors which were likely to influence the level at which Indigenous people accessed health services were the socioeconomic status of patients, the availability of

Box 4.4: Ratio of health expenditure for Indigenous and non-Indigenous Australians

Examining expenditure on health services is one way of understanding the way in which health services are delivered and used. Expenditure reflects not only differing client needs, but differing levels of access and modes of delivery that have developed in response to various policies and strategies. Most government expenditure on Indigenous health is administered through local and State governments.

In 1998–99, an estimated $1,245 million was spent on health services by, and for, Aboriginal and Torres Strait Islander peoples (AIHW 2001c). This amount represents 2.6% of health expenditure for all Australians, but is an estimate only, largely because of the incomplete identification of Indigenous people in many administrative data sets. However, patterns of expenditure from available data indicate clear differences between the Indigenous and other Australian populations in the way that health services are accessed. Greater amounts were spent on Aboriginal and Torres Strait Islander peoples in relation to community and public health services, patient transport, public hospital care (both admitted and non-admitted patient services), and mental health institutions. Lesser amounts were spent through Medicare, the Pharmaceutical Benefits Scheme, high-level residential aged care and private health services than for other Australians.

Overall, for each dollar spent on health services for other Australians, $1.22 was spent on health services for Aboriginal and Torres Strait Islander peoples. Per capita, $3,065 was spent on each Indigenous person, compared with $2,518 for each other Australian.

transport, the ability to speak English, and cultural factors such as the availability of same-sex Indigenous health workers (ABS & AIHW 2001).

4.7 Socioeconomically disadvantaged people

The association between socioeconomic disadvantage and health has been widely researched in Australia and overseas (AIHW: Mathers 1994b, 1995, 1996; Turrell et al. 1999). The reason for the relationship is not always clear; it varies between specific conditions and is confounded by other risk factors. The mechanisms by which socioeconomic status influence health status are many and varied. However, those most often postulated are diet, health behaviour, education, access to health services (both preventive and treatment), occupational exposures, quality of housing and psychosocial factors. Regardless of the mechanism, Sainsbury & Harris (2001:117) summarise the position by stating that 'wealthy people are healthy people; poor people have poor health'. But it should be recognised that for some risk factors and some diseases there is a social gradient. This gradient can be attenuated by adopting healthy behaviours across all levels.

There are a number of elements that contribute to socioeconomic status, including income, level of education, employment status and occupation. These elements by themselves, however, do not provide an ideal measure, and their use often depends on the age group being analysed. Health information by socioeconomically graded areas of residence provides a useful way to analyse information. The most common measure of socioeconomic status by area of residence is the Index of Relative Socioeconomic Disadvantage, derived by the ABS from population census data (AIHW 2000).

Risk factors

The relationship between socioeconomic disadvantage as a risk factor for ill health and its interaction with other risk factors has already been discussed in Chapter 3, which points out that these risk factors are themselves frequently associated with broader social, economic and cultural determinants. However, it is important to recall that when compared with people of high socioeconomic status, those from lower socioeconomic groups are more likely to smoke and smoke regularly, report less physical activity during their leisure time, and be more overweight or obese, all of which are significant risk factors for a number of the major health conditions, e.g. cardiovascular disease, respiratory diseases. This knowledge is gained from national and State-specific health surveys such as those conducted in New South Wales which show that in 1997 and 1998 rates of current smoking increased with lower socioeconomic status (Moore & Jorm 2001).

Self-reported health status

The 1995 National Health Survey showed that on average 17% of people rated their health as fair or poor (rather than good, very good or excellent). This varied with socioeconomic status—22% of persons in the most disadvantaged quintile reported fair or poor health, compared with 12% of persons in the least disadvantaged quintile (ABS 1999b).

Major illnesses and service use

Of the fifteen most common major illnesses recorded in the 1995 National Health Survey, five were more common among the most disadvantaged persons—arthritis, asthma, bronchitis/emphysema, ulcer and diabetes. The survey also found that the more socioeconomically disadvantaged made greater use of doctors and outpatient/casualty services, but were less likely to use preventive health services (ABS 1999b).

Mortality

The relationship between mortality and socioeconomic disadvantage has been well documented in Australia. Mathers et al. found that people with low socioeconomic status have higher rates of mortality (AIHW: Mathers et al. 1999). Mortality burden (years of life lost due to premature mortality) in the most disadvantaged quintile is 41% higher for males and 26% higher for females compared with the least disadvantaged quintile. In 1997 and 1998 males in the most disadvantaged quintile had 12% higher mortality compared to all Australian males, and 30% higher than the males in the least disadvantaged quintile. For females, those in the most disadvantaged quintile had a 16% higher level of mortality than those in the least disadvantaged quintile (ABS 1999b).

Turrell and Mathers (2000) also found significantly higher mortality among males and females aged 25–64 years in the most disadvantaged quintile. Males had more than 40% excess mortality for diseases of the respiratory system (including chronic lung disease), and females had more than 70% excess mortality for diseases of the circulatory system (including coronary heart disease), diseases of the digestive system, and injury (in particular motor vehicle accidents and suicide).

In interpreting these results, note that the Index of Relative Socioeconomic Disadvantage relates to the average disadvantage of all people living in a geographic area and therefore these measures of inequality will, in most cases, be understated.

Life expectancy and burden of disease

Vos et al. (2001), examining Victorian mortality data, has shown an association between low socioeconomic status and lower life expectancy at birth. The burden of premature mortality was also significantly higher among socioeconomically disadvantaged people. Years of life lost due to premature mortality among the most disadvantaged socioeconomic quintile in this study was 30% higher than for the least disadvantaged, while in women this difference was 19%. Large socioeconomic differences were observed for such causes of death as ischaemic heart disease, chronic obstructive pulmonary disease, diabetes, asthma and road traffic accidents.

An earlier study (AIHW: Mathers et al. 1999) found that men in the bottom quintile of socioeconomic disadvantage had a 40% higher chance of dying between ages 25 and 65 than men in the top quintile. There was a 3.6 year gap in life expectancy at birth for males between the bottom and top quintiles, and a 1.9 year gap for females. An especially high inequality was observed for those persons with a mental illness, with women being slightly more disadvantaged than men.

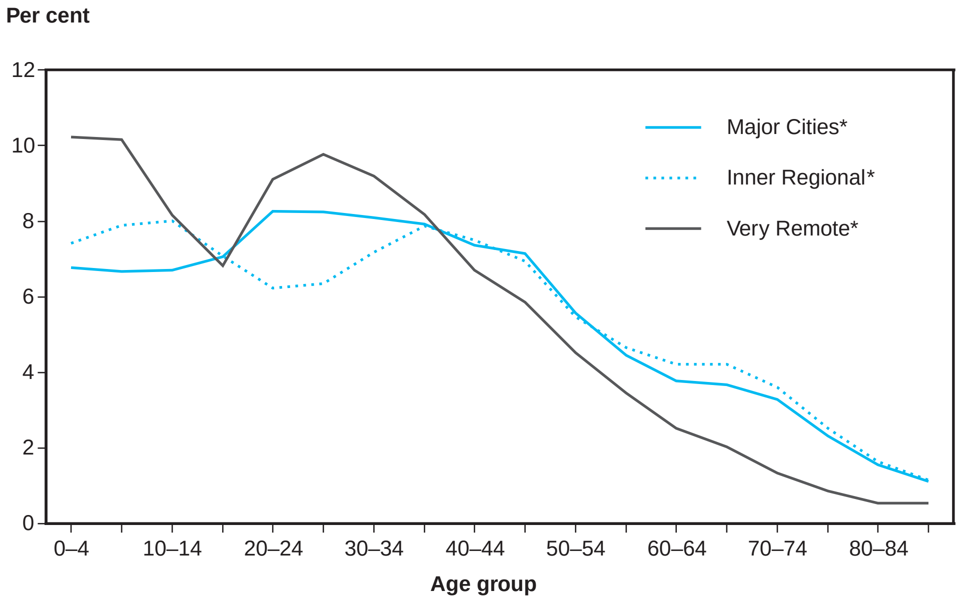
4.8 Rural and remote people

Australia has one of the most urbanised populations in the world, with about 70% of people living in capital cities or major metropolitan areas. Of the remainder, about 45% live in regional cities or large country or coastal towns and surrounding agricultural areas, about 45% live in small country or coastal towns and their surrounding agricultural areas, and about 10% live in remote areas.

Non-metropolitan areas include not only inland agricultural and remote areas, but also coastal areas. In fact, of the people who live outside the major cities but not in remote areas, just under 50% live within 80 km of the coast (Garnaut et al. 2001).

Between 1986 and 1996, population growth across the country was uneven. While the population of metropolitan areas grew by 15%, that of coastal populations grew by over 20%, and the population of inland Australia grew by less than 8% (larger centres showed the strongest growth; small centres, especially in remote areas, showed smaller growth or even a decline) (Garnaut et al. 2001).

Health service access, health risk factors and health status show differences between groups in different geographic regions, although they do not apply uniformly to all groups of people, and the reasons for those differences are not always clear-cut. Changes in the size of populations, for instance, could affect access to services and opportunities for employment in some areas, potentially affecting health differentials. This section further describes some of these differences and the issues associated with them.



Note: Data presented by ASGC Remoteness category.

Source: AIHW, derived from ABS Statistical Local Area population estimates.

Figure 4.20: Age distribution for people living in Major Cities*, Inner Regional* and Very Remote* areas, 1996

Characteristics of regional and remote populations

The populations in each area differ in various ways, and their characteristics explain, or provide better insight into, many of the apparent health differences. For example, people who live in rural and remote areas are more likely to be Indigenous, with about 40% of the Very Remote* area population being Indigenous, compared with 1% in Major Cities* (Very Remote* and Major Cities* are defined according to the ABS, ASGC Remoteness Structure). Rural populations tend to have proportionally more children but fewer young adults (Figure 4.20), and remote area populations, with their significant Indigenous populations and mining communities, tend to have even more children, proportionally more people of working age (and more males) but fewer older people.

People who live in rural and remote areas generally have lower levels of education, at least in part as a consequence of the relatively low supply of employment requiring skilled or professional labour. Household incomes in rural and remote areas are also lower than in metropolitan areas (Garnaut et al. 2001).

Access to commodities and services

Coupled with lower incomes for people in regional and remote areas, the price of commodities such as food and petrol is higher. In rural and remote communities, the cost of basic food is frequently up to 10% higher (and sometimes up to 23% higher) than in metropolitan and regional centres. In addition, stores in remote locations are less likely to have basic food items or healthy food choices (such as fresh fruit and vegetables), and are frequently a considerable distance from residents. The price of less healthy food choices and tobacco increases with remoteness also, but less so than for healthy choices (ABS 1990; Public Health Services 2001).

Access to health services for people living in regional Australia is influenced by the lower number of GPs (but higher number of nurses), lower rates of bulk billing (AMWAC 2000), and lower levels of access to specialists and major hospitals as a consequence of longer travel distances (AIHW: Strong et al. 1998).

Risk factors

Some of the major risk factors for poor health for which rural data are available are physical inactivity, overweight, smoking, hazardous or harmful alcohol consumption and high blood pressure. Poor nutrition is also a risk factor, but is not discussed in this section because little information is available. The geographic areas used here to describe the prevalence of risk factors are defined by the RRMA classification (see Box 4.5).

In 1995, the rate of physical inactivity during leisure time was higher among people living in Remote areas of Australia (37%) than for people living in Metropolitan (34%) and Rural (32%) areas. In the same year, 53% of women from Remote areas were overweight compared with 47% of women from Metropolitan and Rural areas. The pattern was the same for men, but the differences were smaller (62% in Metropolitan and 65% in Rural and Remote areas were overweight). People from Rural and Remote areas (26%) were more likely to be regular smokers than people from Metropolitan areas (21%) (AIHW 2001d).

Box 4.5: Geographic classifications: RRMA, ARIA and ASGC Remoteness

Until recently, rurality had been described almost exclusively by the seven-level Rural, Remote and Metropolitan Areas (RRMA) classification. This classification is based on the size of the local population centre as well as a measure of remoteness (DPIE & DHSH 1994).

Work by the National Key Centre for the Social Applications of Geographical Information Systems (GISCA) from 1996 saw the development of improved measures of remoteness: the Accessibility/Remoteness Index of Australia (ARIA), a continuous variable with a remoteness score of 0–12; and its successor, ARIA+ (similar to ARIA, but with a remoteness score of 0–15).

From ARIA, the Department of Health and Ageing developed its five-level classification (also called ARIA), and from ARIA+, ABS developed its six-level classification, the Australian Standard Geographic Classification (ASGC) Remoteness Structure (DHAC & GISCA 1999; ABS 2001e).

Remoteness classifications

RRMA				DoHA ARIA			ASGC Remoteness		
Broad category	**Fine category**	**Population (000,000)**	**%**	**Category**	**Population (000,000)**	**%**	**Category**	**Population (000,000)**	**%**
Metropolitan	Capital Cities	11.6	64	Highly Accessible	14.9	81	Major Cities*	12.1	66
	Other Metropolitan centres	1.4	8						
Rural	Large Rural centres	1.1	6	Accessible	2.2	12	Inner Regional*	3.8	21
	Small Rural centres	1.2	7				Outer Regional*	2.0	11
	Other Rural areas	2.4	13	Moderately Accessible	0.8	4			
Remote	Remote centres	0.2	1	Remote	0.2	1	Remote*	0.3	0.3
	Other Remote areas	0.3	2	Very Remote	0.2	1	Very Remote*	0.2	0.2
							Migratory*	< 0.1	

Note: This table is a rough guide only; the various classes in each classification are not equivalent.

Source: AIHW Population Estimates.

In this section, both the RRMA and ASGC Remoteness classifications have been used to describe aspects of rural health. Where terms refer to a formal classification, capital letters are used (e.g. Capital Cities), otherwise no capitals are used (e.g. cities). To avoid confusion between the similar terms in both the formal classifications, ASGC terms also have an asterisk (e.g. Remote).*

Compared with their Metropolitan counterparts, Rural/Remote area males and females aged 20–29 were twice as likely to consume alcohol in hazardous or harmful quantities (unpublished data from the 1998 National Drug Strategy Household Survey). There were no clear differences between these areas for people in other age groups.

The prevalence of high blood pressure was similar across geographic areas, with approximately 22% of women and 29–30% of men reporting high blood pressure in all areas (AIHW 2001d).

With greater prevalence of smoking, lower rates of physical activity and more restricted access to healthy food, people in rural and remote Australia are likely to be at greater risk of cardiovascular disease, the leading cause of death in Australia.

On a positive note, it has previously been reported that people living in Rural areas were substantially less likely to report unhappiness (AIHW: Mathers 1994a), and results from the Australian longitudinal study on women's health have confirmed that women from Rural and Remote areas report lower levels of stress than women from Metropolitan areas (Brown et al. 1999).

Health status

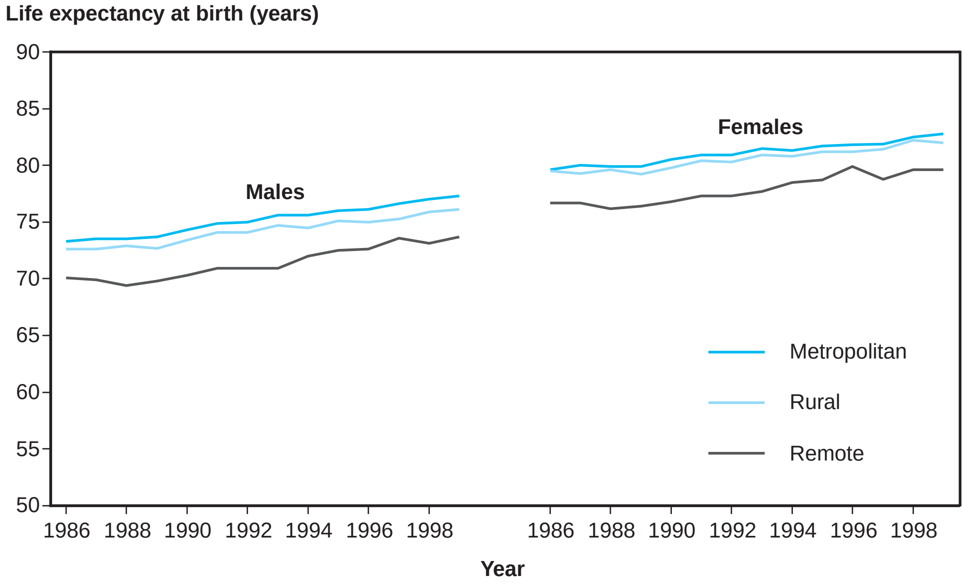
A detailed description of a range of health issues is restricted because some of the rural populations are small and interpreting data items from some data sets leads to dubious conclusions. For the purposes of this description, the AIHW National Mortality Database is currently the most useful.

Data pertaining to hospital admissions is also a rich source of information, but differences in admission practices between geographic areas can make interpretation difficult. For example, admission may reflect precaution rather than urgency, especially if the patient lives a long way from the hospital. In Remote areas, hospital admission for medical intervention occurs at 1.5 to 1.8 times the rate that it does in Metropolitan areas, for surgical intervention at 0.9 times the rate, and for 'other reasons' at 0.7 times the rate (AIHW: Strong et al. 1998). Although it is clear that differences in hospitalisation exist across geographic areas, the interpretation of these statistics is ambiguous.

Inequality in life expectancy

Life expectancy is one of the most commonly used summary measures of mortality. It indicates the number of years a person would live, on average, if subject to prevailing death rates.

In 1986, the average life expectancy for Australian males was 73 years and for females 79 years. By 1999, life expectancy had risen to almost 76 years for males and 82 years for females. There is, however, considerable difference according to areas of residence. Figure 4.21 shows that males and females living in Metropolitan areas have the highest life expectancy, those in Rural areas the next highest and those in Remote areas the lowest life expectancy. This pattern remained consistent throughout the period between 1986 and 1999. Differences between Metropolitan and Rural areas were small compared with the differences between Rural and Remote areas.



Note: Data presented by broad RRMA classification.

Source: AIHW National Mortality Database.

Figure 4.21: Trends in life expectancy at birth, 1986 to 1999

Consistently throughout the period from 1986 to 1999, Metropolitan area males and females were expected to outlive their counterparts in Remote areas by 3 years and those in Rural areas by less than a year, suggesting the persistence of inequalities over time across the three regions. Although this comparison of life expectancy over time is valid, care should be taken when comparing between regions; the effects of Indigenous mortality and mortality of older people, discussed in the next section, have not been excluded from this measure.

Mortality

Overall, average death rates in rural and especially remote areas are higher than in metropolitan areas. There is, however, considerable variation within areas (AIHW: Strong et al. 1998). A large proportion of these higher rates appear to be due to the substantial influence of high Indigenous death rates in these populations.

Uncertainty about the accuracy of identification of Indigenous deaths prevents in-depth reporting of Indigenous mortality in rural and remote areas. However, for other Australians, death rates appear similar or slightly higher in rural areas, and similar or slightly lower in remote areas compared with metropolitan areas.

This masks differences in certain age groups. For example, death rates for older people (generally older than 65 years, not including Indigenous people) in remote areas are lower than those for their less remote (including rural) counterparts. This effect is strong, appears consistent and has yet to be investigated. It may be that, with declining health, older people move to larger population centres which have more facilities, and eventually die there, affecting death rates in both areas.

For the population younger than 65 years of age (not including Indigenous people), the reverse is the case. Death rates for males in Regional* and Remote* areas appear to be 10–20% higher than in Major Cities*, and for females they appear to be approximately 10% higher.

To disentangle the effect of remoteness from these issues, it may be more informative to report cause-specific death rates for people (excluding Indigenous people) younger than 65 years only. The extent to which the mortality of Indigenous people can be reported is restricted by potential error associated with data quality and small numbers.

For males (excluding Indigenous males) younger than 65 years, mortality for the four major causes of death shown in Table 4.12 tends to be higher in Regional* areas, with rates in Remote* areas also higher than in Major Cities* (except for cancer) but not necessarily higher than in Regional* areas (except for injury, where rates continue to increase with remoteness). For females (excluding Indigenous females) younger than 65 years, rates for cancer and respiratory disease are largely indistinguishable across geographic areas, whereas rates for diseases of the circulatory system and injury were higher in Regional* areas, but not significantly different between Remote* areas and Major Cities*.

Table 4.12: Death rates attributed to four major causes, people under 65 (excluding Indigenous people) 1997–1999

Cause	Major City*	Inner Regional*	Outer Regional*	Remote*	Very Remote*
			Males		
Cancers	62	†71	†71	63	64
Cardiovascular disease	46	†51	†54	†56	†57
Respiratory disease	6	†7	†9	9	†12
Injury	48	†62	†67	†75	†85
			Females		
Cancers	55	57	56	50	56
Cardiovascular disease	16	†19	†21	20	24
Respiratory disease	5	6	6	†9	9
Injury	15	†20	18	18	19

† indicates rates are significantly different from those in Major Cities*.

Note: Indirectly age-standardised to Australian rates for the period 1997–1999.

Source: AIHW National Mortality Database.

Summary

In summary, rural and remote populations have higher proportions of Indigenous people, appear to have lower levels of access to employment and services, and have poorer personal risk profiles (e.g. people are more likely to smoke).

Although overall summary measures of mortality reflect common perceptions that death rates are higher in rural and remote areas than in larger population centres, distance is not the only factor at play. When the effects of the relatively high mortality of the Indigenous population are removed from the analysis, the scenario changes from one where death rates are 5–10% higher in Regional* areas and up to 50% higher in Remote* areas compared with Major Cities*, to one where mortality is 3–10% higher in Regional* areas and similar or lower in Remote* areas compared with Major Cities*. When the older population is also removed from the analysis, rates increase again to become 10–20% higher in both Regional* and Remote* areas than in Major Cities*. This means that for people younger than 65 years (excluding Indigenous people), death rates are indeed higher outside metropolitan areas. Differentiating between these various population groups, as well as for the whole population, allows for a better understanding of the issues and more effective targeting of interventions.

Other factors (including socioeconomic status and the environment) which could potentially affect the analysis have not been examined here. Comparison is far from simple.

4.9 Health status of veterans

At June 2001, approximately 314,000 of the one-and-a-half million servicemen and women who enlisted in the Australian Forces over the past century were still alive. These veterans served in conflicts from World War I (1914–1918) through to recent overseas missions.

In recognition of the special contribution made to the nation by veterans, the Australian repatriation system provides a wide range of benefits to the ex-service community.

The veteran population

Under the *Veterans' Entitlements Act 1986*, the Department of Veterans' Affairs (DVA) provides eligible members of the veteran community with access to health care, assistance in the home and support services through arrangements with registered health care practitioners, home support agencies and providers, and public and private hospitals.

Table 4.13: Number of Australian veterans enlisted and estimated survivors at 30 June 2001

Conflict	Numbers enlisted or engaged	Estimated numbers alive
World War I	416,809	21
World War II	993,000	218,300
Other pre-1972 service	86,480	75,900
Post-1972 service	NA	20,300
Total survivors		**314,521**

Sources: Australian War Memorial/DVA; DVA Survivor Model Summary June 2001.

Eligible veterans, war widows/widowers and dependants are issued with healthcare cards that reflect their level of healthcare coverage (Box 4.6).

Veterans aged 75–84, largely from the World War II and Korean conflicts, represent the greatest proportion (58%) of gold and white cardholders. Those aged under 55 are the next largest group comprising around 16% of veterans.

Box 4.6: Veterans' entitlement cards

Holders of a gold card (the Repatriation Health Card – For All Conditions) are entitled to the full range of healthcare services at DVA expense including medical, dental and optical care.

Holders of a white card (the Repatriation Health Card – For Specific Conditions) are entitled to the full range of health care services at DVA expense but generally only in respect of those disabilities or illnesses accepted as service-related.

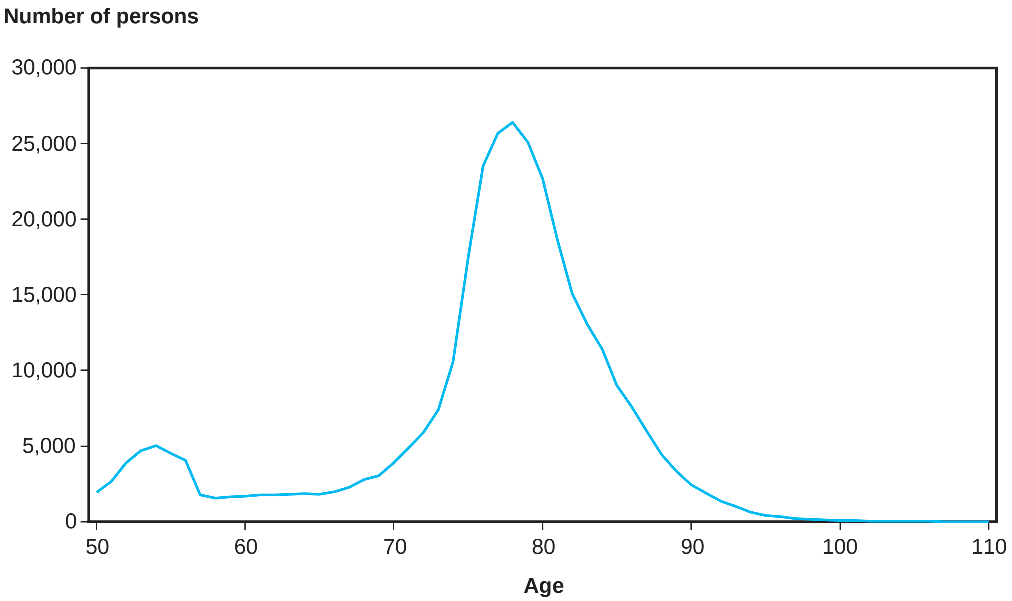
An orange card (Repatriation Pharmaceutical Benefits Card) was introduced on 1 January 2002 and provides pharmaceutical benefits under the Repatriation Pharmaceutical Benefits Scheme to British Commonwealth and Allied veterans who have World War II qualifying service, are aged 70 years or more and have lived in Australia for 10 years or more.

Table 4.14: Veteran healthcare cardholders, 1 July 2001

	Age group (years)									
Sex	**Under 55**	**55–59**	**60–64**	**65–69**	**70–74**	**75–79**	**80–84**	**85 and over**	**Unknown**	**Total**
Veterans										
Males	34,738	12,074	6,133	5,862	11,537	76,430	51,012	20,513	31	218,330
Females	1,961	57	36	33	260	4,743	2,385	1,252	5	10,732
Dependants										
Males	515	21	19	16	11	31	11	3	n.a.	627
Females	2,135	1,143	2,130	5,193	19,834	34,355	25,394	16,639	42	106,865
Other(a)										
Persons										8,577
Total										**345,131**

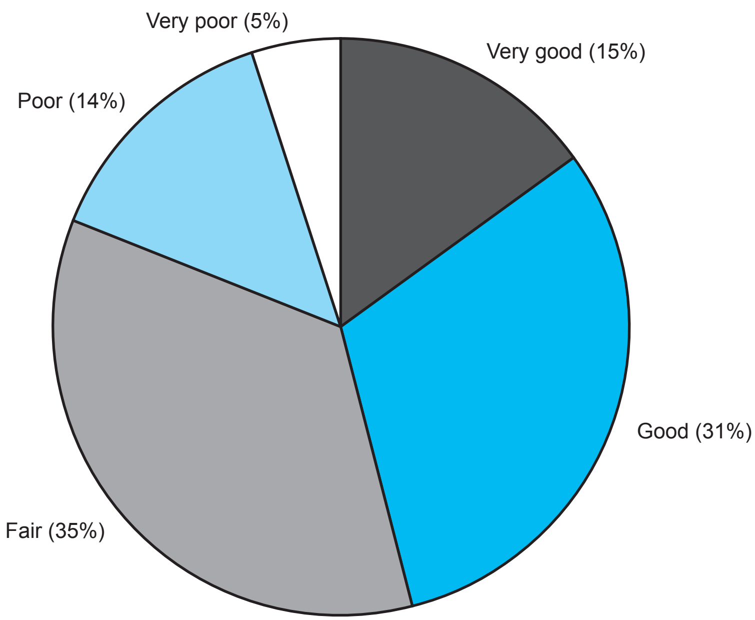
(a) British, New Zealand, overseas, miscellaneous and Commonwealth countries' forces.

Source: DVA Treatment Population Statistics, 1 July 2001.



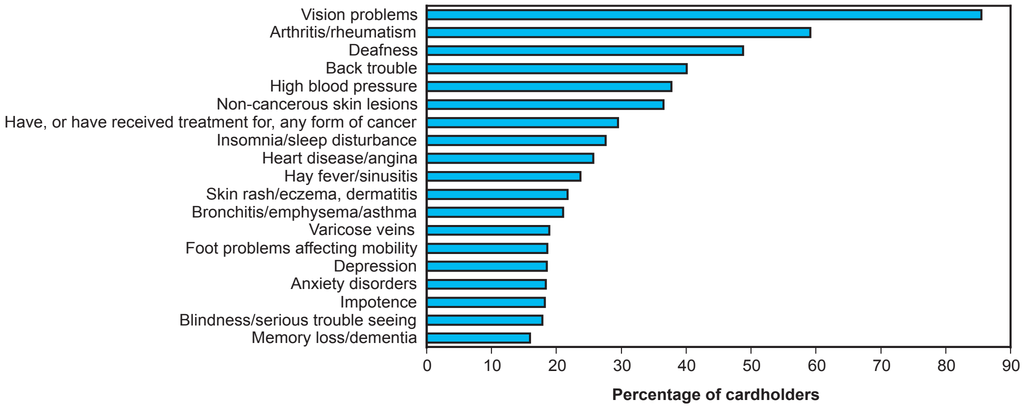
Source: DVA Treatment Population Statistics, 1 July 2001.

Figure 4.22: Veteran healthcare cardholders, 1 July 2001



Source: DVA 1998.

Figure 4.23: Self-assessed health status in veterans and war widows/widowers



Source: DVA 1998.

Figure 4.24: Most prevalent medical conditions in veterans and war widows/widowers

Self-assessments of health status

In a study of veterans and war widows/widowers (DVA 1998), 46% rated their health as 'good' or 'very good' (39% of men and 62% of women). Only 43% of wives caring for veteran husbands and just 33% of Vietnam veterans rated their health as 'good' or 'very good'.

Overall, 43% considered there were things they could do to improve their health. However, although 74% of those aged under 60 believed they could improve their health, only 24% of those aged 85 years and over believed this.

Prevalent medical conditions

The most prevalent medical conditions (Figure 4.24) reported by survey participants were vision problems corrected or alleviated by glasses or contact lenses (85%). Other prevalent conditions are arthritis or rheumatism (59%) and deafness (49%).

Roughly one-third of cardholders said they had 'a lot of bother' from their medical conditions, and generally this was greatest in the under 60 age group (55%) and lowest in the 85 and over age group (30%).

Comparative health status

In an analysis of population-based surveys, nearly half of the veterans with a DVA healthcare entitlement rated their health as either fair or poor, compared with about one-third of other males of equivalent age in the general community (Covance & DVA 1999). It was also found that veterans have poorer health and more health problems than people of the same age in the general community and war widows/widowers.

War widows assess their overall health status in a similar way to other females of the same age in the community. About one-third rate their health as either fair or poor. However, compared with the general community, veterans and war widows/widowers are more likely to:

- have a recent illness
- have recently taken a health-related action
- have recently consulted with doctors and other health professionals
- undertake some level of exercise.

Compared with males in the general community, entitled veterans are more likely to experience the following illnesses:

- diseases of the respiratory, circulatory, digestive and musculoskeletal systems, and the connective tissue
- arthritis
- mental disorders
- neoplasms.

Compared with females in the general community, war widows are more likely to experience and treat the following illnesses:

- diseases of the respiratory system
- mental disorders.

Male and female service pensioners and war widow pensioners have a higher average number of long-term conditions than age pensioners (Covance & DVA 1999).

These analyses examine a range of health conditions which may or may not be related to military service, but there are some conditions accepted as being caused by a person's defence service. Statements of Principles (SOPs) are statements of the medical or scientific evidence connecting injuries, diseases or death with the circumstances of particular veterans' service. The ten most frequent conditions accepted under this arrangement (covering 63% of all SOP conditions) in 2000–01 were sensori-neural hearing loss, post-traumatic stress disorder, chronic bronchitis and emphysema, solar keratosis, ischaemic heart disease, tinnitus, acquired cataract, non-melanotic malignant neoplasm of the skin, osteoarthrosis, and alcohol dependence or alcohol abuse.

Mortality patterns in veterans

A study of the veteran population in the 5 years to 1997 concluded that their death rates differed substantially from the rest of the community (Covance 2000). The study found that, on average, male gold cardholders had a death rate around 14% higher than the community death rate (Table 4.15). In contrast, male white cardholders had death rates around 7% below the community rate. Similarly, war widows/widowers tended to have slightly lower death rates than the general community.

Table 4.15: Number of deaths and expected deaths in the veteran population, 1993–1997

	Actual deaths	Expected deaths	Standardised mortality ratio
Male gold cardholders	49,501	43,260	1.14
Male white cardholders	12,584	13,45	0.93
Female gold cardholders	18,194	19,125	0.95

Notes

1. The community standardised mortality ratio equals 1.00.
2. Observed deaths, expected deaths and standardised mortality ratio in the DVA treatment population, by sex and card type, 1993–1997. The expected number of deaths is that expected for other Australians, given the calendar year, ages and sex distribution in the DVA treatment population.

Death rates also differed substantially between Disability Pension levels. Veterans on the Extreme Disability Allowance, for example, have a relative death rate two to three times that of the community.

4.10 Health of prisoners

During 2000, over 40,000 adults were either imprisoned or detained in Australian prisons. New South Wales had the greatest number of prisoners (8,547), but the Northern Territory had the highest rate of imprisonment at 458.1 per 100,000 population, followed by Western Australia at 218.4 per 100,000 population (ABS 2000e).

National data on the health status of Australian prisoners is not available (see Chapter 6, section on information development). However, the limited information available indicates that many prisoners engage in risk behaviours and have poor health status.

The most comprehensive data on the health status of prisoners is collected in New South Wales, via inmate health surveys. The first survey was conducted in 1996 with a repeat in 2001 (data from this second survey is yet to be released). The 1996 survey found a high proportion of prisoners tested positive for communicable diseases, particularly hepatitis C (35% of males and 65% of females), hepatitis B (35% of males and 45% of females) and herpes simplex virus Type 2 (20% of males and 58% of females) (Butler et al. 1999, 2000).

Exposure to bloodborne viruses such as hepatitis C and hepatitis B are strongly associated with injecting drug use. Two-thirds of female inmates and 40% of male inmates reported a history of injecting drug use; of these, 49% and 53% (respectively) reported injecting while in prison (Butler 1997). In the general community, only 2.1% report a history of injecting drug use (AIHW: Adhikari & Summerill 2000).

The proportion of current smokers in New South Wales prisons was 3 times higher than that in the general community (80% of prisoners compared with 27% of the general community) (Butler 1997; AIHW: Adhikari & Summerill 2000). In addition, almost three-quarters of male prisoners and over 60% of female prisoners reported consuming harmful/hazardous quantities of alcohol in the year before imprisonment (Butler 1997). Although a different method of determining consumption levels was applied to the 1998 National Drug Strategy Household Survey, the proportion of the general community drinking at hazardous or harmful levels was estimated to be much lower, at 10.5% (AIHW: Miller & Draper 2001).

Mental illness is common among inmates; 33% of males and 50% of females reported receiving some form of psychiatric treatment. Depression was the most commonly reported mental illness (7% of males and 16% of females). Prisoners were twice as likely to rate their health as 'fair' or 'poor' compared with the general population. Whereas 17% of males and 16% of females in the general community rate their health as 'fair' or 'poor', 28% of male prisoners and 40% of female prisoners rated their health as such (ABS 2002; Butler 1997).

Data on the HIV status of adults entering prison is collected and published by the National Centre in HIV Epidemiology and Clinical Research. HIV testing on admission to prison is not mandatory in all States and Territories in Australia—in 1999 only 58% of adults admitted to Australian prisons were tested (NCHECR 2000) (Table 4.16). In 1999, testing was mandatory in Queensland and the Northern Territory.

Information on the causes of deaths in prison is available nationally and is published by the Australian Institute of Criminology. Suicide is the leading cause of death in prison, accounting for approximately half of prisoner deaths in 2000 (Table 4.17). Although prisoners on remand represent only 17% of the total prison population, they account for 30% of deaths in prison (Collins & Mouzos 2001).

The ABS conducts an annual prison census, which provides information on the demographic characteristics of prisoners and their crimes. These data demonstrate that, as is the case with the Australian population, the prisoner population is also ageing.

Table 4.16: Proportion of new prisoners tested for and diagnosed with HIV, 1999

	NSW	Vic	Qld	WA	SA	Tas	ACT[(a)]	NT	Aust
Number of receptions	15,206	1,994	10,975	5,958	4,016	2,233	254	2,587	43,223
Tested for HIV antibody (%)	28.9	68.5	100	55.5	28.5	58.1	5.5	100	58.0
Number (%) with HIV infection	38 (0.9)	7 (0.5)	16 (0.1)	0 (0)	3 (0.3)	0 (0)	0 (0)	4 (0.2)	68 (0.3)

(a) The corrections centre in the ACT is a remand centre only. HIV antibody testing is carried out on prisoner request. Data not available for the first 6 months of 1999.

Source: NCHECR 2000.

Table 4.17: Causes of deaths in Australian prisons, 2000

Cause of death	Indigenous	Other Australian	Total
Hanging	8	22	30
Natural causes	3	18	21
Injuries	0	5	5
Gunshot	0	0	0
Drugs	0	5	5
Other	1	2	3
Total	**12**	**50**	**64**

Source: Collins & Mouzos 2001.

The Indigenous population is over-represented in Australia's prisons, accounting for 20% of prisoners but only 2.1% of the total Australian population. In the general population, there are health disparities between the health of the Indigenous population and the rest of the population across a range of health status measures. There are inadequate national data to determine the applicability of this statement to the prisoner population.

4.11 National Health Priority Areas: a population-based perspective

Significant interpopulation variation exists in the prevalence and health outcomes of various National Health Priority Area (NHPA) diseases and conditions and their risk factors. The risk of a particular disease or condition cannot be considered in isolation from the health risk of the population as a whole. Nonetheless, specific diseases are known to have different effects in different population groups.

A major source of this disease-specific variation is the underlying composition of a population. In the preceding sections of this chapter, population groups of Australian society have been defined using criteria such as stages of life, overseas-born, Aboriginal and Torres Strait Islander origin, socioeconomic disadvantage, and residence in rural and remote areas. These population groups are not exclusive, with significant overlap between them. Some of these groups correspond with specific causal factors in the distribution of various determinants of health and disease. Disease-based comparisons between these population groups enable insights into other factors that affect their states of health.

Varying effects of NHPA diseases and conditions over the lifetime

NHPA diseases and conditions affect all stages of life but the impact is much higher in the latter half of life. These effects can be usefully viewed through a partitioning of the life span into three life stages: children and young people (aged 0–24), adults (aged 25–64), and older people (aged 65 and over).

Children and young persons (aged 0–24)

Among children, adolescents and young adults, the NHPA diseases and conditions with most impact are injuries, asthma and mental health. In addition, NHPA diseases with high genetic components, e.g. Type 1 diabetes, contribute significantly to morbidity, disability and mortality.

Injury is a leading contributor to the burden of disease in Australian children and young persons, in particular in terms of the years of life lost prematurely. Much lifelong disability also results from injuries sustained in this period of life. Injuries accounted for 8.4% of the total disability-adjusted life years (DALYs) in 1996, with the burden peaking in the age range 15–24 (AIHW: Mathers et al. 1999). They continued to be the leading cause of death among children and young persons in 2000 (ABS 2001c).

Although not a large cause of mortality, asthma contributes significantly to years of healthy life lived with disability. Almost 70% of the total burden of asthma in Australia falls within childhood (AIHW: Mathers et al. 1999). Asthma ranked sixth for problems managed by GPs in 2000–01, with a large proportion (41.4%) of patients managed aged less than 25 (AIHW: Britt et al. 2001). In addition, childhood asthma was responsible for a large number of attendances at emergency departments.

Mental health is a major concern among young people, in particular among those aged 15–24 (AIHW: Mathers et al. 1999). Depression is common among young adults, especially females (see Chapter 2).

Several of the NHPA diseases and conditions taking hold in these early years become chronic and affect a person's whole life. Several risk-taking behaviours such as tobacco smoking and alcohol misuse are also initiated early in life.

Adults (aged 25–64)

Adulthood is a period of relative stability in health terms. The health changes that characterise it are often subtle, related to complex behavioural, biomedical and socioeconomic risk factors. However, adulthood is an extremely large part of the lifespan and therefore could be split into two broad chronological periods from the NHPA perspective—those aged 25–44 and those aged 45–64. This division usually marks a shift from greater effects of mental illnesses and injuries to those of cardiovascular diseases and cancers. The division also usually indicates a change in health risk behaviours.

The persistence of injuries as a prominent cause of premature mortality and morbidity among males aged 25–44 in some way reflects a continuity of risk-taking behaviours characteristic of young adulthood. In 1996, injuries accounted for almost 27.6% of DALYs lost in this age group, followed by mental disorders at 27.3% (AIHW 2000). On the other hand, cardiovascular diseases and cancers were the leading burden of diseases among those aged 45–64. Dominant cardiovascular diseases were ischaemic heart diseases and stroke; the leading cancers were lung and colorectal.

Mental disorders dominated the burden of disease among females aged 25–44 (33.8% of all DALYs), followed by cancers (13.1%), in 1996. Depression and breast cancers were the major single causes of disease and injury. Cancers take over as the leading contributor to the burden of disease among females aged 45–64 (33.1% of all DALYs in 1996), followed by cardiovascular diseases (13.7%) (AIHW 2000). Breast, lung and colorectal cancer were the leading contributory cancers among females.

Older people (aged 65 and over)

NHPA diseases and conditions play a predominant role in health outcomes among those aged 65 and over. The health of older people is largely the result of a cumulation of exposure to a variety of risk factors, in combination with various ageing processes. Environmental rather than genetic factors are the major sources of disease-specific variation in this particular stage of life.

Cardiovascular disease dominates the burden of disease for older Australians, accounting for 37% of total DALYs in 1996. Ischaemic heart disease was the dominant disease process, responsible for 21.7% of DALYs among males and 20.3% of DALYs among females. Stroke was a relatively more prominent cause of death among females in this age group, accounting for 10.7% of total DALYs. Cancer was responsible for 24% of DALYs in this age group in 1996. In terms of specific cancers, lung, prostate and colorectal cancers were the top three DALY contributors among males; breast, colorectal and lung cancer were the three correspondingly ranked cancers among females (AIHW: Mathers et al. 1999).

Injuries have serious health implications, both in terms of hospitalisation and mortality, among the elderly. This is particularly the case for falls. Hospitalisation rates increase exponentially with age, with the rate among females being much higher than among males (AIHW: Cripps & Carman 2001).

NHPA diseases and conditions among the overseas-born

As described earlier, the health of Australians born overseas differs markedly from that of the local Australian population, in terms of hospitalisation and death rates. This health advantage is often attributed to the 'healthy migrant effect', reflecting stringent health requirements for immigrants. However, this advantage is not consistent across the board, and shows variations for specific diseases and conditions. In the case of certain specific diseases, people born overseas reveal disadvantage in comparison to local residents. Besides, with time, the health risk of immigrants begins to match that of those born in Australia.

The overseas-born have a lower hospitalisation rate for all NHPA diseases and conditions than the Australian-born, with the exception of some cancers. Lung cancer and cervical cancer have higher hospitalisation rates and mortality among women from the United Kingdom and Ireland and those born in Asia and North Africa, respectively. Similarly, diabetes is a relatively larger contributor to mortality among those born in Europe, Asia and North Africa.

NHPAs and Indigenous people

The Indigenous people of Australia experience poorer health than the rest of the population. This inequality, mainly due to disadvantage and higher psychosocial risk factors, leads to a wide range of health problems. These health inequalities arise and accumulate from a lifetime of disadvantage related to inadequate access to appropriate social, legal and economic support and physical infrastructure. However, these inequalities vary in their effect through various NHPA diseases and conditions. Diabetes, for example, is a disproportionately major cause of mortality and morbidity in Indigenous Australians.

Cardiovascular disease is a large killer in the Indigenous population, with a standardised mortality ratio (SMR) more than twice that of the rest of the population. The apparently low risk ratio notwithstanding, the impact of these diseases upon the health of Indigenous Australians is high because of their high prevalence. The SMR is much higher (between 7 and 10) among those aged 25–64 (AIHW 2001d).

Indigenous people experience higher death rates for all cancers, 40% higher than the community in general (ABS & AIHW 2001). This inequality is, however, not consistent across various types of cancer. Whereas the death rate for lung cancer is much higher among Indigenous people, it is relatively lower for melanoma and prostate cancers.

Injuries (accidents, assaults and intentional self-harm) also affect the health of Indigenous Australians disproportionately compared with that of the general Australian population. They accounted for 15% of the deaths in 2000 compared with 6% in the Australian population as a whole (ABS 2001c). This injury-related differential is also reflected in hospital separation statistics. Hospitalisations due to assault among Indigenous males were 6 times that of other Australian males in 1998–99; the ratio was much higher among females (ABS & AIHW 2001).

The mental health differential is a complex issue in the case of Indigenous people because there are many facets to the issue compounded by a recent history of displacement and disadvantage (DHAC & AIHW 1999a). Taking intentional self-harm and suicide as an indicator of depression, it becomes evident that Indigenous people are exposed to greater levels of depression. They also have twice the number of hospital separations for intentional self-harm than expected on the basis of rates observed in the Australian population as a whole (ABS & AIHW 2001).

As mentioned earlier, diabetes is a very big concern among Indigenous Australians. The prevalence of diabetes among Indigenous people is one of the highest in the world. Self-reported diabetes among Indigenous people aged 25–55 is some 7 to 8 times that of the rest of the Australian population. It is also a large contributor to premature mortality—diabetes as an underlying cause of death was recorded at three times the rate in the Australian population in 1997–1999 (AIHW 2001d).

Asthma is also a more commonly reported condition among Indigenous people than the Australian population as a whole (ABS 1999c). Also, over 16,000 people identifying themselves as Indigenous were admitted to Australian hospitals in 1998–99 with a disease of the respiratory system as the principal diagnosis. This is a rate about twice the expected rate in the Australian population (ABS & AIHW 2001).

NHPAs and socioeconomically disadvantaged people

The focus of socioeconomic disadvantage in relation to health, in this chapter, has been on the differences between the first quintile or Q1 (least disadvantaged) and the fifth quintile or Q5 (most disadvantaged) of the population grouped by the Index of Relative Socioeconomic Disadvantage.

In DALY terms, the burden of disease for Q5 in Australia was 37% higher among males and 27% higher among females than those in the Q1 category (AIHW: Mathers et al. 1999). Given that NHPA conditions account for 70% of the total burden of disease and injury in Australia in 1996, a significantly large proportion of these differences is attributable to NHPAs. However, this difference is not consistent across various NHPAs.

Cardiovascular disease disproportionately affects those in Q5 in comparison to those in Q1, with a risk ratio of 2 for people aged 25–64 (AIHW 2001d). Similarly, diabetes and motor vehicle accidents were 80% higher in Q5 compared with Q1 (ABS 2001c). The cancers, however, show a 15% higher death rate among those in Q5 when compared with those in the Q1 category.

NHPAs and rural and remote populations

Injuries, cardiovascular disease and mental health constitute important NHPA-related differentials between those living in the metropolitan areas and rural and remote areas of Australia.

For residents of rural and remote Australia, injuries are a major concern (DHFS & AIHW 1998a). Injury-related death rates in rural and remote localities are almost twice that in the metropolitan areas (AIHW 1998; AIHW: de Looper & Bhatia 2001), and hospital separations for injuries in rural and remote areas are respectively 2 and 3 times that of metropolitan areas. Motor vehicle accidents are a major cause of these differentials. Inter-personal violence and associated health problems are also higher in rural and remote areas (AIHW 1998).

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5 Health resources and use of services

This chapter provides a description of the structure and administration of health services in Australia, and presents details relating to two of the components of the conceptual framework for health presented in Chapter 1:

- the resources or inputs of the health services
- the interventions that are their outputs.

The resources or inputs covered in the chapter include financial, material and human resources, such as expenditure on health, the nature of hospitals and other healthcare delivery establishments, and the health labour force. Interventions discussed include those provided to individual patients by hospitals, general practitioners and community-based health services, and those provided as population health interventions.

The chapter concludes with a focus on health services relating to the National Health Priority Areas.

5.1 Overview of health services in Australia

The healthcare system in Australia is complex, involving many funders and providers. Responsibilities are split between different levels of government, and the public and the for-profit and not-for-profit non-government sectors all have roles.

Coordination

The Australian Health Ministers' Advisory Council (AHMAC) is a committee of the heads of the Commonwealth, State and Territory health authorities and the Commonwealth Department of Veterans' Affairs (DVA). It is the major decision-making body on national health issues. AHMAC advises the Australian Health Ministers' Conference on policy, resources and financial issues. Specific national bodies have been established by AHMAC or the Ministers to coordinate information, advice and program implementation, such as:

- the National Health Information Management Group, which coordinates and directs the implementation of the National Health Information Agreement. The Agreement, signed by Commonwealth, State and Territory health and statistical authorities, is the cornerstone of national health information development in Australia.
- the National Public Health Partnership, established in 1996 by the Commonwealth, State and Territory governments. The role of the Partnership is to plan and coordinate national public health activities, to provide a more systematic and strategic approach to tackling public health priorities, and to provide a means for assessing and implementing major initiatives, new directions and best practice.

- the Australian Council for Safety and Quality in Health Care, which leads national efforts to improve the safety and quality of health care, with a particular focus on minimising the likelihood and effects of error.

Commonwealth, State and Territory governments

Commonwealth Government

Under the Constitution, the Commonwealth Government's health-related powers are limited mainly to the areas of quarantine; the health needs of veterans; pharmaceutical, sickness and hospital benefits; and medical and dental services. However, the provision of specific-purpose grants to States under s 96 of the Constitution has enabled the Commonwealth to have a wider role in the health system by providing health funding to the States.

For hospitals, the Australian Health Care Agreements provide the basis for the Commonwealth Government's financial contribution to public hospitals (which are also funded by the States and Territories). The Agreements are based on the principles that public hospital services should be provided free of charge to public patients, that access to these services must be on the basis of clinical need and within a clinically appropriate period, and that people should have equitable access to public hospital services regardless of their geographical location.

The Commonwealth operates universal benefits schemes for private medical services (Medicare, see Box 5.9, page 302), and for pharmaceuticals (Pharmaceutical Benefits Scheme (PBS), see Box 5.10, page 321) and other programs, such as for population health. The Department of Health and Ageing also funds residential aged care and community aged care packages. These are described in *Australia's Welfare 2001* (AIHW 2001a).

Other Commonwealth health-related activities are undertaken by:

- the Therapeutic Goods Administration, which is responsible for carrying out a range of assessment and monitoring activities to ensure therapeutic goods available in Australia are of an acceptable standard
- the Health Insurance Commission, a statutory authority which administers Medicare (for medical services), the PBS and some other benefit payment arrangements
- the armed services, which provide for the health care of serving personnel
- the DVA, which arranges health care for most war veterans, war widows, some other dependants of deceased veterans and some ex-service personnel
- the Office for Aboriginal and Torres Strait Islander Health, which works with Aboriginal and Torres Strait Islander communities to provide access to primary healthcare services and population health programs
- the Australian Quarantine and Inspection Service, which provides quarantine inspection services for when international passengers, cargo, mail, and animals and plants or their products arrive in Australia
- the Australia New Zealand Food Authority, a statutory authority that establishes and maintains uniform food regulations in Australia and New Zealand

- the National Health and Medical Research Council, a statutory authority that combines the functions of research funding and development of advice. It fosters the development of consistent health standards among the various States and Territories, medical and public health research, and consideration of ethical issues relating to health
- the Australian Institute of Health and Welfare (AIHW), a statutory authority, which is Australia's national agency for health and welfare statistics and information. It works with many government and non-government bodies to generate reliable, regular and current facts and figures on the health and welfare of Australians
- the Australian Bureau of Statistics (ABS), which conducts large-scale population surveys of health and health services on a regular basis. Many of its other surveys also provide health data.

State, Territory and local governments

State and Territory governments have the major responsibility for the public provision of health services, and for public health. The health services usually delivered by State and Territory health authorities (but sometimes delivered by community service departments or local government) are public hospital services (acute care and psychiatric, including admitted-patient services, outpatient clinics and emergency departments); mental health services; dental health services (including school dental services); infant health centres; health promotion and prevention activities; community health centres; ambulance services; and regulation, inspection, licensing and monitoring of premises, institutions and personnel. Some services are funded by governments but delivered by non-government organisations or private providers in some States and Territories.

Several State and Territory governments have established 24-hour telephone 'triage' services in recent years. These are staffed largely by registered nurses who may use decision support software to answer queries from callers about health problems. Western Australia's HealthDirect service, for example, received over 300,000 calls in the 24-month period from May 1999 (Turner et al. 2002).

Most States also provide substantial infrastructure support for medical research institutes established in association with universities and teaching hospitals.

The health responsibilities of local governments vary from State to State, but are mainly in environmental control and in a range of community-based and home-care services. Piped water, sewage disposal and drainage are controlled by local government or by State-owned or local government-owned water utility corporations. In some jurisdictions, water quality is monitored independently by health authorities. Other authorities are responsible for monitoring and regulating air quality. Agencies have been established in most States to control the disposal of wastes and to administer the disposal sites in metropolitan areas, leaving local government to be responsible for the collection and transport of waste material.

The private sector

The private sector's provision of health services includes private medical practitioners and dentists, community pharmacies, other private practitioners and private hospitals.

Private hospitals may operate for profit, or as not-for-profit enterprises, or may be run by religious or charitable organisations. Funding is usually through private health insurance, patient payment, Medicare (for in-hospital medical care), government-contracted services, the DVA, and other insurance including workers compensation, motor vehicle accident and public liability.

Medical care outside hospitals is based on general practitioners (GPs), mainly in private practice, who constitute the principal gateway to specialised services, specialist doctors, pathology, imaging and pharmaceuticals. GPs and other medical practitioners can bill patients and Medicare provides automatic entitlement to benefits for the patients at set rates. Alternatively, the federal government can be direct-billed (see Box 5.9, page 302).

Box 5.1: Corporatisation in health care

Over the last decade or so, there has been increased corporatisation of private healthcare services, including private hospitals, general practice, specialist medical practice, medical centres, pharmaceutical manufacturing and supply, and pathology and imaging services. In many cases, individual companies have interests in more than one of these activities, enabling patients to be referred from one activity to another within the corporation's group, and sometimes within one physical location. GPs play a gatekeeper role in Australia's healthcare system, and for every dollar of Medicare benefits paid in 2000–01 to GPs, another $0.83 was paid by Medicare for patients referred by them for specialist attendances, diagnostic imaging and pathology (including patient episode initiation items), and another $1.17 was paid for pharmaceuticals through the PBS (DHA, unpublished HIC data). Hence, referral patterns can potentially influence revenue flows for these corporations from Medicare, the PBS and other funders.

Further data and analysis are needed to describe corporatisation in health care more completely, and its effects on service provision.

General practice

The corporatisation of general practice has involved the formation of larger practices in attempts to facilitate management and to provide access to capital for the purchase of equipment and information technology, for example (Power & Aloizos 2000).

Corporatisation of general practice occurs when, for example, GPs assign a proportion of their gross income to a company in return for management and support services and a goodwill payment. The number of GPs who work in this type of arrangement with large corporations is not known, but has been estimated to be about 2,500, or about 10% of the practising population (Clark 2001).

Private hospitals

Group for-profit private hospitals (hospitals that either own other hospitals or are owned by a parent company that owns other hospitals) have increased their share of the private hospital market over recent years. Between 1991–92 and 1999–00, there was an increase

(continued)

Box 5.1 (continued): Corporatisation in health care

of 49% in beds for these hospitals (from 7,217 beds to 10,731 beds), compared with falls of 14% for independent for-profit hospitals (from 2,838 beds to 2,430 beds), and 1.7% for not-for-profit hospitals (from 10,690 beds to 10,504 beds) (ABS unpublished Private Health Establishments Collection data). Similarly, the number of beds/chairs for group for-profit private freestanding day hospital facilities increased by 201% between 1991–92 and 1999–00 (from 83 to 250), and numbers for independent for-profit facilities grew by 180% (from 473 to 1,331).

Over this period, group for-profit hospitals recorded increases of 107% for separations (to 851,000) (compared with increases of 10% for independent for-profit hospitals and 31% (to 790,000) for not-for-profit hospitals), and 82% for patient-days (to 2,891,000) (compared with a fall of 16%, to 516,000, and an increase of 5%, to 2,825,000, respectively). This meant that they increased their market share from 35% to 47% of separations, and from 32% to 46% of patient-days. Group for-profit private freestanding day hospital facilities increased their separations by 200% (from 25,000 to 75,000) but their market share was similar in 1991–92 (20%) and 1999–00 (21%).

These changes were accompanied by a trend to larger group for-profit private hospitals, with an increase in the average number of beds from 63 in 1991–92 to 87 in 1999–00 (38%). In comparison, the average size of not-for-profit hospitals increased from 75 beds to 88 beds (17%) and the size of independent for-profit hospitals fell on average by 11%, from 46 beds to 41 beds.

The main players

In 2001, Mayne Health operated 61 hospitals (including 4 public hospitals) throughout Australia, large pathology and diagnostic imaging services, medical centres and workplace health services. It provided over 500,000 hospital admissions, over 1.4 million diagnostic imaging services and 4.9 million pathology services (Mayne Nickless Ltd 2002). Healthscope provided services for over 200,000 patients through its 13 hospitals (including one public hospital) and other health facilities in 2000–01 (Healthscope Ltd 2002). Ramsay Health Care provided services for over 100,000 patients in 2001 through its 22 hospitals and centres offering allied health services (Ramsay Health Care 2002). In 2001, Foundation HealthCare Limited had about 1,000 general practitioners and 135 medical centres, and Primary Healthcare had about 320 general practitioners. Medical Care Services had 12 medical centres in Perth employing about 150 doctors, and owned half of Gribbles, a pathology company which provides over 2 million pathology tests each year (Catchlove 2001; Gribbles Group 2002). Endeavour Healthcare had 400 general practitioners and was also involved in radiology and occupational health (Clark 2001). Sonic Healthcare was a large pathology and radiology provider, which was working with Foundation HealthCare to locate facilities in the latter's medical centres, and provided 10 million services in 2001 (Sonic Healthcare 2001).

Dental care is most commonly delivered by private practitioners. Patients usually pay direct, with private health insurers providing some rebates.

Non-hospital pharmacy services are provided by private community pharmacists. Most pharmaceuticals are included in the PBS which subsidises the price to consumers.

Allied health services such as physiotherapy, nursing and optometry can be provided through private practices, although some are provided through public hospitals, residential aged care facilities and community health centres. The mix varies depending on the type of provider. For example, 57% of speech pathologists work in the government sector but 99% of optometrists work in private practice (AIHW 2001b). Optometrists are the only allied health professionals covered by Medicare.

Complementary and alternative health services are a growing part of the private sector. They are funded by patient payments and in some cases part of the funding is through private health insurance.

5.2 Health services funding and expenditure

Funding for healthcare services comes from a number of government and non-government sources. Government funding sources include the Commonwealth, State/Territory and local government agencies. Commonwealth government funds cover payments for medical services, high-level residential aged care, pharmaceuticals, health insurance rebates, population health programs and payments to States and Territories for hospital services. States and Territories use their own funds to supplement Commonwealth funding for a wide range of health service provision. Non-government sources include payments by individuals, health insurance organisations and providers of motor vehicle third-party and workers compensation insurance.

The total cost of providing and supporting health services is calculated each year as the total expenditure on health services in Australia. The total includes expenditure on health-related activities, such as research and administration, and on health infrastructure (buildings, high-cost equipment and other capital items).

In this section, health services expenditure is examined in terms of total expenditure and expenditures on the major types of health services and health-related activities. Some of the main factors contributing to changes in health services expenditure over time are described. Comparisons are made of expenditure by the State and Territory governments in recent years, and with other OECD member countries.

Summary of health funding and expenditure in Australia

Australia's Health 2000 reported on health expenditure up to 1997–98. Since then, the following have been noteworthy:

- In 1999–00 Australia spent 8.5% of its gross domestic product on health services. This proportion was slightly down on the previous year, but one percentage point higher than at the beginning of the 1990s.
- In 1999–00 an estimated 71.2% of the $53.7 billion spent on health services was funded by governments.

- The Commonwealth Government met 48.0% of total funding (up from 44.2% in 1996–97), and non-government sources accounted for 28.8% (down from 32.8%). State/Territory and local governments' funding share was 23.2%, up marginally from 1996–97 (23.0%).
- Much of the shift to Commonwealth funding from non-government sources of funding was due to the rebates paid to private health insurance members since 1997.
- Average spending on health services in 1999–00 was $2,817 per person.
- Spending on hospital services accounted for 38.0% of all recurrent expenditure in 1998–99 (the latest year for which detailed estimates by health service type are available).
- The areas of most rapid growth over the 1990s were pharmaceuticals (7.5% per year) and private hospitals (7.4%).

Sources of funds for health services in Australia

Funding is provided by all three levels of government—Commonwealth, State/Territory and local—as well as by non-government sources. Funding reported here refers to funding net of transfers. For example, funding by State and local governments is net of grants, such as specific-purpose payments provided to the States and Territories for health purposes by the Commonwealth; the grants are regarded as Commonwealth funding in this case. In much of the discussion that follows, State and Territory government and local government sources are combined as 'State and local government'.

Funding of health services by the Commonwealth and by the State and Territory governments is sourced from the consolidated revenues of those levels of government. The Commonwealth's general revenues include the Medicare levy (see Box 5.2), which in 1999–00 totalled $4,350 million. This was 16.9% of the estimated total Commonwealth funding for health services of $25,771 million (AIHW 2001c). This compares with 10.1% of total health funding by the Commonwealth in 1984–85, the first full year in which the levy was collected ($12,104 million).

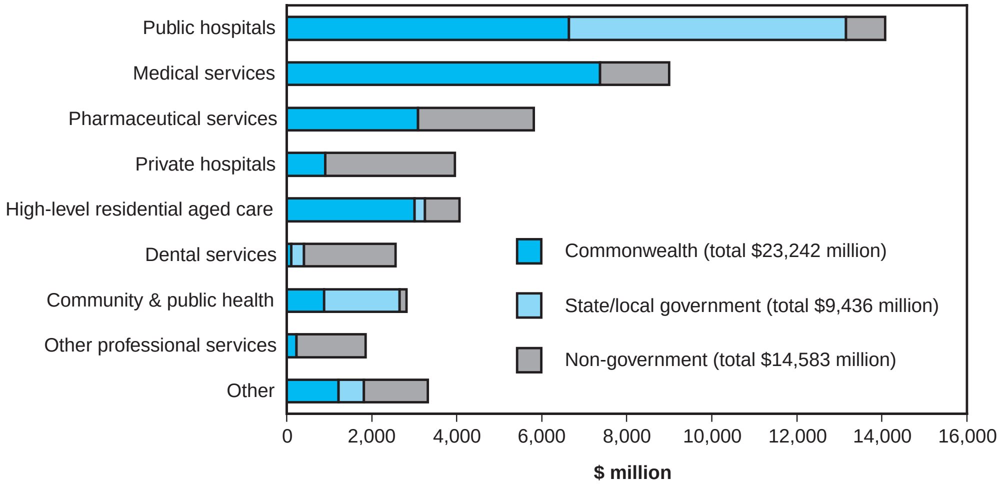
The share of each of the major sources of funding for health services varies according to the type of service. For high-level residential aged care and medical services, the Commonwealth Government provides most of the funding. Community and public

Box 5.2: Medicare levy

Almost all Commonwealth government funding for health services comes from general revenue. However, one portion of the Commonwealth's revenue collections is, at least nominally, health-related—the Medicare levy. This levy was originally 1.0% of taxable earnings. It has been increased several times since 1984 and the basic rate is currently set at 1.5% of taxable income. The levy has also been subject to 'one-off' surcharges from time to time to cover the costs of non-health initiatives of the Commonwealth.

From October 1997, high-income earners who do not have private insurance cover for hospital care have been required to pay an additional surcharge of 1.0% of taxable income.

health services are largely funded by the State and Territory governments, and funding for pharmaceuticals is shared between Commonwealth and non-government sources. Private hospitals are funded largely by non-government sources (Figure 5.1).



Source: AIHW Health Expenditure Database.

Figure 5.1: Recurrent health expenditure by health service type and source of funds, current prices, 1998–99

Table 5.1: Government and non-government sector expenditure as a proportion of total health services expenditure, 1989–90 to 1999–00, current prices (per cent)

	Government			Non-	
Year	**Commonwealth[a]**	**State and local**	**Total**	**government[a]**	**Total**
1989–90	42.2	26.1	68.3	31.7	100.0
1990–91	42.2	25.5	67.7	32.3	100.0
1991–92	42.8	24.6	67.4	32.6	100.0
1992–93	43.7	23.4	67.1	32.9	100.0
1993–94	45.3	21.4	66.7	33.3	100.0
1994–95	45.0	21.7	66.7	33.3	100.0
1995–96	45.5	22.2	67.6	32.4	100.0
1996–97	44.2	23.0	67.2	32.8	100.0
1997–98	45.4	23.9	69.3	30.7	100.0
1998–99	46.8	23.2	70.1	29.9	100.0
1999–00[b]	48.0	23.2	71.2	28.8	100.0

(a) Commonwealth and non-government expenditure has been adjusted for tax expenditures (see Table S41).

(b) Based on preliminary AIHW and ABS estimates.

Source: AIHW Health Expenditure Database.

In 1999–00 the Commonwealth Government provided 48.0% of the funding for health services, State and local governments provided 23.2% and non-government sources provided the remaining 28.8% (Table 5.1).

Commonwealth Government funding

In 1998–99 most of the Commonwealth's funding was applied to medical services (30.9%) and public non-psychiatric hospitals (27.8%) (calculated from Table S42). High-level residential aged care and pharmaceuticals were also large consumers of Commonwealth funding.

State and local government funding

Almost all the health funding by State and local governments is provided by the State and Territory governments. The contribution by local governments is largely confined to some high-level residential aged care and public/community health services. The funding by State and Territory governments is that part of total expenditure on health services that comes from their own revenue sources. It includes specific-purpose payments from the State governments to local governments for health expenditure purposes.

Nationally, most funding by State and local governments is directed to services in public hospitals. In 1998–99, $6,516 million or 55.0% of their total funding for health services went to public hospitals. In addition, a large proportion of the capital formation funded by State and local governments was for public non-psychiatric hospitals (Table S42).

Non-government funding

Most of the recurrent funding provided by non-government sources is in the form of out-of-pocket payments by individuals. In 1998–99 these payments accounted for 58.1% of the $14,583 million spent by non-government sources (Table S42). This was more than double the contribution by private health insurance funds from their own resources ($4,061 million). Other sources—mainly compulsory motor vehicle third-party and workers compensation insurers—met the balance.

Real growth in funding, by sources

Between 1989–90 and 1999–00, real growth in funding by the Commonwealth Government averaged 5.7% per year (Table 5.2). At the same time, contributions by State and local governments grew by 3.0% per year, and non-government funding by 2.5%.

The State and Territory governments' main health funding responsibilities are often in areas of health expenditure that had relatively low rates of growth during the 1990s. These include public hospitals (both psychiatric and non-psychiatric hospitals). Between 1989–90 and 1998–99 expenditure on public non-psychiatric hospitals grew at 2.9% per year in real terms, compared with 4.0% for total recurrent health expenditure (Table S43). At the same time, real expenditure on public psychiatric hospitals fell by an average of 5.2%. In contrast, growth in expenditure was high in areas where the Commonwealth had the major responsibility for funding—for example, expenditure on medical services and pharmaceuticals grew at 4.5% and 7.5%, respectively, during the 1990s. Expenditure on private hospitals, which, although largely funded from non-government sources, involves third-party payments regulated by the Commonwealth, grew rapidly (7.4%) over the decade.

Table 5.2: Funding of health services, constant prices[(a)] and annual growth rates, 1989–90 to 1999–00

Year	Government				Non-government[(b)]		Total	
	Commonwealth[(b)]		State and local					
	Amount ($m)	Growth (%)	Amount ($m)	Growth (%)	Amount ($m)	Growth (%)	Amount ($m)	Growth (%)
1989–90	14,720	. .	9,107	. .	11,520	. .	35,347	. .
1990–91	14,917	1.3	9,216	1.2	12,003	4.2	36,136	2.2
1991–92	15,833	6.1	9,175	–0.4	12,395	3.3	37,403	3.5
1992–93	16,824	6.3	9,144	–0.3	13,075	5.5	39,043	4.4
1993–94	18,212	8.3	8,704	–4.8	13,696	4.8	40,613	4.0
1994–95	18,921	3.9	9,234	6.1	14,159	3.4	42,314	4.2
1995–96	20,094	6.2	9,803	6.2	14,432	1.9	44,329	4.8
1996–97	20,637	2.7	10,759	9.8	15,361	6.4	46,757	5.5
1997–98	22,205	7.6	11,684	8.6	14,959	–2.6	48,849	4.5
1998–99	23,892	7.6	11,852	1.4	15,266	2.1	51,011	4.4
1999–00[(c)]	25,556	7.0	12,191	2.9	14,788	–3.1	52,535	3.0
Average annual growth rates								
1989–90 to 1992–93		4.6		0.1		4.3		3.4
1992–93 to 1997–98		5.7		5.0		2.7		4.6
1997–98 to 1999–00		7.3		2.1		–0.6		3.7
1989–90 to 1999–00		5.7		3.0		2.5		4.0

. . Not applicable.

(a) See Box 5.4 for explanation of constant price estimating method.

(b) Commonwealth government and non-government sector funding adjusted for tax expenditures (see Table S41).

(c) Based on preliminary AIHW and ABS estimates.

Source: AIHW Health Expenditure Database.

Influence of Commonwealth–State health service funding agreements

During the life of Medicare, the Commonwealth and the State and Territory governments have entered into a number of 5-yearly agreements for the funding of specified health services in the States and Territories concerned (Box 5.3). In this publication, focus on the impact of the agreements on funding for health services has been limited to the latest two periods and to part of the second period from 1989–90.

Between 1989–90 and 1992–93, the Commonwealth's share of health funding increased from 42.2% to 43.7% and the proportion met by State and local governments fell from 26.1% to 23.4%. The share of funding borne by non-government sources increased from 31.7% to 32.9% (Table 5.1).

Box 5.3: Commonwealth–State health funding agreement periods

First Medicare (Compensation) Agreement: 1984 to June 1988
Second Medicare Agreement: 1 July 1988 to 30 June 1993
Third Medicare Agreement: 1 July 1993 to 30 June 1998
First Australian Health Care Agreement: 1 July 1998 to June 2003

The Commonwealth's proportion of funding for health services rose from 43.7% in 1992–93 to 45.3% at the beginning (1993–94) of the third Medicare agreement period. That was offset by a fall in the State and local governments' share (from 23.4% to 21.4%). Over the remainder of that agreement period, the Commonwealth's proportion fluctuated slightly to finish the period at 45.4% in 1997–98. At the same time, the State and local governments' share of funding increased to 23.9%. The proportion of funding met by non-government sources decreased marginally between 1993–94 and 1996–97, from 33.3% to 32.8%, and fell further, to 30.7%, in 1997–98.

In the latest agreement period, the funding share met by the Commonwealth increased each year, to an estimated 48.0% in 1999–00. The share met by State and local governments fell marginally, to 23.2% in 1999–00, and the non-government share continued its fall, to 28.8%.

Expenditure on health services in Australia, 1989–90 to 1999–00

Estimated total expenditure on health services in Australia in 1999–00 was $53,657 million (Table 5.3). This represented 8.5% of Australia's estimated gross domestic product (GDP) in that year and compares with 7.5% in 1989–90 and 8.6% in 1998–99. Estimates for recent years are subject to revisions as data are progressively refined by the various data provider agencies.

Between 1989–90 and 1999–00, total expenditure on health services grew at a real average annual rate of 4.0% (Table 5.4) (6.4% in current prices; Table S44). The period of most rapid real growth was between 1992–93 and 1997–98, when expenditure growth averaged 4.6% per year.

Australia's expenditure on health services as a proportion of GDP grew slowly for most of the 1990s. This was because nominal growth (current prices) in health expenditure over the period (6.4% per annum) was greater than the nominal growth in GDP (5.1% per annum) (AIHW 2001c).

Table 5.3: Total health services expenditure and GDP, current prices, 1989–90 to 1999–00

Year	Total health services expenditure ($m)	GDP ($m)	Ratio of health services expenditure to GDP (%)
1989–90	28,800	384,238	7.5
1990–91	31,270	396,684	7.9
1991–92	33,087	405,961	8.2
1992–93	34,993	426,746	8.2
1993–94	36,787	449,416	8.2
1994–95	38,967	473,381	8.2
1995–96	41,783	506,975	8.2
1996–97	44,851	532,170	8.4
1997–98	47,648	564,653	8.4
1998–99	51,011	595,417	8.6
1999–00[(a)]	53,657	632,416	8.5

(a) Based on preliminary AIHW and ABS estimates.

Sources: AIHW Health Expenditure Database; *ABS Australian National Accounts—National Income, Expenditure and Product, June quarter*, various years (Cat. No. 5206.0).

Table 5.4: Total health services expenditure and GDP, constant prices[(a)], 1989–90 to 1999–00

	Total health services expenditure		GDP	
Year	**Amount ($m)**	**Growth rate (%)**	**Amount ($m)**	**Growth rate (%)**
1989–90	35,347	. .	441,385	. .
1990–91	36,136	2.2	440,389	–0.2
1991–92	37,403	3.5	442,023	0.4
1992–93	39,043	4.4	457,985	3.6
1993–94	40,613	4.0	476,989	4.1
1994–95	42,314	4.2	498,550	4.5
1995–96	44,329	4.8	520,261	4.4
1996–97	46,757	5.5	539,088	3.6
1997–98	48,849	4.5	565,126	4.8
1998–99	51,011	4.4	595,417	5.4
1999–00[(b)]	52,535	3.0	621,186	4.3
Average annual growth rates				
1989–90 to 1992–93		3.4		1.2
1992–93 to 1997–98		4.6		4.3
1997–98 to 1999–00		3.7		4.8
1989–90 to 1999–00		4.0		3.5

. . Not applicable.

(a) See Box 5.4 for explanation of constant price estimating method.

(b) Based on preliminary AIHW and ABS estimates.

Sources: AIHW Health Expenditure Database; *ABS Australian National Accounts—National Income, Expenditure and Product, June quarter*, various years (Cat. No. 5206.0).

Box 5.4: Constant price estimates and current prices

Wherever 'constant price' estimates are shown they are intended to reflect changes in volume expressed in terms of prices in the reference year—1998–99 in this publication. Most constant price estimates are calculated using the annually reweighted chain price indexes produced by the ABS. In some cases, however, chain price indexes are not available, and implicit price deflators derived by the ABS have had to be used to calculate the constant price estimates.

A full discussion of chain volume measures can be found in the 1997 ABS publication Chain Volume Measures in the Australian National Accounts, *ABS Cat. No. 5248.0.*

The term 'current prices' is used to refer to amounts as reported for the reference year, unadjusted for inflation. Current price amounts are therefore less comparable between reporting years.

Average per person expenditure on health services

In 1999–00, the average expenditure on health services was $2,817 per person (Table 5.5). After adjusting for inflation, it grew over the 1990s at an average of 2.8% per year. This growth reflects the combined effects of changes in the intensity of use of health services by individuals and the nature of those services.

Table 5.5: Health services expenditure per person, current and constant prices[(a)], and annual growth rates, 1989–90 to 1999–00

	Amount ($)		Growth rate over previous year (%)	
Year	**Current**	**Constant**	**Current**	**Constant**
1989–90	1,700	2,087	. .	. .
1990–91	1,820	2,104	7.1	0.8
1991–92	1,902	2,150	4.5	2.2
1992–93	1,990	2,220	4.6	3.2
1993–94	2,071	2,286	4.1	3.0
1994–95	2,170	2,356	4.8	3.1
1995–96	2,296	2,436	5.8	3.4
1996–97	2,434	2,538	6.0	4.2
1997–98	2,557	2,621	5.0	3.3
1998–99	2,706	2,706	5.8	3.2
1999–00[(b)]	2,817	2,758	4.1	1.9
Average annual growth rates				
1989–90 to 1992–93			5.4	2.1
1992–93 to 1997–98			5.1	3.4
1997–98 to 1999–00			5.0	2.6
1989–90 to 1999–00			5.2	2.8

. . Not applicable.

(a) See Box 5.4 for explanation of constant price estimating method.

(b) Based on preliminary AIHW and ABS estimates.

Source: AIHW Health Expenditure Database.

Between 1996–97 and 1998–99, the fastest growth in average per person expenditure by State and Territory occurred in Western Australia (13.0%) and the Australian Capital Territory (11.8%), whereas in Tasmania it fell by 3.6%. This was largely influenced by growth in expenditure on public (non-psychiatric) hospitals in those jurisdictions (see Table 5.6).

Expenditure on health services for Aboriginal and Torres Strait Islander peoples

Aboriginal and Torres Strait Islander peoples have much poorer health status (as described in Chapter 4), and a far greater proportion of the population live in remote areas where the costs of delivering health services are higher. Despite this, the average expenditure per person on health services for Aboriginal and Torres Strait Islander peoples was similar to that for the rest of the population in 1998–99 (AIHW 2001d). Total recurrent expenditures on Indigenous people were estimated at $1,245 million, or 2.6% of expenditure for the whole population. That translates into an average of $3,065 per Indigenous person, compared with $2,518 per person for other Australians, giving a ratio (Indigenous people to other Australians) of 1.22:1 (Table S45).

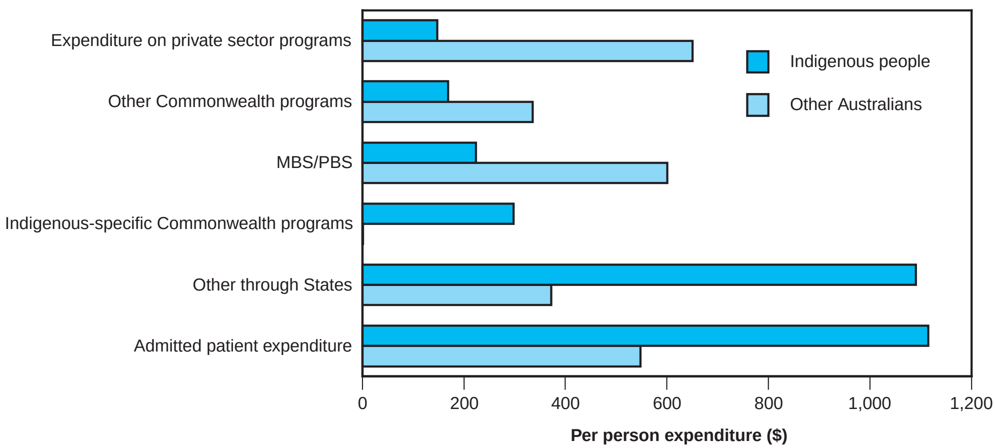
There were significant differences in the patterns of expenditure between Aboriginal and Torres Strait Islander peoples and other Australians. The former were much higher users of State- and Territory-funded health services, in particular admitted patient services in public hospitals and community health services (Figure 5.2). The per person expenditure ratio for all State and Territory programs combined was 2.40:1.

Table 5.6: Average per person expenditure on public (non-psychiatric) hospital and total health services, 1996–97 to 1998–99, constant prices[(a)] ($)

State/Territory	1996–97	1997–98	1998–99	Change 1996–97 to 1998–99 (%)
Public (non-psychiatric) hospitals				
NSW	758	780	814	7.5
Vic	659	684	695	5.4
Qld	586	604	607	3.5
WA	641	712	705	9.8
SA	658	701	707	7.4
Tas	629	596	613	–2.5
ACT	780	856	885	13.4
NT	856	891	924	8.0
Australia	**679**	**708**	**725**	**6.8**
Total health services				
NSW	2,660	2,715	2,755	3.6
Vic	2,479	2,550	2,674	7.9
Qld	2,444	2,533	2,640	8.0
WA	2,303	2,561	2,602	13.0
SA	2,595	2,658	2,740	5.6
Tas	2,840	2,680	2,737	–3.6
ACT	2,495	2,636	2,790	11.8
NT	2,731	2,972	2,855	4.5
Australia	**2,537**	**2,621**	**2,706**	**6.6**

(a) See Box 5.4 for explanation of constant price estimating method.

Source: AIHW Health Expenditure Database.



Source: AIHW 2001d.

Figure 5.2: Estimated health expenditures per person for Aboriginal and Torres Strait Islander peoples and other Australians, 1998–99

Aboriginal and Torres Strait Islander peoples were lower users of the two major Commonwealth health services funding programs, Medicare and the PBS. Average expenditure through these programs was just over one-third (37%) that for other Australians. After including spending on Indigenous-specific Commonwealth programs (consisting of grants to Aboriginal Community Controlled Health Services) and other nationwide Commonwealth health services, the Aboriginal and Torres Strait Islander:other Australian per person ratio was 0.74:1.

Average expenditure on privately funded services provided to Aboriginal and Torres Strait Islander peoples, such as private hospital and dental services and services provided by other allied heath professionals was also much lower than for the other Australian population. The per person expenditure ratio for all non-government services combined was 0.23:1.

Expenditure on veterans

In 2000–01, the DVA spent a total of $2,960 million on the health care of the veteran community, most notably on eligible veterans and war widows/widowers with gold or white DVA healthcare cards (Table 5.7). The largest components were for private hospitals and for local medical officers (GPs) and specialists. Note that elsewhere in this chapter, DVA expenditure is included in expenditure of the Commonwealth Government but not separately identified.

DVA health expenditure on eligible gold cardholders rose from an average of $5,800 per gold cardholder in 1996–97 to $8,400 in 2000–01 (Table 5.8).

Recurrent expenditure by type of health service

Recurrent expenditure on health services in 1998–99 was $47,481 million. This represented 93.1% of the total expenditure on health services in that year ($51,011 million).

In 1998–99 recurrent expenditure on hospitals, the largest category, was $18,031 million, made up of $13,675 million on public non-psychiatric hospitals, $3,959 million on private hospitals, and $397 million on public psychiatric hospitals (Table S42). Spending on high-level residential aged care was $4,066 million (8.6% of recurrent expenditure), medical services $9,001 million (19.0%), pharmaceuticals $5,819 million (12.3%) and dental services $2,566 million (5.4%). A further $1,860 million (3.9%) was spent on services provided by other health professionals, such as physiotherapists, chiropractors and podiatrists.

The proportion of recurrent expenditure directed to hospital services in 1998–99 (38.0%) was lower than at the beginning of the 1990s (40.6% in 1989–90) (Table S46). Much of this decline occurred in the public hospital systems. Expenditure on public non-psychiatric hospitals in 1998–99 was 28.8%, down from 32.3% in 1989–90, and public psychiatric hospital expenditure was 0.8%, down from 2.0% in 1989–90. This was, to some extent, offset by growth in expenditure on private hospitals, which grew from 6.3% to 8.3% over the same period.

Expenditure on pharmaceuticals represented 12.3% of recurrent health expenditure in 1998–99, up three percentage points from 1989–90. There were also marginal increases in medical services, dental services and other health professional services.

Table 5.7: Department of Veterans' Affairs health expenditure[(a)], 2000–01

Type of health service	$ million
Private hospitals	676[(a)]
Local medical officers and specialists	587
Public hospitals	516
Residential aged care subsidy	418
Pharmaceuticals	326
Allied health	99
Rehabilitation appliances	75
Dental services	60
Community nursing	52
Veterans' Home Care and respite	23
Transport	48
Other	80
Total	**2,960**

(a) The figures reflect accrual expenditure (e.g. private hospitals $676m = $669m cash + $7m accrued expense).

Source: DVA unpublished data.

Table 5.8: Department of Veterans' Affairs health expenditure per eligible gold and white cardholder[(a)], 1996–97 to 2000–01

Year	DVA-administered health expenditure[(a)] ($ million)	Eligible veteran population[(b)] at 30 June (number)	Expenditure per gold cardholder ($)
1996–97	1,600	340,327	5,800
1997–98	1,800	339,310	6,600
1998–99	2,000	353,840	6,900
1999–00	2,300	348,996	7,600
2000–01	2,500	345,131	8,400

(a) Excludes residential aged care subsidy, salaries and administration and certain minor items not directly related to veteran health care (e.g. health research). These expenditures are included in Table 5.7.

(b) Includes gold and white cardholders.

Sources: DVA Annual Reports and DVA unpublished data.

The changes in proportions of recurrent expenditure were due to the different growth rates for particular types of health services over the period. Expenditure on public hospitals had relatively low average growth between 1989–90 and 1998–99 of 2.9% per year. Expenditure on private hospitals and pharmaceuticals, on the other hand, had relatively high rates of growth over the period of 7.4% and 7.5%, respectively, per year (Table S43).

Expenditure on hospitals

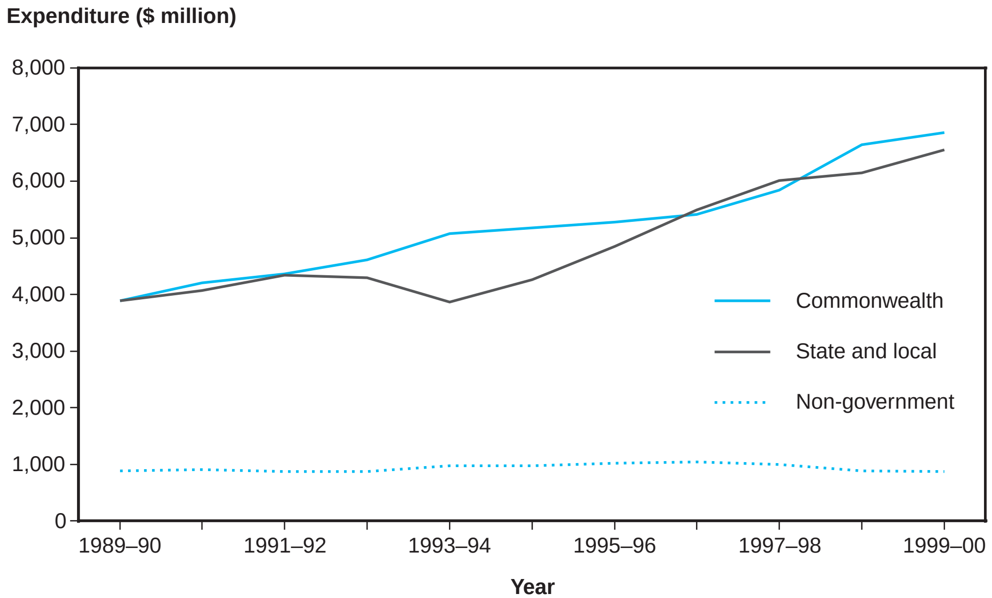
Just over three-quarters (75.8%) of all spending on hospital services during 1998–99 was for services provided in public non-psychiatric hospitals operated by, or on behalf of, State and Territory governments (calculated from Table S42). The remainder was for services in private hospitals (22.0%) and public psychiatric hospitals (2.2%).

Table 5.9: Shares of recurrent expenditure on hospitals, current prices, 1989–90 to 1998–99 (per cent)

	Government				
Year	Commonwealth	State and local	Total	Non-government	Total
1989–90	36.4	40.1	76.5	23.5	100.0
1992–93	37.5	37.7	75.2	24.8	100.0
1993–94	40.5	33.4	73.8	26.2	100.0
1996–97	36.4	37.0	73.5	26.5	100.0
1997–98	37.9	37.7	75.6	24.4	100.0
1998–99	41.9	36.1	78.0	22.0	100.0

Source: AIHW Health Expenditure Database.

Because most expenditure on hospital services is directed to public non-psychiatric hospitals, it is greatly influenced by the Commonwealth–State health funding agreements. In 1989–90, which was the second year of the second Medicare agreement period (see Box 5.3, page 247), the Commonwealth Government's share of funding for expenditure on hospitals was 36.4%, the State and local governments' was 40.1% and non-government sources met the remaining 23.5% (Table 5.9). By the end year of that agreement (1992–93), the respective shares were 37.5%, 37.7% and 24.8%.



Source: AIHW 2001c.

Figure 5.3: Expenditure on public non-psychiatric hospitals, constant prices, 1989–90 to 1999–00

In the first year of the third Medicare agreement period (1993–94) the Commonwealth and non-government shares increased markedly, to 40.5% and 26.2% respectively. The State and local governments' share, on the other hand, fell to 33.4%. This was largely due to an increase in funding by the Commonwealth for public non-psychiatric hospitals under the new agreements, which coincided with a reduction in funding by State and local governments (Figure 5.3). By 1997–98, the share of funding met by the Commonwealth had reduced to 37.9%. The share of funding met by State and local governments had increased to 37.7% but this was still lower than in 1989–90 (40.1%). The proportion met by non-government funding sources was higher at 24.4% compared with 23.5% in 1989–90.

In the first year of the current agreement period, 1998–99, the Commonwealth's share of funding for hospitals increased markedly, to 41.9%. This was due, in part, to the impact of its subsidies on private health insurance for hospital and other health services.

Benefit payments for private hospital services are the main type of expenditure by registered health benefits organisations (health insurance funds; see Box 5.5, page 262). Because the Commonwealth's subsidy on premiums has been allocated across the different areas of expenditure according to the spread of benefits paid by the funds, there has been a marked movement of funding for hospitals from non-government sources to the Commonwealth.

Expenditure on pharmaceuticals

Total expenditure on all pharmaceuticals was $7,563 million in 1999–00. This included $1,084 million on pharmaceuticals used in the provision of hospital services.

Total expenditure on non-hospital pharmaceuticals was $6,480 million in 1999–00—$4,174 million on benefit-paid pharmaceuticals and $2,306 million on other non-hospital pharmaceuticals. The Commonwealth Government contributed $3,522 million in benefits under the PBS and the Repatriation Pharmaceutical Benefits Scheme (RPBS). Individuals paid $652 million in co-payments under the PBS and $2,262 million in payments for non-benefit pharmaceuticals (Table 5.10).

Public hospital expenditure on drugs reported to the AIHW National Public Hospital Establishments Database was $719 million and expenditure on drugs by private hospitals was $126 million. In addition, the Commonwealth Government paid $214 million for highly specialised drugs for use in public hospitals and $25 million for use in private hospitals.

Expenditure on benefit-paid items under the PBS was the largest single contributor to total expenditure on pharmaceuticals. Under the PBS, Commonwealth expenditure on prescriptions was $3,177 million in 1999–00 and increased in nominal terms by 19.9% to $3,810 million in 2000–01 (Table 5.11). The total cost of the scheme both to the Commonwealth, in terms of benefits, and to patients, by way of co-payments, has risen each year in recent years with the proportion met by benefits rising from 81.5% of the total cost in 1996–97 to 83.7% in 2000–01.

Table 5.10: Expenditure on pharmaceuticals[(a)], current prices, 1999–00 ($ million)

	Benefit-paid pharmaceuticals	All other pharmaceuticals		Total pharmaceuticals
		Non-hospital	Hospital	
Public sector				
Commonwealth Department of Veterans' Affairs	272	. .	. .	272
Commonwealth Department of Health and Ageing[(b)(c)]	3,249	12	. .	3,261
Public acute care and psychiatric hospitals[(d)]	. .	. .	*933*	*933*
Total public sector	*3,522*	*12*	*933*	*4,466*
Private sector				
Health insurance funds	. .	32	. .	32
Individuals	652	2,262	. .	2,914
Private hospitals[(e)]	. .	. .	151	151
Total private sector	*652*	*2,294*	*151*	*3,097*
Total	**4,174**	**2,306**	**1,084**	**7,563**

. . Not applicable

(a) Excludes complementary and alternative medicines.

(b) Excludes $239 million in payments for highly specialised drugs.

(c) Includes $73 million in payments for human growth hormones, IVF and other subsidised pharmaceuticals.

(d) Includes $214 million in Commonwealth government payments for highly specialised drugs.

(e) Includes $25 million in Commonwealth government payments for highly specialised drugs.

Source: AIHW Health Expenditure Database.

Table 5.11: Cost of PBS items to the Commonwealth and patients, 1996–97 to 2000–01 ($ million)

Benefit category	1996–97	1997–98	1998–99	1999–00	2000–01
Patient contributions					
General patients	278	294	318	346	407
Concessional patients	252	276	283	306	337
Total patient contributions	*530*	*570*	*601*	*652*	*744*
Government benefits					
General patients—no safety net	392	412	469	521	662
General patients—safety net	73	99	107	107	128
Total general patients	*465*	*511*	*576*	*628*	*790*
Concessional patients—no safety net	1,466	1,576	1,740	2,001	2,360
Concessional patients—safety net	402	440	467	548	660
Total concessional patients	*1,868*	*2,016*	*2,207*	*2,548*	*3,020*
Total cost to government	*2,333*	*2,527*	*2,783*	*3,177*	*3,810*
Total cost of PBS benefit-paid items[(a)]	**2,863**	**3,097**	**3,384**	**3,828**	**4,554**

(a) Excludes payments for human growth hormones, IVF and other non-PBS subsidised pharmaceuticals.

Source: DHAC 2001c.

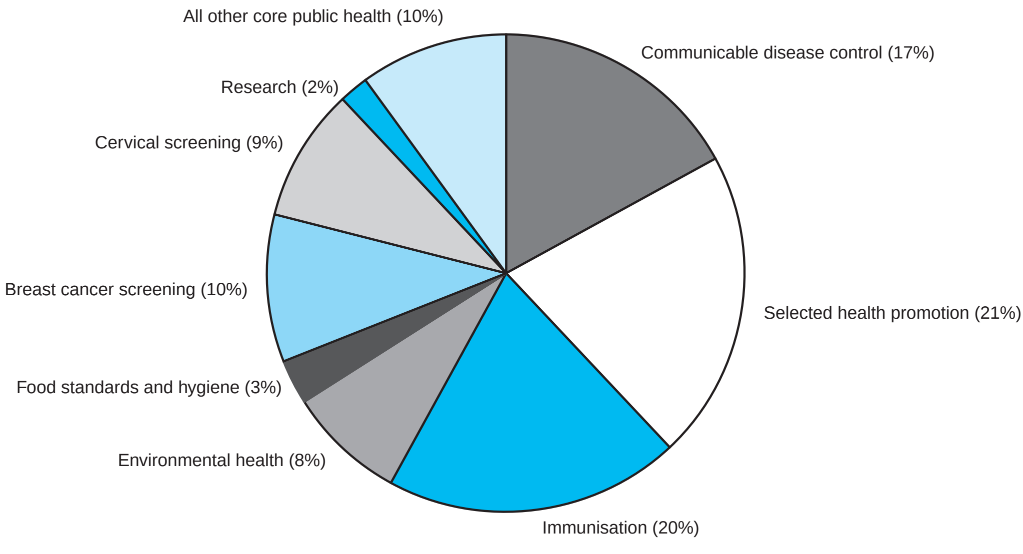
Expenditure on public health activities

Expenditure on public health activities has been described through the National Public Health Expenditure Project, an initiative of the National Public Health Partnership (AIHW 2001e, 2001f). In 1998–99, public health expenditure by Commonwealth, State and Territory health departments, based on eight agreed core public health activity categories, was $880 million (Table S48). This amounted to 1.9% of total recurrent health expenditure in Australia.

Total spending by the States and Territories was $613 million, of which $192 million was funded through Commonwealth grants; total direct spending by the Commonwealth was $267 million.

Selected health promotion aimed at promoting healthy lifestyles was the largest public health category, accounting for 21% ($187 million) of total public health expenditure in 1998–99 (Figure 5.4). The next largest areas of expenditure on public health were immunisation ($178 million) and communicable disease control ($145 million), which included HIV/AIDS, hepatitis C and sexually transmitted infections programs, and needle and syringe programs. Total spending on breast cancer screening in 1998–99 was $91 million and on cervical screening, $81 million.

The 1998–99 data collection represents expenditure by Commonwealth, State and Territory health departments. Work is currently under way to develop methods for extending the National Public Health Expenditure Project to cover public health expenditures by local government authorities and the contributions made by non-government organisations.



Total expenditure: $880 million

Source: AIHW 2001e.

Figure 5.4: Expenditure on public health by category, 1998–99

Table 5.12: Expenditure on health research and development, current prices, 1996–97 to 1998–99 ($ million)

Source	1996–97	1997–98	1998–99
Higher education institutions	268	239	316
Private non-profit and other	101	99	116
Overseas[(a)]	22	38	28
Business enterprises[(b)]	134	142	149
Commonwealth Government	196	159	223
State and Territory governments[(c)]	127	92	133
Government (not elsewhere classified)	4	4	7
All funding sources	**853**	**773**	**972**

(a) Expenditure by overseas financing sources is not included in the research expenditure in Table S42, which records expenditure by Australian sources of funding.

(b) Includes government business enterprises. This expenditure is not included as research in Table S42 as it is assumed to have been already captured in expenditure on the services provided by the enterprises.

(c) Includes expenditure on research undertaken in public hospitals and included in Table S42 as hospital expenditure.

Source: AIHW Health Expenditure Database.

Expenditure on health research

The expenditure reported below relates to research activities that have health as the area of expected national benefit. Health research can include research and development activities directed at understanding the influences on population health, fundamental biological processes, and disease and injury mechanisms. It can also include developing and testing health promotion activities, disease prevention strategies, medical instrumentation, human pharmaceutical products, and other clinical interventions for treatment, rehabilitation, palliation and other health care.

Total expenditure on health research and development undertaken in Australia in 1998–99 was $972 million (Table 5.12), an increase of 25.7% over the previous year. General government sources invested 37.3% of this funding ($363 million). A further $316 million came from institutes of higher education, while business—including government business enterprises—provided $149 million and private non-profit organisations and overseas sources funded the remaining $144 million.

Between 1996–97 and 1998–99 the share of funding of health research and development by institutes of higher education increased from 31.4% to 32.5%, with a marginal increase recorded for private non-profit organisations and overseas sources. These increases were largely offset by a fall in the share of general government funding, from 38.3% in 1996–97 to 37.3% in 1998–99, and business enterprise decreased its share from 15.7% to 15.3% over the same period.

Capital formation

The roles of the various sectors in the funding of capital formation are quite different. The Commonwealth's spending on capital is often by way of grants and subsidies to other levels of government or to non-government organisations to help them provide facilities for health service delivery. In contrast, the States and Territories are the owners of large-scale assets—such as hospitals, community health centres and residential aged care facilities—and use their own resources and Commonwealth money to purchase

Table 5.13: Shares of outlays on health capital, current prices, 1989–90 to 1998–99 (per cent)

	Government				
Year	Commonwealth	State and local	Total	Non-government	Total
1989–90	9.5	47.7	57.1	42.9	100.0
1990–91	12.5	53.5	66.0	34.0	100.0
1991–92	12.9	50.7	63.6	36.4	100.0
1992–93	8.8	49.4	58.1	41.9	100.0
1993–94	5.3	48.5	53.9	46.1	100.0
1994–95	0.5	54.6	55.1	44.9	100.0
1995–96	4.4	49.6	54.0	46.0	100.0
1996–97	2.7	52.1	54.8	45.2	100.0
1997–98	2.8	56.8	59.7	40.3	100.0
1998–99	2.7	59.7	62.3	37.7	100.0

Source: AIHW Health Expenditure Database.

new and replacement health capital. Non-government organisations invest largely in private hospitals and residential aged care facilities using money funded by the private sector and by government.

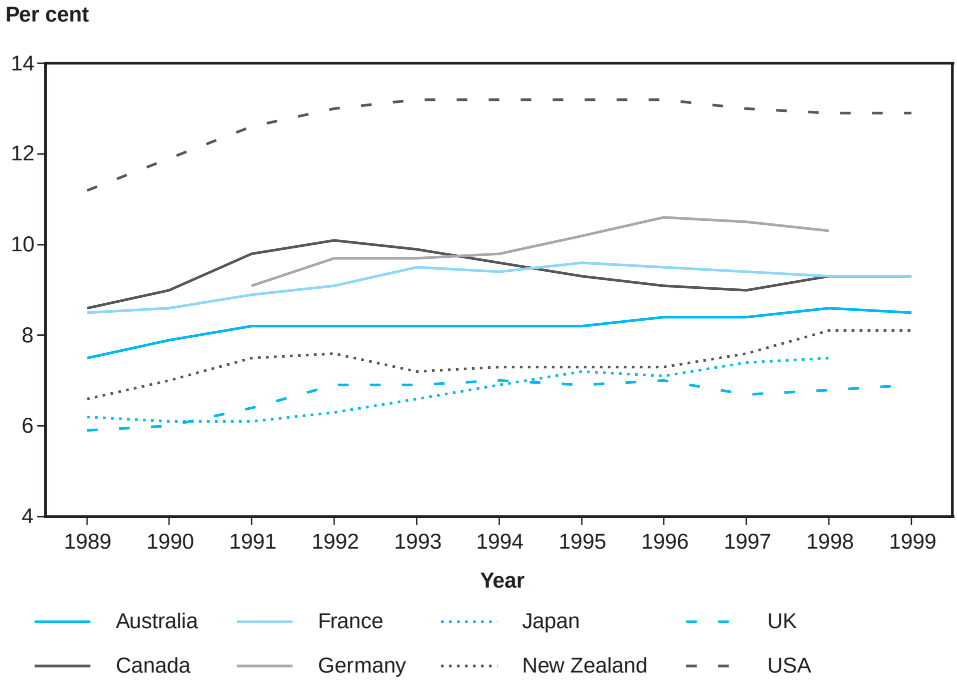
Total capital outlays in 1998–99 were $2,677 million (in current prices) (Table S42). Almost 60% of these were sourced from State and local government, with non-government and Commonwealth sources accounting for 37.7% and 2.7% respectively in that year (Table 5.13).

From 1989–90 to 1998–99, State and local governments' share of funding rose 12 percentage points, from 47.7% to 59.7%, as acquisitions of new and replacement capital for government health service providers increased over the decade. The non-governments' share of funding fell by 5.2 percentage points and the Commonwealth's share fell by 6.8 percentage points over the same period. A significant proportion of the latter occurred in the early 1990s due to the disposal of the DVA (repatriation) hospitals to the other service provider sectors.

Australian and international health services expenditure

This section compares Australia's health services expenditure during the 1990s with that of seven other members of the OECD—Canada, France, Germany, Japan, New Zealand, the United Kingdom and the United States. The comparison gives an indication of the relative efforts made to meet the need for health services in countries with similar economic and social structures or with which Australia has important economic and social links. Differences between countries, in terms of what is included as 'health services', complicate the comparison to some extent, and caution is therefore necessary when making comparisons.

The average for health expenditures as a proportion of GDP across all eight selected OECD countries increased to 10.7% in 1998, from 9.3% in 1989. Australia ranked fifth at 8.6% in 1998, up from 7.5% in 1989 (Table S49 and Figure 5.5). The United States, Canada, France and Germany were consistently higher spenders compared with Australia. The United States was by far the highest spender on health care, spending 12.9% of GDP on health in 1999.



Sources: AIHW Health Expenditure Database; OECD 2001.

Figure 5.5: Health expenditure as a proportion of GDP, Australia and other selected OECD countries, 1989 to 1999

Health expenditure per person has been calculated after adjusting for differences in the purchasing powers of the national currencies. This has been done using purchasing power parities to convert expenditures in each of the countries first into United States dollars and then into Australian dollars. The purchasing power parities used are for the whole of the GDP.

In 1999, Australia's average health expenditure per person was, at $2,817, just under half that of the United States (Table 5.14). In each year to 1997, Australia had the fifth highest average, above Japan, United Kingdom and New Zealand. In 1998, the latest year for which data are available for all eight countries, its ranking had moved past that of France to be the fourth highest in the group. This was still well below the eight country mean (A$3,774) but it was marginally higher than the six country mean (excluding the United States and Japan), A$2,685.

Factors contributing to nominal increases in health services expenditure are inflation (both general inflation and excess health inflation) and changes in the level of services used, either from population growth or from more intensive per person use of services. The general rate of inflation is an indication of price pressures that apply throughout the economy, and the rate of excess health inflation indicates additional price rises

Table 5.14: Health services expenditure per person, Australia and other selected OECD countries, current prices, 1989 to 1999[(a)] (A$)

Year[(a)]	Aust	Canada	France	Germany[(b)]	Japan	NZ	UK	USA	Eight country mean[(c)]	Seven country mean[(d)]	Six country mean[(e)]
1989	1,700	2,129	1,960	. .	1,397	1,177	1,239	3,413	2,422[(f)]	1,562[(f)]	1,689[(f)]
1990	1,820	2,332	2,113	. .	1,504	1,302	1,346	3,806	2,675[(f)]	1,690[(f)]	1,831[(f)]
1991	1,902	2,485	2,256	2,192	1,595	1,362	1,392	4,062	2,765	1,876	2,018
1992	1,990	2,607	2,421	2,506	1,745	1,462	1,602	4,361	3,004	2,068	2,232
1993	2,071	2,646	2,456	2,483	1,841	1,473	1,608	4,567	3,116	2,109	2,245
1994	2,170	2,680	2,484	2,644	1,959	1,558	1,671	4,738	3,247	2,207	2,332
1995	2,296	2,745	2,558	2,810	2,105	1,605	1,678	4,761	3,324	2,316	2,423
1996	2,434	2,740	2,582	2,974	2,214	1,647	1,833	5,000	3,489	2,423	2,528
1997	2,557	2,878	2,598	3,082	2,387	1,777	1,857	5,300	3,678	2,529	2,600
1998	2,706	3,092	2,665	3,093	2,353	1,886	1,978	5,456	3,774	2,575	2,685
1999	2,817	3,202	2,750	n.a.	n.a.	1,957	2,040	5,665	n.a.	n.a.	n.a.

n.a. Not available.

. . Not applicable.

(a) Australian data relate to the year ending 30 June in the following year; data for France and Germany relate to the calendar year indicated; data for New Zealand before 1990 relate to the year commencing 1 April in the year indicated, and data for 1990 onwards refer to the year ending 30 June in the following year; data for Canada, Japan and the United Kingdom relate to the year beginning 1 April in the year indicated; United States data relate to the year ending 30 September in the year indicated.

(b) Data for 1991 onwards refer to the unified Germany.

(c) Mean weighted by population.

(d) Weighted mean excluding the United States.

(e) Weighted mean excluding the United States and Japan.

(f) Excludes Germany in 1989 and 1990.

Note: Expenditures converted to Australian dollar (A$) values using GDP purchasing power parities.

Sources: AIHW Health Expenditure Database; OECD 2001.

specific to the health services sector. The ability of a nation's health financing system to control health prices is an important factor in controlling growth in total expenditure on health services.

During the 1990s Australia recorded an excess health inflation rate of 0.7%, the fourth lowest of the group of selected OECD countries (Table S50). A number of factors have contributed to Australia's lower than average excess health inflation rate. The increased use of fringe benefits tax exemption for public benevolent institutions to supplement the salary packages of hospital employees is one of these. It results in lower growth in apparent cost of inputs to hospital services and was estimated to have cost the Commonwealth budget $230 million in 1999-00. Even allowing for this, salaries of health workers in Australia are lower compared with average weekly earnings (AWE) than in high inflation countries. For example, remuneration for GPs in Australia is twice AWE, compared with about three times AWE in the United States.

Had Australia's excess health inflation rate been similar to that of the United States over the 1980s and 1990s, its expenditure to GDP ratio would have been 11.3% instead of 8.6% in 1998–99.

Of the selected OECD countries, Australia also recorded the third highest average real growth in per person expenditure (2.8%), behind that of Japan (5.9%) and Germany (4.1%) over this period.

5.3 Private health insurance

All Australians are eligible to choose to receive public hospital treatment at no direct cost to themselves. Private health insurers provide cover for people who wish to be treated by the doctor of their choice in a hospital and may provide a range of other benefits (Box 5.5).

Funding of health services by health insurance funds

Total expenditure by health insurance funds includes benefits for non-health services, such as funerals, sickness benefits and lifestyle activities. These are excluded from the definition of expenditure on health services used in this analysis.

Total direct recurrent expenditure on health services funded through private health insurance funds was $4,843 million in 1998–99 (Table 5.15). This was 9.5% of total health expenditure in that year. In addition, the funds had made an adjustment to their accumulated provision for outstanding claims of $10 million. At the same time the

Box 5.5: Private health insurance arrangements

Since the introduction of Medicare in 1984, health insurance funds operated by registered health benefits organisations have offered hospital insurance ('hospital tables') for approved services provided in both public and private hospitals. They have also offered ancillaries insurance ('ancillary tables') for a wide range of non-hospital health and health-related services. There are four categories of health insurance membership—singles, couples without children, sole parents, and couples with children. (Registered health benefits organisations are organisations registered under the National Health Act 1953 *for the purpose of conducting a health benefits fund.)*

The funds are able to tailor hospital insurance to meet particular needs of different groups of contributors. They can, for example, offer 'exclusionary' tables that exclude benefits for obstetrics or hip replacements. The premiums for such insurance reflect the particular exclusion(s) and are lower than for similar insurance that does not contain such exclusion(s). 'Front-end deductible' tables are also available. This allows contributors to meet a set amount of the charge for hospital care from their own pockets whilst paying a reduced premium.

Health insurance arrangements changed substantially on 1 July 2000, with the introduction of lifetime health cover incentives. These incentives encourage people to take out and retain private health insurance cover throughout their lives. From that date, people who join a health insurance fund before their thirtieth birthday and maintain their hospital cover pay lower premiums throughout their lives compared with someone who joins later in life. People over 30 years old who take out hospital cover pay a loading of 2% for each year that their entry age is over 30. Fund members who had hospital cover at 1 July 2000 and maintain it are exempt from the loading. People who were aged 65 years and over at 1 July 1999 are also exempt from the loading.

Commonwealth Government, through its 30% rebate of premiums, provided a subsidy of $962 million to private health insurance. This, in effect, represented a subsidy of $960 million for the direct expenditure on health services, and $2 million for the adjustment to the provisions for outstanding and unpresented claims.

In its 1999–00 budget the Commonwealth Government announced its intention to introduce lifetime health cover incentives (see Box 5.5).

Direct recurrent expenditure funded through private health insurance increased by $342 million to $5,185 million in 1999–00. The Commonwealth subsidy, on the other hand, increased by almost 70%, to $1,634 million. Of this, $1,606 million related to the direct recurrent expenditure and $28 million to the provision adjustment. This rapid growth in the subsidy was partly due to the effect of the phasing in of lifetime health cover over the year.

In the following year, 2000–01, which was the first full year of the lifetime health cover policy, direct recurrent expenditure through the funds grew to $6,190 million and the subsidy payments by the Commonwealth to $2,125 million. The Commonwealth's subsidy of direct recurrent expenditure on health services through private health insurance ($2,052 million) in that year represented just under one-third (33.2%).

The net funding of health services out of income generated by the funds themselves (i.e. premiums and other income, less the Commonwealth subsidy) fell from $3,883 million in 1998–99 to $3,579 million in 1999–00, before rising to $4,138 million in 2000–01. The large increase in membership induced by the potential penalties to people who failed to join a fund before 1 July 2000 meant the net income received by health insurance funds during 2000–01 exceeded the benefits paid out during that year by $1.1 billion. Accordingly, operating profits before abnormals and extraordinary items of the funds (in current prices) increased almost fivefold between 1998–99 and 2000–01, from $176 million to $852 million (Table 5.15).

In 2000–01, benefits paid for private hospital services accounted for $1,999 million, or 48.3% of the net funding for health by private health insurance. Expenditure on administration ($564 million, 13.6%) and dental benefits ($517 million, 12.5%) were the next largest areas of funding by private health insurance.

Trends in private health insurance coverage, membership and premiums

At the end of June 2001 there were 8.7 million Australians or 44.9% of the population covered by private health insurance (PHIAC 2002). This was a fall of 0.9% from the peak of 8.8 million (45.8%) that was reached at the end of September 2000, after an accelerating upward trend in coverage that had begun in the March 1999 quarter (Figures 5.6 and 5.7).

From the introduction of Medicare in 1984, when the level of coverage was just over 50%, to December 1998, the general trend in coverage had been downward. At the end of December 1998, 30% of the population were covered by health insurance.

Table 5.15: Expenditure on health services funded through health insurance funds, current prices, 1998–99 to 2000–01 ($million)

	1998–99				1999–00				2000–01			
	Gross benefits	Premium rebates[(a)]		Net benefits	Gross benefits	Premium rebates[(a)]		Net benefits	Gross benefits	Premium rebates[(a)]		Net benefits
Area of expenditure	**paid**	**Direct**	**Taxation**	**paid**	**paid**	**Direct**	**Taxation**	**paid**	**paid**	**Direct**	**Taxation**	**paid**
Expenditure												
Hospitals	2,813	453	104	2,255	2,900	777	121	2,002	3,312	997	101	2,214
Public (non-psychiatric)	289	47	11	232	287	77	12	198	322	97	10	215
Private	2,524	407	94	2,024	2,612	700	109	1,803	2,990	900	91	1,999
Ambulance	125	20	5	100	135	36	6	93	180	54	5	120
Medical services	253	41	9	203	281	75	12	194	427	129	13	285
Other health professionals	235	38	9	188	262	70	11	181	333	100	10	223
Pharmaceuticals	36	6	1	29	43	12	2	30	53	16	2	35
Aids and appliances	186	30	7	149	210	56	9	145	268	81	8	179
Community/public health	1	—	—	1	1	—	—	1	1	—	—	1
Dental services	603	97	22	483	636	170	27	439	774	233	24	517
Total health services	**4,252**	**685**	**158**	**3,409**	**4,468**	**1,197**	**186**	**3,084**	**5,347**	**1,610**	**163**	**3,574**
Health administration	591	95	22	474	717	192	30	495	843	254	26	564
Direct expenditure	**4,843**	**780**	**180**	**3,883**	**5,185**	**1,390**	**216**	**3,579**	**6,190**	**1,864**	**188**	**4,138**
Outstanding claims	10	2	—	8	91	24	4	63	220	66	7	147
Total expenditure	**4,853**	**782**	**180**	**3,891**	**5,276**	**1,414**	**220**	**3,642**	**6,410**	**1,930**	**195**	**4,285**
Revenue												
Contributions income[(b)]				3,965				3,828				5,006
Other revenue				149				214				226
Total revenue				4,114				4,042				5,232
Operating profit/loss before abnormals and extraordinary items				176				381				852

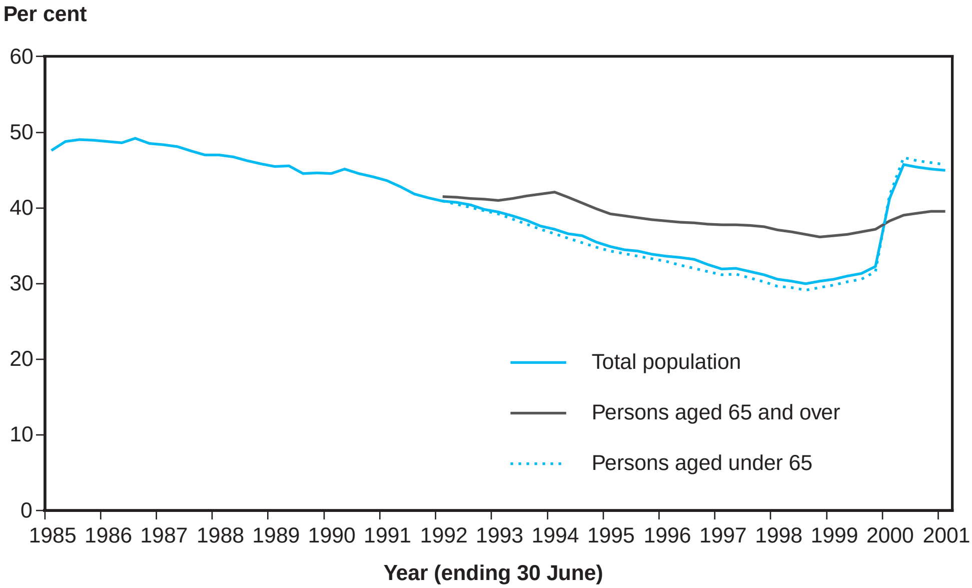
(a) Premium rebate is pro-rated across all categories (including change in provisions for outstanding claims).

(b) Adjusted to remove the Commonwealth reimbursement to the funds for the 30% rebate on premiums.

Sources: PHIAC quarterly reports and Annual Report: Operations of the Registered Health Benefits Organisations 1997–98 to 1999–00. Department of the Treasury, *Tax Expenditures Statement,* various years.

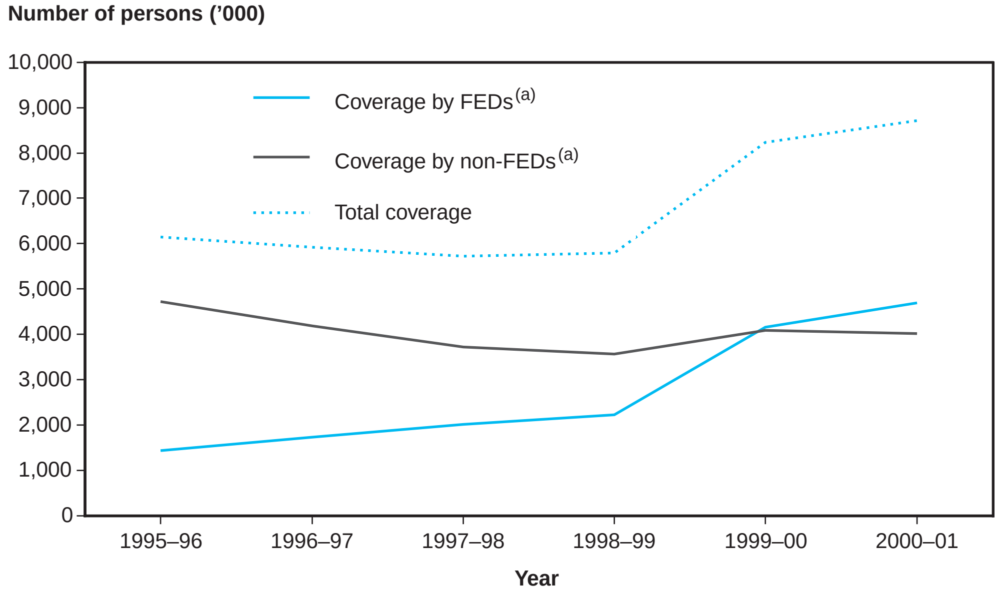
Events which have contributed to the growth in coverage during recent years include the following:

- In 1995, funds were enabled to provide cover that excluded benefits for some types of treatment (e.g. obstetrics).
- The Private Health Insurance Incentives Scheme was introduced in 1997. This provided a reimbursement of part of the premiums charged by private health insurance funds to low- and middle-income earners.
- In October 1997 the government introduced an additional levy of 1% of taxable income on single people with taxable incomes exceeding $50,000 and couples with combined taxable incomes exceeding $100,000 who did not have private health insurance that covered hospital services.
- The Private Health Insurance Incentives Scheme was replaced by a non-means-tested 30% reimbursement of private health insurance premiums in 1999.
- Lifetime health cover arrangements were introduced. This requires funds to charge a loading on premiums of 2% for each year that the age of a new member exceeds 30 at the time of joining a fund. Legislation to give effect to this policy initiative was passed in 1999 and people who wanted to avoid having to pay the loading were required to join a fund before 1 July 2000 or before they turned 31 years of age.



Sources: PHIAC 2001, 2002 and PHIAC unpublished data.

Figure 5.6: Proportion of population covered by basic health insurance, 1985 to 2001



(a) Front-end deductible insurance.

Source: PHIAC annual reports, various years.

Figure 5.7: Hospital insurance coverage, 1995–96 to 2000–01

The greatest immediate influence on the level of coverage was the lifetime health cover provision. Coverage increased from 32.3% at the end of March 2000, to 45.8% at 30 September 2000, reflecting the full implementation of the Commonwealth Government's lifetime health cover arrangements during the September quarter.

Growth in premiums income, expenditure and reserves

From the introduction of Medicare in 1984 until June 2001, real growth in premiums income averaged 6.5% per year. Most of this occurred during the 1980s when premiums rose by an average of 8.0% per year. From 1989–90, with falling coverage of health insurance in the population (44.5% in June 1990; 33.6% in June 1996), the average rate of growth was much lower, at 6.3% per year. However, since 1996–97 when the Commonwealth Government began to provide incentives in the form of rebates on premiums, premiums have averaged a 10.6% real increase each year (Table S51).

Real growth in the total amount of benefits (including ambulance levies paid to State and Territory governments) through health insurance funds averaged 5.8% per year between 1984 and 2001. However, the major growth in these expenditures was during the 1980s. From 1984–85 to 1988–89, expenditures grew at an average of 10.5% per year and from 1989–90 to 2000–01 at an average of 4.3% per year (Table S51).

The total reserves, or net assets, of the registered health benefits funds in 2000–01 were $2,387 million. This represents a real increase of 51.6% in the level of the reserves between 1999–00 and 2000–01 (Table S52).

5.4 Health workforce

This section provides information relating to the workforce in health industries and occupations in Australia. Information of this nature assists in health workforce planning, which in turn is critical to providing an adequate and suitably distributed workforce around Australia. The health workforce is large and diverse, covering many occupations, ranging from highly qualified professionals to support staff and volunteers.

This section covers the size and composition of and recent changes to three of the major health occupations, namely medical practitioners, nurses and pharmacists, although some comparative data are also provided for other health occupations. These occupations were selected because they are the largest and the ones for which there is relatively recent good data coverage. The numbers of students who commenced undergraduate courses in health-related fields in 1995 and 2000, and key components of migration for employment of people in major health occupations are also described. Finally, an international comparison is given of medical practitioners, nurses and dentists in terms of numbers per 1,000 population in Australia, New Zealand, Canada, the United States and the United Kingdom, and changes between 1981 and 1998.

Health industry employees

In 2000, there were an estimated 643,500 people employed in the health industry (excluding veterinary services), comprising 7.1% of the total civilian workforce in Australia (Table 5.16). Of these, 386,500 (60.1%) were full-time employees, and 256,500 (39.9%) were part time. Part-time employees represented a higher than average percentage, compared with the total civilian workforce (26.3%). This is because the health industry tends to attract female workers, who make up 78.1% of the health workforce—much higher than in the total civilian workforce (43.8%). Females (43.7%) are more likely than males (12.8%) to work part time in general, and in the health industry, 47.1% of female workers are part time, compared with 14.1% of males. In fact, 92.3% of part-time health employees in 2000 were female.

In comparison to the workforces of other industries, the health industry is relatively fast-growing. Between 1995 and 2000, it increased by 12.1%, compared with a 9.6% increase in the total civilian workforce. Over this period, the increase in part-time employment (19.2%) was much greater than that for full-time employment (7.5%). These increases were greater than the percentage increases in the civilian workforce (17.5% and 7.1% respectively).

Across the broad industry groups within the health industry, the increase in employment for medical and dental services (16.9%) was greater than those for hospitals and nursing homes (12.0%) and other health services (excluding veterinary services) (7.1%), with the increases in part-time employment being much greater than for full-time employment in each industry.

Health occupations

Health occupations comprise professionals who diagnose and treat physical and mental illnesses and conditions and recommend, administer, dispense and develop medications and treatment to promote or restore good health. In this section, only the

Table 5.16: Health industry employees, 2000

Industry	Males		Females		Persons			Per cent female
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time	Total	
Hospitals and nursing homes								
2000 ('000)	65.5	10.3	184.0	148.3	249.5	158.5	408.5	81.4
Increase from 1995 (%)	1.9	17.1	11.2	17.0	8.6	17.0	12.0	. .
Medical and dental services								
2000 ('000)	30.3	4.3	43.3	52.3	73.5	56.5	129.5	73.4
Increase from 1995 (%)	8.0	30.8	12.3	27.4	10.5	27.7	16.9	. .
Other health services (excluding veterinary services)								
2000 ('000)	24.8	5.3	38.8	36.3	63.5	41.5	105.5	71.1
Increase from 1995 (%)	–9.2	31.3	7.6	15.1	0.4	16.9	7.1	. .
Health services (excluding veterinary services)								
2000 ('000)	120.5	19.8	266.0	236.8	386.5	256.5	643.5	78.1
Increase from 1995 (%)	0.8	23.4	10.8	18.8	7.5	19.2	12.1	. .
Total civilian workforce								
2000 ('000)	4,414.5	647.8	2,222.5	1,724.5	6,637.0	2,372.3	9,009.3	43.8
Increase from 1995 (%)	6.0	26.5	9.3	14.4	7.1	17.5	9.6	. .

. . Not applicable.

Note: Annual figures are the average of the four quarters.

Source: ABS Labour Force Survey data, from AUSTATS.

following are discussed: medical practitioners, nurses, dental practitioners, pharmacists, physiotherapists and medical imaging professionals.

Of the 328,800 employees in health occupations in 2000–01, over three quarters (76.3%) were females (Table 5.17), but this varied widely across occupations, from 95.5% for enrolled nurses and 91.0% for registered nurses, to 17.2% for dentists. Of the females, 44.1% worked part time compared with 9.6% of males.

Between 1996–97 and 2000–01, the number of health professionals increased by 8.2%, with males up by 4.0% and females up 9.6%. The overall increase in the female workforce was reflected in almost all occupations, with enrolled nurses (down 22.9%) being the only occupation to fall.

Advances in medical technology may account for the rapid increase in the medical imaging occupation (up 27.6%), with more widespread use of magnetic resonance imaging, ultrasound and computerised tomography scanning. This occupation recorded the greatest increase between 1996–97 and 2000–01, with marked increases also recorded for physiotherapists and pharmacists. The largest decreases occurred in the number of enrolled nurses, down 24.1%, but this was accompanied by an increase of 11.6% in registered nurses.

Table 5.17: Workforces in selected health occupations, 2000–01

Occupation	Males			Females			Persons			Per cent female
	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	
Generalist medical practitioners										
Workforce ('000)	21.3	2.0	23.0	7.5	3.8	11.5	28.8	5.8	34.5	33.3
Change since 1996–97 (%)	n.a.	n.a.	–4.2	n.a.	n.a.	—	n.a.	n.a.	–2.8	. .
Specialist medical practitioners										
Workforce ('000)	10.3	0.8	11.3	2.8	1.5	4.0	13.0	2.3	15.3	26.2
Change since 1996–97 (%)	n.a.	n.a.	–10.0	n.a.	n.a.	6.7	n.a.	n.a.	–6.2	. .
Registered nurses[(a)]										
Workforce ('000)	15.0	1.3	16.5	91.0	76.0	166.8	106.0	77.3	183.3	91.0
Change since 1996–97 (%)	n.a.	n.a.	22.2	n.a.	n.a.	10.6	n.a.	n.a.	11.6	. .
Enrolled nurses										
Workforce ('000)	1.0	0.3	1.0	11.3	10.0	21.0	12.3	10.3	22.0	95.5
Change since 1996–97 (%)	n.a.	n.a.	–42.9	n.a.	n.a.	–22.9	n.a.	n.a.	–24.1	. .
Dental practitioners										
Workforce ('000)	5.5	0.8	6.0	1.0	0.3	1.3	6.5	1.0	7.3	17.2
Change since 1996–97 (%)	n.a.	n.a.	–4.0	n.a.	n.a.	—	n.a.	n.a.	–3.3	. .
Pharmacists										
Workforce ('000)	5.5	1.0	6.8	6.0	3.3	9.0	11.5	4.3	15.8	57.1
Change since 1996–97 (%)	n.a.	n.a.	—	n.a.	n.a.	50.0	n.a.	n.a.	23.5	. .
Physiotherapists										
Workforce ('000)	2.0	0.5	2.0	5.5	4.8	10.0	7.5	5.3	12.0	83.3
Change since 1996–97 (%)	n.a.	n.a.	14.3	n.a.	n.a.	25.0	n.a.	n.a.	23.1	. .
Medical imaging professionals										
Workforce ('000)	3.5	—	3.5	3.3	2.5	5.8	6.8	2.5	9.3	62.2
Change since 1996–97 (%)	n.a.	n.a.	55.6	n.a.	n.a.	15.0	n.a.	n.a.	27.6	. .
Total[(b)]										
Workforce ('000)	**70.5**	**7.5**	**77.8**	**141.0**	**110.8**	**251.0**	**211.5**	**118.3**	**328.8**	**76.3**
Change since 1996–97 (%)	**6.0**	**11.1**	**4.0**	**11.0**	**7.5**	**9.6**	**9.3**	**7.7**	**8.2**	**. .**

n.a. Not available.

. . Not applicable.

(a) Includes nurse managers, educators, researchers, registered midwives, registered mental health nurses and developmental disability nurses.

(b) Excludes veterinary surgeons; includes other health professionals not individually shown.

Note: Data compiled by averaging rounded quarterly data. Figures showing per cent changes between 1996–97 and 2000–01 should be treated with caution, due to rounding of numbers and sampling variability.

Source: ABS Labour Force Survey data, from AUSTATS.

Geographical distribution

The distribution of the health workforce across Australia does not match the population distribution. This is true of the three occupations examined here—medical practitioners, nurses and pharmacists. Moreover, these health workers are distributed differently from each other. For example, there was a marked variation in the distribution of medical practitioners, but less variation for nurses, as discussed in the following sections.

Medical practitioners

In 1999, there were higher percentages of medical practitioners in capital cities (76.8%) and large rural centres (6.2%) than the percentages of population residing in those areas (63.9% and 6.0% respectively) (Table 5.18). For other areas, the percentage of medical

Table 5.18: Medical practitioners: characteristics by geographic location (RRMA) of main job, 1999

	Geographic location of main job						
	Capital city	Other metropolitan centre	Large rural centre	Small rural centre	Other rural area	Remote centres and areas	Total
Number	39,165	3,619	3,135	2,035	2,343	672	50,969
Practitioner distribution (%)	76.8	7.1	6.2	4.0	4.6	1.3	100.0
Population distribution (%)	63.9	7.6	6.0	6.5	13.2	2.7	100.0
Practitioners per 100,000 population	322	248	277	165	94	8	268
Males	27,067	2,736	2,370	1,555	1,780	462	35,970
Females	12,098	882	765	480	563	210	14,999
Per cent female	30.9	24.4	24.4	23.6	24.0	31.2	29.4
Type of medical practitioner							
Primary care practitioners	14,900	1,526	1,193	1,185	1,987	440	21,232
Hospital non-specialists	3,694	413	390	142	77	85	4,801
Specialists	13,903	1,207	1,306	599	203	89	17,306
Specialists-in-training	4,179	334	128	27	11	14	4,694
Non-clinicians	2,489	139	118	81	66	44	2,937
Age (years)				**Per cent**			
Under 35	23.1	21.8	17.2	13.3	12.4	30.4	21.8
35–44	28.2	28.8	32.9	32.3	34.1	38.4	29.1
45–54	24.8	25.7	28.3	30.0	27.8	18.4	25.4
55–64	14.6	14.7	14.6	15.0	13.9	9.0	14.6
65 and over	9.2	8.9	7.0	9.3	11.9	3.7	9.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Average age (years)	46.0	45.8	45.7	47.5	47.4	42.6	46.1

Note: Based on the Rural, Remote and Metropolitan Classification of the Department of Primary Industries and Energy and the Department of Human Services and Health (1994).

Source: AIHW (in press).

practitioners was lower than the percentage of population. The greatest imbalance was in other rural areas, where 13.2% of Australia's population resided, but only 4.6% of medical practitioners had their main practice.

Medical practitioners in remote areas were generally much younger (average 42.6 years in 1999) than those in metropolitan and rural areas, with 3.7% of them aged 65 years or more, compared with 9.1% Australia-wide. Temporary resident doctors (recruited from overseas for periods less than 1 year) (2,224 in 1998–99) were generally at the younger end of the age range for doctors, and many worked in remote areas, particularly in Queensland, Western Australia and Victoria (AIHW 1999). This could partly explain the relatively high percentage (30.4%) of medical practitioners aged under 35 years practising in remote areas. Medical practitioners in small rural centres (average age 47.5 years) and other rural areas (47.4 years) were marginally older than those in metropolitan areas. This lower average age for metropolitan doctors may reflect the numbers of younger doctors undertaking training in teaching hospitals, which are located mainly in metropolitan areas—this acts to reduce the average age in metropolitan areas. The introduction in the 1999–00 Commonwealth Budget of scholarships such as the Rural Australia Medical Undergraduate Scholarship Scheme, to assist students from rural and remote areas to undertake medical courses, would not yet have had a discernible impact on the doctor numbers in non-metropolitan areas.

Table 5.19: Employed registered and enrolled nurses: characteristics by geographic location (RRMA) of main job, 1997

	Geographic location of main job							
	Capital city	Other metropolitan centre	Large rural centre	Small rural centre	Other rural area	Remote centre	Other remote area	Total
Number	139,363	15,385	19,177	17,004	24,630	2,687	3,964	222,211
Per cent registered	83.3	77.5	77.8	71.9	65.1	72.0	72.1	79.2
Nurse distribution (%)	62.7	6.9	8.6	7.7	11.1	1.2	1.8	100.0
Population distribution (%)	63.9	7.6	6.0	6.5	13.2	1.2	1.5	100.0
Employed nurses per 100,000 population								
Registered nurses	984	853	1,348	1,013	652	875	847	950
Enrolled nurses	198	247	386	397	350	340	328	250
All nurses	1,182	1,100	1,734	1,410	1,001	1,214	1,175	1,200
Age (years)				**Per cent**				
Under 30	17.9	15.7	15.5	12.2	9.2	19.5	17.3	16.1
30–39	31.3	34.4	33.4	33.6	31.7	36.6	34.6	32.0
40–49	31.8	34.0	34.2	35.9	37.0	29.3	29.1	33.0
50–59	16.2	13.7	14.8	16.2	18.7	12.4	15.4	16.1
60 and over	2.8	2.2	2.2	2.1	3.4	2.3	3.6	2.8
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Average age (years)	40.1	39.9	40.1	40.9	42.1	38.8	40.0	40.3

Note: Based on the Rural, Remote and Metropolitan Classification of the Department of Primary Industries and Energy and the Department of Human Services and Health (1994).

Source: AIHW 2001g.

There was a higher percentage of female medical practitioners in 1999 in remote areas (31.2%) and capital cites (30.9%) than in other areas, where the percentages were around 24%.

Nurses

Unlike other health occupations, the percentage of employed nurses in metropolitan areas was lower than the percentage of Australia's population in those areas (although only slightly so). In other areas, nurses tended to be concentrated in cities and towns with hospitals (mainly large rural centres), where the percentage of nurses exceeded the population share (Table 5.19). In terms of number per 100,000 population, large and small rural centres were better served with both registered and enrolled nurses than all other areas.

The age distribution of nurses across geographic areas was fairly even, with those in other rural areas slightly older on average (42.1 years) and those in remote centres slightly younger (38.8 years).

Table 5.20: Employed pharmacists[(a)]: characteristics by geographic location (RRMA) of main job, 1996

	Geographic location of main job							
	Capital city	**Other metropolitan centre**	**Large rural centre**	**Small rural centre**	**Other rural area**	**Remote centre**	**Other remote area**	**Total**
Number	9,889	933	801	785	1,243	89	94	13,833
Pharmacist distribution (%)	71.5	6.7	5.8	5.7	9.0	0.6	0.7	100.0
Population distribution (%)	63.9	7.6	6.0	6.5	13.2	1.2	1.5	100.0
Pharmacists per 100,000 population	84.9	67.8	73.1	65.7	50.9	40.9	27.9	75.6
Males	5,175	577	491	472	796	51	57	7,619
Females	4,714	356	310	313	447	38	37	6,215
Type of pharmacist								
Community	7,635	815	673	672	1,173	77	82	11,126
Hospital/clinic	1,518	108	123	104	63	12	12	1,940
Other	736	10	5	9	7	—	—	767
Age (years)				**Per cent**				
Under 30	16.5	12.6	13.0	11.6	7.6	16.7	9.0	14.8
30–44	34.2	28.9	31.4	35.9	32.5	46.7	29.9	32.9
45–64	44.1	49.6	48.1	46.3	50.9	31.7	55.2	45.8
65 and over	5.2	9.0	7.5	6.1	9.0	5.0	6.0	6.5
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Average age (years)	42.5	46.4	45.8	44.5	47.7	37.8	45.0	43.7

(a) Includes self-employed.

Note: Based on the Rural, Remote and Metropolitan Classification of the Department of Primary Industries and Energy and the Department of Human Services and Health (1994).

Source: AIHW 2000a.

Pharmacists

Populations in the capitals were better served with pharmacists than all other geographical areas (Table 5.20). This was reflected in the number of employed pharmacists per 100,000 population, with the rate of 84.9 in capital cities and 50.9, 40.9 and 27.9 in other rural areas, remote centres, and other remote areas, respectively.

Of the 13,833 pharmacists in Australia, the great majority (11,126 or 80.4%) were community pharmacists. The average age for employed pharmacists was 46.7 years.

The profile of pharmacists in capital cities differed from other geographic areas, with 77.2% being community pharmacists, 15.3% hospital/clinic pharmacists and 7.5% other pharmacists (mainly working in government and research organisations). In every other area, community pharmacists constituted over 84% of all pharmacists. The percentage of pharmacists who were working in hospitals (14.0%) was much the same in all areas (between 11.6% and 15.4%) except for other rural areas (5.1%). Pharmacists tend to work in large hospitals, few of which are located in other rural areas.

As was the case for medical practitioners, the percentage of pharmacists who were female was higher in capital cities (47.7%) and remote centres (43.1%) than other areas, with the percentage in other rural areas being a relatively low 35.9%.

Dental practitioners

Data collected by the AIHW Dental Statistics and Research Unit in the last quarter of 2000 in cooperation with the State and Territory dental boards and health departments show that, compared with 1994, the number of dental practitioners practising in Australia increased by 17.3% to 8,991 in 2000 (Table 5.21). Nationally, the percentage of female practitioners increased from 18.4% in 1994 to 22.9% in 2000.

Table 5.21: Practising dentists, 1994 and 2000

					Dentists per 100,000 population					
State or	Practising dentists		Per cent female		Capital city		Rest of State or Territory		Total	
Territory	1994	2000	1994	2000	1994	2000	1994	2000	1994	2000
NSW	2,733	3,126	17.5	22.7	54.8	58.4	29.6	31.2	45.2	48.4
Vic	1,867	2,204	20.1	25.5	48.2	52.4	25.5	29.9	41.7	46.3
Qld	1,314	1,564	16.6	20.6	50.2	52.2	33.5	36.9	41.1	43.9
SA	731	821	19.3	22.7	59.4	64.5	23.4	28.3	49.7	54.8
WA	675	913	17.9	21.6	45.8	55.6	23.4	29.0	39.7	48.5
Tas	119	119	19.3	16.8	31.9	33.9	20.5	19.2	25.2	25.3
NT	55	60	27.3	27.5	42.3	48.7	20.5	15.0	32.1	30.5
ACT	173	184	21.4	25.7	57.5	59.2	. .	. .	57.5	59.3
Australia	**7,667**	**8,991**	**18.4**	**22.9**	**51.2**	**55.6**	**28.7**	**31.5**	**43.0**	**46.9**

. . Not applicable.

Source: AIHW Dental Statistics and Research Unit.

The number of dentists per 100,000 population had increased in all States and Territories, except in the Northern Territory, where the rate had declined since 1994. There was a relatively large variation around the national average rate of 46.9, ranging from 25.3 dentists per 100,000 population in Tasmania to the highest rate of 59.3 in the Australian Capital Territory. There was a substantial difference in the rates per 100,000 population in the capital cities (overall rate 55.6) compared with other areas (31.5). The increase in the rate for capital cities since 1994 was marginally greater than the increase for other areas.

Tertiary education entrants to the workforce

In 2000, the highest numbers of students commencing health-related courses were in the fields of nursing—basic (6,954), nursing—post-basic, including bachelor level (4,134), medicine (1,303), medical science (1,031) and health science/technology (1,013) (Table 5.22).

Table 5.22: Australian citizens/residents commencing undergraduate study, 1995 and 2000

	1995		2000		
Field of study	**Number**	**% female**	**Number**	**% female**	**% change 1995 to 2000**
Dental therapy	20	85.0	33	87.9	65.0
Dentistry	199	40.2	264	48.5	32.7
Health—general	172	44.2	325	60.3	89.0
Health administration	357	73.9	336	79.8	–5.9
Health counselling	165	78.2	96	85.4	–41.8
Health support—general	373	81.2	270	74.1	–27.6
Health support—other	341	23.8	835	50.5	144.9
Health surveying/environmental health	173	43.9	198	57.6	14.5
Medical radiography	567	64.2	658	67.5	16.0
Medical science	454	61.5	1,031	68.0	127.1
Medical technology	333	65.2	320	66.6	–3.9
Medicine	856	47.4	1,303	53.6	52.2
Nursing—basic	7,099	84.6	6,954	86.6	–2.0
Nursing—post-basic	6,577	89.7	4,134	89.3	–37.1
Bachelor level	3,778	90.0	1,224	89.1	–67.6
Nutrition & dietetics	92	81.5	270	91.9	193.5
Occupational therapy	618	87.5	799	87.2	29.3
Optometry	181	61.3	230	68.7	27.1
Pharmacy	568	57.0	768	67.1	35.2
Physiotherapy	651	60.5	759	63.0	16.6
Podiatry	101	59.4	180	60.6	78.2
Rehabilitation	175	80.0	458	71.0	161.7
Health science/technology	651	71.4	1,013	66.4	55.6
Speech pathology/audiology	352	94.3	429	96.7	21.9
Indigenous total	**312**	**79.2**	**308**	**72.7**	**–1.3**
Total	**18,276**	**77.4**	**18,753**	**75.9**	**2.6**

Source: AIHW analysis of Department of Education, Science and Training data.

Between 1995 and 2000, the largest percentage increases in course commencements were courses with small numbers of commencing students, namely nutrition/dietetics (up 193.5%), rehabilitation (up 161.7%), health support—other (up 144.9%) and medical science (up 127.1%).

Of the large disciplines (those with more than 500 commencements), all had increases in enrolments except nursing. Enrolments in basic nursing courses fell by 2.0%, and those in post-basic nursing courses fell by 37.1%. The fall in post-basic nursing commencements was mainly due to substantial decreases in those commencing a bachelor-level course (down 67.6% between 1995 and 2000). Between 1988 and 1993, nurse education transferred from hospitals to the higher education sector. This resulted in a very large rise in commencements of bachelor degrees during the following few years, when many hospital-trained nurses took up the option to upgrade their qualifications. Commencements reached a maximum of 3,778 in 1995, making up 57% of all post-basic nursing commencements in that year, and have declined steadily since then.

Decreases in commencements were also recorded in health counselling (down 41.8%), health support—general (down 27.6%), health administration (down 5.9%) and medical technology (down 3.9%).

The number of Indigenous people commencing undergraduate health courses hardly changed (from 312 to 308) between 1995 and 2000. Most of these students were commencing courses in nursing—basic (82), health support—general (81) and health support—other (72), and 19 commenced in medicine.

Migration of health professionals

In 1999–00, migration of health professionals to and from Australia comprised 9,427 arrivals and 7,743 departures of a permanent or long-term nature, a net gain of 1,684 (Table 5.23). Note, however, that these figures represent arrivals and departures for all purposes, not just employment, and therefore do not equate with additions to the workforce. For example, some people arriving will be required to fulfil the requirements of professional bodies, some may not obtain employment in their stated occupation, and some arrive to visit relatives, to holiday or for study or business.

Of permanent and long-term arrivals into and departures from Australia during 1999–00, the largest categories of occupation by far were nurses, with 4,092 arrivals and 3,625 departures, resulting in a net gain of 467. There was also a large movement of general practitioners, with 2,276 arriving and 1,684 leaving, resulting in a net gain of 592. There was a net gain of 172 medical specialists.

In addition to long-term and permanent migration into and out of the country, there are quite large numbers of short-term visitors (for a period of 1 year or less), arriving and leaving. A total of 2,089 short-term visitors arrived in Australia in 1999–00 for employment in a health occupation. Over half of these were general practitioners (1,376), 395 were nurses and a further 156 were medical specialists. General practitioners are brought into Australia to work as Temporary Resident Doctors in areas of need, for periods of up to 12 months.

Table 5.23: Migration of health professionals: overseas arrivals and departures, 1999–00

	Permanent and long-term arrivals and departures									Short-term arrivals
	Arrivals				Departures					
Occupation	Residents returning after long-term stay	Perm-anent settlers	Visitors, for long-term stay	Total	Resid-ents leaving perm-anently	Resid-ents leaving for long-term stay	Long-term visitors leaving	Total	Net perma-nent and long-term arrivals	Visitors, for employ-ment
Medical practitioners										
General	642	439	1,195	2,276	279	715	690	1,684	592	1,376
Specialist	46	105	160	311	17	35	87	139	172	156
Nurses[(a)]	1,866	1,158	1,068	4,092	752	2,039	834	3,625	467	395
Dental practitioners	111	108	92	311	44	96	62	202	109	21
Pharmacists	133	155	137	425	47	168	109	324	101	24
Occupational therapists	160	39	28	227	26	194	19	239	–12	10
Optometrists	104	134	114	352	54	96	134	284	68	22
Physio-therapists	334	90	113	537	82	369	77	528	9	15
Speech pathologists	58	17	19	94	15	73	7	95	–1	4
Chiropractors/ osteopaths	46	14	16	76	16	41	18	75	1	0
Podiatrists	11	16	6	33	3	15	7	25	8	2
Medical imaging professionals	113	56	88	257	28	106	55	189	68	31
Other health	122	177	137	436	68	130	136	334	102	33
Total	**3,746**	**2,508**	**3,173**	**9,427**	**1,431**	**4,077**	**2,235**	**7,743**	**1,684**	**2,089**

(a) Includes midwives.
Source: AIHW analysis of Department of Immigration and Multicultural and Indigenous Affairs data.

Although it is not known how many Temporary Resident Doctors left Australia during the year, the number is likely to be fairly similar to the number arriving, as there is a fairly steady turnover. Their visa conditions are that they cannot stay indefinitely, and their average intended length of stay is just under 12 months (48.5 weeks in 1999–00). Nevertheless, there is always a stock of around 1,000 overseas doctors temporarily working in various parts of Australia—at any point in time during 1999–00 they numbered approximately 1,275.

Private sector practices and employment

Private sector employment makes up an important and substantial proportion (60%) (ABS Census of Population and Housing, 1996, unpublished data) of all workers in the health industry, as the first point of contact for many patients is often a visit to a local practitioner in their rooms. The ABS series of surveys of private sector health businesses and the practitioners who work in them provide relevant information.

Table 5.24: Practices and employment of health professionals in private practice, June 1998

Health profession	Practices	Employment: Males Full-time	Males Part-time	Males Total	Females Full-time	Females Part-time	Females Total	Persons Full-time	Persons Part-time	Persons Total
					Number					
Dental practice	5,099	4,720	1,073	5,793	730	845	1,575	5,450	1,918	7,368
Physiotherapy	3,242	1,297	644	1,941	1,385	2,336	3,721	2,682	2,980	5,662
Chiropractic/ osteopathic	2,132	1,772	385	2,157	1,369	2,344	3,713	3,141	2,729	5,870
Optometry/ optical dispensing	1,557	1,480	237	1,717	637	348	985	2,117	585	2,702
Audiology/ audiometry	146	114	22	136	225	142	367	339	164	503
					Per cent					
Dental practice	. .	64.1	14.6	78.6	9.9	11.5	21.4	74.0	26.0	100.0
Physiotherapy	. .	22.9	11.4	34.3	24.5	41.3	65.7	47.4	52.6	100.0
Chiropractic/ osteopathic	. .	30.2	6.6	36.7	23.3	39.9	63.3	53.5	46.5	100.0
Optometry/ optical dispensing	. .	54.8	8.8	63.5	23.6	12.9	36.5	78.3	21.7	100.0
Audiology/ audiometry	. .	22.7	4.4	27.0	44.7	28.2	73.0	67.4	32.6	100.0

. . Not applicable.

Sources: ABS 1999a, 1999b, 1999c, 1999d, 1999e.

Dental practitioners (7,368) were the most commonly reported type of professional (Table 5.24). They were employed in 5,099 dental practices, implying that many worked in single-person practices.

Dentists also had by far the highest percentage of their number who were males employed full time (64.1%), with audiologists/audiometrists (22.7%) the lowest. Relatively high percentages of physiotherapists and chiropractic/osteopathic practitioners were female part-timers (41.3% and 39.9%, respectively).

Data from the ABS private health business surveys are not comparable with the AIHW Labour Force Survey data (Tables 5.18 to 5.20), because their methodologies and scope are different. For some occupations, such as physiotherapists, the difference is considerable.

Australian and international health workforces

This section compares the full-time equivalent numbers and rates per 1,000 population of medical practitioners, dentists and nurses in five selected OECD countries: Australia, New Zealand, Canada, the United States and the United Kingdom (Table 5.25). Growth in the number of those practitioners in the five countries between 1981 and 1998 is also discussed. Care must be taken, however, when making comparisons between the countries shown, as their occupational classifications differ.

Practising medical practitioners

The number of practising physicians (medical practitioners) per 1,000 population in 1998 in the five selected countries ranged from 1.7 for the United Kingdom, 2.1 for Canada, 2.2 for New Zealand, 2.5 for Australia, up to 2.7 for the United States (Table 5.25).

The number of practising physicians per 1,000 population increased in all countries between 1993 and 1998, except for Canada. Australia maintained its position of having the second highest rate behind the United States in 1981, 1993 and 1998.

Table 5.25: Health professionals, selected OECD countries, 1981, 1993 and 1998

	Australia	New Zealand	Canada	United States	United Kingdom
Practising physicians			**1981**		
FTE professionals	27,127	5,037	45,542	463,330	73,958
FTE per 1,000 population	1.8	1.6	1.8	2.0	1.3
			1993		
FTE professionals	42,300	6,872	61,877	652,240	87,721
FTE per 1,000 population	2.4	1.9	2.2	2.5	1.5
			1998		
FTE professionals	46,078	8,491	62,977	725,357	101,732
FTE per 1,000 population	2.5	2.2	2.1	2.7	1.7
Nurses			**1981**		
FTE professionals	106,565	20,341	161,269	1,326,700	256,921
FTE per 1,000 population	7.1	6.4	6.5	6.5	4.6
			1993		
FTE professionals	147,238	33,429	235,117	1,975,800	295,245
FTE per 1,000 population	8.3	9.4	8.2	7.7	5.1
			1998		
FTE professionals	(a)149,202	36,763	227,651	2,238,800	299,010
FTE per 1,000 population	(a)8.1	9.7	7.5	8.3	5.0
Dentists			**1981**		
FTE professionals	6,380	(b)1,145	11,484	124,400	18,163
FTE per 1,000 population	0.4	(b)0.4	0.5	0.6	0.4
			1993		
FTE professionals	7,618	1,306	15,024	151,400	21,440
FTE per 1,000 population	0.4	0.4	0.5	0.6	0.4
			1998		
FTE professionals	(a)8,000	1,496	16,507	157,900	23,409
FTE per 1,000 population	(a)0.4	0.4	0.5	0.6	0.4

(a) 1997 data.

(b) 1980 data.

Note: FTE = full-time equivalent.

Source: OECD 2001.

Nurses

In 1998 the number of nurses per 1,000 population was higher for New Zealand (9.7) than the rates for the other selected countries, with the United Kingdom having the lowest rate of 5.0. The numbers of nurses per 1,000 population increased in each of the selected countries between 1981 and 1993; after 1993 the rates decreased for Australia (down 0.2 per thousand), Canada (down 0.7) and the United Kingdom (down 0.1).

Between 1993 and 1998, the increase in the number of nurses was greater in the United States (up 13.3%) than in the other selected countries. The numbers in Australia (1993 to 1997) and the United Kingdom rose slightly (each up 1.3%), and the number in Canada fell by 3.2%.

Dentists

The number of dentists per 100,000 population in each of the countries selected appears to have remained stable for many years, with rates for each country being the same in 1998 as they had been both in 1981 and in 1993. In all 3 years, there were 0.4 dentists per 1,000 population in Australia, New Zealand and the United Kingdom, with slightly higher rates for Canada (0.5) and the United States (0.6).

The increase between 1993 and 1998 in the number of dentists was higher in New Zealand (up 14.5%) than in the other selected countries, with the United States having the lowest increase (up 4.3%). In Australia, the number of dentists increased marginally between 1993 and 1997 (up 5.0%), which appears to contradict the decline of 3.3% depicted in Table 5.17. This decline, however, occurred in a subsequent period (1996–97 to 2000–01).

5.5 Provision and use of health services

Hospitals

In 1999–00, there were 726 public acute care hospitals and 302 private hospitals other than freestanding day hospital facilities, numbers not much changed over recent years (Table 5.26). Acute care hospitals provide at least minimal medical, surgical or obstetric services for admitted patient treatment and/or care, and provide 24-hour nursing service as well as other necessary professional services. Private hospitals in this category include acute care and psychiatric hospitals.

In contrast, there was a marked change in the number of private freestanding day hospital facilities, with numbers nearly doubling from 111 in 1993–94, to 207 in 1999–00. These facilities provide investigation and treatment services for admitted patients on a day-only basis.

The number of public psychiatric hospitals declined by 40% from 37 in 1993–94 to 22 in 1999–00. These hospitals are devoted mainly to the treatment and care of admitted patients with psychiatric, mental or behavioural disorders. Reforms under the National Mental Health Strategy have meant that their role has declined in recent years, with more services provided in acute care hospitals and community settings.

Public acute hospitals can be described in terms of peer groups (Table 5.32), as developed to explain variability in the average cost per casemix-adjusted separation and to group hospitals in terms of their volume of admitted patient activity and geographical location (AIHW 2000b). These peer groups also demonstrate some of the attributes of the State and Territory hospital systems arising from differing geographical characteristics, for example. Thus, small rural and remote hospitals had an average of 23 beds in 1999–00, and were most numerous in Queensland and Western Australia. Principal referral hospitals averaged 468 beds each nationally.

Bed numbers

Changes in the numbers of hospitals are often due to changes in administrative or reporting arrangements and not necessarily to changes in the number of hospital campuses or buildings. For this reason, numbers of hospital beds are regarded as a more reliable indicator of the availability of hospital services.

Table 5.26: Hospitals and available beds, 1993–94 to 1999–00

Hospitals	**1993–94**	**1994–95**	**1995–96**	**1996–97**	**1997–98**	**1998–99**	**1999–00**
Public acute[(a)]	702	727	704	704	734	726	726
Public psychiatric	37	35	34	23	24	21	22
Public total	739	762	738	727	758	747	748
Private freestanding day hospital facilities	111	125	140	153	175	190	207
Private other[(b)]	329	328	323	319	317	312	302
Private total	440	453	463	472	492	502	509
All hospitals	**1,179**	**1,215**	**1,201**	**1,199**	**1,250**	**1,249**	**1,257**
Available beds[(c)]							
Public acute[(a)]	56,140	54,211	54,579	53,410	52,606	50,851	50,188
Public psychiatric	5,360	4,685	3,992	3,426	3,112	2,943	2,759
Public total	61,500	58,896	58,571	56,836	55,718	53,794	52,947
Private freestanding day hospital facilities	917	939	1,023	1,163	1,348	1,460	1,581
Private other[(b)]	21,241	22,370	22,757	22,966	23,019	23,746	23,665
Private total	22,158	23,309	23,780	24,129	24,367	25,206	25,246
All hospitals	**83,658**	**82,205**	**82,351**	**80,965**	**80,085**	**79,000**	**78,193**
Available beds per 1,000 population[(d)]							
Public acute[(a)]	3.1	3.0	3.0	2.9	2.8	2.7	2.6
Public psychiatric	0.3	0.3	0.2	0.2	0.2	0.2	0.1
Public total	3.4	3.2	3.2	3.1	3.0	2.8	2.7
Private freestanding day hospital facilities	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Private other[(b)]	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Private total	1.2	1.3	1.3	1.3	1.3	1.3	1.3
All hospitals	**4.7**	**4.5**	**4.5**	**4.3**	**4.3**	**4.1**	**4.1**

(a) Includes DVA hospitals.

(b) Includes private psychiatric hospitals, excludes private freestanding day hospital facilities.

(c) Average available beds where possible, otherwise available beds at 30 June.

(d) Rates are calculated as crude rates using the December population for each year.

Sources: AIHW National Public Hospital Establishments Database; National Survey of Mental Health Services; ABS 1995, 2001a.

Table 5.27: Available beds per 1,000 population[(a)], States and Territories, 1999–00

Hospital type	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Public acute	2.6	2.5	2.7	2.7	3.1	2.2	2.2	2.8	2.6
Public psychiatric	0.2	0.0	0.2	0.2	0.3	0.2	. .	. .	0.1
Total public	*2.8*	*2.6*	*2.9*	*2.8*	*3.4*	*2.4*	*2.2*	*2.8*	*2.8*
Private freestanding day hospital facilities[(b)]	0.1	0.1	0.1	0.1	0.1	0.0	n.a.	. .	0.1
Private other[(c)]	1.0	1.3	1.5	1.5	1.4	1.6	n.a.	n.a.	1.2
Total private	*1.1*	*1.4*	*1.6*	*1.6*	*1.5*	*1.6*	*n.a.*	*n.a.*	*1.3*
All hospitals	**3.9**	**3.9**	**4.5**	**4.4**	**4.9**	**4.1**	**2.2**	**2.8**	**4.1**

n.a. Not available.

. . Not applicable.

(a) Rates are calculated as crude rates using the December 1999 population.

(b) Australian Capital Territory included with New South Wales.

(c) Includes private acute and psychiatric hospitals. Australian Capital Territory included with New South Wales; Northern Territory included with South Australia.

Sources: AIHW National Public Hospital Establishments Database; ABS 2001a.

Hospitals vary in size from small community facilities that may have fewer than 10 beds to large metropolitan hospital campuses that can have more than 500 beds.

Between 1993–94 and 1999–00, there was a 3.7% reduction in available beds in hospitals other than public psychiatric hospitals, resulting in a decrease in the overall number of available beds from 4.7 to 4.1 beds per 1,000 population (Table 5.26). The change in available beds was not evenly distributed between the public and private sectors, with the number of private sector beds increasing by 13.9% and public acute hospital beds decreasing by 10.6% (calculated from Table 5.26).

The number of beds per 1,000 population in hospitals is a useful indicator of the comparative supply of hospital services across States and Territories. For example, there is a different mix between public and private beds across the States and Territories. In 1999–00, the national average for public acute hospitals was 2.6 beds per 1,000 population, ranging from 2.2 per 1,000 population in Tasmania and the Australian Capital Territory, to 3.1 per 1,000 population in South Australia. For the private sector, there was a range from 1.1 beds per 1,000 population in New South Wales to 1.6 beds per 1,000 population in Queensland, Western Australia and Tasmania (Table 5.27).

Admitted patients, patient-days and length of stay

There were 5,898,804 separations from public acute, public psychiatric and private hospitals reported to the AIHW National Hospital Morbidity Database for 1999–00 (Tables S30 and S31), or 298 separations per 1,000 population (Table 5.28). There were 3,854,865 separations from public acute hospitals (65%), 17,950 separations from public psychiatric hospitals (0.3%) and 2,025,989 separations from private hospitals (34%). These separations accounted for 22,604,114 patient-days, 67% in public hospitals, 5% in public psychiatric hospitals and 28% in private hospitals (Tables S32 and S33).

Between 1995–96 and 1999–00, there was an 8% increase in separations from public acute hospitals and a 28% increase in separations from private hospitals. There was a

Table 5.28: Hospital use by admitted patients, 1995–96 to 1999–00

	1995–96	1996–97	1997–98	1998–99	1999–00
Separations per 1,000 population[(a)]					
Public hospitals	196.3	195.8	199.9	199.7	197.4
Public acute hospitals[(b)]	193.2	193.1	197.0	198.7	196.5
Public psychiatric hospitals[(c)]	1.7	1.1	1.2	1.1	1.0
Private hospitals	85.1	89.2	93.2	95.5	101.4
Private freestanding day hospital facilities	n.a.	11.8	12.9	13.3	14.1
Other private hospitals	n.a.	77.5	80.2	82.2	87.3
Total	**279.1**	**282.7**	**290.6**	**294.5**	**298.0**
Patient-days per 1,000 population[(a)]					
Public hospitals	878.3	861.7	848.8	817.8	799.6
Public acute hospitals[(b)]	827.1	789.4	774.1	751.3	740.2
Public psychiatric hospitals[(c)]	89.8	72.3	74.7	66.6	59.3
Private hospitals	311.6	302.0	303.8	299.4	307.7
Private freestanding day hospital facilities	n.a.	11.7	12.8	13.2	14.1
Other private hospitals	n.a.	288.3	289.0	284.2	293.7
Total	**1,187.9**	**1,161.7**	**1,150.6**	**1,115.3**	**1,105.3**
Same-day separations as a percentage of total					
Public acute hospitals[(b)]	39.8	42.0	43.3	44.7	45.8
Private hospitals	48.9	51.0	53.1	54.8	56.2
Other private hospitals	n.a.	43.7	45.6	47.6	49.3
Total[(d)]	**42.4**	**44.7**	**46.3**	**47.9**	**49.2**
Average length of stay (days)					
Public acute hospitals[(b)]	4.4	4.2	4.0	3.9	3.9
Other private hospitals	n.a.	3.8	3.7	3.6	3.5
Total[(d)]	**4.3**	**4.2**	**4.1**	**3.9**	**3.8**
Average length of stay, excluding same-day separations (days)					
Public acute hospitals[(b)]	6.6	6.5	6.4	6.3	6.4
Other private hospitals	n.a.	6.0	6.0	5.9	5.9
Total[(d)]	**6.8**	**6.8**	**6.7**	**6.6**	**6.6**

n.a. Not available.

(a) Figures are rates per 1,000 population directly age-standardised to the Australian population at 30 June 1991. For private hospitals, rates were derived using populations of the reporting States and Territories only, without adjustment for incomplete reporting.

(b) Includes DVA hospitals.

(c) In 1995–96 Queensland was unable to report. Victoria was not able to provide patient-days data for all separations in 1995–96 and for 407 separations in 1996–97.

(d) Public psychiatric hospitals included in these totals.

Source: AIHW 2001h.

decrease of 3% in patient-days for public acute hospitals over this period and an increase of 8% for private hospitals.

After adjusting for changes in the age and size of the population, between 1995–96 and 1999–00 the number of separations per 1,000 population increased by 6.7% overall, by 1.7% for public acute hospitals, and 19.2% for private hospitals (calculated from Table 5.28). The number of patient-days per 1,000 population fell by 7.0% over the 4-year

Box 5.6: Statistics and data sources relating to the use of hospitals

Admitted patient statistics

Statistics on admitted patients, although sometimes referred to as admission statistics, are more correctly referred to as separation statistics. This is because most of the data on the use of hospitals by admitted patients are based on information collected at the end of patients' episodes of care, rather than at the beginning. The reason for this is that the actual length of stay and the procedures carried out are known and the diagnostic information is more accurate.

***Admitted patient** means a patient who undergoes a hospital's formal admission process.*

***Patient-day** means the occupancy of a hospital bed (or chair in the case of some same-day patients) by an admitted patient for all or part of a day.*

***Separation** is the term used to refer to the episode of care, which can be a total hospital stay (from admission to discharge, transfer or death), or a portion of a hospital stay beginning or ending in a change of type of care (for example, from acute to rehabilitation). 'Separation' also means the process by which an admitted patient completes an episode of care by being discharged, dying, transferring to another hospital or changing type of care.*

*For each separation, patients are assigned a **principal diagnosis** or the diagnosis established after study to be chiefly responsible for occasioning the patient's episode of admitted patient care. The principal diagnosis recorded for each separation is usually a disease, injury or poisoning, but can also be specific treatment of an already diagnosed condition, such as dialysis for renal disease, or other reasons for hospitalisation. If applicable, one or more **procedures** are also reported. These can be therapeutic or diagnostic. Diagnoses and procedures were reported using the ICD-10-AM classification in 1999–00 (see Box 5.7, page 287).*

The State and Territory health authorities compile information on separations and supply it to the AIHW for collation into the National Hospital Morbidity Database. This database is an electronic record for each separation from almost every hospital in Australia, including public acute and psychiatric hospitals (public sector) and private hospitals, which include private freestanding day hospital facilities (private sector).

As indicators of community morbidity, hospital separation data have limitations. Sick people who are not admitted to hospital are not counted and those who are admitted more than once, or to more than one hospital, are counted on each occasion. Hospital separation data also reflect differing admission practices, and availability of and access to hospitals.

Non-admitted patients

Hospitals provide services to non-admitted patients through emergency departments, outpatient clinics and a range of other specialised services. Summary information on these services is collated nationally for public hospitals by the AIHW and for private hospitals by the ABS.

(continued)

Box 5.6 (continued): Statistics and data sources relating to the use of hospitals

An ***occasion of service*** *for a non-admitted patient is defined as any examination, consultation, treatment or other service provided to a patient in each functional unit of a health service establishment on each occasion such service is provided. National data are categorised into broad clinic or service-based groupings.*

Use of the national definition and categorisation for non-admitted patients is not completely uniform among the States and Territories and has varied over time, and this affects data quality. Existing national systems for counting and classifying non-admitted patient services are being revised.

period, 10.5% for public acute hospitals and 1.3% for private hospitals. Thus there was a slight shift from the use of public acute to private sector hospitals during the 4-year period. In 1995–96, 69% of separations and 70% of patient-days were in public acute hospitals, whereas in 1999–00, these percentages had fallen to 65% and 67% respectively. Within public acute hospitals, the proportion of patients admitted as public (Medicare) patients increased, from 83% in 1995–96 to 87% in 1999–00.

Although some categories of patients are not admitted for acute care services, such as those requiring rehabilitation, some specialised mental health services or palliative care, most patients require a relatively short stay in hospital. There is an increasing trend towards day surgery and procedures for this group of patients, with improvements in medical technology (anaesthetics and microsurgery, for example) enabling a wider range of procedures to be performed on a same-day basis (Duckett 2002; Productivity Commission 1999). Improved drug treatments and efforts to increase hospital productivity have also tended to result in decreased length of stay. With potentially the opposite effect on average length of stay, however, some treatments that have previously required admission are being provided in outpatient clinics and day-care facilities or by community health services.

The average length of stay in hospital decreased from 4.3 days in 1995–96 to 3.8 days in 1999–00. The average length of stay excluding same-day separations also decreased, but less markedly, from 6.8 days in 1995–96 to 6.6 days in 1999–00. These figures are within the range of those reported for other OECD countries, for which same-day separations are excluded for average length of stay calculations.

With public psychiatric hospitals excluded, the average length of stay in 1999–00 was 3.8 days overall, 3.9 days in public acute hospitals and 3.1 days in private hospitals. The difference between public and private hospitals at least in part reflects the different range of patients cared for and treatments undertaken (casemixes) in the two hospital sectors. For example, public acute hospitals had more children under the age of 5 years as patients (4.5% of separations) compared with private hospitals (0.9% of separations) (Tables S30 and S31), and procedures were more commonly reported for patients of private hospitals (89%) than patients of public acute hospitals (73%).

Same-day separations

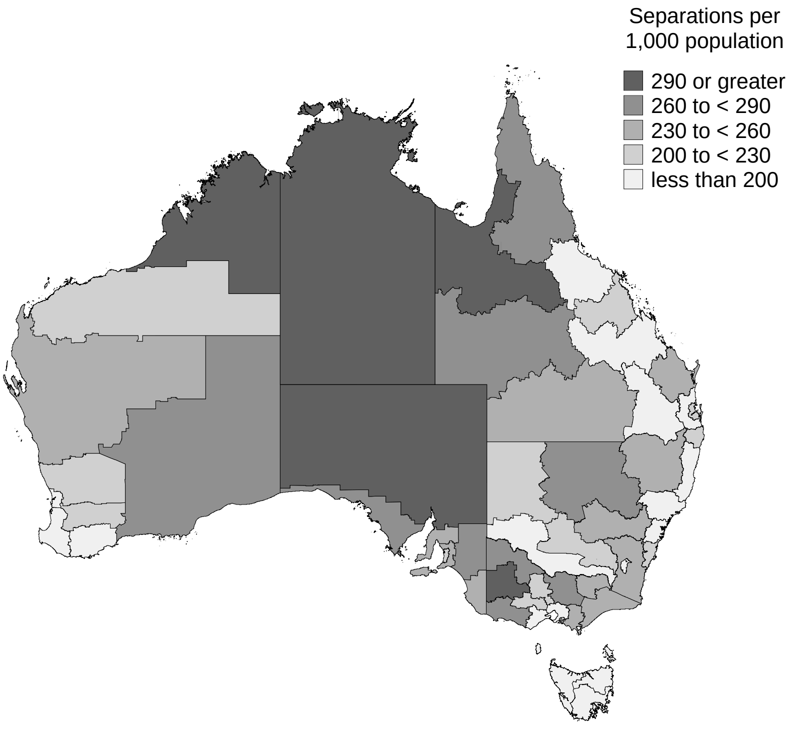
In 1999–00, there were 2,903,966 same-day separations, 1,764,127 from public acute hospitals, 2,379 from public psychiatric hospitals and 1,137,460 from private hospitals

(277,774 in private freestanding day hospital facilities). There was a marked upward trend over the period 1995–96 to 1999–00 in the proportion of separations that were day-only. In 1995–96, 42% of separations were same-day separations, but by 1999–00 this had increased to 49% of all separations.

Although the number of private freestanding day hospitals has increased markedly over recent years (from 111 in 1993–94 to 207 in 1999–00; Table 5.26, page 280), private acute and psychiatric hospitals accounted for 79.1% of the increase in same-day separations in the private sector between 1996–97 and 1999–00. The number of same-day separations increased by 34.4% for these hospitals, compared with an increase of 26.5% for private freestanding day hospitals.

Area of usual residence of the patients

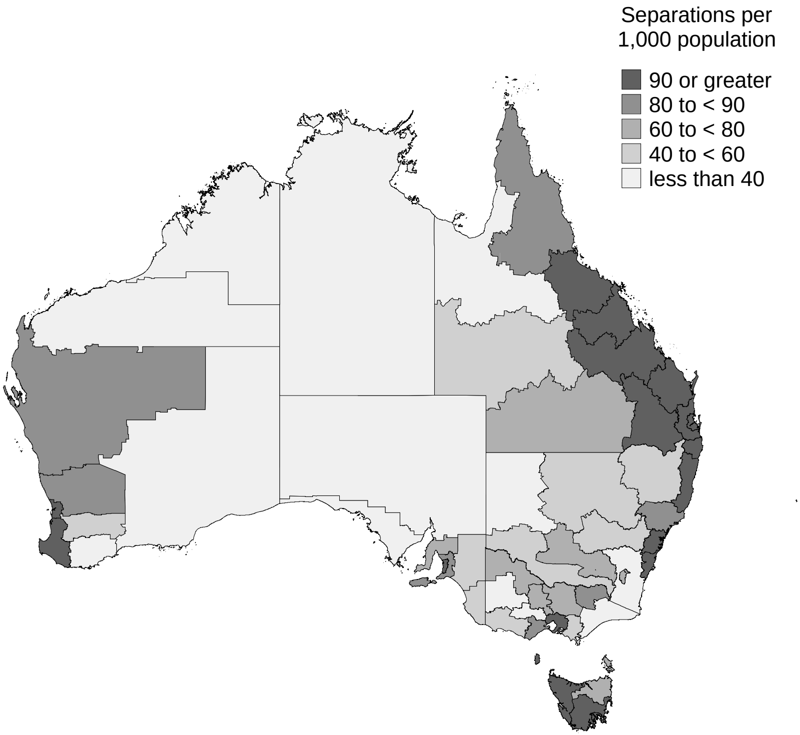
Figures 5.8 and 5.9 show age-standardised separation rates per 1,000 population by statistical division of the usual residence of the patient, for public and private hospitals. In the public sector, the highest rates were reported for residents of the statistical divisions of Kimberley in Western Australia and Darwin in the Northern Territory. In the private sector, highest rates were reported for the Moreton statistical division in Queensland and the South-West statistical division in Western Australia (AIHW 2001h).



Note: Rates were age-standardised to the 1991 Australian population.

Source: AIHW 2001h.

Figure 5.8: Separations per 1,000 population, by statistical division of usual residence, public hospitals, 1999–00



Note: Rates were age-standardised to the 1991 Australian population.
Source: AIHW 2001h.

Figure 5.9: Separations per 1,000 population, by statistical division of usual residence, private hospitals, 1999–00

Diagnoses, procedures and diagnosis-related groups for admitted patients

The conditions that hospitals treat are of interest to health service managers, planners, funders and epidemiologists. These conditions, the procedures that patients undergo in hospital and the consequent casemix of hospitals are detailed in the National Hospital Morbidity Database using the classification systems described in Box 5.7.

For patients with a disease, injury or poisoning recorded as a principal diagnosis, the broad diagnosis groups (ICD-10-AM chapters) with the highest number of separations in Australian hospitals (public acute, public psychiatric and private hospitals) in 1999–00 were diseases of the digestive system, followed by pregnancy, childbirth and the puerperium, and diseases of the circulatory system (Tables S34 and S35).

At a more detailed level (three-character ICD-10-AM categories), the most common disease or injury principal diagnoses (excluding diagnoses described as symptoms or types of care) in public hospitals were angina pectoris (66,378 separations) and pneumonia, organism unspecified (42,173 separations) (AIHW 2001h). In private hospitals, the most common diagnoses were other cataract (55,645 separations), and embedded and impacted teeth (39,068 separations).

Box 5.7: Classification of diseases, procedures and separations for admitted patients

Diseases and procedures

Hospital patient records contain a great deal of information about a patient's diagnosis and about procedures performed during the hospital stay. To allow efficient storage and analysis of this information, detailed classification and coding systems are used to describe and record diagnoses and procedures. The classification used in 1999–00 in Australia was the first edition of the International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification (ICD-10-AM), developed by the National Centre for Classification in Health (NCCH 1998). It comprises classifications of diseases and external causes of injuries and poisoning, based on the World Health Organization version of ICD-10, and a classification of procedures based on the Australian Medicare Benefits Schedule. These ICD-10-AM codes can be a source of information on the diseases treated in hospitals and the operations performed, at very detailed levels or aggregated into broad groupings such as the ICD-10-AM chapters. The second edition of ICD-10-AM has been in place since 1 July 2000.

Diagnosis-related groups

Australian Refined Diagnosis Related Groups (AR-DRGs) is a classification system used mainly for acute admitted patient episodes. This classification provides a means of summarising and relating the number and type of acute admitted patients treated in a hospital (i.e. its casemix) to the resources required by the hospital. This classification groups episodes with similar clinical conditions and similar usage of hospital resources using information in the hospital morbidity record such as diagnoses, procedures, and age of the patients.

Each AR-DRG is associated with information on the average length of stay and estimated average cost for patients in the group in the public and private sectors. This classification, therefore, has use in measuring outputs and performance of hospitals and in planning and funding hospital service provision.

A procedure was reported for 78% of separations in Australian hospitals in 1999–00. Of these, 61% were in public hospitals, although public hospitals accounted for 66% of separations overall. Similarly, although 72% of overall patient-days were in public hospitals, only 69% of patient-days associated with procedures were in public hospitals (11,901,596). This reflects the higher proportion of separations in the private sector that were reported with a procedure, compared with the public sector, 89% and 73% respectively.

At the broad group (ICD-10-AM chapter) level, if miscellaneous diagnostic and therapeutic procedures are not included (i.e. procedures that are not 'operations' or obstetrical procedures), operations on the urinary system accounted for the largest proportion of public hospital separations for which a procedure was reported (584,819 separations) (Table S36). Haemodialysis accounted for 93% (541,388) of these separations. The most commonly reported procedure group for the private sector was operations on the digestive system (432,460 separations) (Table S37). Within that grouping, panendoscopy with excision was reported for 48% of the separations, and fibre-optic colonoscopy with excision for 30%.

Procedures were reported for varying proportions of separations within the broad groups of principal diagnoses. High proportions of separations for diseases of the eye and adnexa (98%), neoplasms (94%), and diseases of the blood and blood-forming organs (93%) had procedures reported. In contrast, there were fewer reported for separations with principal diagnoses of mental and behavioural disorders (36%), certain infectious and parasitic diseases (40%), and diseases of the respiratory system (55%).

Using the AR-DRGs classification of acute care separations (see Box 5.7), the Major Diagnostic Categories for which there were the most separations were kidney and urinary tract in public hospitals and digestive system in private hospitals (Tables S38 and S39). The AR-DRGs with the highest numbers of separations in 1999–00 featured several for which same-day separations dominated (Table 5.29). Among these were the top two groups in public hospitals, admit for renal dialysis (466,793 public sector separations) and chemotherapy (117,705 public sector separations), and the top two groups in the private sector, other colonoscopy, same-day (136,449 private sector separations) and other gastroscopy for non-major digestive disease, same-day (95,482 private sector separations).

Vaginal delivery without complicating diagnosis was the most common AR-DRG that was not usually a same-day hospitalisation. This group was the third most common in

Table 5.29: Top 12 AR-DRGs (version 4.1), 1999–00[(a)]

AR-DRG		Separations	Per cent same-day separations	Patient-days	Average length of stay (days)
L61Z	Admit for renal dialysis	529,104	99.9	529,503	1.0
R63Z	Chemotherapy	207,141	99.7	207,917	1.0
G44C	Other colonoscopy, same-day	197,028	100.0	197,028	1.0
G45B	Other gastroscopy for non-major digestive disease, same-day	154,995	100.0	154,995	1.0
O60D	Vaginal delivery without complicating diagnosis	144,352	2.9	492,860	3.4
C08Z	Major lens procedures	105,064	81.1	109,787	1.0
D40Z	Dental extractions and restorations	79,930	89.6	81,953	1.0
I18Z	Knee procedures	79,785	66.0	105,161	1.3
Z40Z	Follow-up after completed treatment with endoscopy	74,989	96.8	76,285	1.0
J11Z	Other skin, subcutaneous tissue and breast procedures	71,877	87.9	88,873	1.2
U60Z	Mental health treatment, same-day, without electroconvulsive therapy	69,499	100.0	69,499	1.0
O40Z	Abortion with D&C, aspiration curettage or hysterotomy	61,326	84.0	64,044	1.0

(a) Includes separations with acute or unspecified type of episode of care only.

Source: AIHW National Hospital Morbidity Database.

public hospitals (111,208 separations) and the eighth most common in private hospitals (33,376 separations). This category does not include deliveries by caesarean section or complicated deliveries.

Same-day procedures

There were marked increases between 1993–94 and 1999–00 in the proportions of separations from both public acute and private hospitals that were same-day, 34.2% and 43.3% to 45.8% and 56.2%, respectively. In addition, the proportion of same-day separations for which a procedure was reported rose from 83.5% to 87.1%, so there was an increase of 78.6% (to 2.5 million) same-day separations for which procedures were reported.

In contrast with the 78.6% increase for same-day separations, there was a 26% increase in overnight separations with procedures. Thus the proportion of all separations for which procedures were reported that were same-day separations rose from 45% to 52% in public hospitals, and from 49% to 60% in private hospitals.

Whilst about half of these same-day separations with procedures were for haemodialysis (529,692 separations in 1999–00), fibre-optic colonoscopies (280,330 separations), panendoscopies (250,187 separations) or intravenous chemotherapy (186,629 separations), which have historically been undertaken largely on a same-day basis, some of the increases in these same-day separations relate to other procedures for which there have been increased proportions undertaken on a same-day basis (Table 5.30). For example, the proportion of coronary angiographies performed on a same-day basis rose from 22.0% in 1993–94 to 33.1% in 1999–00.

Table 5.30: Separations and same-day separations for selected procedures, 1993–94 to 1999–00

Procedure	1993–94	1996–97	1999–00
Extracapsular crystalline lens extraction by phacoemulsification			
Separations	22,972	78,983	108,957
% same-day	39.4	64.3	80.5
Release of carpal and tarsal tunnel			
Separations	17,902	21,484	23,650
% same-day	54.3	70.3	80.8
Procedures for haemorrhoids			
Separations	19,320	24,073	24,850
% same-day	36.0	50.9	59.5
Coronary angiography			
Separations	45,239	66,923	74,174
% same-day	22.0	26.6	33.1
Examination procedures on ventricle			
Separations	25,418	56,895	63,099
% same-day	22.6	26.1	34.0

Source: AIHW National Hospital Morbidity Database.

Procedures in private hospitals

Over recent years there has been an increase in the activity of private hospitals, as described above, accompanied by a widening of the types and complexity of services they provide. Intensive care, cardiac surgery, neurosurgery, renal dialysis and oncology are among the services that have become increasingly available in private hospitals (Productivity Commission 1999).

Between 1991–92 and 1999–00 the number of private hospitals with an oncology unit increased from 8 to 51, and the number of hospitals with separate coronary intensive care units increased from 3 to 29. Renal dialysis units were available in 22 hospitals in 1999–00 compared with 3 hospitals in 1991–92, and neurosurgical units were available in 8 hospitals in 1999-00 compared with only 1 hospital in 1991–92 (ABS 1993, 2001a).

The expansion in the type and complexity of services available in private hospitals is also reflected in changes in the procedures undertaken in the private sector. For example, high-cost procedures such as bone marrow transplants and tracheostomies are increasingly being undertaken in the private sector. In 1993–94, there were 10 bone marrow transplants reported for private hospitals (1.6% of the total of 621 for all hospitals), but by 1999–00 this had increased to 200 (15% of the total of 1,295). For tracheostomies, 5% of separations were in private hospitals in 1993–94 (134 of a total of 2,863), compared with 12% in 1999–00 (559 of a total of 4,627).

Complex procedures such as coronary artery bypass grafts are also increasingly being undertaken in private hospitals. For example, in 1993–94, 32% of separations for coronary artery bypass grafts were in private hospitals compared with 41% in 1999–00. Over this period, the number of separations for coronary artery bypass graft increased by 35% in the private sector, from 5,254 to 7,068. In the public sector the number of separations for coronary artery bypass graft decreased by 6%, from 10,917 separations in 1993–94 to 10,234 separations in 1999–00.

Other procedures that are being increasingly undertaken in the private sector include chemotherapy and haemodialysis. Between 1993–94 and 1999–00, the number of separations for chemotherapy increased from 20,117 to 91,328 (354%) in the private sector; they increased from 113,585 to 123,024 (8%) in public hospitals. Hence, the proportion of separations for chemotherapy that were in private hospitals increased from 15% to 43% over this period. For haemodialysis, 8% of separations were in private hospitals in 1993–94, but by 1999–00 this had risen to 12%. The number of separations for haemodialysis in the private sector increased from 18,005 to 63,346 (252%), compared with an increase of 210,743 to 478,042 (127%) in public hospitals.

In 1999–00, private hospitals reported separations for all but 4 of the 661 AR-DRGs: liver, lung, heart and multiple organ transplants.

AR-DRGs for veterans

The number of separations has increased substantially over recent years for veterans (AIHW 2001h), reflecting the increased hospital requirements of an ageing population and an extension of DVA gold card eligibility on 1 January 1999. As reported by State and Territory governments to the National Hospital Morbidity Database, the most frequently reported AR-DRGs in 1999–00 were for renal dialysis, major lens procedures and chemotherapy (Table 5.31). Eligibility to receive hospital treatment as a DVA patient may not necessarily have been confirmed by DVA for these separations.

Table 5.31: Top 10 AR-DRGs (version 4.1) for veterans, 1999–00[(a)]

AR-DRG		Public hospitals	Private hospitals	Total
L61Z	Admit for renal dialysis	19,434	4,875	24,309
C08Z	Major lens procedures	1,911	13,072	14,983
R63Z	Chemotherapy	3,849	6,827	10,676
G44C	Other colonoscopy, same-day	1,363	6,923	8,286
U60Z	Mental health treatment, same-day, without electroconvulsive therapy	2,981	3,637	6,618
G45B	Other gastroscopy for non-major digestive disease, same-day	1,318	5,030	6,348
J11Z	Other skin, subcutaneous tissue and breast procedures	1,269	3,820	5,089
Z40Z	Follow-up after completed treatment with endoscopy	1,035	3,468	4,503
F62B	Heart failure and shock without catastrophic cc[(b)]	2,533	1,629	4,162
E65A	Chronic obstructive airways disease with catastrophic or severe cc[(b)]	2,403	1,673	4,076
Total[(c)]		**119,234**	**159,517**	**278,751**

(a) Includes separations with acute or unspecified type of episode of care only.

(b) cc = complications and co-morbidities.

(c) Includes all other AR-DRGs.

Source: AIHW National Hospital Morbidity Database.

The DVA paid for 223,480 private hospital separations and 130,059 public hospital separations for entitled veterans and war widows in 2000–01 (DVA, unpublished data).

Non-admitted patients

There were 32,426,272 non-admitted patient occasions of service reported for public acute and psychiatric hospitals in 1999–00, or about 1,859 per 1,000 population (AIHW 2001h). In 1999–00, 5,220,290 or 15% of these occasions of service were provided in accident and emergency departments and 2,844,684 or 8.0% were provided as radiology or organ imaging. The largest group of non-admitted occasions of service was other medical/surgical/obstetric services (11,516,364 or 33%). Note that there is considerable variation in practices among States and Territories in the way in which data on non-admitted patient occasions of service are collected, and this may affect the numbers of non-admitted patient occasions of service assigned to each category by different jurisdictions.

Private hospitals also contribute to the provision of non-admitted patient services, with a different mix of types compared with the public hospitals. In 1999–00, private hospitals reported 1,819,600 occasions of service (ABS 2001a), with the largest numbers reported for accident and emergency (486,100 or 26.7%) and allied health services (474,900 or 26.1%).

Hospital performance indicators

The National Health Performance Framework (see Chapter 6, page 344) includes nine dimensions that can be used to assess how well the health system is performing in delivering quality health actions to improve the health of Australians. For several of these dimensions, indicators have been identified that relate to the performance of the acute care or hospital component of the health system (NHPC 2002). They include:

- the cost per casemix-adjusted separation, as an indicator of efficiency
- waiting times for elective surgery, as an indicator of access
- hospital separations with an adverse event, as an indicator of safety.

Table 5.32: Cost per casemix-adjusted separation by public hospital peer group[(a)], 1999–00

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Principal referral and specialist women's & children's hospitals									
Number of hospitals[(b)]	23	12	15	4	4	2	1	1	62
Average beds per hospital[(b)]	372	752	351	567	418	364	503	268	468
Average cost weight[(c)]	1.10	1.03	1.08	1.02	1.06	1.08	0.93	0.80	1.06
Cost per casemix-adjusted separation ($)	2,846	2,537	2,683	3,343	2,601	2,518	n.p.	n.p.	2,747
Large hospitals									
Number of hospitals[(b)]	17	6	7	2	3	1	1	1	38
Average beds per hospital[(b)]	146	143	173	117	198	131	162	162	153
Average cost weight[(c)]	1.01	0.90	0.87	0.87	0.99	1.16	1.14	0.71	0.95
Cost per casemix-adjusted separation ($)	2,503	2,422	2,077	2,669	2,545	n.p.	n.p.	n.p.	2,443
Medium hospitals									
Number of hospitals[(b)]	40	21	16	11	14	0	0	0	102
Average beds per hospital[(b)]	58	59	68	104	58	. .	. .	. .	65
Average cost weight[(c)]	0.91	0.81	0.79	0.81	0.88	. .	. .	. .	0.85
Cost per casemix-adjusted separation ($)	2,847	2,331	2,148	3,116	2,425	. .	. .	. .	2,632
Small rural and remote hospitals									
Number of hospitals[(b)]	29	17	37	34	15	4	0	3	139
Average beds per hospital[(b)]	25	20	22	23	25	15	. .	37	23
Average cost weight[(c)]	0.82	0.83	0.79	0.81	0.84	0.82	. .	0.85	0.81
Cost per casemix-adjusted separation ($)	2,532	2,370	2,196	3,785	2,317	15,675	. .	3,394	2,945
Total selected public acute care hospitals									
Number of hospitals[(b)]	109	56	75	51	36	7	2	5	341
Average beds per hospital[(b)]	129	205	112	87	96	131	333	108	129
Average cost weight[(c)]	1.05	0.99	1.00	0.94	1.00	1.08	0.98	0.78	1.01
Cost per casemix-adjusted separation ($)	2,777	2,511	2,528	3,299	2,552	2,842	3,120	3,410	2,701

n.p. Not published because there was only one hospital in the peer group.

. . Not applicable.

(a) Psychiatric hospitals, drug and alcohol hospitals, mothercraft hospitals, hospices, rehabilitation and other non-acute facilities and multipurpose facilities have been excluded. For details, see AIHW 2001h.

(b) Hospital counts refer to the lowest level of establishment with available financial data. Some relate to hospital networks which can include a mix of large, small, specialised and non-acute hospitals. As a result, the numbers of hospitals and beds will be different from those reported in Table 5.26.

(c) The average cost weight is a measure of the relative costliness of the separations, based on AR-DRG data from the National Hospital Morbidity Database, and 1999–00 AR-DRG v. 4.1 cost weights (DHAC 2001c).

Sources: AIHW National Hospital Morbidity Database and AIHW National Public Hospital Establishments Database.

Cost per casemix-adjusted separation

The cost per casemix-adjusted separation is a measure of the average cost of providing care for an admitted patient, adjusted for the relative complexity of the patient's condition and hospital services provided (AIHW 2001h). It is calculated for selected public acute care hospitals as the proportion of the recurrent expenditure that is estimated to have been associated with treating admitted patients, divided by the total separations adjusted using AR-DRG cost weights for their relative costliness.

Table 5.32 presents cost per casemix-adjusted separation data by hospital peer group. These groups are designed to explain variability in the average cost per casemix-adjusted separation and to group hospitals in terms of their volume of admitted patient activity and geographical location (AIHW 2000b).

For 1999–00, the overall cost per casemix-adjusted separation was $2,701. This varied from $3,410 for the Northern Territory to $2,511 for Victoria, and from $2,945 for small rural and remote hospitals to $2,443 for large hospitals.

Waiting times for elective surgery

Waiting times for elective surgery are an indicator of access to hospital services, i.e. an indicator of the provision of timely care according to need. Waiting times are the focus, rather than waiting lists, because, without knowledge of the rate of turnover of patients on a waiting list, its size is not a reliable indicator of access to the hospital system or the amount of time that a patient would be likely to have to wait, or to have waited, for surgery.

Waiting times for patients admitted during a particular period are generally used as the main summary measures of elective surgery waiting times, although they provide measures of waiting times only for patients who complete their wait and are admitted. Most patients are admitted after waiting, but 10% to 20% of patients are removed from waiting lists for other reasons (e.g. they were admitted as an emergency patient for the awaited procedure, or they were not contactable, had died, had been treated elsewhere, or had declined the surgery).

In 1999–00, the AIHW National Elective Surgery Waiting Times Data Collection included data for an estimated 85% of public hospital elective surgery (AIHW 2002a); data were not available for smaller hospitals in several States, and for the Australian Capital Territory.

Overall, the median waiting time for elective surgery was 27 days in 1999–00 (Table 5.33), ranging from 22 days in Queensland to 36 days in Tasmania. The shortest median waiting time was for patients admitted from waiting lists in hospitals in the 'Principal referral and women's and children's hospitals' peer group. The longest median waiting time was for patients admitted from waiting lists in hospitals in the 'Large hospitals' peer group.

In the 'Principal referral and women's and children's hospitals' peer group, 3.4% of patients were admitted after waiting more than 12 months. In the 'Large hospitals' peer group 2.7% of patients waited more than 12 months and in the 'Medium hospitals' peer group 2.4% of patients waited more than 12 months. Overall, the proportion of patients admitted after waiting more than 12 months varied among the States and Territories, ranging from 1.6% in the Northern Territory to 6.7% in Tasmania.

Table 5.33: Patients admitted from waiting lists, by public hospital peer group[(a)], 1999–00

Peer group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Principal referral and women's & children's hospitals									
Number of admissions[(b)]	113,346	87,076	85,580	26,042	22,806	10,896	n.p.	3,731	349,477
Estimated coverage (%)	100	100	98	100	100	100	n.p.	100	100
Median waiting time (days)	22	27	21	33	26	36	n.p.	n.p.	24
% waited more than 12 months	2.3	4.0	3.0	7.6	2.3	6.0	n.p.	n.p.	3.4
Large hospitals									
Number of admissions[(b)]	39,800	24,842	17,474	. .	9,877	2,702	n.p.	1,409	96,104
Estimated coverage (%)	100	52	100	0	100	100	n.p.	100	77
Median waiting time (days)	31	33	27	. .	40	n.p.	n.p.	n.p.	31
% waited more than 12 months	2.8	1.7	3.3	. .	1.9	n.p.	n.p.	n.p.	2.7
Medium hospitals									
Number of admissions[(b)]	41,766	4,398	9,201	18486	. .	. .	n.p.	. .	73,851
Estimated coverage (%)	100	15	92	72	0	. .	n.p.	. .	58
Median waiting time (days)	28	22	29	29	. .	. .	n.p.	. .	28
% waited more than 12 months	1.9	4.1	2.5	2.9	. .	. .	n.p.	. .	2.4
Total[(c)]									
Number of admissions[(b)]	202,281	116,316	112,718	44,528	32,683	13,598	n.p.	5,786	527,910
Estimated coverage (%)	100	71	95	75	67	99	n.p.	100	85
Median waiting time (days)	26	28	22	31	30	36	n.p.	23	27
% waited more than 12 months	2.4	3.6	3.0	5.7	2.2	6.7	n.p.	1.6	3.1

n.p. Not published because there was only one hospital in the peer group.

. . Not applicable.

(a) Psychiatric hospitals, drug and alcohol hospitals, mothercraft hospitals, hospices, rehabilitation and other non-acute facilities and multipurpose facilities have been excluded. For details, see AIHW 2002a.

(b) Admissions for elective surgery reported to the National Elective Surgery Waiting Times Data Collection.

(c) Includes data for hospitals not included in the specified hospital peer groups.

Source: AIHW 2002a.

Adverse events

Adverse events are defined as incidents in which harm resulted to a person receiving health care. They include infections, falls and other injuries, and medication problems, some of which may be potentially preventable. The Australian Council for Safety and Quality in Health Care estimates that about 10% of hospital separations in Australia and other developed countries are likely to be associated with an adverse event (ACSQHC 2001).

Data are not available to measure accurately the number of adverse events in Australian hospitals. However, hospital separations data can be used as an indication, as they include information on diagnoses and external causes of injury and poisoning that indicate that an adverse event has occurred. Adverse events as recorded in hospital separations data have been identified as an indicator of safety for the National Health Performance Framework (NHPC 2002).

Table 5.34: Hospital separations with an adverse event, 1993–94 to 1997–98

Year	Mis-adventures	Compli-cations	Drug adverse effects	Iatrogenic disease	Total[(a)]	Total per 100 separations	Total per 1,000 patient-days
1993–94	2,898	133,516	28,890	143,647	182,858	3.97	8.70
1994–95	3,582	152,584	35,816	164,063	209,305	4.29	9.98
1995–96	3,928	164,181	41,714	174,242	226,563	4.38	10.09
1996–97	4,532	178,837	48,202	189,792	246,948	4.64	11.04
1997–98	4,877	190,739	53,388	200,264	264,347	4.75	11.71

(a) Categories do not necessarily sum to the totals, as shown, because multiple diagnoses and external causes can be recorded for each separation.

Source: AIHW National Hospital Morbidity Database.

The number of separations reported to the AIHW National Hospital Morbidity Database which included a diagnosis and/or external cause code for an adverse event increased each year between 1993–94 (182,858 separations) and 1997–98 (264,347 separations) (Table 5.34). The proportion of total separations which included adverse events also increased each year, from 3.97% in 1993–94 to 4.75% in 1997–98. Similarly, the number of separations with adverse events per 1,000 patient-days increased, from 8.70 per 1,000 patient-days in 1993–94 to 11.71 per 1,000 patient-days in 1997–98.

Although the rates reported increased over this period, there are several reasons that it should not be concluded that there was an increase in actual adverse events occurring or treated in Australian hospitals. There were slight changes in scope and coverage of the database and likely improvements in the quality of data recording associated with the introduction of Australian editions of ICD-9-CM and, in some States and Territories, of casemix-based funding arrangements. Some of the ICD-9-CM disease and external cause categories (e.g. falls and accidental poisonings) can be used for both adverse events and other occurrences, so the number of adverse events is likely to have been underestimated (AIHW: Hargreaves 2001).

Mental health services

Each year, approximately 18% of Australian adults experience mental illness and 38% of these people use a health service for a mental health-related problem (ABS 1998a). Those with severe mental health-related disabilities were more likely to use a health service (57%).

Historically, stand-alone psychiatric hospitals were the main focus of specialised mental health care. However, the availability of effective anti-psychotic drugs, changes in clinical practice and the emergence of the human rights movement provided the setting for reform of mental health care which, in recent years, has been outlined in the National Mental Health Strategy. The Strategy's first National Mental Health Plan (1993–98) included reducing or closing existing psychiatric hospitals; providing sufficient acute hospital, accommodation and community-based services; integrating the management and delivery of psychiatric services within general healthcare services; and establishing effective links between mental health, general health and non-health services. The second plan (1998–2003) has focused on improving quality of care, increasing consumer participation and developing models of best practice.

Australians therefore now use a variety of public and private health service providers for mental health care, including psychiatric and acute care hospitals, public community-based services, private psychiatrists and general practitioners.

Hospitals and beds

For both public and private hospitals, specialised mental health care is provided in psychiatric units and wards in acute care hospitals and in stand-alone psychiatric hospitals. This care is provided to patients formally admitted to the hospital and to those who attend, or are visited by, the hospital's outpatient services and community-based services. Most national data on mental health-related hospital services relate to the care of admitted patients, with only limited data available on non-admitted patient care.

The reforms of the last decade have seen a reduction in the proportion of resources devoted to public psychiatric hospitals and a corresponding increase in resources for psychiatric units in acute care hospitals and community-based mental health services. Between 1993–94 and 1999–00, the number of public psychiatric hospitals fell from 37 to 22, and bed numbers fell 48.5%, from 5,360 to 2,759 (Table 5.26, page 280). This decline has been accompanied by a 31% increase in the number of available psychiatric unit beds in public acute care hospitals wards between 1992–93 and 1997–98 (DHAC 2000). Between 1992–93 and 1997–98 there was a decrease in spending per capita on public psychiatric hospitals (from $32 to $21 per capita) and a corresponding increase in spending on psychiatric units co-located with acute care hospitals (from $14 to $19 per capita) (DHAC 2000).

In 1999–00, the recurrent expenditure for public psychiatric hospitals, including non-admitted patient and community services managed by the hospital, was $423.8 million. The majority of this expenditure was for the salaries and wages of the 6,274 full-time equivalent staff. The available beds per capita were comparable across the six States, with the exception of Victoria, which manages most of its psychiatric hospital services as components of acute care hospitals.

In 1999–00, there were 45 private hospitals with one or more psychiatric units or wards (ABS 2001a). Of these, 24 were designated as private psychiatric hospitals. These private psychiatric hospitals had an expenditure of $122.5 million, employed an average of 1,572 full-time equivalent staff and had 1,369 available beds.

Admitted patients

Hospitalisation is comparatively infrequent, with less than 1% of adults with a mental illness hospitalised each year (ABS 1998a). There were 177,789 mental health-related separations involving specialised psychiatric care and/or a mental health-related principal diagnosis in public hospitals during 1999–00, associated with 2.6 million patient-days (Table 5.35). Public acute hospitals accounted for 89.9% of public hospitalisations but only about 55.5% of the days spent in hospital. The majority of public psychiatric and public acute hospitalisations were overnight (86.7% and 73.8%, respectively). For private hospitals, there were 88,873 mental health-related hospitalisations in 1999–00, the majority of which were same-day (69.3%). There were 579,327 patient-days associated with these hospitalisations.

Table 5.35: Mental health-related separations and patient-days by hospital type, 1999–00

	Public acute	Public psychiatric	Private	Total
Same-day separations				
With specialised psychiatric care	24,316	2,379	45,524	72,219
Without specialised psychiatric care	17,622	0	9,552	27,174
Total	*41,938*	*2,379*	*55,076*	*99,393*
Overnight separations				
With specialised psychiatric care	63,635	15,568	20,126	99,329
Without specialised psychiatric care	54,266	3	13,671	67,940
Total	*117,901*	*15,571*	*33,797*	*167,269*
Total mental health-related separations				
With specialised psychiatric care	87,951	17,947	65,650	171,548
Without specialised psychiatric care	71,888	3	23,223	95,114
Total	*159,839*	*17,950*	*88,873*	*266,662*
Receiving specialised psychiatric care (%)	55.1	100.0	73.9	64.3
Patient-days for overnight separations				
With specialised psychiatric care	927,332	1,153,859	341,265	2,422,456
Without specialised psychiatric care	475,439	12	182,986	658,437
Total	*1,402,771*	*1,153,871*	*524,251*	*3,080,893*
Total patient-days for mental health-related separations				
With specialised psychiatric care	951,648	1,156,238	386,789	2,494,675
Without specialised psychiatric care	493,061	12	192,538	685,611
Total	*1,444,709*	*1,156,250*	*579,327*	*3,180,286*
Receiving specialised psychiatric care (%)	65.9	99.9	66.8	78.4

Source: AIHW 2002b.

Involuntary hospitalisation was more frequent in public psychiatric hospitals, where over half of the separations were involuntary, compared with 24.5% of mental health-related separations in public acute hospitals and 5.6% in private hospitals (AIHW 2002b).

For public psychiatric hospitals, the most frequently recorded principal diagnosis, in terms of the number of separations and patient-days, was schizophrenia. Principal diagnoses of depressive disorders were reported most frequently for public acute hospitalisations with specialised psychiatric care, with principal diagnoses of schizophrenia accounting for the greatest number of patient-days. Mental and behavioural disorders due to use of alcohol were the most frequently reported principal diagnoses for separations from public acute hospitals without specialised psychiatric care, and separations for dementia accounted for the most patient-days.

In private hospitals, the most frequently recorded principal diagnoses, for separations with and without specialised psychiatric care, and for patient-days (for separations with specialised psychiatric care), were depressive disorders. The most patient-days without specialised psychiatric care were recorded for separations with principal diagnoses of dementia.

Table 5.36: Top 12 AR-DRGs (version 4.1) for mental health-related separations[b], all hospitals, 1999–00

AR-DRG		Separations	Per cent same-day separations	Patient-days	Average length of stay (days)
U60Z	Mental health treatment, same-day, without electroconvulsive therapy	54,335	100.0	54,335	1.0
U63B	Major affective disorders without catastrophic or severe cc (age less than 70 years)	20,208	0.0	318,173	15.7
U67Z	Personality disorders and acute reactions	15,511	0.0	126,697	8.2
U61A	Schizophrenia disorders with mental health legal status	12,204	0.0	370,263	30.3
U61B	Schizophrenia disorders without mental health legal status	10,875	0.0	247,689	22.8
U64Z	Other affective and somatoform disorders	5,997	0.0	67,450	11.2
U40Z	Mental health treatment, same-day, with electroconvulsive therapy	4,036	100.0	4,036	1.0
U63A	Major affective disorders with catastrophic or severe cc or without catastrophic or severe cc and aged 70 or over	3,904	0.0	109,613	28.1
V61B	Drug intoxication and withdrawal without cc	2,569	8.6	17,939	7.0
V60Z	Alcohol intoxication and withdrawal	2,464	34.8	20,133	8.2
B63Z	Dementia and other chronic disturbances of cerebral function	2,365	11.6	156,387	66.1
U62A	Paranoia and acute psychiatric disorder with catastrophic or severe cc or with mental health legal status	2,344	0.0	37,864	16.2

(a) Includes separations with acute or unspecified type of episode of care only.

Note: cc = complications or co-morbidities.

Source: AIHW 2002b.

The top twelve most frequent AR-DRGs for mental health-related separations are presented in Table 5.36. For same-day separations, mental health treatment without electroconvulsive therapy was the most frequently recorded AR-DRG (54,335 separations). Major affective (mood) disorders without catastrophic or severe complications or co-morbidities was the AR-DRG most frequently recorded for overnight separations (20,208 separations).

Public community mental health services

Public community mental health services include community-based services such as child and adolescent community mental health services, mobile treatment teams and community residential services that are staffed either 24 hours a day or on a part-time basis. The category also includes hospital-based services such as psychiatric outpatient services, day programs and community outreach services. Reflecting the general move of mental health services to community settings, between 1992–93 and 1997–98 expenditure on these services increased, particularly for ambulatory services ($15 to $26 per capita) (DHAC 2000).

During 1999–00, these services had a recurrent expenditure of $631.4 million and an average of 8,570 full-time-equivalent staff. They had 1,171 available beds, in relation to which 1,545 overnight stays were reported.

Vietnam Veterans Counselling Service

The prevalence of anxiety disorders, depression and post-traumatic stress disorder were found to be higher in male Vietnam veterans than would be expected in the community (DVA 1998). In a survey conducted in 1997, anxiety disorders were reported by 41% of veterans, higher than that expected based on prevalence of anxiety disorders in the general community (31%). Depression (45%) and post-traumatic stress disorder (31%) were also more common than expected (36% and 8% respectively).

The DVA recognises these conditions as consequences of war-related service and has put in place the Vietnam Veterans Counselling Service (VVCS) to help veterans cope with them.

The VVCS offers free services to veterans of all conflicts, including those from peacekeeping missions. Partners are also eligible, as are the sons and daughters of Vietnam veterans. The service operates from 15 centres across Australia and provides outreach services with more than 380 contracted counsellors in rural, remote and outer metropolitan areas.

Services include counselling, therapeutic and educational group programs, community development and health promotion. There are specialist projects such as one aimed at promoting cardiovascular fitness, and another aimed at sons and daughters to combat significantly elevated suicide rates in this group. VVCS also provides an after-hours telephone crisis counselling service known as Veterans Line.

Contact counselling session numbers grew from fewer than 3,000 ten years ago to over 28,000 in 2000–01 (Table 5.37). Increases similarly occurred in other counselling activities, group programs, community development and liaison work (which includes support for self-help ventures), linkages with the Department of Defence, involvement in education of general practitioners and allied health professionals, and support of ex-service organisations.

Table 5.37: Vietnam Veterans Counselling Service activity, 1999–00 and 2000–01

Service	1999–00	2000–01
Contact counselling sessions	26,880	28,063
Veterans Line calls	5,887	6,372
Centre-based counselling		
Hours	24,077	25,958
Clients	12,000	12,300
Services	27,421	29,360

Source: DVA, unpublished data.

Alcohol and other drug treatment services

In Australia, alcohol and other drug treatment services are provided in a variety of settings, mainly through partnerships involving government and community-based organisations, or private practices. Treatment services range from early, brief interventions designed to prevent clients progressing to harmful drug use, to long-term residential treatment designed to rehabilitate clients with an alcohol or drug dependence. The goals of treatment can vary from complete abstinence to reduced or controlled use. Alcohol and other drug treatment services also work with family members of people with a drug or alcohol problem, as well as with other service providers to resolve additional health and social problems confronting their clients.

In March 1990, the first national census of Clients of Treatment Service Agencies in Australia was conducted to identify the characteristics of clients attending drug and alcohol treatment services. The census was subsequently repeated in 1992, 1995 and most recently in May 2001.

The 2001 client census reported that 5,304 clients were treated on census day in the 458 agencies that responded (90.3% of the total) (Shand & Mattick in press). Although the majority of clients were in treatment for their own substance use (93.8%), a small proportion of clients (6.2%) were relatives or friends of substance users. The mean age was 33 years for substance users and 39 years for relatives/friends. Overall, the majority of substance users were male (64.8%), had been born in Australia (88.8%), spoke English at home (95.0%), and were in unpaid employment or unemployed (82.1%). Alcohol and opiates were the substances most commonly reported (35.1% and 39.1% respectively), followed by cannabis (9.3%) and amphetamines (8.8%). Polydrug use was reported for 12.6% of substance users. Just under half the substance users (47.0%) were reported to have injected illicit drugs in the 12 months preceding the census.

Box 5.8: The National Drug Strategy

The National Drug Strategy (NDS) and its forerunner, the National Campaign Against Drug Abuse (NCADA), have been operating since 1985. Both NCADA and NDS were created with strong bipartisan political support as cooperative ventures between the Commonwealth and State/Territory governments as well as the non-government sector. The common aim from the outset was 'to minimise the harmful effects of drug use in Australian society'. Drugs affect virtually every Australian family. Each year the use of alcohol, tobacco and illicit drugs is a significant factor in many deaths and hospitalisations and contributes enormous economic costs to the healthcare system, law enforcement and private industry in Australia.

The National Drug Strategic Framework 1998–99 to 2002–03 has been developed under the direction of the Ministerial Council on Drug Strategy to outline policy principles and priority areas for reducing harm arising from the use of licit and illicit drugs. The Framework presents a shared vision and a basis for cooperation and coordinated action to reduce the harm caused by drugs in Australia over a 5-year period until the year 2003. The mission for the National Drug Strategic Framework 1998–99 to 2002–03 is to improve health, social and economic outcomes by preventing the uptake of harmful drug use and reducing the harmful effects of licit and illicit drugs in Australian society.

Table 5.38: Principal drug problems of substance users in treatment, 1990, 1992, 1995 and 2001[(a)]

	Proportion of substance users (per cent)			
Drug problem	**1990**	**1992**	**1995**	**2001**
Alcohol	55.2	51.7	49.3	35.1
Opiates	33.7	33.2	33.6	39.1
Tobacco	7.9	8.5	4.8	2.2
Benzodiazepines	3.7	4.1	4.0	2.4
Cannabis	4.1	6.0	6.7	9.3
Amphetamines	3.9	4.3	6.5	8.8[(b)]
Polydrug[(c)]	10.9	11.2	12.2	12.6
Injected drugs in last 12 months	34.4	32.1	38.2	47.0

(a) Figures reflect more than one drug problem nominated for some participants.

(b) The 2001 figure includes amphetamine-related substances (e.g. ecstasy).

(c) These figures reflect clients reported by agencies as polydrug (including opiates) users, polydrug (excluding opiates) users, and those clients for whom more than three drugs (excluding tobacco) had been nominated.

Source: Shand & Mattick (in press).

Table 5.38 shows that the proportions of clients presenting to specialist treatment agencies with alcohol problems and opiate problems has changed since the first census in 1990. Whereas the proportion of clients presenting with alcohol-related problems has substantially decreased, treatment for other drug problems (opiates, cannabis, amphetamines and polydrug use) has increased since 1990.

The Clients of Treatment Service Agencies census, however, does not record methadone dosing. Given that the number of people registered for methadone maintenance treatment increased from approximately 10,000 in 1990 (Ward et al. 1992) to over 30,000 in 2000 (Degenhardt 2001), overall treatment for opiates has increased far more markedly than the census indicates. Further, the census captures only clients in treatment at specialist drug and alcohol treatment agencies. It does not capture treatment by general practitioners, which may be one of the factors behind the decline in alcohol treatment observed (e.g. since 1999, two new prescribed pharmacotherapies—acamprosate and naltrexone—have become available to treat alcohol dependence). In addition, it is a one-day sample and therefore may not be representative of the total substance user community in treatment.

Medicare services

Data on the operation of Medicare, Australia's universal system of health insurance, provide an overview of the use of private medical services. These include services provided outside hospitals as well as medical services for private patients in public and private hospitals. Note, however, that Medicare data do not provide a complete view of the use of medical services (see Box 5.9).

In 2000–01, Medicare provided benefits for 213.9 million services (DHA 2002a). This represents a 2-year increase of 3.7% over the 206.3 million services in 1998–99. This increase was in part due to the effects of population growth (2.4%), a rise in the number of items per person and the inclusion of additional items in the Medicare Benefits Schedule (MBS). Medicare items cover a range of different services, from a single doctor

Box 5.9: Medicare and Medicare benefits

Medicare*, Australia's universal health insurance scheme, came into operation on 1 February 1984. Administered by the Health Insurance Commission (HIC), the scheme provides people with access to free treatment as public (Medicare) patients in hospitals, and free or subsidised treatment by medical practitioners, participating optometrists and, for certain services, eligible dentists. All Australian residents are eligible for Medicare, except diplomats and their dependants. Short-term visitors are not eligible unless they are covered by a reciprocal healthcare agreement and the services are of immediate medical necessity. Medicare is funded through taxation, which includes the Medicare levy (see Box 5.2).*

The Australian Health Care Agreements between the Commonwealth Government and the State and Territory governments provide for all persons eligible for Medicare to obtain care as an admitted patient, outpatient or emergency department patient at public hospitals without charge. Doctors appointed by the hospitals provide medical care for such 'public' patients (at no cost to the patient). Patients who choose to be treated in private hospitals or as private patients in public hospitals are liable for hospital accommodation and other charges, and for medical fees charged by private practitioners. Private health insurance can be purchased to cover these private hospitalisation costs (see Section 5.3 and Box 5.5).

Medicare benefits *provide financial assistance to people who incur medical expenses in respect of professional services rendered by qualified medical practitioners, participating optometrists and, for certain services, eligible dentists. A schedule of fees has been established, and Medicare benefits for services provided by private practitioners are based on those fees.*

Practitioners are not obliged to adhere to the schedule fees, except in the case of participating optometrists. However, if they direct-bill the HIC for any service rather than issuing patients with accounts, the amount payable then is the Medicare benefit, and additional charges cannot be raised for the service. About 71% of services were direct-billed in 2000–01.

Some types of medical services do not qualify for Medicare benefits. These include services provided to entitled veterans and their dependants for the DVA. Interim Medicare benefits may be paid for services for which claims may be lodged under motor vehicle third-party insurance and workers compensation schemes. These benefits are covered by the HIC at the time when claims are settled. Other services which do not qualify for Medicare benefits include services provided by public authorities and most government-funded community health services, as well as services not necessary for patient care (e.g. examinations for employment purposes). To attract benefits, services must be 'clinically relevant', i.e. reasonably required for the treatment of the patient's condition.

For private patients who are admitted in hospitals or day-hospital facilities, the Medicare benefit is 75% of the schedule fee, but the gap between the benefit and the schedule fee is insurable with private health insurance organisations. Insurance to cover amounts paid in excess of the schedule fee is prohibited unless the services are the subject of a private health insurance contract or no-gaps arrangement.

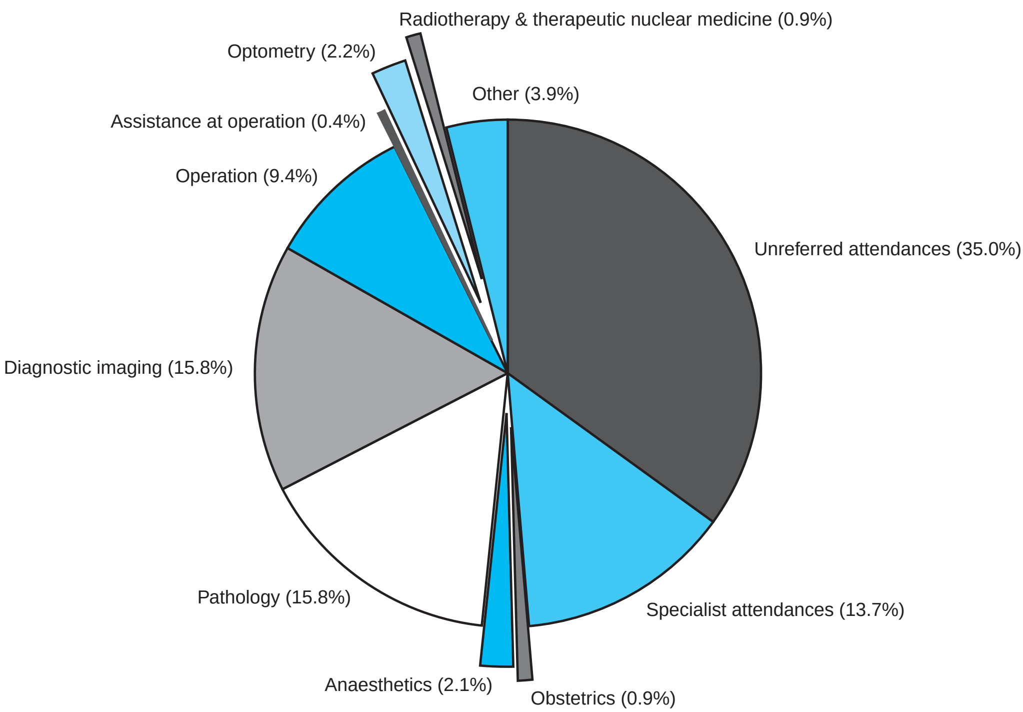
(continued)

Box 5.9 (continued): Medicare and Medicare benefits

For non-hospital services, a benefit of up to 85% of the schedule fee is payable. The patient is responsible for the gap between the benefit paid and the schedule fee, up to a maximum amount, which is indexed annually. From 1 November 2001, that amount was $55.60. Patients are responsible for payments of amounts charged above the schedule fee.

For all beneficiaries (individuals and registered families), if the sum of the gaps between benefits and schedule fees exceeds a specified amount in any year for non-hospital services, an amount up to the level of the schedule fee is reimbursed for services during the remainder of the year. The level of this 'safety net' threshold is linked to the Consumer Price Index, and is adjusted each year.

consultation to multiple pathology tests for a single patient episode, each of which is counted as a separate item. Consequently, it is not possible to directly compare different types of services based on of the number of Medicare claims. Also for this reason, the terms 'items' or 'items of service' are generally used when referring to Medicare claims.



Note: Based on the amount paid in benefits ($), not the number of services.
Source: DHA 2002a.

Figure 5.10: Medicare benefits paid by broad type, 2000–01

In 2000–01, a total of $7,326 million was paid in Medicare benefits, of which $2,561 million (35.0%) was for unreferred attendances, i.e. GP services, emergency attendances after hours, other prolonged attendances, group therapy and acupuncture. A further $1,159 million (15.8%) was paid for diagnostic imaging, $1,156 million (15.8%) for pathology tests and $1,005 million (13.7%) for specialist attendances (Figure 5.10).

The largest increase in items of service between 1998–99 and 2000–01 were in anaesthetics (15.4%), with growth coinciding with higher levels of private health insurance following the introduction of the lifetime health cover initiatives (see Section 5.3). There were also large increases for radiotherapy and therapeutic nuclear medicine (13.5%) and pathology (11.7%), reflecting decreases for hospital patients and larger increases for out-of-hospital services.

In 2000–01, each person in Australia received, on an average, 11.0 services under Medicare (or 10.0 services, if patient episode initiation (PEI) items, which cover the administrative costs associated with collection of specimens for pathology, are excluded). These services included 5.2 unreferred attendances, 1.0 specialist attendance and 3.2 pathology items.

Between 1998–99 and 2000–01, the annual number of services per person (including PEI) increased from 10.9 to 11.3, or an average annual increase of 0.7% (Table 5.39). As for numbers of services overall, the largest increase was for anaesthetics.

The number of services used per person varied considerably. For example, in 2000–01, 2.5% of the population received 51 or more services each, and these accounted for 18.4% of total benefits paid. Between 1 and 5 services were received per person by 34.5% of the population, and these accounted for 8.5% of the total benefits (DHA, unpublished Medicare data).

Table 5.39: Medicare items processed per capita, by broad type, 1998–99 and 2000–01

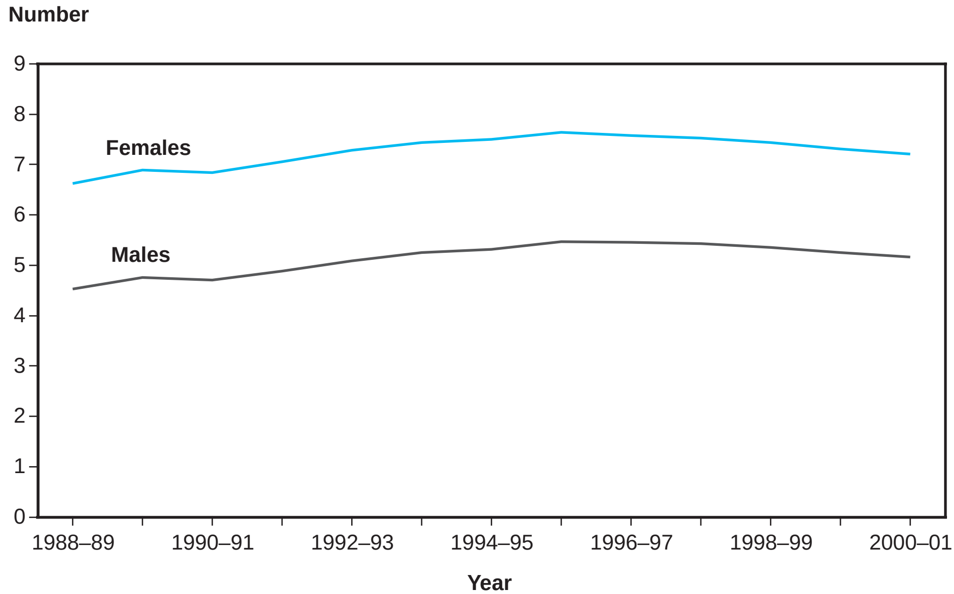
Type of item	**1998–99**	**2000–01**	**Total change (per cent)**	**Annual change (per cent)**
Unreferred attendances[(a)]	5.42	5.19	–4.1	–2.1
Specialist attendances	0.98	1.00	1.5	0.7
Obstetrics	0.08	0.08	–8.3	–4.2
Anaesthetics	0.09	0.11	12.7	6.3
Pathology PEI items[(b)]	0.97	1.02	4.7	2.4
Other pathology	1.97	2.18	4.4	2.2
Total pathology	*2.94*	*3.20*	*9.1*	*4.6*
Diagnostic imaging	0.60	0.63	5.6	2.8
Operations	0.29	0.30	4.2	2.1
Optometry	0.21	0.22	6.1	3.1
Other[(c)]	0.29	0.26	4.7	2.4
Total including PEI items	**10.90**	**11.03**	**1.3**	**0.7**
Total excluding PEI items	**9.93**	**10.02**	**0.9**	**0.5**

(a) Includes general practitioner attendances, emergency attendances, attendances after hours, other prolonged attendances, group therapy and acupuncture.

(b) Patient episode initiation items. These items cover the administrative costs associated with the collection of specimens.

(c) Includes assistance at operations, radiotherapy and therapeutic nuclear medicine, and miscellaneous services.

Source: DHA 2002a.



Note: Rates are age-adjusted to the Australian population at 30 June 1991.
Source: AIHW, derived from DHA 2002a.

Figure 5.11: GP and specialist consultations per person, 1988–89 to 2000–01

The average number of consultations with GPs and specialists per person increased steadily from 1986–87 to 1995–96, and has since declined slightly (Figure 5.11). The data exclude obstetrics, pathology, radiology, anaesthetics, optometry and surgery.

In 1988–89, males consulted a GP or specialist on average 4.5 times per year and the female population averaged 6.6 times per year. In 2000–01, these rates increased to 5.2 and 7.2 respectively. The increase in consultation rates may be in part due to improved access to doctors, as there was a 30% increase in the number of full-time-equivalent Medicare providers of general practice services between 1988–89 and 2000–01 (DHA, unpublished Medicare data). Increased promotion and awareness of steps which people can take to maintain their own health and that of their families, such as immunisation, Pap smears, blood pressure measurements and general health check-ups, may have also contributed to the increased consultation rates.

Use of private medical services by State

Variations in the use of medical items occur among the States and Territories. In 2000–01, the highest number of services was recorded in New South Wales with 11.7 services per person. This was followed by Victoria and South Australia (11.1) and Queensland (10.8). The Northern Territory recorded the lowest per person use of medical services with 5.9 (DHA 2002a). This is partly offset by services being provided to Aboriginal and Torres Strait Islander peoples through programs other than Medicare, and these services are not included in the data reported here.

Table 5.40: DVA healthcare cardholder use of local medical officer and specialist services, 2000–01

	Consultations/ services	Cardholders who received services	Items per cardholder	Users as proportion of treatment population (%)(a)
Local medical officer consultations	3,888,029	312,133	12	90
Specialist consultations	1,657,725	231,948	7	67
Other local officer and specialist services	6,115,527	284,579	21	82

(a) Using treatment population at 30 June 2001 of 345,131.

Source: DVA Treatment Accounts System, unpublished.

Use of DVA-funded medical services

The DVA funds medical services provided by local medical officers (GPs who are registered with DVA) and specialists for eligible veterans, war widows/widowers and their dependants. DVA issues each eligible veteran with a gold or white health card. The gold card is issued to veterans who are entitled to the full range of healthcare services funded by DVA. The white card provides access to the services for service-related conditions only.

In 2000–01, 11.7 million medical services were provided under these arrangements (Table 5.40).

Of the DVA healthcare cardholder population of approximately 345,000 people, 22% (nearly 73,000 people) receive some form of mental health treatment in any given year. Whereas some receive specialist treatment from mental health practitioners, for the majority, treatment is provided through their GP.

General practice

The continuous national study of general practice activity in Australia, known as the BEACH (Bettering the Evaluation and Care of Health) program provides insight into the patients and problems managed in general practice and the ways in which GPs manage the problems. For BEACH, a random sample of about 1,000 GPs provides details of a total of around 100,000 GP–patient encounters each year. These encounters represent more than 100 million such encounters occurring across the country each year. The study is conducted by the General Practice Statistics and Classification Unit (an AIHW collaborating unit within the Family Medicine Research Centre, University of Sydney). This section provides a summary of the results from the third year of the program, covering the period April 2000 to March 2001 inclusive (AIHW: Britt et al. 2001).

The general practitioners and encounters

GPs sampled for BEACH have the equivalent of at least 1,500 Medicare claims a year, so the majority of part-time GPs are included and those who claim for only a few consultations a year are excluded. The source population for 2000–01 included over 17,000 practitioners, the majority (68.0%) of whom were male (Table 5.41). Almost one-quarter (23.9%) were aged 55 years or more and only 12.4% were under 35 years

Table 5.41: The 2000–01 BEACH source population: all active recognised GPs in Australia

Variable	Australia(a) Number	Australia(a) % of GPs	Variable	Australia(a) Number	Australia(a) % of GPs
Sex			**State**		
Males	11,730	68.0	New South Wales	5,849	34.1
Females	5,514	32.0	Victoria	4,170	24.3
Age			Queensland	3,136	18.3
< 35	2,143	12.4	South Australia	1,521	8.9
35–44	5,438	31.6	Western Australia	1,590	9.3
45–54	5,536	32.1	Tasmania	485	2.8
55+	4,112	23.9	Australian Capital Territory	282	1.6
Geographical location			Northern Territory	137	0.8
Capital city	11,454	66.4	**Graduated**		
Other metropolitan centre	1,287	7.5	Australia	12,928	75.0
Large rural centre	1,055	6.1	Overseas	4,316	25.0
Small rural centre	1,148	6.7			
Other rural area	1,953	11.3			
Remote centre	151	0.9			
Other remote area	196	1.1			

(a) Data provided by GP Branch, DHA. All GPs who claimed at least 375 A1 Medicare items during the most recent 3-month HIC data period. Missing data removed.

Note: Based on the Rural, Remote and Metropolitan Classification of the Department of Primary Industries and Energy and the Department of Human Services and Health (1994).

Source: AIHW: Britt et al. 2001.

old. Three-quarters of the GPs had graduated in Australia and the majority (66.4%) were practising in capital cities. Those in New South Wales and Victoria accounted for 58.4% of the total. A total of 999 GPs took part in BEACH for 2000–01.

In most (98.1%) of the 99,307 encounters reported, the patient was seen by the GP. By far the majority (94.6%) were claimable from Medicare and 83.9% of these were standard surgery consultations.

The encounters involved 149,962 reasons for encounter (RFEs), 143,528 problems managed, 107,400 medications, 49,072 non-pharmacological treatments, 10,366 referrals, 29,225 pathology test orders and 8,227 orders for imaging.

The patients

Children accounted for 14.0% of encounters, 10.3% were with young adults, and 23.0% with older patients. The majority of the patients were female (57.1%). The patient held a healthcare card at 36.7% of encounters, and came from a non-English-speaking background at 7.1%. The patients identified themselves as an Aboriginal and/or a Torres Strait Islander at less than 1%.

For every 100 encounters an average of 151 patient RFEs were recorded. More than half related to the respiratory, musculoskeletal, skin, circulatory and digestive systems. The ten most commonly recorded RFEs accounted for 35.5% of all RFEs. The need for a

Table 5.42: GP consultations: 10 most frequent patient reasons for encounter, 2000–01

Patient reason for encounter	Per cent of total RFEs[(a)]	Rate per 100 encounters[(a)]
Check-up	8.8	13.2
Prescription	6.1	9.2
Cough	4.6	7.0
Immunisation/vaccination	2.9	4.4
Test results	2.8	4.3
Throat complaint	2.7	4.0
Back complaint	2.5	3.8
Rash	1.9	2.9
Upper respiratory tract infection	1.7	2.6
Fever	1.5	2.3
Total	**100.0**	**151.0**

(a) Figures do not total 100 as more than one RFE can be managed at each encounter. Also only the 10 most frequent problems are listed.

Note: Based on 149,962 RFEs at 99,307 encounters.

Source: AIHW: Britt et al. 2001.

check-up was the most common RFE (13.2 per 100 encounters) and requests for medication were also frequent (9.2). Visits were also often related to the need for immunisation or vaccination (4.4 per 100 encounters) (Table 5.42).

The problems managed

On average there were 145 problems managed per 100 encounters. Problems related to the respiratory system, the skin and the musculoskeletal and circulatory systems accounted for just over half of all problems managed. Of the 143,528 problems managed, 32.8% were problems new to the patient. Problems regarded by the GP as likely to be work-related (irrespective of whether the encounter was covered by workers compensation) occurred at a rate of 3.3 per 100 encounters. The 20 problems most frequently managed accounted for 39.4% of all problems managed. Hypertension was the most common (8.6 per 100 encounters) followed by upper respiratory tract infection (6.9 per 100), immunisation/vaccination (4.6 per 100) and depression (3.7 per 100) (Table 5.43).

Between 1998–99 and 2000–01 there was a statistically significant increase in the rate of management of problems related to the endocrine and metabolic system, partly explained by an increase in the rate of management of lipid disorders. There was a significant decrease in the rate of management of respiratory problems, in particular of asthma and acute bronchitis. There were also marginal decreases in the rates of management of problems related to the ear, the eye and the neurological system.

Management

There was no specific treatment recorded for 13.6% of problems managed. The most common treatment was medication alone (40.9% of problems) followed by clinical treatments only (9.6%) and then by medication and clinical treatment (8.6%).

Table 5.43: GP consultations: 20 most frequently managed problems, 2000–01

Problems managed	Per cent of total problems[(a)]	Rate per 100 encounters[(a)]
Hypertension	6.0	8.6
Upper respiratory tract infection	4.8	6.9
Immunisation/vaccination	3.2	4.6
Depression	2.5	3.7
Lipid disorder	2.0	2.9
Asthma	2.0	2.8
Diabetes	1.9	2.8
Acute bronchitis/bronchiolitis	1.9	2.7
Back complaint	1.8	2.6
Osteoarthritis	1.7	2.5
Dermatitis, contact/allergic	1.4	2.1
Sprain/strain	1.4	2.0
Anxiety	1.2	1.7
Prescription	1.1	1.7
Viral disease, other/not otherwise specified	1.1	1.6
General check-up	1.1	1.6
Sleep disturbance	1.1	1.6
Urinary tract infection	1.1	1.5
Acute otitis media/myringitis	1.0	1.5
Sinusitis acute/chronic	1.0	1.5
Total	**100.0**	**144.5**

(a) Figures do not total 100 as more than one problem can be managed at each encounter. Also only the 20 most frequent problems are listed.

Note: Based on 143,528 problems managed at 99,307 encounters.

Source: AIHW: Britt et al. 2001.

GPs undertook management activities at a rate of 205 per 100 encounters and 142 per 100 problems. The most common was the prescription, advice (for over-the-counter purchase) or supply of medication (108.2 per 100 encounters or 74.8 per 100 problems). Other treatments of a clinical or procedural nature were provided at 49.4 per 100 encounters, referrals at 10.4, pathology orders at 29.4 and imaging at 8.3 per 100 encounters (Table 5.44).

One or more medications were given for 58.7% of problems and at least one non-pharmacological treatment was used in the management of 29.7% of problems. A referral was made for 7.2% of problems and orders for pathology tests were made for 10.6% of problems. Orders for imaging were less frequent, being made for 5.2% of problems managed.

Between 1998–99 and 2000–01 there were statistically significant increases in rates of treatment with drugs such as non-steroidal anti-inflammatory drugs, and lipid-lowering agents (such as statins). There was a decrease for asthma inhalants.

Table 5.44: GP consultations: management activities, 2000–01

Management type	Rate per 100 encounters	Rate per 100 problems	Per cent of total problems[(a)]
Medications	108.2	74.8	58.7
Prescribed	92.3	63.9	51.3
Advised	9.0	6.2	5.6
GP supplied	6.9	4.8	3.8
Other treatments	49.4	34.2	29.7
Clinical	37.2	25.8	22.7
Procedural	12.2	8.4	8.0
Referrals	10.4	7.2	7.2
Specialist	7.4	5.1	5.1
Allied health	2.3	1.6	1.6
Pathology	29.4	20.4	10.6
Imaging	8.3	5.7	5.2

(a) The percentage of total problems for which at least one of the specified management types was initiated by the GP.

Note: Based on 143,528 problems managed at 99,307 encounters.

Source: AIHW: Britt et al. 2001.

Dental services

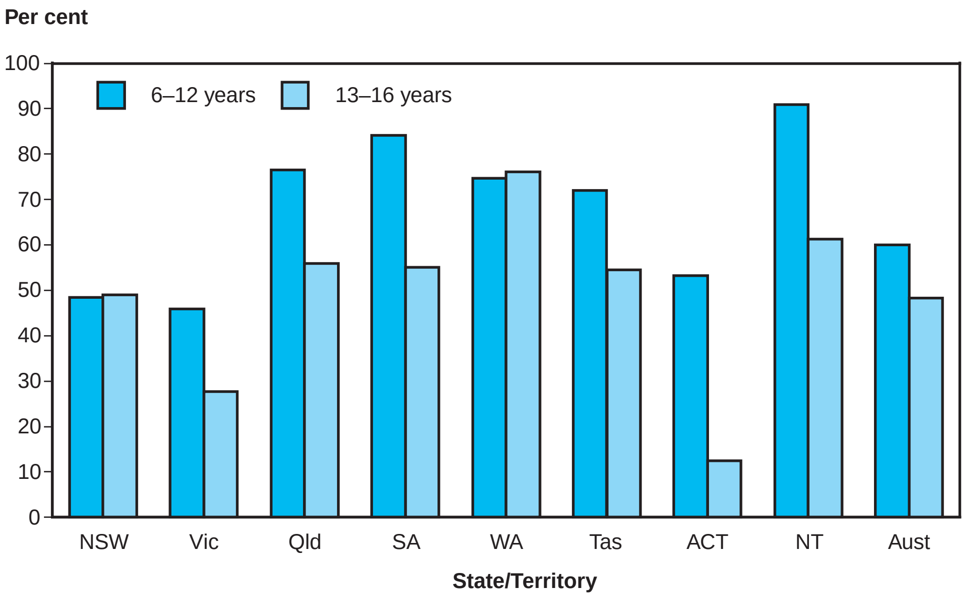
This section focuses on access to dental care using data from National Dental Telephone Interview Surveys (NDTISs) conducted in the period 1994 to 1999. Data are also presented on trends in dental practice, using data from a longitudinal study of dentists' practice activity.

Child and adolescent access to dental care

NDTIS data collected in 1999 show that, for more than 70% of primary school children (aged 6–12 years) in Queensland, South Australia, Western Australia, Tasmania and the Northern Territory (Figure 5.12), their last visit to a dentist was to a school dental service. In the Australian Capital Territory, the corresponding figure was 52% and it was less than 50% in New South Wales and Victoria.

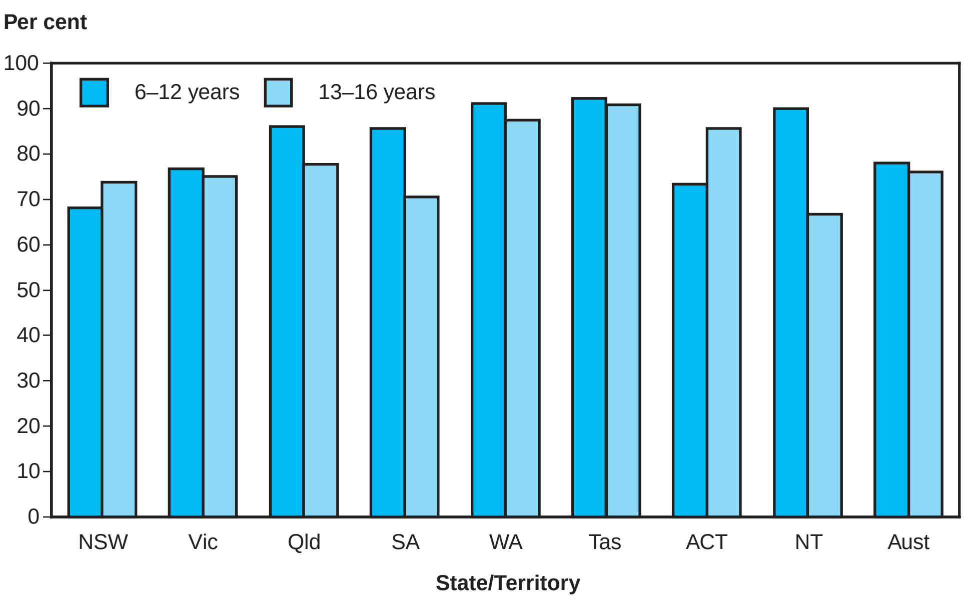
Over 50% of adolescents aged 13–16 years reported having visited a school dental service for their last visit in 1999 in Queensland, South Australia, Western Australia, Tasmania and the Northern Territory. In Victoria and the Australian Capital Territory, substantially fewer than 50% had used a school dental service for their last visit.

In 1999, over two-thirds of children aged 6–12 years in all States and Territories had made a dental visit in the previous 12 months (Figure 5.13), although this proportion varied, from 68% in New South Wales to 92% in Tasmania. In the 13–16 age group, a similar proportion of children had made a dental visit in the previous 12 months, the proportion varying from 67% in the Northern Territory to 91% in Tasmania.



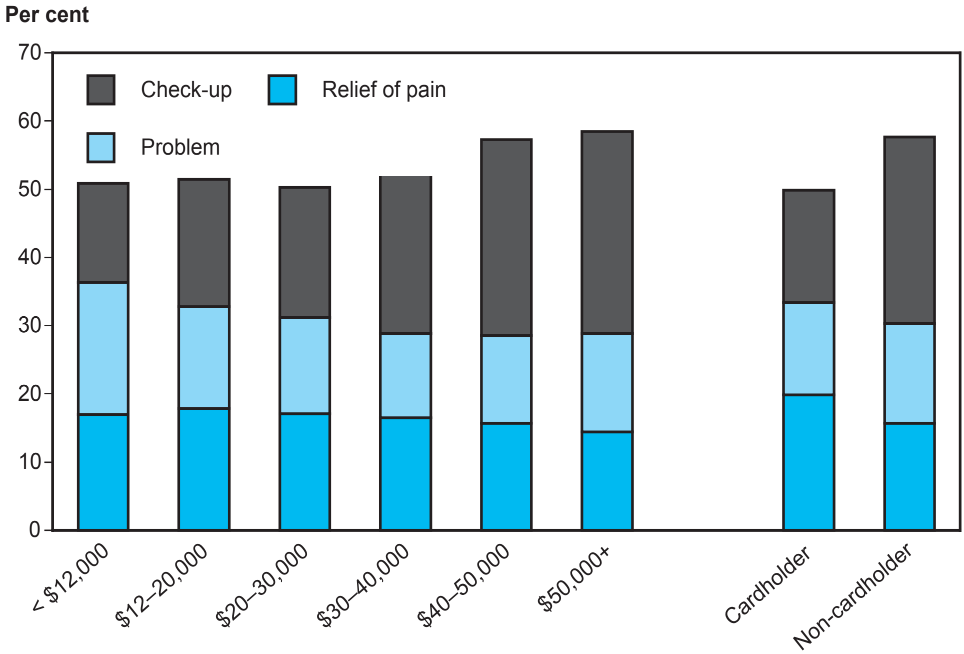
Source: National Dental Telephone Interview Survey 1999.

Figure 5.12: Children whose last visit to a dentist was to a school dental service, 1999 (per cent)



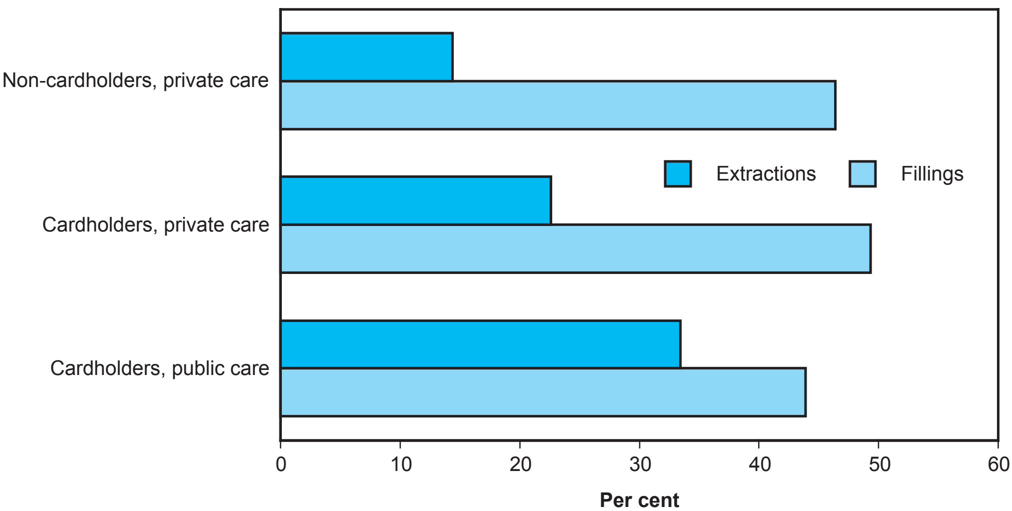
Source: National Dental Telephone Interview Survey 1999.

Figure 5.13: Children who made a dental visit in the previous 12 months, 1999 (per cent)



Source: National Dental Telephone Interview Survey 1999.

Figure 5.14: Dentate adults making a dental visit within the previous 12 months, by income and reason for last visit, 1999 (per cent)



Source: National Dental Telephone Interview Survey 1999.

Figure 5.15: Dental services received by dentate adults within the previous 12 months, 1999 (per cent)

Adult access to dental care

This section focuses on adult access to dental services with a particular emphasis on problem-oriented dental-visiting behaviour and the subsequent differences in the type of care received.

Dental visits are prompted by some form of stimulus, which may vary between a regular check-up and a perceived dental problem. The potential benefits of the visit are assessed and balanced against the costs or possible disadvantages, which may include money, time, pain, inconvenience of travel and fear of dentists (dental anxiety). These factors influence whether or not care is avoided or delayed, and are associated with the type of care received, which may vary from timely preventive services to invasive procedures for advanced disease.

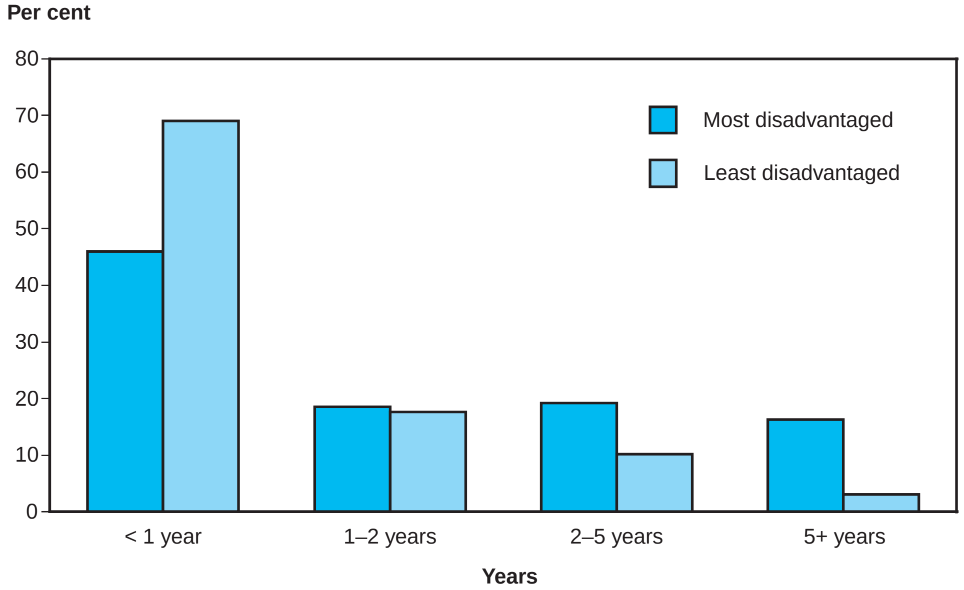
In 1999 just over half of dentate Australian adults (i.e. persons with at least one natural tooth) made a dental visit in the previous 12 months, and in the majority of cases the last visit was made in response to a problem or for relief of pain (Figure 5.14). The most obvious difference between low and higher income groups was the dominance of visits for relief of pain and problems among those with the lowest annual household income.

The proportion of people last visiting for a check-up increased steadily with income, with the proportion for the highest income group just over double that of the lowest. Less variation occurred in the percentage last visiting for relief of pain, and all problem visits were less prevalent among groups with a household income above $30,000 per annum.

The proportion of government benefit cardholders last visiting for a problem or relief of pain was higher than that for non-cardholders, with the proportion of visits that were for check-ups and the proportion that made a dental visit in the previous 12 months noticeably lower than for non-cardholders.

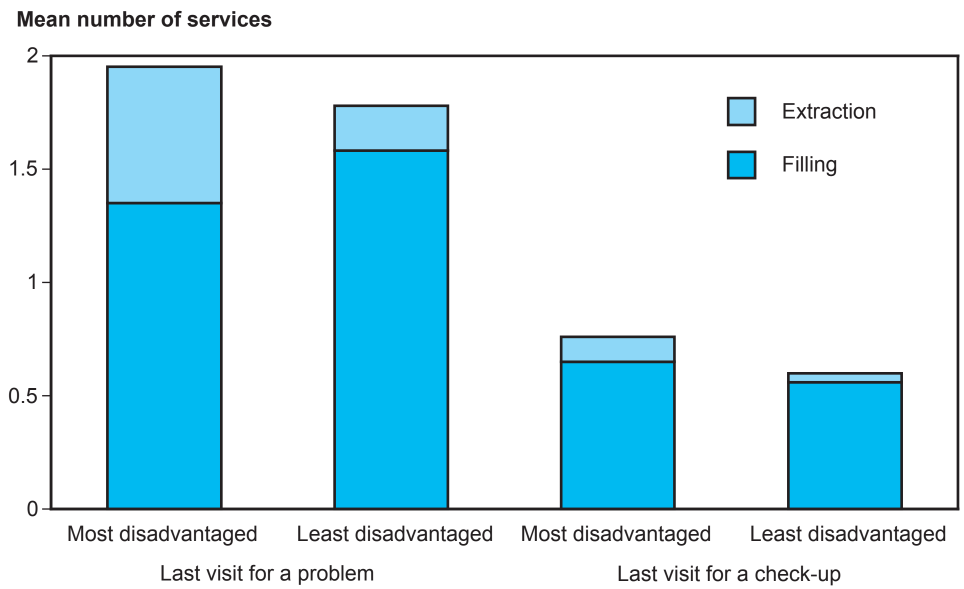
The differences in the services received by cardholders receiving public-funded care, those receiving private care at their own expense, and non-cardholders are evident in Figure 5.15. The group with the highest extraction rate—cardholders who last had public-funded care—also had the lowest filling rate. This group consistently had a high proportion of problem visits, in excess of 70%. Non-cardholders and cardholders whose last dental visit was in the private sector were more likely to receive fillings and less likely to have extractions. The group with the lowest extraction rate—non-cardholders whose last visit was to a private practice—had a lower proportion of problem-oriented visiting.

Time since last making a dental visit indicates contact with services, with people who avoid or delay dental visits less likely to receive ongoing preventive care. The differences between dentate adults from the 'most disadvantaged' and 'least disadvantaged' groups in the time since their last dental visit are demonstrated in Figure 5.16. Adults living in the most disadvantaged areas (lowest quintile based on the SEIFA Index of Relative Socio-Economic Disadvantage) whose annual household income was below $20,000 and who did not have private dental insurance were defined as 'most disadvantaged'. The 'least disadvantaged' were defined as people who had an income greater than $40,000, dental insurance and a residential postcode in an affluent area (highest SEIFA quintile). Less than half of the participants from 'most disadvantaged'



Sources: National Dental Telephone Interview Surveys 1994, 1995, 1996.

Figure 5.16: Years since last dental visit for dentate adults, 1994 to 1996



Sources: National Dental Telephone Interview Surveys 1994, 1995, 1996.

Figure 5.17: Mean number of services per year for dentate adults making a dental visit within the previous 12 months, 1994 to 1996

households had visited in the previous year, compared with almost 70% of the 'least disadvantaged'. A greater percentage of the 'most disadvantaged' had not visited for 2 or more years, with a fivefold difference between the two groups (16.3% compared with 3.1%) when the time elapsed was 5 or more years.

Problem-oriented visiting behaviour may lead to more advanced disease and less favourable treatment, such as extraction. Longer periods between dental visits reported by 'most disadvantaged' persons, particularly among those who usually visited for a problem, were likely to be followed by more invasive procedures when dental care was sought.

'Most disadvantaged' persons had three times as many teeth extracted as 'least disadvantaged' persons (0.60 per person per year compared with 0.20), and fewer fillings than 'least disadvantaged' persons who last visited for a problem (Figure 5.17). Those visiting for a check-up had fewer fillings and extractions than those last attending for a problem, with 'most disadvantaged' persons more likely to have a tooth extracted. These differences between 'most disadvantaged' and 'least disadvantaged' persons indicate that the treatment received was influenced by socioeconomic factors as well as the reason for visit.

Trends in dental practice

Trends in dental practice have been measured at 5-year intervals in Australia since 1983. These trends are established among a random sample of dentists from each State and Territory, with a sample supplementation procedure at each wave of the study to ensure representative cross-sectional estimates over time.

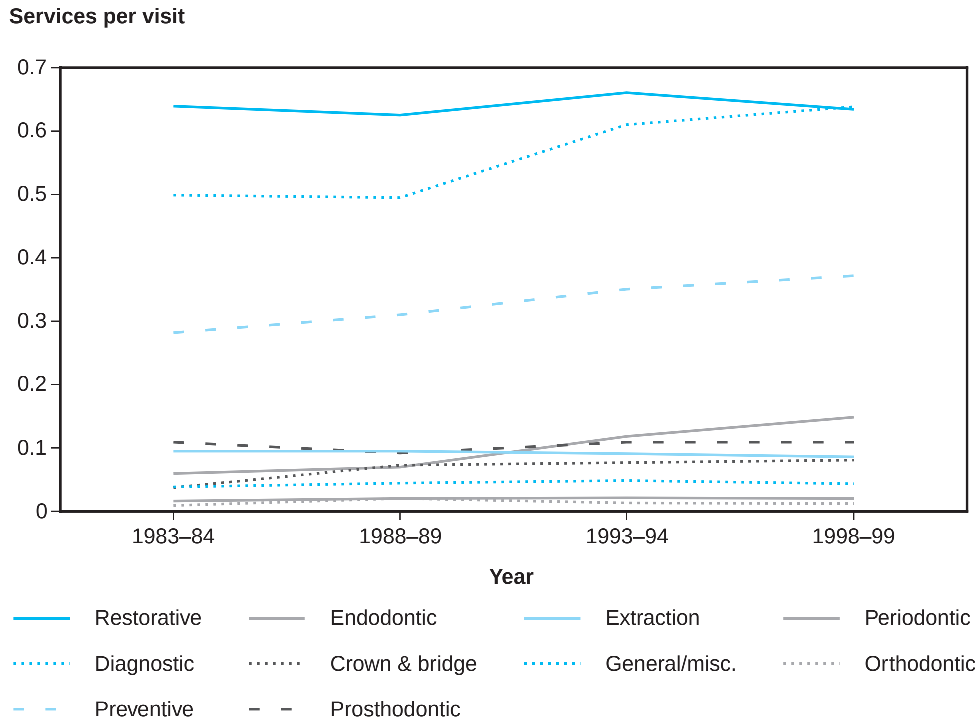
Measures of practice activity show a pattern of stable numbers of hours worked per year by dentists in private general practice between 1983–84 and 1998–99 (Table 5.45). However, over the same period the number of patient visits per hour declined, with a consequent decrease in the number of patient visits per year. These changes reflect longer term trends towards increased length of appointment time observed between 1960–61 and 1982–83 (Spencer & Lewis 1986).

In contrast to the reduction in number of patient visits, the number of services per visit provided by dentists in private general practice increased between 1983–84 and 1998–99. However, the total number of services provided by dentists per year remained stable, reflecting a counterbalancing of the decline in patient visits and the increase in services supplied per visit. Demographic trends towards increased numbers of older adults in the population are also being observed among dental patients, with the proportion of adult patients increasing between 1983–84 and 1998–99 from 20% to 34% for 45–64-year-olds and from 5% to 14% for patients aged 65 years and over. Oral health trends in the population have indicated a decline in tooth loss over recent decades, with the percentage of people with no natural teeth among those aged 65 years and over decreasing from 66.6% in 1979 (ABS 1979) to 40.0% in 1994 (AIHW: Carter et al. 1994). With increasing numbers of older patients who are retaining their teeth, these patients may have complex treatment needs that require more services that take longer to complete.

Table 5.45: Practice activity and service provision for private general dental practitioners, 1983–84 to 1998–99

	Hours per year	Patients per hour	Patients per year	Total services per visit	Annual services per dentist
1983–84	1,726	1.95	3,405	1.78	5,832
1988–89	1,756	1.78	3,097	1.84	5,607
1993–94	1,752	1.61	2,816	2.10	5,766
1998–99	1,740	1.49	2,589	2.14	5,463

Source: AIHW DSRU Longitudinal Study of Dentists' Practice Activity.



Source: AIHW DSRU Longitudinal Study of Dentists' Practice Activity.

Figure 5.18: Main types of service provision by private general dental practitioners, 1983–84 to 1998–99

The population trends towards declining tooth loss and increased numbers of older adults are likely to affect service patterns. The increase in total number of services provided per visit reflects changes in a range of service areas (Figure 5.18). Service provision was dominated by restorative, diagnostic and preventive services in each of the survey years. However, diagnostic, preventive and endodontic (root canal treatment) services each showed increases over the 1983–84 to 1998–99 period. These trends in service provision reflect a service pattern oriented towards retention of natural teeth through diagnosis and disease prevention, restoration through fillings, and avoidance of extraction through endodontic treatment.

Primary health care services for Aboriginal and Torres Strait Islander peoples

Section 4.6 of this report provides data on health status, hospitalisation rates and the use of GPs for Aboriginal and Torres Strait Islander peoples, demonstrating that the pattern of usage of these mainstream services is different for Indigenous peoples compared with the rest of the Australian population. Health expenditure data (Section 5.2) also indicate that Aboriginal and Torres Strait Islander peoples have different patterns of use of healthcare services compared with other Australians.

Mainstream services are not always accessible or the most appropriate provider for Aboriginal and Torres Strait Islander peoples, due to a mix of geographic, social and cultural reasons. Combined with the relatively poorer health status of Aboriginal and Torres Strait Islander peoples compared with the rest of the population, this has led to State, Territory and Commonwealth governments providing funds for healthcare services specifically to meet the needs of Aboriginal and Torres Strait Islander peoples.

The State and Territory governments provide funding mainly through hospitals and community clinics. The Commonwealth Government, through the Office for Aboriginal and Torres Strait Islander Health (OATSIH), provides funding for a range of Indigenous-specific health and substance misuse services, which are largely delivered in community-based settings. In 2000–01 OATSIH provided $162 million for the provision of these services from 211 primary service sites and 81 secondary service sites (including outreach services) distributed throughout Australia (DHAC 2001a).

The OATSIH-funded Aboriginal primary healthcare services (which may also receive funding from other sources such as State and Territory governments) are also known as Aboriginal Community-Controlled Health Services and Aboriginal Medical Services. They operate in urban, rural and remote locations and offer a wide range of services, including management of acute and chronic health conditions, preventive health (such as immunisation and screening) and promotion activities, transport services and advocacy and assistance in accessing other appropriate community and health services. A small number provide specific programs only, such as substance misuse, health promotion or counselling.

In 1999–00, approximately 1,200,000 episodes of health care were reported to have been provided by 117 services (98% of the total) (DHA and NACCHO unpublished). This compared with 1,060,000 services in 1998–99 and 860,000 services in 1997–98. These services covered an estimated total health service population of 600,000 Aboriginal and Torres Strait Islander peoples in 1999–00 (the population figure reflecting some overlap between services) compared with 515,000 in 1998–99 and 410,000 in 1997–98. Approximately 90% of services in 1999–00 were provided to Aboriginal and Torres Strait Islander clients (DHAC 2001b). Of these clients, 61% were female.

The services had 2,100 full-time-equivalent staff positions funded by OATSIH and State and Territory governments in 1999–00. Of these, 65% were Aboriginal or Torres Strait Islander staff members. This did not include 200 full-time-equivalent visiting health professionals and Community Development Employment Program staff. Nearly all

Aboriginal health workers and substance misuse workers were Indigenous people, whereas most nurses and almost all doctors, dentists and specialists were other Australians.

Hearing services

The loss of hearing can hamper learning and acquisition of speech by children and can contribute to social isolation, particularly for older Australians. An estimated 17% of the Australian population have hearing loss (AIHW: Mathers et al. 1999), making it the second most prevalent health condition, after dental caries.

In Australia, public hearing services are provided through a voucher system coordinated by the Commonwealth Government's Office of Hearing Services. People in need of these services are referred by their medical or hearing services practitioner. Those assessed as eligible (e.g. sickness allowance recipients, pensioner concession card and some DVA healthcare cardholders) are sent a voucher and a list of accredited hearing services providers (including private providers and Australian Hearing Services, the public provider) who are contracted with the Office of Hearing Services to provide services under the voucher system. Clients present their voucher to a listed provider to access services such as hearing assessment; audiological rehabilitation and maintenance; prescription, selection and fitting of hearing devices; and subsidised battery supply and device repair.

During 2000–01, the voucher system expenditure was $127.8 million compared with $71.9 million for 1997–98, when the system commenced (DHAC 2001a). In 2000–01, 124,630 adult clients were issued with a voucher, an increase of around 4,000 vouchers on the previous year. In total, there were 479,906 voucher hearing services provided by Australian Hearing Services and the other private service providers in 2000–01, a slight

Table 5.46: Hearing services provided through the voucher system and community service obligation arrangements, Australia, 1999–00 and 2000–01

Type of service	1999–00	2000–01
Assessments		
New	57,867	57,555
Return	55,171	53,750
Total	*113,038*	*111,305*
Hearing aid fitted		
New monaural fit	19,073	17,381
New binaural fit	30,921	29,277
Subsequent binaural	9,636	9,416
Return monaural fit	18,018	15,997
Return binaural fit	22,291	18,869
Total	*99,939*	*90,940*
Replacements	12,969	14,689
Maintenance	257,744	262,972
Total	**483,690**	**479,906**

Source: Office of Hearing Services.

decrease on the previous 12 months (483,690) (Table 5.46). The majority of these were maintenance (55%) and assessment services (23%). About 73% of clients receiving an assessment in 2000–01 were fitted with a device compared with 80% for 1999–00 (DHAC 2001a).

In addition to the voucher system, Australian Hearing Services also receives funding from the Commonwealth Government for community service obligations and research ($28.7 million in 2000–01). All Australians under the age of 21 and adults with special needs (e.g. those with complex hearing rehabilitation needs, Aboriginal and Torres Strait Islander peoples, those living in remote locations) are eligible to receive services from Australia Hearing Services as part of its community service obligations. Services were provided in 2000–01 to around 34,909 children and young adults under the age of 21, and around 11,044 adults with special needs.

Family planning organisations

Family planning organisations provide a range of clinical, community education and professional training services in sexual and reproductive health. The clinical services provided to individuals include contraceptive services, counselling and information services, and the management of sexual and reproductive health. Family planning organisations provide these services to many clients who choose not to use or do not have access to mainstream health services, including young people, migrant populations, the homeless and people with disabilities.

During 2000–01, 126,720 client visits were made to family planning organisations (excluding those in South Australia) (Family Planning Australia 2001). This compares with 151,338 client visits recorded for 1998–99 and was a 27% decline from the 173,036 visits recorded for 1996–97.

When clients visit a family planning organisation they may access a single service or a combination of services. Following the trend reported for client visits, there was a 21% reduction in the number of services provided in 2000–01 compared with 1996–97 (calculated from Table 5.47). The majority of this reduction occurred for early intervention and health promotion services. In contrast, the number of reproductive

Table 5.47: Client visits and services provided by family planning organisations[(a)], selected years, 1996–97 to 2000–01

Type of service provided	1996–97	1998–99	2000–01
Contraceptive services	72,463	62,040	70,584
Reproductive and sexual health management[(b)]	31,159	23,866	44,061
Early intervention/health promotion services[(c)]	127,807	107,554	68,541
Total services	231,429	193,460	183,186
Number of client visits	173,036	151,338	126,720

(a) Excludes South Australia.

(b) Includes management of menstrual irregularity, sexually transmitted infections and menopause, antenatal checks, postnatal checks and post-termination checks.

(c) Includes Pap smears, breast checks, pregnancy tests, tests for sexually transmitted infections, rubella tests and hepatitis tests.

Source: Family Planning Australia national database.

and sexual health management services provided during 2000–01 represented a 41% increase on the number of those services provided during 1996–97. Data on reproductive health counselling and information services to clients were not available for 2000–01.

During 2000–01, 37% of services were delivered to clients who were aged less than 25 years and 21% to clients aged 40 years and over. Males made 3% of client visits, although the number of males who attended with their female partners (i.e. as couples) is unknown. About 23% of client visits were made by people born outside Australia.

Family planning organisations also provide education and training programs. In 2000–01, about 13,500 people (mainly health and education professionals) attended training sessions, and over 100,000 attended general, community or school education programs.

Complementary and alternative health services

A range of services complement or provide alternatives to mainstream healthcare services. The 1995 National Health Survey estimated that 1.6% of Australians consulted a chiropractor in the 2 weeks before the survey, with smaller proportions visiting acupuncturists, herbalists, naturopaths, hypnotherapists and osteopaths (ABS 1997b).

The extent to which these services have been incorporated into the general healthcare system differs. Only acupuncture performed by a medical practitioner attracts a Medicare rebate; rebates totalled $15.2 million in 2000–01, for 719,000 acupuncture Medicare items. Some private health ancillary insurance covers some of these services, such as those provided by naturopaths, osteopaths and chiropractors.

5.6 Use of medications

The use of medications is the most common health-related action taken by Australians (ABS 1997b). Prescription medications are provided through community pharmacies and hospitals, whereas non-prescription medicines and complementary and alternative medicines are available from pharmacies and other retail outlets.

The National Health Survey in 1995 estimated that 10.7 million Australians (59.1% of the population) used some form of orthodox medication (medications other than homeopathic, herbal, nutritional, and other complementary and alternative medicines) in the 2 weeks before interview. There were 4.6 million (25.8%) who had used vitamins or minerals and 1.7 million (9.4%) who had used herbal or natural medications.

Prescribed medicines

In the 1995 National Health Survey, it was estimated that 6.54 million Australians used medications that had been prescribed by a medical practitioner in the 2 weeks before interview. The types of prescribed medication most commonly used were fluid, heart and blood pressure medications (1.93 million people), asthma medications (1.01 million people) and pain relievers (752,000 people).

Box 5.10: The Pharmaceutical Benefits Scheme

The PBS subsidises the cost of a wide range of prescription medications, providing Australians with access to necessary and cost-effective medicines at an affordable price. As at 1 November 2001, 589 generic drugs available in 1,458 forms and strengths (items) marketed as 2,459 different drug products (brands) were covered by the scheme. The items that attract benefits are reviewed frequently, and the price of every item covered is negotiated with the supplier.

Australian residents and visitors from those countries with which Australia has a Reciprocal Health Care Agreement are eligible for PBS benefits. To access the benefits under the scheme, patients are grouped into two classes. General patients pay the first $22.40 (from 1 January 2002) for each prescription item. Concessional cardholder patients (people with low incomes and sickness beneficiaries who hold a healthcare card) make a copayment of $3.60 per prescription item. Surcharges apply for some alternative brands and medicines.

Individuals and families are protected from large overall expenses for PBS-listed medicines by safety nets. Once a general patient and/or immediate family has spent $686.40 in a calendar year (excluding surcharges), the patient copayment per item decreases to the concessional rate of $3.60 per item.

For concessional patients, the $3.60 copayment is not required once their expenditure on PBS items exceeds $187.20 in a calendar year (excluding surcharges). These copayments and safety net thresholds are indexed according to movements in the Consumer Price Index from 1 January each year.

Patients may pay more than the standard copayment where a PBS item is priced above the benchmark price for different brands of the same drug, or the benchmark price for a particular therapeutic group of drugs. These additional payments do not count towards safety nets and any difference in price must be met by the patient.

The Commonwealth also helps in the provision and purchase of drugs through the RPBS, which provides assistance to eligible war veterans and dependants. It is generally similar to the PBS for concessional beneficiaries but covers some additional medicines.

Information on the use of prescription medicine compiled by the Health Insurance Commission relates to prescriptions submitted for subsidy payment under the PBS or the RPBS (Box 5.10). Data are not available on use of prescribed medicines in public hospitals and most private hospitals. Recent data are also not available on prescriptions issued from community pharmacies that were not covered by the PBS or the RPBS; data for 1998 were summarised in *Australia's Health 2000*.

In 2000–01, there were 148.1 million community PBS prescriptions, 22.9 million to general patients and 124.8 million to concessional patients (DHA 2002b). This was an increase of 7.2% over the 138.1 million in 1999–00 and of 18.4% over the 125.1 million in 1998–99. There were 13.1 million RPBS prescriptions in 2000–01, an increase of 8.7% over the 12.0 million RPBS prescriptions in 1999–00.

Table 5.48: Top 10 generic medications by volume, Pharmaceutical Benefits Scheme, 2000–01

	Generic drug	Action	Total volume 2000–01	Total volume 1999–00	% change
1	Atorvastatin	Serum lipid-reducing	4,512,127	3,442626	23.7
2	Simvastatin	Serum lipid-reducing	4,498,294	4,124,508	8.3
3	Paracetamol	Analgesic	4,344,529	4,267,035	1.8
4	Ranitidine hydrochloride	Anti-ulcerant	3,567,592	3,688,406	–3.4
5	Salbutamol	Bronchodilator	3,392,527	3,456,617	–1.9
6	Celecoxib	Anti-inflammatory	3,312,211	. .	. .
7	Codeine with paracetamol	Analgesic	2,833,716	2,880,507	–1.7
8	Temazepam	Sedative hypnotic	2,562,287	2,541,297	0.8
9	Omeprazole	Anti-ulcerant	2,529,186	2,167,644	14.3
10	Atenolol	Beta-blocker	2,460,249	2,319,294	5.7

. . Not applicable.

Source: DHA 2002b.

The top three generic medications by PBS prescription volume in 2000–01 were atorvastatin and simvastatin (both serum lipid-reducing agents; both about 4.5 million prescriptions), followed by paracetamol (an analgesic; 4.3 million prescriptions). The number of prescriptions for atorvastatin in 2000–01 was 24% higher than in 1999–00, and there was a marked increase also for simvastatin (Table 5.48). Simvastatin and atorvastatin were also the highest cost drugs for the PBS in 2000–01, with PBS expenditure on them totalling $237.0 million and $226.2 million, respectively. The next most costly were omeprazole (an anti-ulcerant, $161.4 million) and celecoxib (an anti-inflammatory/anti-rheumatic drug, $160.6 million).

Celecoxib, for which there were 3.3 million prescriptions, was newly listed on the PBS in 2000–01. For Zyban (bupropion, an anti-smoking drug), another newly listed drug, there were 274,382 prescriptions between February and June and PBS expenditure of $65.6 million.

Table 5.49: GP consultations: 10 most frequently prescribed medications, 2000–01

Generic medication	Action	Per cent of prescriptions	Prescriptions per 100 encounters
Paracetamol	Analgesic	4.2	3.9
Amoxycillin	Antibiotic	3.5	3.2
Cephalexin	Antibiotic	2.4	2.2
Paracetamol & codeine	Analgesic	2.4	2.2
Celecoxib	Anti-inflammatory	2.3	2.1
Salbutamol	Bronchodilator	2.3	2.1
Amoxycillin & potassium clavulanate	Antibiotic	1.8	1.7
Cefaclor monohydrate	Antibiotic	1.8	1.6
Roxithromycin	Antibiotic	1.7	1.6
Influenza virus vacinne	Vaccine	1.6	1.5

Source: AIHW: Britt et al. 2001.

The BEACH survey of general practice activity collects information on drugs prescribed by GPs (AIHW: Britt et al. 2001). In 2000–01, medications were prescribed at a rate of 92.3 per 100 encounters. Antibiotics were the most commonly prescribed group, accounting for 17.2% of all prescriptions. This was followed by cardiovascular (14.7%), central nervous system (12.0%), psychological (8.1%), musculoskeletal (7.3%) and respiratory medications (6.8%).

The most frequently prescribed individual generic medications are listed in Table 5.49. Five of the top ten drugs are from the antibiotic group. Simple analgesics were relatively frequently prescribed. This reflects their prescription for healthcare cardholders for whom they are a cheaper option than over-the-counter purchases.

Non-prescribed medicines

The 1995 National Health Survey estimated that, in the 2 weeks before interview, 6.3 million people (34.6% of the population) used orthodox medications that were not prescribed, and 178,900 Australians (1.0%) used medications provided by a doctor or hospital (ABS 1997b). The most commonly used types of non-prescribed drugs were pain relievers (used by 3.6 million people), and skin ointments and creams (1.1 million people).

The BEACH survey collects and reports information on drugs that GPs advise patients to purchase over the counter, and those that the GPs supply directly (AIHW: Britt et al. 2001).

In 2000–01, 8.5% of medications were advised for over-the-counter purchase and 6.3% were supplied by the GP. Extrapolated, this represented about 9 million recommendations for purchase of drugs, and 7 million supplies of drugs by GPs. The drugs most commonly advised for over-the-counter purchase were paracetamol and ibuprofen (an anti-inflammatory drug). The most common medications supplied by GPs were vaccines (principally influenza virus vaccine) and celecoxib (an anti-inflammatory drug).

Complementary and alternative medicines

In addition to the prescribed pharmaceuticals and other orthodox drugs, some Australians use a range of complementary and alternative medicines, including homeopathic, herbal and nutritional medications. The 1995 National Health Survey estimated that in the 2 weeks before interview, 25.8% Australians used vitamin or mineral supplements and 9.4% used herbal or natural medications (ABS 1997b).

5.7 Public health interventions

Public health is an integral component of the Australian health system but is commonly differentiated from the treatment system. Activities widely defined as public health represent the organised response by society to protect and promote health and to prevent illness, injury and disability. Public health interventions focus on prevention, promotion and protection rather than on treatment; on populations or population groups rather than on individuals; and on the factors and behaviours that affect health and cause illness and injury. Health promotion and prevention are the key public health services and activities.

Many modern diseases and illnesses are encouraged by social, economic, behavioural, environmental and lifestyle choices (Egger et al. 1990). Public health interventions include a wide range of activities to monitor, assess, promote and protect the population's health and to reduce the level and impact of those factors that influence ill health. They encompass education of target groups on health risk behaviours and harm minimisation, community development, development of legislation, and community-wide campaigns and services including immunisation, and improving water quality and food standards. These activities aim to prevent or reduce those modifiable risk factors that result in diseases and injuries and may result in a reduced life expectancy or quality of life.

Well-structured public health priorities and interventions have the ability to reduce illness, cut healthcare costs and improve quality of life. Studies have demonstrated the value to the community of such interventions, in particular the substantial benefits, relative to costs, flowing from both measles immunisation and tobacco control (Abelson 2001).

National public health interventions include those in areas such as cancer screening and immunisation, as described below.

Cancer screening

Breast, cervical and bowel cancers are three of a small group of cancers where there is evidence that illness and death can be reduced through population-based screening and effective follow-up treatment. National screening programs for breast cancer (via mammography) and cervical cancer (via Pap smears) have been implemented in Australia with the aim of achieving this reduction. These programs are called BreastScreen Australia and the National Cervical Screening Program. Pilot tests for a population-based screening program for bowel cancer are currently being developed, with screening expected to commence in mid-2002.

BreastScreen Australia

The BreastScreen Australia program is jointly funded by the Commonwealth and State and Territory governments. It consists of a network of dedicated screening and assessment services throughout metropolitan, rural and remote areas of all Australian States and Territories. These services can be fixed or mobile and provide free two-yearly mammographic screening and follow-up of any suspicious lesions identified at screening to the point of diagnosis of breast cancer. The program is aimed specifically at women aged 50–69 years of age without symptoms, although women aged 40–49 years and 70 years and older may attend for screening. Women may attend without a doctor's referral.

In addition, recruitment and reminder systems are used to promote screening and rescreening among women in the target group once every 2 years.

Table 5.50: Women screened in each 2-year period, 1996 to 1999

	1996 & 1997	1997 & 1998	1998 & 1999
BreastScreen Australia			
All ages 40 years and over	1,240,885	1,367,759	1,452,263
Target population (ages 50–69)	844,607	921,283	975,258
Participation rate for target population (%)	51.4	54.3	55.9
National Cervical Screening Program			
All ages 20 years and over	2,630,235	2,721,650	2,777,324
Target population (ages 20–69)	2,563,108	2,653,504	2,716,364
Participation rate for target population (%)	62.3	63.9	64.8

Notes

1. Participation rates are age-standardised to the 1991 total Australian population.
2. The Queensland Health Pap Smear registry commenced in February 1999. Hence the data presented here for cervical screening exclude screening in Queensland.

Sources: AIHW analysis of State and Territory Cervical Cytology Registry data and BreastScreen Australia data.

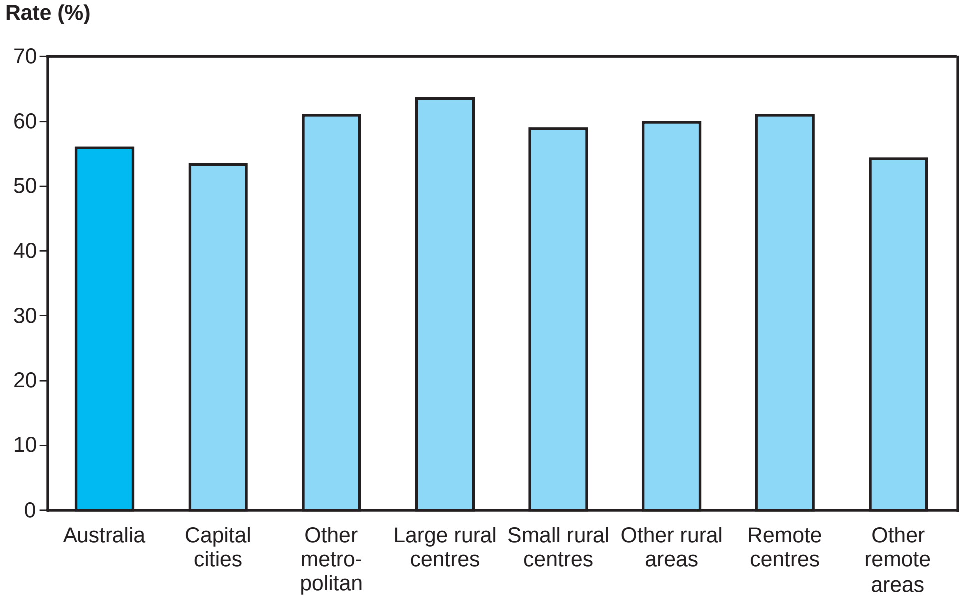
A comprehensive system of accreditation is used to ensure that all BreastScreen Australia services operate under a common set of standards. Each service is assessed on a regular basis by an independent team to ensure that the service provided complies with national standards.

The proportion of women in the target age group who were screened under the BreastScreen Australia program in a 2-year period rose from 51.4% in the period 1996–97 to 55.9% in the period 1998–99 (Table 5.50). Participation rates in 1998–99 in non-capital city metropolitan areas, large and small rural centres, other rural areas and remote centres were all statistically significantly higher than the rates for capital cities and other remote areas (Figure 5.19). These higher rates reflect policies aimed at encouraging participation in country areas, for example through the use of mobile mammography units. There was no consistent pattern in participation rates by relative socioeconomic disadvantage, with no statistically significant difference in participation between the most and the least disadvantaged groups (Figure 5.20).

National Cervical Screening Program

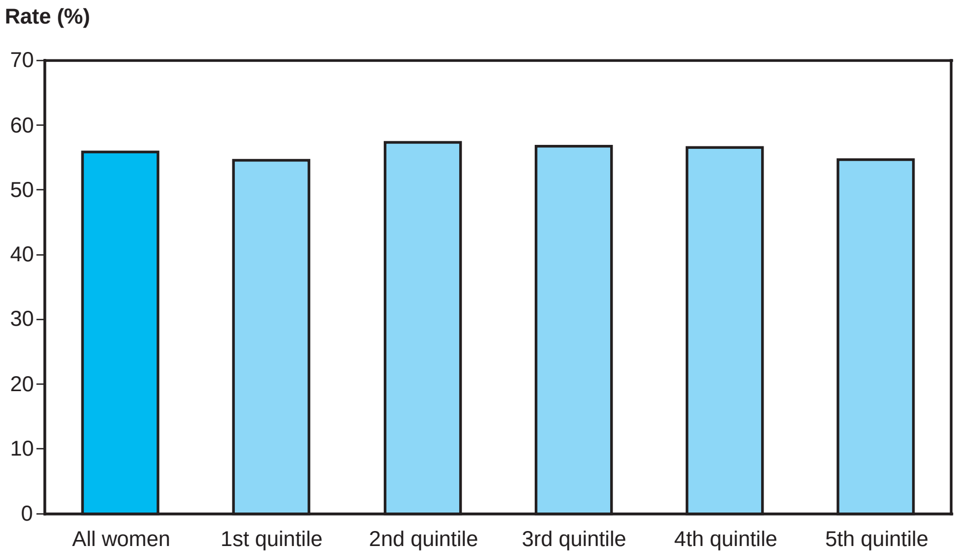
Screening to detect abnormalities of the cervix has been available for Australian women since the 1960s. Until the early 1990s this screening was largely unstructured, with no agreement on the screening target group or the best interval between screens. Since then it has become progressively more organised and in 1995 the program became known as the National Cervical Screening Program.

Unlike breast screening, cervical screening in Australia does not operate through a separate dedicated screening and assessment service. Instead, screening services are provided as part of mainstream health services, with approximately 80% of Pap smears performed by GPs. Cervical screening is funded mainly by Medicare (61%) with the remainder funded by Commonwealth government contributions through special-purpose payments to State and Territory governments (23%), and these governments' own revenue sources (16%).



Source: AIHW analysis of BreastScreen Australia data.

Figure 5.19: Participation of women aged 50–69 years in BreastScreen Australia by region, 1998–99



Source: AIHW analysis of BreastScreen Australia data.

Figure 5.20: Participation of women aged 50–69 years in BreastScreen Australia by socioeconomic status, 1998–99

The National Cervical Screening Program has both national and State and Territory components. Although policy is usually decided at a national level, coordination of screening activity mainly happens at a State and Territory level.

Cervical cytology registries operate in all States and Territories. The major functions of the registries are to:

- remind women to attend for screening
- ensure the follow-up of women with abnormal Pap smears
- provide cervical screening histories to laboratories and clinicians to aid reporting and management
- monitor the effects of initiatives to improve participation by women in screening.

The current Australian recommendation is for all women who have been sexually active at any stage in their lives to have a Pap smear every 2 years until they reach the age of 70 years. Screening may cease at the age of 70 for women who have had two normal Pap smears within the last 5 years. Women over 70 years who have never had a Pap smear or who request a Pap smear are also screened. However, for reporting purposes the target group is taken to be all women aged between 20 and 69 years who have not had a hysterectomy.

The proportion of women in the target age group who were screened under the National Cervical Cancer Screening Program in a 2-year period rose from 62.3% in the period 1996–97 to 64.8% in the period 1998–99 (Table 5.50).

Childhood immunisation

The purchase of vaccines in the Australian Standard Vaccination Schedule is funded by the Commonwealth and delivery of vaccines and program implementation is the responsibility of the States and Territories. The schedule includes vaccines recommended for children against diseases such as measles, diphtheria, tetanus, pertussis and hepatitis B (see Chapter 3).

The national childhood vaccination activities include the Australian Childhood Immunisation Register (ACIR), which is administered by the Health Insurance Commission and records details of vaccinations given to children under the age of 7 who live in Australia. Providers are paid a fee for reporting each completed schedule milestone; the cost of this is shared equally by the Commonwealth and the States. For the financial year 2000–01, ACIR information payments totalled $8.6 million with the majority ($6.2 million) being paid to GP providers (Table 5.51).

Table 5.51: ACIR information payments, 2000–01

Provider type	Benefits paid
General practice	$6.2 million
Council/State health	$1.5 million
Community health centres	$0.64 million
Other	$0.22 million
Total	$8.6 million

Source: Australian Childhood Immunisation Register.

Table 5.52: Immunisation episodes by State and Territory and provider type, 2000–01

Provider type	NSW	Vic	Qld	SA	WA	Tas	ACT	NT	Aust[a]
Local government council	74,007	403,867	50,378	36,826	24,127	10,739	0	0	599,944
State/Territory health department	0	0	81	127	15,262	0	1,860	45	17,375
Flying Doctor Service	577	0	2,526	348	7	0	0	0	3,458
General practice	1,054,629	520,237	590,113	174,516	228,259	75,042	22,571	2,111	2,667,359
Public hospital	21,264	1,736	19,762	10,913	16,026	199	561	1,663	72,450
Private hospital	793	19	24	0	0	0	0	627	1,463
Aboriginal health service or health worker	5,022	2,042	7,397	2,234	1,527	0	198	5,675	19,417
Community health centre	81,485	7,967	39,049	24,039	62,483	532	39,584	54,800	310,176
Total[a]	**1,237,777**	**935,937**	**709,330**	**249,003**	**347,691**	**86,512**	**64,774**	**64,921**	**3,841,373**

(a) Both totals include other.

Source: HIC 2002.

Nationally, GPs are the major childhood vaccine providers but there is considerable variation between jurisdictions in the proportion of vaccines delivered in the private and public sectors. In 2000–01, there were 3.8 million vaccinations recorded by the ACIR (Table 5.52). The majority (69.4%) were provided by GPs, although this varied from State to State. Local government councils (15.6%) and community health centres (8.0%) administered a substantial proportion of vaccinations, particularly in Victoria for the former, and in the Australian Capital Territory and the Northern Territory for the latter.

Before the introduction of the current national child immunisation program and the establishment of the ACIR in January 1996, the percentage of children immunised was regarded as unacceptably low. The national program has put in place a range of funding arrangements and financial incentives to increase the proportion of children immunised. The level of immunisation (which has risen over recent years; see Chapter 3) has been regularly monitored using ACIR data, and appropriate modifications have been made to the program and payments.

The incentives for increased immunisation and reporting have included the General Practice Immunisation Incentives Scheme, which was introduced by the Commonwealth Government in 1998. The scheme includes service incentive payments, which are paid on the completion of each immunisation schedule in accordance with the approved standards. In addition, outcomes payments are paid quarterly to general practices that achieve target levels of immunisation for children who attend the practice. In 1999–00, $18.5 million was paid in service incentive payments, and $13.3 million in outcome payments.

Two incentives for parents were introduced in 2000. The means-tested Maternity Immunisation Allowance is payable for children from 18 months of age either when all immunisations due by that age have been recorded on the ACIR, or there is a documented medical contraindication or conscientious objection to immunisation. The

Child Care Benefit, which is available to partially reimburse expenditure on approved or registered child care, is also available only with evidence of either up-to-date immunisation on the ACIR, or contraindication or conscientious objection.

5.8 Health resources and use of health services for the National Health Priority Areas

This section provides an overview of the health resources and use of health services for the six National Health Priority Areas (NHPAs). Information is included on health system expenditure on the NHPAs, and provision and use of health services, including general practitioners, hospitals, mental health services and the National Diabetic Services Scheme. Information is also included on use of medications.

Expenditure

Estimates of disease costs give an indication of the financial burden of NHPAs on the Australian health system. In 1993–94, the total health system costs of NHPAs was estimated at over $12.6 billion or 40% of total health expenditure (Table 5.53). Cardiovascular disease placed the largest financial burden on the health system, especially ischaemic heart disease and hypertension. Mental disorders, injury and poisoning and cancer were other large contributors to health system expenditure.

About $5.9 billion of the NHPA related expenditure (47%) was spent on NHPAs in the hospital sector, with over 60% of health expenditure for cancer and injury and poisoning in the hospital sector, in contrast to 20% for asthma.

Table 5.53: Health system expenditure on National Health Priority Areas, $m, 1993–94

NHPA diseases and conditions	Hospital[(a)]	Medical[(b)]	Pharmaceuticals	Other[(c)]	All sectors
Cardiovascular disease	1,663	546	849	861	3,919
Mental disorders	941	438	199	1,444	3,022
Injury and poisoning	1,663	393	127	418	2,601
Cancer	1,327	261	53	263	1,904
Diabetes	201	98	136	247	681
Asthma	94	102	199	82	478
All NHPAs	*5,889*	*1,838*	*1,563*	*3,315*	*12,605*
All diseases and injuries	**14,062**	**5,640**	**4,042**	**7,654**	**31,397**

(a) Includes public and private acute hospitals, repatriation hospitals, and psychiatric hospitals. Excludes public hospital non-admitted services.

(b) Medical services for private patients in hospitals are included under Hospital.

(c) Includes nursing homes, dental and allied health services, certain cancer prevention programs (national screening programs for breast and cervical cancer, and lung and skin cancer prevention programs), National Drug Strategy funding for prevention, health and medical research, and administration and other institutional and non-institutional health expenditure. In addition, for mental health specifically, hospital non-admitted patient services, specialised community mental health services, residential and non-residential treatment services run by non-government organisations, and allied health services.

Source: AIHW: Mathers et al. 1999.

A large proportion of expenditure for asthma was on pharmaceuticals (42%). Asthma drugs cost the Commonwealth Government more than $274 million in 2000–01. The cost of diabetes drugs was over half that, at about $130 million (DHA 2002b). Well-managed asthma costs considerably less than poorly managed asthma ($2,094 and $4,909 per person with asthma per year, respectively). The majority of savings that arise from asthma being well-managed are in the hospital system, with fewer people presenting at emergency departments or requiring readmission. There are also considerable savings in indirect costs, such as absenteeism from the workplace (National Asthma Campaign 1992).

Provision and use of health services

Hospitals

Principal diagnoses within the six NHPAs accounted for 30% of hospital separations (1,762,624) and 41% of patient days (9,302,554) in Australian hospitals in 1999–00 (Table 5.54). Cancers accounted for the largest number of these (583,220 separations), followed by cardiovascular disease (443,369 separations). Mental disorders accounted for the highest number of patient-days (2,942,961), followed by cardiovascular disease (2,413,204).

The average length of hospital stay for NHPA diseases and conditions in 1999–00 was 5.3 days, compared with 3.8 days for all hospital separations. Average lengths of stay were highest for mental disorders and diabetes, with lengths of stays averaging 12.0 days and 6.6 days respectively. Asthma had the shortest average length of stay at 2.7 days.

Table 5.54: Hospital separations for National Health Priority Areas[(a)], all hospitals[(b)], 1999–00

NHPA diseases and conditions	Separations	Same-day separations	Separations per 1,000 population[(c)]	Patient-days	Average length of stay (days)
Cancer	583,220	404,866	30.6	1,866,899	3.2
Cardiovascular disease	443,369	91,853	23.3	2,413,204	5.4
Injury and poisoning	419,681	121,416	22.0	1,788,466	4.3
Mental disorders	244,858	94,075	12.9	2,942,961	12.0
Asthma	47,008	7,240	2.5	128,771	2.7
Diabetes	24,488	4,713	1.3	162,253	6.6
Total NHPA separations	*1,762,624*	*724,163*	*92.5*	*9,302,554*	*5.3*
All separations	**5,898,804**	**2,903,966**	**152.1**	**22,604,114**	**3.8**

(a) Only separations for which the principal diagnosis corresponds to one of the priority areas have been included. These conditions will also have been reported as additional diagnoses for separations with principal diagnoses not within these priority areas. The figures also include family history, observation/screening and follow-up care and treatment for the NHPAs. The ICD-10-AM codes associated with the priority areas are as follows: Cancer C00–C97, Z08–Z09, Z51.0–1, Z54.1–2, Z80, Z85–Z86; Cardiovascular disease G45–G46, I00–I99, Z01.3, Z03.4–5, Z13.6, Z82.3–4, Z86.7, Z95; Injury and poisoning V01–Y98; Mental disorders F00-F99, Z03.2, Z81, Z86.5; Asthma J45–J46, Diabetes E10–E14, Z13.1, Z83.3.

(b) Includes public psychiatric hospitals.

(c) Crude rates.

Source: AIHW National Hospital Morbidity Database.

About 41% of hospital separations for NHPAs in 1999–00 were same-day separations, lower than the average of 49% for all hospital separations. Cancer was the NHPA condition for which the greatest proportion of separations were same-day (69%), followed by mental disorders (38%) and injury and poisoning (29%). Separations for chemotherapy were a large contributor to the high number of same-day separations for cancer.

Overall about 68% of hospital separations for NHPA diseases and conditions were in public hospitals (1,196,504). However, over 85% of hospital separations for asthma and diabetes were in public hospitals. The largest proportion of private hospital separations were for cancers (44%) and mental disorders (34%).

Mental health services

In the Australian healthcare system, mental health care is provided by both hospital-based and community-based services (as discussed on page 295). Community-based services are dedicated to the assessment, treatment and rehabilitation or care of people whose mental illness can be managed in the community, sometimes as an alternative to hospitalisation. Information on the use of and expenditure on mental health services is provided in more detail earlier in the chapter.

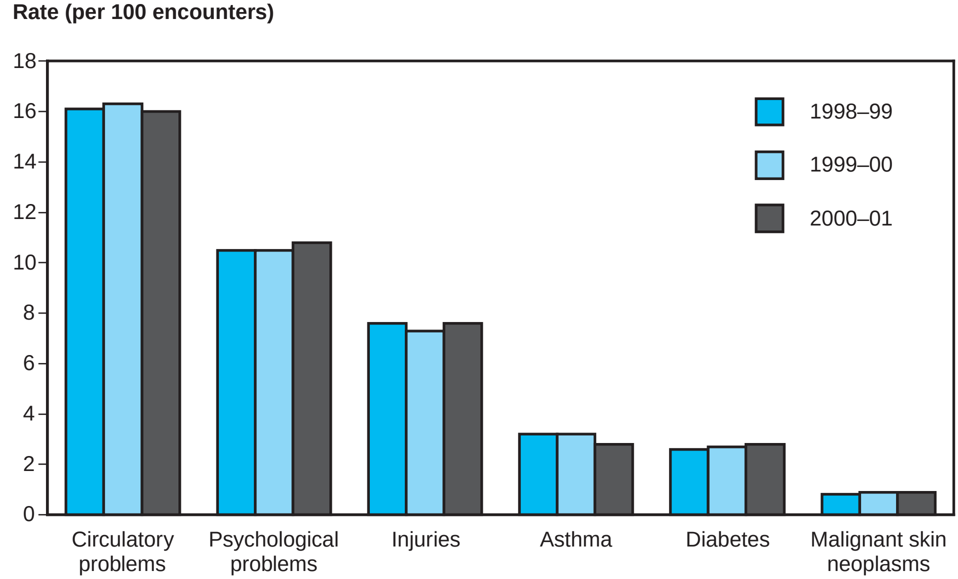
General practitioners

According to the 1995 National Health Survey, overall about 23% of persons consulted a doctor (GP or specialist) in relation to their health in the 2 weeks before interview (ABS 1997b). However, almost 46% of people with diabetes consulted a doctor in the 2 weeks before the survey, as did 40% of people with a cardiovascular condition and 31% of people with asthma (ABS 1997c, 1997d, 1998b).

The BEACH survey of general practice activity collects information on problems managed by GPs (see page 306). Selected NHPA conditions accounted for about 28% of all problems managed in general practice in 2000–01. Circulatory and psychological problems were the most common NHPA diseases and conditions managed in general practice, at a rate per 100 encounters of 16.0 and 10.8 respectively in 2000–01 (AIHW: Britt et al. 2001). A simple extrapolation based on approximately 103 million Medicare-claimed general practice consultations would suggest there are approximately 16.5 million encounters per year in which GPs manage cardiovascular diseases and 11.1 million in which GPs manage mental disorders. The management rate per 100 encounters did not vary significantly over the period 1998–99 to 2000–01 for most of the selected NHPA diseases and conditions (Figure 5.21). However, the management rate of asthma decreased significantly (p = 0.007) from 3.2 contacts per 100 encounters in 1999–00 to 2.8 per 100 encounters in 2000–01. This represents an estimated drop in annual asthma encounters of about 400,000 per year (AIHW: Britt et al. 2001).

National Diabetic Services Scheme

Under the National Diabetic Services Scheme (NDSS), the Commonwealth Government subsidises the supply of insulin syringes and diagnostic agents to persons with diabetes (DHA 2002b). There were 493,919 persons with diabetes registered with the NDSS in 2000–01, an increase of over 10% from the previous year. The increase in registrants has been associated with an increase in the use of and expenditure on both syringes and



Source: AIHW: Britt et al. 1999, 2000, 2001.

Figure 5.21: National Health Priority Area-related problems managed by general practitioners per 100 encounters, 1998–99 to 2000–01

diagnostic agents used for urine and blood testing. The number of products used for urine testing decreased and the number of products used for blood testing increased between 1999–00 and 2000–01.

The total government expenditure on NDSS for products supplied in 2000–01 was $57 million, with expenditure on diagnostic agents totalling $52.9 million and syringes $4.1 million.

Use of medications

The 1995 National Health Survey found that the use of medications was the most common health-related action taken by Australians (ABS 1997b), being reported for the 2 weeks before interview by 12.5 million people, or 69% of the population. Heart and blood pressure medications (1.93 million people, or 11%) and asthma medications (1.01 million people, or 6%) were the most commonly used prescribed medications. Medications for diabetes, heart and blood pressure medications, and medications for anxiety, depression or nervous conditions were used on a daily basis in over 90% of cases (ABS 1998c).

Two-thirds (67%) of adults with a cardiovascular condition took medications for heart problems/blood pressure. Other medication types used for cardiovascular conditions were pain relievers (24%) and fluid tablets/diuretics (11%) (ABS 1997d). For people with diabetes, the most common types of medication were diabetes medication (58%) and heart/blood pressure medication (44%) (ABS 1997c).

The BEACH survey of general practice activity collects information on both prescribed and non-prescribed medications, such as those supplied or advised for over-the-counter purchase by GPs (AIHW: Britt et al. 2001). In 2000–01, cardiovascular drugs were the second most commonly prescribed drug group, accounting for 14.7% of all prescriptions. Psychological drugs (8.1%) and respiratory drugs were the fourth and sixth most common drug groups prescribed, with asthma preventives (2.4%) the second most common respiratory drugs prescribed after bronchodilators (3.5%). In terms of drugs supplied by GPs, cardiovascular drugs were the third most common, accounting for 9.1% of all supplied drugs, and psychological drugs (6.1%) were the fifth most common drug group supplied. Cardiovascular and psychological medications were less commonly advised for over-the-counter purchase. Asthma preventives were generally not supplied or advised for over-the-counter purchase by GPs.

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6 Health monitoring and information development

The previous chapters illustrate the amount and quality of information now collected in Australia on health and health-related issues.

Substantial improvements in national health information have occurred since the signing of the National Health Information Agreement (the Agreement) in 1993 by Commonwealth, State and Territory health authorities, the Australian Bureau of Statistics (ABS) and the Australian Institute of Health and Welfare (AIHW). The Health Insurance Commission became a signatory to the Agreement in 1999. The Agreement put in place the national infrastructure of cooperative structure and processes needed to improve the quality, collection and dissemination of health information across Australia.

Management and development of national health information under the Agreement is the responsibility of the National Health Information Management Group (NHIMG), which reports to the Australian Health Ministers' Advisory Council (AHMAC). The National Advisory Group for Aboriginal and Torres Strait Islander Health Information and Data, the Expert Group on Health Classification and the National Health Data Committee (NHDC), report to NHIMG. The NHDC produces the *National Health Data Dictionary*.

When the National Public Health Partnership was established in 1997 to develop a joint Australian intergovernmental agenda for public health, a related information group, the National Public Health Information Working Group, was set up.

The Agreement's focus on consistent information across Australia has been a large force in the improvement of consistent health information in the different parts of the health system. The push by government for measuring performance in the health sector has also resulted in increased work on both the conceptual and information development needed to cater for issues such as efficiency, effectiveness, equity, responsiveness and accountability. A conceptual framework for the measurement of health status and the performance of health system has been developed.

The rapid global growth of information technology has given rise to opportunities to harness new technologies to enable better communication to support clinical decisions, program management and policy development. In 2001 Commonwealth, State and Territory Ministers initiated the Health*connect* project to investigate the concept of and to develop plans for a national network of electronic health records. The establishment of such a network has the potential to improve the timeliness and connectivity of health statistics as well as information for clinical management. International reporting on health of countries by bodies such as the World Health Organization (WHO) and OECD has also affected health information development. Not only do international reports need reliable and comparable data from member countries, but also international analysis and debate on such aspects as the responsiveness of the health system and the structure of health financing require new data that need to be developed and collected.

These developments are described in this chapter.

6.1 Recent information developments and emerging issues

Even with the improvements in the quality and quantity of data now available there remain significant challenges in answering questions about how well our health system is performing. To a large degree this should be seen as a natural ongoing process. Although Australia has reliable data on a number of broad measures of health such as death rates and infant mortality, prevalence of disease and life expectancy, these broad measures often fail to explain the whole story. These measures are population averages and may mask important variations within the population and, in particular, how disadvantaged groups compare with the overall population, although information on population groups is improving.

Increasingly, people want to know how healthy they are, whether it is the same for everyone, what the effects of disease and injury are on the quality of life, what the factors are that determine health, whether those factors are changing for the better, whether we are investing in the areas of health that will have the most beneficial effect, and how well the healthcare system performs in improving the health of Australians.

There has been a steady growth of public and private sector activities in the healthcare industry that require reliable, consistent and timely information. In some cases these activities have been built on good-quality data, but in many cases the activities have themselves provided the catalyst and momentum for the development of the necessary data.

One major driving force has been the push by governments to reform government services with special emphasis on the effectiveness and efficiency of government-funded human services. Health and community services have been important focuses for the reviews of government services undertaken by the Steering Committee for the Review of Commonwealth/State Service Provision (SCRCSSP 2002). For these reviews to be valid, the underlying data need to have a high degree of consistency across jurisdictions and programs. The reviews have noted the difficulties in obtaining good-quality data and have provided an incentive to improve the quality of data available.

Strategies and plans

As health information has become more complex, government, the major source and user of health data in Australia, has responded with a range of health information development plans. Although this report covers the national plans, it is important to recognise that State and Territory health authorities also have a number of plans and strategies to achieve their own information needs and to implement aspects of national plans. The States and Territories are the major sources of administrative health data.

In 1995 the NHIMG, after extensive consultation, published the National Health Information Development Plan (AIHW & AHMAC 1995). This plan, which listed eight priority areas for information development, has provided the foundation for recent and current developments in national health information.

Other information plans include the National Public Health Information Development Plan, focusing on the development needs in relation to public and population health, and the National Indigenous Health Information Plan, which recommended strategies and actions needed to achieve improvements in data about the health of Aboriginal and Torres Strait Islander peoples.

There are also a range of health information developments that underlie activities of other bodies such as the National Health Priorities Action Council and the National Health Performance Committee, both reporting to AHMAC.

In 2001–02, NHIMG reviewed the implementation of the 1995 National Health Information Development Plan, and has developed an updated plan currently before AHMAC for endorsement.

Progress with the 1995 National Health Information Development Plan

The 1995 plan listed eight priority areas for information development. These priority areas were information development in relation to Aboriginal and Torres Strait Islander health, national health and welfare information model, record linkage, health outcomes, severe mental illness, non-institutional healthcare data, improving cost-effectiveness of collections, and potentially modifiable major disease risk factors. Efforts have been made in all these areas, and the progress that has not been covered in previous chapters is described below.

There has been considerable progress in improving Indigenous health statistics. An Indigenous sample was added to the 2001 ABS National Health Survey and plans have been made to include a larger Indigenous sample in the forthcoming 2004 survey. The ABS will also introduce a regular 6-yearly Indigenous social survey (including health topics), the first of which is to be undertaken in 2002.

Indigenous data from births and deaths registers and from hospital administration records have improved. Birth data are of sufficient quality to be published nationally, and death data from most States and the Northern Territory are now considered of sufficient quality to be publishable.

Every two years since 1997, the ABS and AIHW have jointly published a comprehensive report, *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples* (ABS & AIHW 2001). As well, AHMAC has endorsed a set of indicators of Aboriginal and Torres Islander health, and an annual report on these indicators is published (NHIMG 2001).

The 1996 National Health Information Model has been reviewed and updated by the AIHW (AIHW 2002). It has been used to organise the content of the recent versions of the *National Health Data Dictionary.*

Linkage of health records for research has progressed. The AIHW National Death Index and the Cancer Register are available to users for specific health research that requires data linkages, and have been used to study cancer survival rates. An AHMAC-approved protocol for record linkage for research into diabetes services and outcomes has been agreed between Western Australia, the Health Insurance Commission, the Department of Health and Ageing and the AIHW. A pilot study linking hospital separations and admission to aged care homes has started at AIHW as part of a large AHMAC-auspiced research program on the interface between aged care and hospital services.

Developing health outcome measures has received a great deal of attention. The NHIMG-developed health outcomes indicators framework has been adopted for data development and reporting for National Health Priorities Areas such as injury, diabetes and asthma. These are reported in previous chapters of this publication. Health status and outcomes indicators developed for the National Health Performance Framework and used in the 2001 report on health performance by the National Health Performance Committee are discussed later in this chapter.

National information development priorities

The NHIMG paper before AHMAC includes the following priority areas for information development:

Indigenous health—Reinforce efforts to implement the National Indigenous Health Information Plan, implement the ABS survey strategy for Indigenous statistics, improve Indigenous population estimates for the Indigenous population, and develop data to support the national performance indicators for Indigenous health.

Integration of services—Develop and expand national minimum data sets to cover emergency, rehabilitation and community services, and work with the National Community Services Information Management Group to implement a consistent approach to data development in National Data Dictionaries in the health, community services and housing fields.

Safety and quality in health care—Review existing data collections and establish new collections where necessary to monitor health system safety, and improve measurements of health outcomes, including survival analysis, using ethically approved data linkage.

Information technology and health—Develop consistent coding and classification systems for use within the national health information network.

Population health—Develop data collection on a range of health risk factors, develop and implement national surveys that include biological measurements of risk factors, and continue the collection of data on public health expenditure.

Equity and access—Further develop analytical techniques for measuring health inequality, and use emerging geo-coding capability to analyse locational aspects of inequality.

Health labour force—Review and improve health labour force collections for planning use, including geographic distribution, skill levels and consumer demand.

Performance of health system—Undertake data development to facilitate reporting under the National Health Performance Framework, and develop summary measures to enable valid international comparison.

Standards and classification—Review the *National Health Data Dictionary*, including the upgrading of the AIHW Knowledgebase as a national health data repository, and establish and maintain national classification systems and links with coding systems in all health settings.

Management of health information—Regularly review national minimum data sets, negotiate reduction of duplication in health meta-data collections, implement best practice guidelines, and advocate statistical best practice in information privacy regimes.

A number of the current information development activities have their source in one of the plans or current programs, and when brought together it is apparent there is considerable activity. That this high level of activity will continue is also evident from the plans of organisations like the ABS, the Department of Health and Ageing and the AIHW over the next 3 years. The National Health Survey will now be conducted every 3 years. Plans for the survey incorporate an Indigenous health component. A pilot survey is planned for the first Australian Health Measurement Survey, which will include a range of physical and biomedical measures. There is increased State and Territory population health surveillance activity, including on-going programs of computer-assisted telephone interviews. These programs are supported by health survey module manuals on chronic disease and common risk factors. A number of other data collections are also being planned, including the establishment of national minimum data sets on drugs and alcohol and palliative care.

6.2 Health system performance measurement

As outlined in the introduction, measurement of health system performance is now seen as an important issue at not only national but also international levels. WHO and the OECD have both signalled their intention not only to focus on the development of performance measures but also to publish comparative reports of national performance.

This represents a major change in approach resulting to some extent from the improved health data in many countries which allows some limited comparison because of the increasing consistency in both the data and the information concepts underlying the data.

The measuring of performance of a system or service requires an understanding of the objectives of the system or service and of the context within which the system operates. The National Health Performance Committee (NHPC) Report (NHPC 2001) notes:

> when measuring performance of a system or program it is important to consider the process involved in turning inputs into outputs and evaluating the outcomes.

Consistent with the conceptual framework outlined in Chapter 1 of this report, system performance can be measured taking the following approach:

- monitoring of inputs to the health system

- measurement of outputs
- monitoring of outcomes.

Both equity and quality are integral components of performance measurement; performance cannot be validly measured without regard to both equity and quality.

These two elements in themselves significantly raise the complexity of measurement. Establishing valid measures for both concepts requires a clear understanding of objectives and unambiguous outcome measures.

National Health Performance Framework

In 1999 Australian Health Ministers set up the NHPC, to report on the national health system encompassing the acute, community health care and public health sectors. The committee is to develop, establish and maintain a national performance measurement framework and appropriate indicators as a basis for its reporting.

The NHPC developed the National Health Performance Framework, largely derived from the Indicators Framework published as part of the Canadian Health Information Roadmap Initiative (CIHI 2000: Appendix A). The NHPC framework has also drawn on the conceptual framework for health presented by the AIHW in *Australia's Health 2000*. It has been endorsed by Australian Health Ministers for reporting the performance of the Australian health system at a national level.

The Australian framework has three basic tiers of information:

- health status and outcomes
- determinants of health
- health system performance.

This three-tier framework acknowledges that influences on population health status and outcomes can come from the health system's interventions as well as determinants from outside the health system. It also allows monitoring on how health system interventions can focus on managing determinants, as in public health programs, as well as those that directly relate to the treatment of diseases.

The close correspondence with the Canadian framework has contributed to a growing international consensus on frameworks for health performance indicators.

The framework provides a structured approach to the appraisal of the health system, particularly on assessing how well the system is performing. Although the three tiers of the framework are not hierarchical, the relationships between the tiers and the dimensions are important.

The inclusion of questions in relation to each tier and set of dimensions clearly provides a performance emphasis to the framework. The question 'Is it the same for everyone?' integrates equity into the framework and establishes the information requirements. It is intended that data on the indicators will reflect differentials by age, sex, geographic location, Indigenous status and socioeconomic status. The data on performance collected in accordance with this framework will help in reporting on inequities, and in highlighting possible scope for improvement.

National Health Performance Framework

Health status and outcomes **How healthy are Australians? Is it the same for everyone? Where is the most opportunity for improvement?**			
Health Conditions	**Human Function**	**Life Expectancy and Wellbeing**	**Deaths**
Prevalence of disease, disorder, injury or trauma or other health-related states.	Alterations to body structure or function, activities and participation.	Broad measures of physical, mental, and social wellbeing of individuals and other derived indicators.	Age and/or condition specific mortality rates.

Determinants of health **Are the factors determining health changing for the better? Is it the same for everyone? Where and for whom are they changing?**				
Environmental Factors	**Socioeconomic Factors**	**Community Capacity**	**Health Behaviours**	**Person-related Factors**
Physical, chemical and biological factors such as air, water, food and soil quality.	Socioeconomic factors such as income, education, employment, per capita expenditure on health.	Characteristics of communities and families such as population density and structure, health, literacy, housing, and community support.	Attitudes, knowledge and behaviours, e.g. eating patterns, physical activity, alcohol consumption and smoking.	Genetic-related susceptibility to disease and other factors such as blood pressure, cholesterol levels and body weight.

Health system performance **How well is the health system performing in delivering quality health actions to improve the health of all Australians? Is it the same for everyone?**		
Effective	**Appropriate**	**Efficient**
Care/intervention/action achieves desired outcome.	Care/intervention/action provided is relevant to the client's needs and based on established standards.	Achieving desired results with most cost-effective use of resources.
Responsive	**Accessible**	**Safe**
Service provides respect for persons and is client-orientated. Includes respect for dignity, confidentiality, promptness, quality of amenities, access to social support networks and choice of provider.	Ability of people to obtain health care at the right place and right time irrespective of income, physical location and cultural background.	The avoidance or reduction to acceptable limits of actual or potential harm from healthcare management or the environment in which health care is delivered.
Continuous	**Capable**	**Sustainable**
Ability to provide uninterrupted, coordinated care or service across programs, practitioners, organisations and levels over time.	An individual's or service's capacity to provide a health service based on skills and knowledge.	Capacity to provide infrastructure such as workforce, facilities and equipment, and be innovative and respond to emerging needs (research, monitoring).

Source: NHPC (2001).

The framework can be applied at all levels and in all sectors of the health system, including at the individual program level and for particular regions. A validated and endorsed structure on how to approach the appraisal of health system performance that supports benchmarking for improvement will minimise the risks of a proliferation of conceptual frameworks, each associated with data collections for which limited comparisons can be made.

Wider application of the framework

It is expected the framework will help the integration of other national performance measurement and reporting activities, including, for example, those of the Steering Committee for the Review of Commonwealth/State Service Provision.

A number of bodies whose focus is on particular programs or population groups have begun implementing or trialling the framework for their own applications, demonstrating a robustness in the underlying structure of the framework. For instance, the National Health Priority Performance Advisory Group, a body charged with advising the National Health Priority Action Council on monitoring the performance of the National Health Priority Areas initiative, sees the framework as useful for assessing the range of indicators already determined for individual health priority areas. It recognises a basic consistency with the health outcomes framework developed in 1997 by the NHIMG and adopted for National Health Priority Areas indicators. Additionally, a workshop on chronic disease monitoring, conducted in November 2001 under the auspices of the National Public Health Information Working Group, has recommended that the NHPC framework become the basis for indicators for chronic disease monitoring. Indicators for child and youth health, and rural health, are also being developed using the NHPC framework as a guide.

6.3 Health indicators

Health indicators, like frameworks, are derived and used in a number of different ways. Indicators may provide a measure of a relatively straightforward event such as the death rate for the population as a whole, or by age, population group or condition. Indicators may also be measures of more complex concepts such as healthy life expectancy (HALE). An important characteristic of indicators is that they can be used to facilitate comparisons and highlight and clarify relationships, for example of the health impact of various conditions or the effect of factors such as socioeconomic status on health. The selection and use of indicators must be customised to their specific purpose and the context in which they are being used. The indicators must be robust and capable of adapting to change and reflecting trends.

The development of health indicators that can be used to measure performance is a major thrust both internationally and in Australia. Keeping some consistency between these measures, in terms of comparability, use of uniform data definitions and data standards, presents a challenge to the health information sector. This challenge will grow as the need for patient-level data and increased uniformity in clinical data increases.

Hierarchy of indicators

Indicators need to reflect the level from which they are drawn. Indicators at the national level may have little relevance at the regional or local level, but may still provide a useful benchmark in the absence of detailed local data. There is a hierarchy of indicators that will vary according to context. System-level indicators are generally related to a discrete system within a jurisdiction, such as a State health system or the national health system. Indicators at this level are used by international organisations such as the WHO and OECD to monitor and compare the performance of health systems of different countries. Below the system level is the program level, which relates particularly to identified public sector programs within a State or jurisdiction and allows comparison between programs and potentially across jurisdictions. Program-level indicators remain at a fairly high level, for example measuring trends across specific conditions or population groups. The provider level is the level of indicator that most directly relates to the provision of services and activities, and may be part of funding arrangements and reporting. This level usually does not feature in national performance indicators.

Currently, there are extensive sets of indicators being developed at a national level to shape and monitor programs and activities including the six National Health Priority Areas, chronic diseases and health outcomes. Sets of specific performance measures include not only those being developed by the NHPC but also the Aboriginal and Torres Strait Islander Health Performance Indicators.

Identification of a parsimonious set of indicators suitable for monitoring key elements of health at a national level is a continuing task for the NHPC. The committee has adopted defined criteria to help it to identify the indicators that best summarise the overall performance of the Australian health system.

The NHPC has proposed several criteria (Box 6.1) to be applied in selecting health performance indicators (NHPC 2001).

In addition the NHPC agreed to five selection criteria for sets of performance indicators. Sets of indicators or composite indices should:

1. cover the spectrum of the health issue
2. reflect a balance of indicators for all appropriate parts of the framework
3. identify and respond to new and emerging issues
4. be capable of leading change
5. provide feedback on where the system is working well, as well as areas for improvement.

The NHPC notes the need to use existing data where possible and appropriate, the difficulty in linking the efforts of the health sector directly with observable health outcomes, and the long-term nature of the research and conceptual and information development necessary to develop 'meaningful measures of the efficiency and effectiveness of health outputs and the impact on health outcomes' (NHPC 2001:20).

Box 6.1: Selection criteria for health performance indicators

1. Be worth measuring.

The indicators represent an important and salient aspect of the public's health or the performance of the health system.

2. Be measurable for diverse populations.

The indicators are valid and reliable for the general population and diverse populations (i.e. Indigenous populations, sex, rural/urban, socioeconomic etc.).

3. Be understood by people who need to act.

People who need to act on their own behalf or that of others should be able to readily comprehend the indicators and what can be done to improve health.

4. Galvanise action.

The indicators are of such a nature that action can be taken at the national, State, local or community level by individuals, organised groups, and public and private agencies.

5. Be relevant to policy and practice.

Actions that can lead to improvement are anticipated and feasible—they are plausible actions that can alter the course of an indicator when widely applied.

6. Reflect results of actions when measured over time.

If action is taken, tangible results will be seen, indicating improvements in various aspects of the nation's health.

7. Be feasible to collect and report.

The information required for the indicator can be obtained at reasonable cost in relation to its value and can be collected, analysed and reported on in an appropriate time frame.

8. Comply with national processes of data definitions.

The NHPC thus recognises the need for care in selection and use of indicators, noting that indicators are an indication of organisational achievement and not an exact measure.

The NHPC 2001 report gave examples of a number of illustrative indicators that could be used in measuring the dimensions of the three tiers. Further development of these and other indicators provides the basis of the NHPC 2001 national report on health sector performance indicators (NHPC 2002). Examples of the indicators used to measure the dimensions in the three tiers are given below.

Although these indicators have generally been chosen by the NHPC in accordance with the selection criteria outlined, their developmental nature must be recognised together with the difficulties caused by data limitations.

Tier 1 Health status and outcomes

Indicator	Dimension
Non-fatal burden of disease (years of life lived with disability) for disease groups	Health condition
Core activity restriction	Human function
Proportion of disease in targeted National Health Priority Areas of the total burden of disease and injury	Life expectancy and wellbeing
Standardised mortality ratios for Indigenous Australians	Life expectancy and wellbeing
International comparison of life expectancy at birth by sex	Life expectancy and wellbeing
Cause-specific death rates	Deaths
Suicide and self-inflicted injury deaths	Deaths

Tier 2 Determinants of health

Indicator	Dimension
Environmental tobacco smoke	Environmental factors
Notification rates of Ross River virus	Environmental factors
Differentials in death rates across socioeconomic quintiles	Socioeconomic factors
Carer activity	Community capacity
Voluntary work participation rates	Community capacity
Proportion of adults and adolescent smokers	Health behaviours
Proportion of adults insufficiently physically active	Health behaviours
Proportion of persons overweight	Health behaviours
Proportion of persons with high blood pressure	Person-related factors
Low-birthweight babies	Person-related factors

Tier 3 Health system performance

Indicator	Dimension
Separation rates with asthma as principal diagnosis	Effective
Five-year survival rates for cancer	Effective
Breast and cervical cancer screening: proportion of females screened	Effective
Immunisation: children fully vaccinated	Effective
Hospital separation rates for caesarean sections	Appropriate
Hospital separation rates for myringotomies and tonsillectomies	Appropriate
Prescription of oral antibiotics for upper respiratory tract infection	Appropriate
Cost per casemix-adjusted separation	Efficient
Average length of stay for hospital admissions	Efficient
Per capita fee-for-service expenditure on primary and secondary health services	Efficient
Emergency department waiting times	Responsive
Number of full-time workload equivalent GPs by location	Responsive
Days waited for admission for elective surgery (50th percentile)	Accessible
Number of residential care places and community aged care packages per 1,000 persons aged 70 years and over	Accessible
Hospital separations with an adverse event	Safe
Uptake of Medicare Benefits Schedule items for enhanced primary care	Continuous
Proportion of workload carried by vocationally registered GPs and other medical practitioners aged over 50 years	Sustainable

6.4 A national network for electronic health records

In 1996, the Minister for Health and Family Services requested the House of Representatives to conduct an inquiry into health information management and telemedicine. In its report, *Health On-line*, the Inquiry recommended a major pilot trial designed to evaluate the costs and benefits of deploying 'telehealth and health informatics' throughout the health system (Commonwealth of Australia 1997).

In 1998, Health Ministers established the National Health Information Management Advisory Council (NHIMAC) to advise on plans for the development of an electronic health information system. In July 2000, the National Electronic Health Records Taskforce recommended to NHIMAC the establishment of a general approach to a health information exchange or network for Australia. The Taskforce identified four components for the network: privacy and confidentiality, standards (including data standards), telecommunication infrastructure, and uptake and use of information technology (National Electronic Health Records Taskforce 2000).

In 2001, the Health*connect* office was established by Commonwealth, State and Territory Health Ministers to undertake a two-year research and development program to test the potential of a national electronic health records network. The Health*connect* office has released a draft statement of business requirements, called Health*connect* Business Architecture, for general consultation. Work is also proceeding to establish sites for Health*connect* trials.

The development of an electronic health record system aims to provide on-line information for clinical use and may contribute to improving the timeliness and quality of statistical information that would flow from health services delivery.

6.5 International work on health measurement

WHO Health System Performance Assessment Framework

The WHO Health System Performance Assessment Framework defines the functions and goals of the health system (WHO 2000).

Goals of the health system

The goals are health, responsiveness and fair financing contribution.

For the health goal, both the level of health and the inequality of health are considered important. The WHO are measuring the level of health by the HALE measure.

Responsiveness refers to non-health goals of the system such as respect for people and client orientation. This is measured by, among other things, examining how the health system deals with confidentiality of information, how it respects the dignity of the person, whether it allows access to social support networks and whether the patient receives prompt attention. It is proposed to measure the distribution of responsiveness as well as the level.

Components for assessment Goals	Average level	Distribution
Health	✓	✓
Responsiveness	✓	✓
Fairness in financial contribution	—	✓

The WHO also proposes to measure fairness in financial contribution. This focuses on the risks that are faced by households in financing health care, and on catastrophic costs that may be incurred by some households in paying for health care.

Functions of the health system

The WHO defined four basic functions of a health system which contribute to determining observed levels of goal attainment—financing, service provision, resource generation and stewardship (WHO 2001a).

Health system financing is the process by which revenues are collected, accumulated in fund pools and allocated to specific health actions. It can be subdivided into three sub-functions: revenue collection, fund pooling and purchasing.

Service provision refers to the way inputs are combined to allow the delivery of a series of interventions or health actions. It includes personal and non-personal health services. The former are services consumed directly by an individual (preventive, diagnostic, therapeutic or rehabilitative). The latter are actions that are applied either to collectivities (e.g. mass health education, legislation) or to the non-human components of the environment (e.g. basic sanitation).

Health systems are not limited to the institutions that finance or provide services, but include organisations that produce inputs to those services, particularly human resources, physical resources such as facilities and equipment, and knowledge. Included are educational institutions, research centres, construction firms, and the vast array of organisations producing technologies such as pharmaceutical products, devices and equipment. Strategies for **resource generation**, the third function, can be critical to the performance of the system.

Stewardship is a neglected function in most health systems, extending beyond the conventional notion of regulation. It involves setting, implementing and monitoring the business rules for the health system; assuring a level playing field among all people in the system (particularly purchasers, providers and patients); and defining strategic directions for the health system as a whole.

OECD health framework and reporting

The OECD published a report *Health at a Glance* in October 2001 which includes indicators of health status, healthcare resources, healthcare utilisation and health expenditures, using information from its OECD Health Data database provided by member countries. In 2001 the OECD also started a new 3-year health project. The project focuses on measuring and analysing the performance of healthcare systems in member countries and the factors affecting performance.

In this project, the OECD has proposed a framework for reporting on health system performance that has a focus on three broad goals: health improvement/outcomes, responsiveness and access, and financial contribution/health expenditure. A broad comparison shows much in common with frameworks used by the WHO, Australia's NHPC, Canada and other countries.

The pace of international health information development is a major challenge for Australia. Fortunately, the robust and, at times, innovative national health information infrastructure that has been established in Australia since 1993 has also enabled Australia to be an influential participant in international health information developments through a range of European, American and international health, informatics and standards bodies. Australia has made an important contribution to the recent review of the WHO Health System Performance Assessment Framework, through the participation in the Peer Review Group. Australia has also been a significant contributor to the international development of welfare and social indicators and associated performance indicators.

6.6 Health classifications

Classifications are a basic statistical building block. They provide a logical structure to information, enabling concepts and data to be aggregated into manageable understandable information.

The 54th WHO World Health Assembly in May 2001 endorsed the International Classification of Functioning, Disability and Health (ICF) as a companion classification to the long-established International Classification of Disease (ICD). The ICD is used for the classification of health conditions (diseases, disorders, injuries, etc.) and is generally based on an etiological perspective. The ICF is intended for the classification of functioning and disability associated with health conditions. Under the ICF, disability is conceptualised as multidimensional, relating to body functions and structures of people, their activities, the life areas in which they participate, and the factors in their environment that affect these experiences (WHO 2001b; AIHW 2001: 258–9). Work is under way to develop implementation plans for the ICF, including the development of user guides and generally promoting the classification for use in national data systems.

The ICD and the ICF are now the two reference classifications in the WHO family of health classifications. Other health classifications that are derived from the reference classifications or are related to them will also belong to the family and will be able to be linked to the reference classifications.

Work is under way to develop a structure for the WHO family of health classifications to better link the various classifications. Australia participates actively in these international developments through the NHIMG's Expert Group on Health Classifications and through the AIHW as the WHO Collaborating Centre for Health Classification in Australia. These classifications serve as an additional standardising influence on health system performance reporting as they are the basis of measurements describing health status and functioning in frameworks proposed by the NHPC, WHO and other organisations.

6.7 Future directions in health information

This report has benefited from the range of health data being collected in Australia.

Arrangements under the National Health Information Agreement have been effective in ensuring information priority areas are covered and data gaps are identified. The NHIMG, with representation from the policy departments of all jurisdictions, has ensured that data collected meet the requirements of policy and program administrators.

Further improvements in Australian health statistics can be expected with the recent decision to increase the frequency of the National Health Survey to every 3 years. The National Health Survey will provide up-to-date data on health status and the use of health services, and will also collect some information on mental health and nutrition, areas where current data are limited.

Plans are being developed to conduct a health measurement survey in 2004 that collects biomedical specimens to give information on health risks in the population. Information on health risks is an important guide for the targeting of early intervention programs to populations that are exposed to risks. The Department of Health and Ageing, the AIHW and ABS will conduct a pilot test of this survey in 2003.

There is also increased emphasis in the joint use of data from different sources for the analysis of issues that cut across health sectors, e.g. the use of aged care homes and hospitals by older Australians. The issues involved in such joint use of data, e.g. technical and privacy considerations in the creation and use of linked data sets, are being given attention by the NHIMG. The development of data on the various primary and community health services is also progressing to help monitor the various community-based services and understand the interface between institutional and community care.

The 2001 publication of the National Health Performance Framework will assist in the development of indicators in the various health subsectors, e.g. hospital services, child and youth health, rural health, and particular health areas such as chronic diseases.

At the AIHW, work has progressed on exploring a range of issues that arise in developing a measurement framework for welfare needs, interventions and outcomes (AIHW 2001). A conceptual framework for welfare information has been described which includes components of welfare (outcome measures), influential factors (analogous to determinants in the health sector) and interventions, services and assistance. Despite the differences of language, the parallels to the National Health Performance Framework are evident.

Australia's Welfare 2001 also sets out an indicative list of welfare indicators. Combined with the several sets of performance indicators developed in recent years for different community service sectors, the aim is to produce a parsimonious set of indicators for the welfare sector in *Australia's Welfare 2003*.

In both the health and welfare sectors, the scene is set for the production of indicator sets, based on consistent models for each sector. With moves towards statistical integration now being initiated by NHIMG and National Community Services Information Management Group, indicator development is paralleling policy moves towards the integration of health and community services used by an individual, family or household. The AIHW will report on these substantial aims in its 2004 report on Australia's health.

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Statistical tables

1.1 Population

Table S1: Estimated resident population, selected years, 1901 to 2001 (number)

Age group	1901	1921	1941	1961	1981	1991	2001[(a)]
Males							
0–4	172,957	307,300	299,900	573,700	583,218	652,302	644,853
5–14	450,067	570,800	575,300	1,056,600	1,321,340	1,290,729	1,367,178
15–24	366,146	457,900	627,900	776,100	1,320,618	1,405,897	1,403,747
25–34	320,455	451,800	593,900	728,000	1,244,663	1,416,512	1,463,465
35–44	279,558	369,500	496,000	737,900	931,360	1,319,366	1,474,375
45–54	156,674	281,300	432,400	627,800	772,879	960,260	1,330,222
55–64	99,170	208,400	307,600	427,800	661,984	734,081	911,623
65–74	64,716	90,900	173,100	266,300	426,174	548,636	626,897
75–84	18,731	29,300	70,900	102,300	158,247	243,406	350,853
85+	2,207	4,700	7,500	15,800	27,784	44,220	82,209
All ages	**1,977,928**	**2,771,900**	**3,584,500**	**5,312,300**	**7,448,267**	**8,615,409**	**9,655,422**
Females							
0–4	168,836	296,300	288,700	546,400	556,400	619,401	612,618
5–14	441,003	557,300	556,000	1,008,300	1,264,582	1,223,098	1,298,569
15–24	365,792	462,800	614,900	729,300	1,278,293	1,354,941	1,340,767
25–34	293,424	458,400	573,300	664,400	1,212,261	1,408,886	1,451,173
35–44	216,135	353,200	471,900	706,100	891,517	1,303,292	1,477,932
45–54	118,574	257,400	436,400	595,700	737,394	915,819	1,316,973
55–64	80,302	179,300	307,600	435,500	691,752	728,737	891,056
65–74	48,935	82,000	186,400	333,100	511,502	633,509	674,584
75–84	14,757	31,000	79,700	149,200	256,487	370,917	487,120
85+	2,038	5,500	10,500	27,900	74,805	110,027	180,449
All ages	**1,795,873**	**2,683,200**	**3,525,400**	**5,195,900**	**7,474,993**	**8,668,627**	**9,731,241**

(a) Preliminary data.

Note: Population estimates are for 30 June of each year.

Sources: Commonwealth Statistician 1925; ABS Cat. No. 3201.0; AIHW National Population Database.

Fertility and pregnancy

Table S2: Age-specific birth rates[(a)] and total fertility rates[(b)], 1921 to 2000 (live births per 1,000 females)

	Age group of mother (years)							Total fertility rate
	Less than 20	20–24	25–29	30–34	35–39	40–44	45 and over	
Annual averages								
1921–1925	27.3	133.7	167.0	137.0	96.9	40.4	4.2	3,032
1941–1945	23.9	126.9	152.8	114.3	66.3	21.1	1.7	2,535
1961–1965	46.5	204.0	207.2	122.4	59.2	17.5	1.2	3,289
1981–1985	25.7	100.8	144.5	82.0	25.4	4.4	0.3	1,915
1991–1995	21.2	71.6	128.3	104.2	39.3	6.4	0.3	1,857
Annual rates								
1996	20.1	65.2	117.1	105.7	43.7	7.5	0.3	1,797
1997	19.5	62.3	113.8	106.7	44.9	7.5	0.3	1,775
1998	18.5	60.0	111.2	107.2	45.7	8.0	0.3	1,755
1999	18.1	58.7	108.5	108.8	47.1	8.5	0.3	1,751
2000	17.4	56.5	107.0	110.5	49.1	8.8	0.4	1,749

(a) Age-specific birth rates are the live births registered during the calendar year, according to age of mother, per 1,000 of the female resident population of the same age as estimated for 30 June.

(b) Total fertility rate is obtained by summing the 5-year age-specific birth rates and multiplying by 5. It represents the number of children 1,000 women would bear during their lifetimes if they experienced the rates of the year shown.

Sources: ABS 1977; ABS Cat. No. 3301.0.

Table S3: Age-specific birth rates[(a)] and total fertility rates[(b)], States and Territories, 2000 (live births per 1,000 females)

	Age group of mother (years)							Total fertility rate
State/ Territory	Less than 20	20–24	25–29	30–34	35–39	40–44	45 and over	
NSW	16.7	59.5	110.2	113.6	51.7	9.7	0.5	1,809
Vic	10.8	41.4	98.3	113.1	52.2	8.8	0.4	1,625
Qld	22.7	66.3	112.9	103.9	43.5	7.3	0.3	1,784
WA	20.9	61.6	108.3	109.8	46.5	8.1	0.3	1,777
SA	15.2	54.0	104.8	110.7	48.2	9.2	0.6	1,713
Tas	25.7	80.5	113.3	95.9	36.3	6.5	0.4	1,792
ACT	10.9	38.5	100.4	111.5	53.0	8.2	0.3	1,614
NT	69.6	98.6	111.3	99.4	49.7	13.7	0.8	2,216
Australia	**17.4**	**56.5**	**107.0**	**110.5**	**49.1**	**8.8**	**0.4**	**1,749**

(a) Age-specific birth rates are the live births registered during the calendar year, according to age of mother, per 1,000 of the female resident population of the same age as estimated for 30 June.

(b) Total fertility rate is obtained by summing the 5-year age-specific birth rates and multiplying by 5. It represents the number of children 1,000 women would bear during their lifetimes if they experienced the rates of the year shown.

Source: ABS 2001a.

Table S4: Total fertility rates[(a)], crude birth rates[(b)] and male:female birth ratio, selected countries (latest available year)

	Total fertility rate		Crude birth rate		M:F birth ratio	
Country	**Year**	**Rate**	**Year**	**Rate**	**Year**	**ratio**
Australia	**2000**	**1,749**	**2000**	**13.0**	**2000**	**105.6**
Australia	***1999***	***1,751***	***1999***	***13.1***	***1999***	***104.8***
Canada	1997	1,552	1997	11.6	1997	105.5
China	1995–2000	1,800	1995–2000	16.2	1994	112.0
Denmark	1996	1,747	1999	12.4	1996	106.1
France	1996	1,712	1999	12.6	1996	105.5
Germany	1997	1,368	1999	9.5	1997	105.5
Greece	1998	1,292	1999	10.9	1998	106.3
Ireland	1997	1,920	1999	14.2	1997	105.5
Israel	1997	2,933	1999	21.2	1997	105.8
Italy	1995	1,187	1998	9.3	1995	106.4
Japan	1998	1,384	1999	9.3	1998	105.4
Korea, Republic of	1998	1,478	1998	13.6	1998	110.1
Malaysia	1998	3,290	1998	25.0	1998	107.1
Netherlands	1998	1,628	1999	12.7	1998	105.0
New Zealand	1998	1,910	1998	14.6	1998	106.8
Norway	1998	1,814	1999	13.3	1998	104.9
Philippines	1995–2000	3,620	1995–2000	28.6	1996	108.2
Poland	1997	1,508	1999	9.9	1997	106.0
Russian Federation	1995	1,344	1999	8.3	1997	106.0
Singapore	1998	1,500	1999	11.1	1998	106.5
Spain	1997	1,157	1998	9.3	1997	106.3
Sweden	1997	1,525	1999	10.0	1997	105.7
Switzerland	1998	1,470	1999	10.3	1998	105.0
United Kingdom	1997	1,720	1999	11.9	1997	105.1
United States	1998	2,060	1998	14.6	1997	104.8

(a) Total fertility rate is obtained by summing the 5-year age-specific birth rates and multiplying by 5. It represents the number of children 1,000 women would bear during their lifetimes if they experienced the rates of the year shown.

(b) Live births per 1,000 mid-year population.

Sources: UN 2001; WHO 2002; ABS 2001a.

Table S5: Birthweight distribution of total births[(a)], States and Territories, 1999

Births/birthweight	NSW	Vic	Qld	WA	SA	Tas[(b)]	ACT	NT	Australia
Births					**Number**				
Less than 2,500 g	5,541	4,340	3,286	1,720	1,218	415	332	356	17,208
All births	87,289	62,689	48,747	25,771	18,519	6,092	4,688	3,599	257,394
Birthweight (g)					**Per cent**				
Less than 500	0.2	0.4	0.4	0.3	0.3	0.3	0.4	0.3	0.3
500 to 999	0.4	0.5	0.5	0.5	0.6	0.4	0.8	1.2	0.5
1,000 to 1,499	0.6	0.6	0.7	0.7	0.6	0.7	0.9	0.8	0.6
1,500 to 1,999	1.2	1.3	1.3	1.3	1.2	1.4	1.2	2.4	1.3
2,000 to 2,499	3.8	4.1	3.8	3.9	3.9	4.0	3.8	5.3	3.9
Less than 2,500	6.3	6.9	6.7	6.7	6.6	6.9	7.1	10.0	6.7
2,500 to 2,999	14.8	15.9	14.2	15.8	15.3	15.0	13.8	19.3	15.1
3,000 to 3,499	35.5	35.5	34.6	36.4	35.7	33.6	34.0	35.2	35.3
3,500 to 3,999	31.1	30.2	31.9	30.4	30.6	31.6	31.1	25.6	30.9
4,000 to 4,499	10.3	9.9	10.7	9.1	10.0	10.8	12.0	8.3	10.2
4,500 and over	1.9	1.7	1.9	1.6	1.9	2.1	1.9	1.6	1.8

(a) Includes live births and foetal deaths (stillbirths) with known birthweight. Totals include births with unstated birthweights.

(b) Data for Tasmania unavailable; 1998 data used as an estimate.

Source: AIHW NPSU 2001.

Table S6: Infant mortality rates, States and Territories, selected years, 1901 to 2000 (per 1,000 live births)

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
1901	103.7	102.9	101.9	128.9	100.1	89.0	(a)	62.5	103.6
1921	62.6	72.5	54.2	78.3	65.5	78.0	74.1	63.3	65.7
1941	43.8	36.2	39.1	35.3	32.5	49.0	16.4	83.3	39.7
1961	20.8	17.8	20.0	19.7	20.0	16.8	15.6	23.9	19.5
1981	10.2	9.3	10.4	8.9	8.0	12.3	8.9	23.5	10.0
1993	6.2	5.4	7.0	5.9	5.2	5.9	4.3	15.3	6.1
1994	6.3	5.1	6.2	5.6	4.7	7.5	4.7	11.3	5.9
1995	5.7	4.9	6.3	5.1	5.8	5.8	4.8	13.3	5.7
1996	5.8	5.0	6.4	6.5	4.9	4.5	5.7	11.5	5.8
1997	5.2	4.9	5.8	5.3	4.7	6.5	3.8	12.5	5.3
1998	4.3	4.7	6.4	5.0	4.0	5.7	6.0	12.4	5.0
1999	5.8	5.6	5.7	4.7	4.3	7.6	5.6	11.7	5.7
2000	5.2	4.5	6.2	4.3	4.6	5.8	4.2	11.7	5.2

(a) Part of New South Wales prior to 1911.

Source: ABS Cat. No. 3302.0.

Table S7: Perinatal mortality rates[(a)], by age group of mother, 1991 to 2000 (per 1,000 live births plus foetal deaths)

	Age group of mother (years)						
Year	Less than 20	20–24	25–29	30–34	35–39	40 and over	Aust
1991	15.2	11.0	9.0	10.3	11.3	20.8	10.6
1992	14.1	11.1	9.2	9.8	11.6	18.0	10.7
1993	12.7	9.6	8.1	8.1	10.4	13.1	9.2
1994	12.0	9.3	7.6	8.4	10.8	14.8	9.1
1995	14.2	10.2	8.0	7.9	9.5	13.4	9.4
1996	14.0	10.9	8.4	8.9	9.9	17.3	10.0
1997	15.0	9.6	8.0	7.6	10.7	12.1	9.2
1998	13.0	8.9	7.4	6.9	9.6	12.6	8.3
1999	13.8	9.6	7.5	7.3	8.6	13.4	8.5
2000	14.3	9.4	7.4	7.1	8.4	9.2	8.3

(a) Perinatal deaths consist of foetal deaths (stillbirths) and neonatal deaths (within 28 days of birth). The perinatal mortality rate is defined as the number of deaths per 1,000 live births and foetal deaths combined.

Note: Data are based on year of registration and use the ABS definition for perinatal deaths of at least 400 grams birthweight or, where birthweight is unknown, at least 20 weeks gestation. Editions of *Australia's Health* prior to the year 2000 used the WHO definition of 500 grams birthweight and 22 weeks gestation.

Source: ABS Cat. No. 3303.0.

Table S8: Perinatal mortality rates[(a)], States and Territories, 1991 to 2000 (per 1,000 live births plus foetal deaths)

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
1991	11.0	9.8	11.1	10.3	9.0	11.9	12.5	18.2	10.6
1992	11.8	9.4	10.6	9.8	9.9	9.1	9.4	19.3	10.7
1993	9.5	8.5	9.4	8.3	8.8	10.0	7.7	21.1	9.2
1994	9.2	9.3	8.9	8.3	8.5	8.4	6.9	16.9	9.1
1995	8.9	9.2	9.8	9.3	9.9	9.7	9.2	16.3	9.4
1996	11.0	8.8	10.0	10.2	8.6	9.5	8.8	12.6	10.0
1997	9.8	8.5	9.1	8.1	8.2	11.6	6.6	15.5	9.2
1998	8.1	7.7	9.6	7.5	7.2	9.8	12.2	13.1	8.3
1999	8.1	9.2	8.2	8.3	6.6	10.7	11.7	16.1	8.5
2000	7.7	7.9	8.9	8.4	8.2	10.6	8.3	14.5	8.3

(a) Perinatal deaths consist of foetal deaths (stillbirths) and neonatal deaths (within 28 days of birth). The perinatal mortality rate is defined as the number of deaths per 1,000 live births and foetal deaths combined.

Note: Data are based on year of registration and use the ABS definition for perinatal deaths of at least 400 grams birthweight or, where birthweight is unknown, at least 20 weeks gestation. Editions of *Australia's Health* prior to the year 2000 used the WHO definition of 500 grams birthweight and 22 weeks gestation.

Source: ABS Cat. No. 3303.0.

Table S9: Neonatal, postneonatal and infant mortality rates[(a)], selected countries (latest available year) (per 1,000 live births)

	Males			Females		
	Neonatal	Post-neonatal	Infant	Neonatal	Post-neonatal	Infant
Australia (2000)	**3.8**	**1.8**	**5.7**	**3.1**	**1.6**	**4.7**
Australia (1998)	***3.7***	***1.8***	***5.5***	***3.0***	***1.5***	***4.5***
Canada (1997)	4.2	2.2	6.0	3.6	1.4	5.0
China (1997)	n.a.	n.a.	28.8	n.a.	n.a.	37.1
Denmark (1996)	4.7	1.6	6.3	3.0	1.7	4.7
France (1996)	3.3	2.1	5.4	2.7	1.4	4.1
Germany (1997)	3.2	2.2	5.4	2.5	1.7	4.3
Greece (1998)	4.8	2.3	7.1	4.4	1.8	6.2
Ireland (1997)	3.9	2.5	6.4	3.5	2.4	5.9
Israel (1997)	4.1	2.4	6.5	3.8	2.4	6.3
Italy (1995)	5.2	1.8	7.0	3.9	1.4	5.4
Japan (1998)	2.1	1.7	3.8	1.8	1.6	3.4
Korea, Republic of (1997)	n.a.	n.a.	2.5	n.a.	n.a.	2.4
Malaysia (1998)	8.4	2.3	10.7	6.6	2.2	8.8
Netherlands (1998)	4.3	1.7	6.0	3.3	1.0	4.3
New Zealand (1998)	3.4	3.1	6.5	2.7	1.7	4.4
Norway (1998)	2.9	1.6	4.6	2.2	1.2	3.4
Philippines (1996)	11.4	10.0	21.3	8.5	7.9	16.5
Poland (1997)	8.2	2.8	11.0	6.6	2.8	9.3
Russian Federation (1995)	12.8	7.9	20.7	9.1	6.5	15.6
Singapore (1997)	2.5	1.5	4.0	1.8	1.6	3.4
Spain (1997)	3.6	2.0	5.5	2.9	1.6	4.5
Sweden (1997)	2.7	1.4	4.1	2.0	1.2	3.1
Switzerland (1998)	4.0	1.5	5.5	2.9	1.0	4.0
United Kingdom (1997)	4.2	2.2	6.4	3.5	1.7	5.3
United States (1997)	5.2	2.8	8.0	4.3	2.1	6.5

(a) Neonatal: less than 28 days. Postneonatal: 28 to 364 days. Infant: less than 1 year.

Sources: ABS 2001b; UN 2001; WHO 2002.

Mortality

Table S10: Life expectancy (years) at selected ages, 1901 to 1998–2000

Year	At birth		At age 15		At age 65	
	Males	Females	Males	Females	Males	Females
Annual averages						
1901–10	55.2	58.8	49.0	51.9	11.3	12.9
1920–22	59.2	63.3	51.4	54.6	12.0	13.6
1946–48	66.1	70.6	54.3	58.3	12.3	14.4
1960–62	67.9	74.2	55.1	61.0	12.5	15.7
1980–82	71.2	78.3	57.4	64.3	13.8	18.0
Annual rates						
1990	73.9	80.1	59.8	65.8	15.2	19.0
1991	74.4	80.4	60.2	66.0	15.4	19.1
1992	74.5	80.4	60.3	66.1	15.4	19.2
1993	75.0	80.9	60.8	66.5	15.7	19.5
1994	75.0	80.9	60.8	67.0	15.7	19.7
1994–1996[(a)]	75.2	81.1	60.9	66.7	15.8	19.6
1995–1997[(a)]	75.6	81.3	61.3	66.9	16.1	19.8
1996–1998[(a)]	75.9	81.5	61.5	67.1	16.3	20.0
1998–2000[(a)]	76.6	82.0	62.2	67.6	16.8	20.4

(a) The methodology used to calculate this table has changed since 1995. Data on population and deaths averaged over 3 years are now used to minimise year-to-year statistical variations.

Sources: ABS Cat. No. 3302.0; ABS unpublished data.

Table S11: Life expectancy (years) at selected ages, States and Territories, 1998–2000

State/Territory	At birth		At age 15		At age 65	
	Males	Females	Males	Females	Males	Females
New South Wales	76.4	81.9	62.0	67.5	16.7	20.3
Victoria	77.1	82.3	62.7	67.8	17.1	20.5
Queensland	76.4	81.9	62.2	67.6	16.9	20.4
Western Australia	76.9	82.6	62.5	68.0	17.1	20.8
South Australia	76.6	82.3	62.2	67.7	16.8	20.6
Tasmania	75.7	81.2	61.4	66.9	16.3	19.8
Australian Capital Territory	78.3	82.3	63.8	68.0	17.6	20.5
Northern Territory	70.3	75.2	56.6	61.5	15.0	17.2
Australia	**76.6**	**82.0**	**62.2**	**67.6**	**16.8**	**20.4**

Note: The methodology used to calculate this table has changed since 1995. Data on population and deaths averaged over 3 years are now used to minimise year-to-year statistical variations.

Sources: ABS Cat. No. 3302.0; ABS unpublished data.

Table S12: Life expectancy (years) at selected ages, selected countries, latest year

	At birth		At age 15		At age 65	
Country/year	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**
Australia (1998–2000)	**76.6**	**82.0**	**62.2**	**67.6**	**16.9**	**20.4**
Australia (1997–1999)	***76.2***	***81.8***	***61.9***	***67.4***	***16.6***	***20.2***
Canada (1995)	75.2	81.2	61.0	66.9	16.1	20.1
China (1990)	66.8	70.5	55.4	59.2	12.2	14.7
Denmark (1996–1997)	73.3	78.4	58.9	63.9	14.5	17.9
France (1996)	74.2	82.0	59.8	67.5	16.1	20.7
Germany (1994–1996)	73.3	79.7	58.9	65.3	14.8	18.5
Greece (1998)	75.3	80.5	61.1	66.2	16.2	18.7
Ireland (1990–1992)	72.3	77.9	58.2	63.6	13.4	17.1
Israel (1997)	76.0	80.4	61.8	66.2	16.4	19.1
Italy (1995)	74.6	81.0	60.4	66.7	15.5	19.4
Japan (1998)	77.2	84.0	62.7	69.5	17.1	22.0
Korea, Republic of (1997)	70.6	78.1	56.5	64.0	13.6	17.3
Malaysia (1998)	69.6	74.6	55.9	60.8	13.1	15.0
Netherlands (1997–1998)	75.4	80.7	61.0	66.2	15.2	19.3
New Zealand (1995–1997)	74.3	79.6	55.4	60.5	15.5	19.0
Norway (1998)	75.5	81.3	61.0	66.7	15.7	19.6
Philippines (1991)	63.1	66.7	53.5	56.3	12.3	13.7
Poland (1997)	68.4	77.0	54.5	62.9	13.1	16.8
Russian Federation (1995)	58.3	71.7	45.1	58.4	10.8	14.9
Singapore (1998)	75.2	79.3	60.7	64.7	15.3	17.8
Spain (1994–1995)	74.3	81.6	60.0	67.3	16.1	20.0
Sweden (1997)	76.7	81.8	62.2	67.2	16.2	19.9
Switzerland (1995–1996)	75.7	81.9	61.3	67.4	16.3	20.3
United Kingdom (1997)	74.7	79.6	60.3	65.2	15.1	18.5
United States (1997)	73.6	79.2	59.4	63.0	15.8	19.0

Sources: UN 2001; ABS 2001b.

Table S13: Age-specific, crude and age-standardised death rates, selected years, 1921 to 2000 (per 100,000 population)

Sex/age group (years)	1921	1941	1961	1981	1991	2000
Males						
0–4	2,213	1,289	564	281	191	136
5–9	200	139	49	34	20	15
10–14	172	108	52	29	22	18
15–19	219	159	123	124	88	73
20–24	321	205	161	153	128	101
25–29	373	199	146	133	127	124
30–34	442	232	169	123	133	131
35–39	584	339	229	165	161	149
40–44	730	461	380	261	198	186
45–49	994	737	588	455	313	241
50–54	1,299	1,161	992	790	517	383
55–59	1,895	1,775	1,614	1,294	885	627
60–64	2,878	2,774	2,619	1,983	1,543	1,041
65–69	4,199	4,251	4,117	3,231	2,489	1,789
70–74	6,199	6,479	6,252	5,195	3,927	3,097
75–79	10,076	10,054	9,312	8,018	6,547	5,162
80–84	15,368	15,264	14,084	12,112	10,548	8,493
85+	26,213	29,453	23,772	20,814	17,571	16,530
Crude rate	**1,106**	**1,099**	**946**	**815**	**744**	**700**
ASR[(a)]	**1,733**	**1,578**	**1,358**	**1,109**	**885**	**713**
Females						
0–4	1,771	1,022	443	216	151	110
5–9	192	103	38	18	14	11
10–14	128	73	30	20	15	12
15–19	205	104	47	45	37	33
20–24	290	155	61	48	45	37
25–29	377	202	74	51	54	44
30–34	426	234	92	57	54	53
35–39	535	311	146	87	77	76
40–44	563	374	209	143	111	102
45–49	690	565	347	265	187	158
50–54	943	780	542	378	307	242
55–59	1,289	1,103	785	617	484	397
60–64	1,915	1,805	1,298	971	797	590
65–69	3,112	2,884	2,178	1,568	1,305	996
70–74	5,041	4,789	3,652	2,552	2,187	1,704
75–79	8,295	8,275	6,271	4,426	3,797	2,907
80–84	13,136	12,704	10,241	7,597	6,487	5,572
85+	22,345	25,457	20,670	16,035	14,351	13,790
Crude rate	**873**	**901**	**745**	**646**	**635**	**639**
ASR[(a)]	**1,394**	**1,225**	**875**	**633**	**537**	**451**

(a) Age-standardised rate. Age-standardised to the total Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

Table S14: Age-specific, crude and age-standardised death rates, State or Territory of usual residence, 2000 (per 100,000 population)

Sex/age group (years)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Males									
0–4	142	116	141	131	144	140	122	266	136
5–9	13	14	19	16	12	17	9	22	15
10–14	20	15	15	17	23	28	9	37	18
15–19	71	61	71	76	81	114	39	275	73
20–24	102	89	96	109	113	100	105	212	101
25–29	113	123	125	129	146	107	115	268	124
30–34	124	125	122	153	142	159	118	283	131
35–39	149	142	145	162	151	155	116	299	149
40–44	198	154	180	180	196	254	120	528	186
45–49	250	219	243	228	248	276	123	611	241
50–54	378	374	398	321	472	393	199	682	383
55–59	643	577	679	575	622	656	420	1,255	627
60–64	1,118	975	1,019	951	1,034	1,135	743	1,821	1,041
65–69	1,827	1,737	1,776	1,685	1,789	2,085	1,801	2,672	1,789
70–74	3,148	2,948	3,121	3,014	3,155	3,574	2,642	5,837	3,097
75–79	5,177	5,024	5,102	5,154	5,484	5,840	4,170	6,968	5,162
80–84	8,656	8,306	8,603	7,923	8,366	9,422	8,007	12,245	8,493
85+	16,774	16,634	16,305	16,021	16,726	16,040	14,179	13,000	16,530
Crude rate	**729**	**694**	**674**	**602**	**827**	**832**	**415**	**553**	**700**
ASR[(a)]	**724**	**688**	**712**	**687**	**732**	**780**	**599**	**1,081**	**713**
Females									
0–4	113	92	140	88	75	134	87	270	110
5–9	10	13	12	12	4	18	19	24	11
10–14	11	12	12	13	14	12	9	–	12
15–19	26	36	34	45	28	35	35	85	33
20–24	38	35	33	48	31	35	8	115	37
25–29	34	44	57	46	51	32	23	129	44
30–34	54	47	48	59	59	50	57	124	53
35–39	66	83	72	81	73	94	32	309	76
40–44	97	101	104	103	114	88	56	254	102
45–49	153	159	142	149	191	177	166	340	158
50–54	245	223	245	218	254	302	258	565	242
55–59	400	382	407	367	423	432	273	802	397
60–64	611	574	530	603	560	686	617	1,838	590
65–69	1,015	930	1,018	968	1,018	1,146	978	2,021	996
70–74	1,750	1,684	1,671	1,633	1,620	1,896	1,683	2,678	1,704
75–79	2,972	2,862	2,808	2,624	3,017	3,484	2,865	3,947	2,907
80–84	5,726	5,371	5,609	5,274	5,513	5,962	5,756	9,199	5,572
85+	14,177	13,826	13,617	12,549	13,824	13,659	13,926	8,136	13,790
Crude rate	**676**	**650**	**584**	**529**	**756**	**747**	**421**	**367**	**639**
ASR[(a)]	**458**	**441**	**447**	**425**	**451**	**490**	**438**	**701**	**451**

(a) Age-standardised rate. Age-standardised to the total Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

Table S15: Age-specific, crude and age-standardised death rates, selected countries, latest year (per 100,000 population)

Country/year	Age group (years)					
	0[a]	1–4	5–14	15–24	25–34	35–44
Males						
Australia (2000)	**566**	**30**	**16**	**87**	**127**	**167**
Australia (1997)	***576***	***39***	***17***	***105***	***131***	***168***
Canada (1997)	601	31	20	87	102	170
Denmark (1996)	626	30	19	72	108	245
Finland (1996)	437	17	22	88	147	293
France (1996)	536	32	19	91	149	274
Germany (1997)	542	31	16	84	103	214
Greece (1997)	673	35	21	94	124	191
Ireland (1996)	641	29	23	102	132	170
Israel (1996)	663	41	21	74	90	151
Italy (1995)	696	29	22	91	140	192
Japan (1997)	395	38	15	58	73	141
Netherlands (1997)	551	31	18	56	75	146
New Zealand (1996)	775	44	22	134	143	158
Norway (1995)	503	25	20	86	100	162
Poland (1996)	1,342	46	27	106	180	435
Portugal (1998)	661	59	38	139	227	338
Russian Federation (1997)	1,965	109	57	286	523	908
Spain (1995)	587	36	21	86	209	259
Sweden (1996)	401	23	12	48	81	149
United Kingdom (1997)	643	30	17	76	96	159
United States (1997)	795	40	24	124	160	266

(continued)

(a) Infant mortality per 100,000 births.

Table S15 (continued): Age-specific, crude and age-standardised death rates, selected countries, latest year (per 100,000 population)

	Age group (years)					
Country/year	**45–54**	**55–64**	**65–74**	**75+**	**Crude rate**	**ASR[(b)]**
Males						
Australia (2000)	**310**	**812**	**2,405**	**8,234**	**700**	**549**
Australia (1997)	***342***	***961***	***2,736***	***8,884***	***735***	***610***
Canada (1997)	376	1,057	2,826	9,212	754	634
Denmark (1996)	523	1,390	3,796	11,320	1,160	796
Finland (1996)	579	1,342	3,501	10,962	972	792
France (1996)	551	1,260	2,800	9,373	974	672
Germany (1997)	527	1,280	3,262	10,723	996	733
Greece (1997)	447	1,055	2,718	9,498	1,015	632
Ireland (1996)	427	1,318	3,917	12,208	926	829
Israel (1996)	342	1,080	2,715	9,316	630	608
Italy (1995)	402	1,147	3,051	9,973	1,030	673
Japan (1997)	378	956	2,341	8,527	813	556
Netherlands (1997)	372	1,096	3,257	10.690	871	695
New Zealand (1996)	406	1,194	3,107	9,883	793	706
Norway (1995)	410	1,134	3,266	10,852	1,068	711
Poland (1996)	993	2,338	4,786	12,695	1,083	1,089
Portugal (1998)	597	1,343	3,458	11,974	1,165	889
Russian Federation (1997)	1,658	3,382	6,269	13,489	1,500	1,530
Spain (1995)	496	1,212	2,873	9,656	962	698
Sweden (1996)	361	944	2,747	9,927	1,075	614
United Kingdom (1997)	408	1,184	3,387	10,388	1,036	705
United States (1997)	551	1,337	3,191	9,120	881	723

(continued)

(b) Age-standardised rate. Reference population is the WHO standard population. Standard death rates in this table are different from the rates in other tables because of the use of a different reference population.

Table S15 (continued): Age-specific, crude and age-standardised death rates, selected countries, latest year (per 100,000 population)

	Age group (years)					
Country/year	**0[(a)]**	**1–4**	**5–14**	**15–24**	**25–34**	**35–44**
Females						
Australia (2000)	**465**	**23**	**12**	**35**	**48**	**89**
Australia (1997)	***487***	***24***	***13***	***39***	***52***	***91***
Canada (1997)	502	27	15	33	43	95
Denmark (1996)	472	30	14	26	50	136
Finland (1996)	345	23	14	28	42	114
France (1996)	414	23	13	34	59	117
Germany (1997)	428	25	11	30	43	110
Greece (1997)	613	25	16	31	40	83
Ireland (1996)	551	33	9	29	48	94
Israel (1996)	599	36	10	26	41	86
Italy (1995)	537	29	15	27	52	91
Japan (1997)	343	35	11	24	37	81
Netherlands (1997)	454	26	11	27	45	106
New Zealand (1996)	674	39	22	57	62	96
Norway (1995)	318	25	11	30	39	92
Poland (1996)	1,092	38	18	33	52	152
Portugal (1998)	539	51	26	45	69	131
Russian Federation (1997)	1,471	92	31	88	134	248
Spain (1995)	509	33	16	30	63	103
Sweden (1996)	363	15	10	23	38	80
United Kingdom (1997)	526	23	12	30	43	105
United States (1997)	647	32	17	46	70	141

(continued)

(a) Infant mortality per 100,000 births.

Table S15 (continued): Age-specific, crude and age-standardised death rates, selected countries, latest year (per 100,000 population)

	Age group (years)					
Country/year	**45–54**	**55–64**	**65–74**	**75+**	**Crude rate**	**ASR[(b)]**
Females						
Australia (2000)	**198**	**484**	**1,342**	**6,575**	**639**	**344**
Australia (1997)	***215***	***549***	***1,512***	***7,030***	***662***	***377***
Canada (1997)	232	619	1,589	6,958	684	391
Denmark (1996)	354	924	2,331	8,686	1,148	516
Finland (1996)	230	520	1,610	8,371	947	425
France (1996)	236	493	1,192	7,312	865	345
Germany (1997)	269	592	1,711	8,450	1,099	430
Greece (1997)	190	468	1,510	8,494	887	414
Ireland (1996)	266	719	2,221	9,247	824	512
Israel (1996)	211	661	1,865	7,956	590	439
Italy (1995)	216	515	1,471	7,768	916	388
Japan (1997)	192	415	1,043	5,557	652	295
Netherlands (1997)	264	628	1,638	7,959	869	422
New Zealand (1996)	299	744	1,878	7,715	735	462
Norway (1995)	231	607	1,707	7,935	1,006	414
Poland (1996)	364	891	2,444	10,530	918	602
Portugal (1998)	256	600	1,688	9,343	980	504
Russian Federation (1997)	532	1,250	3,149	11,414	1,273	767
Spain (1995)	198	463	1,283	7,463	808	379
Sweden (1996)	237	558	1,517	7,613	1,048	384
United Kingdom (1997)	270	715	2,057	8,398	1,097	459
United States (1997)	316	815	1,959	7,534	849	463

(b) Age-standardised rate. Reference population is the WHO standard population. Standard death rates in this table are different from the rates in other tables because of the use of a different reference population.

Sources: WHO 2002; AIHW National Mortality Database.

Table S16: Age-standardised death rates[a], selected years, 1921 to 2000 (per 100,000 population)

ICD-10 chapter or disease	1921	1941	1961	1971	1981	1991	1998	1999	2000
Males									
Infectious and parasitic[b]	210	93	17	10	5	6	9	9	9
Neoplasms	157	179	197	222	242	237	224	219	216
Endocrine, nutritional[c]	16	24	16	23	18	24	23	22	23
Blood diseases	10	6	4	3	3	3	2	2	2
Mental disorders	7	4	5	9	9	13	16	14	15
Nervous system diseases	47	26	15	12	13	16	20	20	20
Circulatory diseases	387	635	759	763	565	381	290	276	256
Respiratory diseases	207	149	108	124	98	78	62	59	64
Digestive diseases	59	57	39	31	36	29	22	23	22
Genitourinary diseases	126	138	44	24	16	14	14	14	13
Skin diseases	5	3	2	1	1	1	1	1	1
Musculoskeletal diseases	7	5	4	4	3	3	3	3	3
Congenital diseases	9	10	10	8	7	5	4	4	4
Perinatal diseases	54	43	20	17	7	5	4	4	4
Ill-defined conditions	315	103	15	7	6	5	4	4	4
Injury and poisoning	117	104	104	105	81	65	63	63	58
All causes	**1,733**	**1,577**	**1,358**	**1,361**	**1,109**	**885**	**760**	**739**	**713**
Females									
Infectious and parasitic[b]	158	58	9	6	4	4	5	6	6
Neoplasms	159	163	139	138	136	144	135	132	131
Endocrine, nutritional[c]	26	40	20	22	15	15	16	16	15
Blood diseases	13	6	5	3	3	2	2	2	2
Mental disorders	3	3	2	6	6	9	10	10	11
Nervous system diseases	36	22	9	9	8	12	15	15	16
Circulatory diseases	345	523	514	509	347	246	192	183	173
Respiratory diseases	160	115	45	43	32	34	33	32	36
Digestive diseases	58	40	23	18	20	19	15	16	15
Genitourinary diseases	67	76	20	17	12	10	11	11	10
Complications of pregnancy	24	14	2	1	—	—	—	—	—
Skin diseases	5	3	2	1	—	1	1	1	1
Musculoskeletal diseases	9	6	4	5	4	5	4	4	4
Congenital diseases	7	9	8	8	6	4	3	4	3
Perinatal diseases	40	33	15	13	5	4	3	3	3
Ill-defined conditions	250	74	14	6	4	3	2	2	3
Injury and poisoning	34	40	42	46	30	25	23	23	23
All causes	**1,394**	**1,225**	**875**	**848**	**633**	**537**	**470**	**461**	**451**

(a) Age-standardised to the total Australian population at 30 June 1991.

(b) From 1996, includes AIDS and AIDS-related deaths.

(c) Prior to 1996, includes AIDS and AIDS-related deaths.

Source: AIHW National Mortality Database.

Table S17: Age-standardised death rates[(a)], State or Territory of usual residence, 2000 (per 100,000 population)

ICD-10 chapter or disease	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Males									
Infectious and parasitic[(b)]	11	9	7	7	8	8	6	19	9
Neoplasms	209	215	226	215	218	235	217	260	216
Blood diseases	2	2	2	1	2	3	3	1	2
Endocrine, nutritional	19	27	23	22	22	21	13	67	23
Mental disorders	17	17	9	16	12	8	7	14	15
Nervous system diseases	21	20	19	22	14	19	16	17	20
Circulatory diseases	269	235	256	235	266	279	245	358	256
Respiratory diseases	66	59	63	56	76	76	50	102	64
Digestive diseases	23	19	20	21	25	24	19	58	22
Skin diseases	1	1	1	1	1	2	0	3	1
Musculoskeletal diseases	3	3	3	3	2	6	6	9	3
Genitourinary diseases	12	16	10	11	14	14	5	27	13
Perinatal diseases	4	4	4	3	5	5	6	10	4
Congenital diseases	3	4	4	3	5	2	3	6	4
Ill-defined conditions	2	3	3	7	2	18	9	34	4
Injury and poisoning	54	54	67	63	62	58	57	115	58
All causes	**717**	**689**	**719**	**688**	**734**	**776**	**663**	**1100**	**713**
Females									
Infectious and parasitic[(b)]	6	6	4	5	6	4	5	21	6
Neoplasms	128	134	126	131	128	149	154	195	131
Blood diseases	2	2	2	1	2	2	0	0	2
Endocrine, nutritional	13	17	16	16	18	11	11	50	15
Mental disorders	12	13	7	11	13	8	16	12	11
Nervous system diseases	16	16	14	20	12	16	14	14	16
Circulatory diseases	181	160	181	148	172	186	206	205	173
Respiratory diseases	38	33	32	31	41	42	32	73	35
Digestive diseases	14	14	16	16	17	16	14	25	15
Skin diseases	1	1	1	1	1	1	1	1	1
Musculoskeletal diseases	4	4	4	4	5	7	5	7	4
Genitourinary diseases	10	11	9	8	11	8	11	55	10
Pregnancy	—	—	—	—	—	—	—	—	—
Perinatal diseases	4	2	4	3	2	3	4	8	3
Congenital diseases	3	3	4	2	3	1	3	6	3
Ill-defined conditions	2	2	3	4	2	11	3	9	3
Injury and poisoning	19	23	28	26	23	18	20	43	23
All causes	**454**	**441**	**450**	**426**	**454**	**483**	**497**	**722**	**451**

(a) Age-standardised to the total Australian population at 30 June 1991.

(b) Includes AIDS and AIDS-related deaths.

Source: AIHW National Mortality Database.

Table S18: Age-standardised death rates(a), selected countries, latest year (per 100,000 population)

	ICD-10 chapter					
	Infectious & parasitic	**Malignant neoplasms**	**Circulatory**	**Respiratory**	**External causes**	**All causes**
Males						
Australia (2000)	**7**	**164**	**188**	**46**	**54**	**549**
Australia (1997)	***8***	***171***	***226***	***61***	***56***	***610***
Canada (1997)	5	176	221	58	55	634
Denmark (1996)	10	204	278	67	64	796
Finland (1996)	7	170	329	72	102	792
France (1996)	9	213	179	48	77	672
Germany (1997)	6	192	308	49	51	733
Greece (1997)	5	167	277	33	57	632
Ireland (1996)	4	196	353	115	57	829
Israel (1996)	10	148	217	38	47	608
Italy (1995)	4	199	248	46	50	673
Japan (1997)	11	179	159	76	55	556
Netherlands (1997)	8	207	247	73	36	695
New Zealand (1996)	4	185	282	76	65	706
Norway (1995)	6	172	296	67	55	711
Poland (1996)	8	228	505	47	104	1,089
Portugal (1998)	14	186	300	84	70	889
Russian Federation (1997)	34	226	722	94	286	1,530
Spain (1995)	9	201	216	73	54	698
Sweden (1996)	5	145	280	47	48	614
United Kingdom (1997)	5	185	283	102	38	705
United States (1997)	11	176	271	66	76	723

(continued)

(a) Reference population is the WHO standard population. Standard death rates in this table are different from the rates in other tables because of the use of a different reference population.

Table S18 (continued): Age-standardised death rates[(a)], selected countries, latest year (per 100,000 population)

	ICD-10 chapter					
	Infectious & parasitic	Malignant neoplasms	Circulatory	Respiratory	External causes	All causes
Females						
Australia (2000)	**4**	**103**	**123**	**26**	**21**	**344**
Australia (1997)	***4***	***109***	***143***	***35***	***20***	***377***
Canada (1997)	4	118	131	32	21	391
Denmark (1996)	4	155	162	48	29	516
Finland (1996)	4	95	180	30	31	425
France (1996)	5	97	101	22	32	345
Germany (1997)	4	116	193	20	19	430
Greece (1997)	4	90	210	21	17	414
Ireland (1996)	3	133	210	73	18	512
Israel (1996)	9	121	155	28	20	439
Italy (1995)	2	105	162	17	19	388
Japan (1997)	6	87	96	33	22	295
Netherlands (1997)	5	124	141	32	17	422
New Zealand (1996)	4	139	173	48	24	462
Norway (1995)	5	117	159	40	21	414
Poland (1996)	3	121	311	18	28	602
Portugal (1998)	6	96	208	37	21	504
Russian Federation (1997)	7	108	446	27	69	767
Spain (1995)	5	92	146	26	16	379
Sweden (1996)	3	108	159	27	20	384
United Kingdom (1997)	4	130	169	66	15	459
United States (1997)	8	121	172	42	27	463

(a) Reference population is the WHO standard population. Standard death rates in this table are different from the rates in other tables because of the use of a different reference population.

Sources: WHO 2002; AIHW National Mortality Database.

Table S19: Age-standardised death rates[(a)], States and Territories, 1997–2000 and changes from 1993–1996 to 1997–2000

Cause of death	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Ischaemic heart disease								
Males	171.8	155.4	181.2	154.8	172.8	175.2	156.7	207.5
% change 93–96 to 97–00	*–15.4*	*–21.7*	*–17.2*	*–23.9*	*–18.7*	*–20.2*	*–16.4*	*1.8*
Females	95.0	85.4	103.2	81.5	91.9	93.2	88.6	106.8
% change 93–96 to 97–00	*–19.2*	*–19.3*	*–15.1*	*–24.0*	*–18.9*	*–20.7*	*–16.6*	*13.9*
Cerebrovascular disease (stroke)								
Males	*60.6*	*51.5*	*57.0*	*53.4*	*55.3*	*65.9*	*54.3*	*68.3*
% change 93–96 to 97–00	–8.1	–14.9	–11.5	–17.1	–19.7	–8.1	–9.9	–10.3
Females	54.4	47.0	52.0	47.3	49.3	52.3	62.0	69.3
% change 93–96 to 97–00	*–12.0*	*–12.6*	*–11.9*	*–12.9*	*–17.0*	*–16.7*	*3.1*	*–0.3*
Lung cancer								
Males	49.0	48.7	53.6	51.8	50.6	54.1	43.8	64.0
% change 93–96 to 97–00	*–5.5*	*–13.9*	*–3.3*	*–8.2*	*–4.0*	*–10.0*	*4.4*	*–30.6*
Females	18.5	19.4	18.7	20.8	17.3	20.4	24.0	34.0
% change 93–96 to 97–00	*1.6*	*–1.6*	*10.6*	*4.5*	*5.4*	*–0.6*	*42.1*	*6.9*
Chronic obstructive pulmonary disease								
Males	38.8	38.2	40.9	34.4	33.7	52.6	33.4	72.3
% change 93–96 to 97–00	*–7.1*	*–16.7*	*–4.9*	*–15.1*	*–16.9*	*–4.7*	*–13.2*	*–15.3*
Females	17.8	16.7	16.1	14.3	14.4	25.1	17.7	49.2
% change 93–96 to 97–00	*1.2*	*–3.7*	*8.7*	*–3.7*	*5.1*	*15.3*	*3.5*	*–12.4*
Colorectal cancer								
Males	26.4	28.3	27.7	28.7	26.2	28.4	28.0	18.0
% change 93–96 to 97–00	*–1.9*	*–8.3*	*–1.8*	*0.6*	*–10.1*	*–17.1*	*–22.9*	*–30.4*
Females	16.8	18.9	17.9	17.9	18.6	23.5	21.3	14.6
% change 93–96 to 97–00	*–6.6*	*–10.3*	*–1.8*	*–7.7*	*0.4*	*2.1*	*–3.4*	*–43.0*
All causes								
Males	754.6	727.9	760.5	729.2	751.2	806.8	731.8	1067.7
% change 93–96 to 97–00	*–6.9*	*–11.4*	*–9.1*	*–11.0*	*–10.5*	*–12.7*	*–11.2*	*–7.8*
Females	469.1	463.0	470.9	448.3	463.3	509.2	518.5	770.5
% change 93–96 to 97–00	*–8.6*	*–8.6*	*–7.5*	*–9.2*	*–8.7*	*–9.7*	*–0.9*	*–5.1*

(a) Age-standardised to the total Australian population at 30 June 1991.

Note: A small proportion of the difference between the 1993–1996 and the 1997–2000 rates is due to the classification change from ICD-9 to ICD-10 and the introduction of automated coding in 1997.

Source: AIHW National Mortality Database.

Infectious diseases

Table S20: Selected notifiable diseases, 1996 to 1999

	Notifications				Rate per 100,000 population			
Disease	1996	1997	1998	1999	1996	1997	1998	1999
Bloodborne								
Hepatitis B—incident	213	268	262	307	1.2	1.4	1.4	1.6
Hepatitis B—unspecified[(a)]	5,911	7,044	6,620	8,091	32.3	38.0	35.3	42.7
Hepatitis C—incident	75	154	345	385	0.5	1.0	2.3	2.5
Hepatitis C—unspecified[(a)]	9,712	19,331	19,006	21,244	53.0	104.4	101.4	112.0
Hepatitis D	14	17	10	21	0.1	0.1	0.1	0.1
Hepatitis (NEC)	16	5	4	0	0.1	0.0	0.0	0.0
Gastrointestinal								
Campylobacteriosis[(b)]	12,117	11,742	13,282	12,643	100.1	95.8	107.0	100.7
Haemolytic uraemic syndrome	—	4	13	24	—	0.0	0.1	0.1
Hepatitis A	2,112	3,069	2,443	1,557	11.5	16.6	13.0	8.2
Hepatitis E	4	7	1	2	0.0	0.0	0.0	0.0
Listeriosis	68	73	55	63	0.4	0.4	0.3	0.3
Salmonellosis	5,791	7,089	7,489	7,154	31.6	38.3	39.9	37.7
Shigellosis[(b)]	677	796	594	547	5.6	6.5	4.8	4.4
SLTEC,VTEC[(c)]	—	20	14	43	—	0.2	0.1	0.3
Typhoid	79	81	63	72	0.4	0.4	0.3	0.4
Yersiniosis[(b)]	272	246	190	143	2.2	2.0	1.5	1.1
Quarantinable								
Cholera	5	2	4	3	0.0	0.0	0.0	0.0
Sexually transmissible								
Chancroid	1	1	1	0	0.0	0.0	0.0	0.0
Chlamydial infection	8,445	9,242	11,339	14,082	46.1	49.9	60.5	74.2
Donovanosis	49	48	27	16	0.3	0.3	0.2	0.1
Gonococcal infection[(d)]	4,175	4,692	5,398	5,676	22.8	25.3	28.8	29.9
Syphilis[(e)]	1,510	1,355	1,677	1,979	8.2	7.3	8.9	10.4
Vaccine preventable								
Haemophilus influenzae type b	49	52	34	40	0.3	0.3	0.2	0.2
Measles	481	858	290	230	2.6	4.6	1.5	1.2
Mumps	126	191	182	184	0.7	1.0	1.0	1.0
Pertussis	4,384	10,941	5,739	4,396	23.9	59.1	30.6	23.2
Rubella[(f)]	2,556	1,389	745	376	14.0	7.5	4.0	2.0
Tetanus	3	7	8	2	0.0	0.0	0.0	0.0

(continued)

(a) Unspecified hepatitis includes cases with hepatitis in whom the duration of illness can not be determined.

(b) Notified as 'foodborne disease' or 'gastroenteritis in an institution' in New South Wales.

(c) Infections with Shiga-like toxin (verotoxin) producing *E.coli* (SLTEC/VTEC).

(d) Northern Territory, Queensland, South Australia, Victoria and Western Australia: includes gonococcal neonatal ophthalmia.

(e) Includes congenital syphilis.

(f) Includes congenital rubella.

Table S20 (continued): Selected notifiable diseases, 1996 to 1999

	Notifications				Rate per 100,000 population			
Disease	**1996**	**1997**	**1998**	**1999**	**1996**	**1997**	**1998**	**1999**
Vectorborne								
Arbovirus infection nec	47	21	83	62	0.3	0.1	0.4	0.3
Barmah Forest virus infection	859	696	531	639	4.7	3.8	2.8	3.4
Dengue	123	175	509	131	0.7	0.9	2.7	0.7
Malaria	866	751	647	724	4.7	4.1	3.5	3.8
Ross River virus infection	7,853	6,643	3,128	4,416	42.9	35.9	16.7	23.3
Zoonoses								
Brucellosis	39	40	43	52	0.2	0.2	0.2	0.3
Hydatid infection	44	61	40	29	0.2	0.3	0.2	0.2
Leptospirosis	215	128	189	318	1.2	0.7	1.0	1.7
Ornithosis	86	35	64	84	0.6	0.2	0.4	0.9
Q fever	554	580	560	518	3.0	3.1	3.0	2.7
Other bacterial infections								
Legionellosis	201	157	262	249	1.1	0.8	1.4	1.3
Leprosy	7	12	4	6	0.0	0.1	0.0	0.0
Meningococcal infection	421	484	453	568	2.3	2.6	2.4	3.0
Tuberculosis	971	1,043	972	1,153	5.3	5.6	5.2	6.1
Total	**71,131**	**89,550**	**83,321**	**88,229**				

nec Not elsewhere classified.

(a) Unspecified hepatitis includes cases with hepatitis in whom the duration of illness can not be determined.

(b) Notified as 'foodborne disease' or 'gastroenteritis in an institution' in New South Wales.

(c) Infections with Shiga-like toxin (verotoxin) producing *E.coli* (SLTEC/VTEC).

(d) Northern Territory, Queensland, South Australia, Victoria and Western Australia: includes gonococcal neonatal ophthalmia.

(e) Includes congenital syphilis.

(f) Includes congenital rubella.

Note: In the period 1996–1999 there were no reported cases of the following notifiable diseases: diphtheria, plague, poliomyelitis, rabies, viral haemorrhagic fever, yellow fever, lymphogranuloma venereum. There was 1 case of botulism in 1998.

Source: DHAC 2001a.

Table S21: Characteristics of AIDS cases

Description	≤1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Total cases	**3,428**	**791**	**845**	**955**	**807**	**664**	**376**	**308**	**176**	**207**
Median age (years)										
Males	37	38	37	37	37	37	39	39	39	40
Females	32	32	37	31	35	34	32	35	34	33
Per cent males	**96.7**	**95.1**	**94.6**	**94.9**	**95.3**	**95.0**	**91.8**	**93.2**	**88.6**	**90.3**
State/Territory (per cent)										
NSW	60.9	54.6	57.0	57.9	58.3	54.8	52.1	54.2	58.0	49.0
Vic	20.4	21.1	21.3	19.9	20.1	20.6	20.5	19.8	15.9	26.7
Qld	8.3	11.4	10.8	10.4	12.5	11.6	16.0	12.0	17.6	16.5
WA	4.6	5.8	3.8	4.3	3.7	5.7	4.0	4.2	2.3	3.4
SA	3.8	4.2	5.3	5.2	3.7	4.7	6.1	6.2	5.1	2.4
Tas	0.5	1.3	0.1	0.5	0.2	1.1	0.5	1.0	0.0	0.5
ACT	1.2	1.0	1.1	1.5	1.1	1.3	0.0	1.6	0.0	1.0
NT	0.3	0.6	0.6	0.3	0.4	0.2	0.8	1.0	1.1	0.5
Exposure category (per cent)										
Male homosexual/bisexual contact	86.9	82.1	81.1	83.4	81.2	80.0	74.9	67.5	63.3	68.7
Male homosexual/bisexual contact and ID use	3.3	5.0	7.0	5.0	5.4	5.9	3.7	3.1	6.3	4.2
ID use (female and heterosexual male)	2.2	2.2	3.3	3.1	3.6	3.8	5.6	8.4	6.3	7.3
Heterosexual contact	2.5	6.5	6.3	5.7	6.5	8.3	14.1	18.5	22.8	17.7
Haemophilia/coagulation disorder	1.7	1.7	1.3	1.1	2.0	1.1	1.1	0.3	0.6	1.6
Receipt of blood/tissue	3.1	2.0	1.0	1.0	0.8	1.0	0.3	1.4	0.6	0.5
Mother with/at risk for HIV infection	0.3	0.5	0.0	0.7	0.5	0.0	0.3	0.7	0.0	0.0
Other/undetermined	2.3	3.2	3.8	3.6	4.3	5.3	5.6	7.1	10.2	6.8
AIDS-defining condition (per cent)										
Pneumocystis carinii pneumonia (PCP)	35.3	26.8	22.1	22.4	19.8	22.6	25.5	22.4	19.9	29.6
Kaposi's sarcoma (KS)	13.9	12.2	11.1	9.8	10.9	11.7	9.3	9.7	8.0	5.8
PCP and other (not KS)	6.1	6.1	3.7	2.5	4.1	4.4	7.2	7.1	8.5	6.3
Oesophageal candidiasis	6.3	8.7	11.8	14.6	16.5	14.3	10.1	9.7	11.9	13.1
Other[(a)]	38.4	46.2	51.3	50.7	48.7	47.0	47.9	51.0	51.7	45.1

(a) Includes *Mycobacterium avium* and HIV wasting disease.

Source: NCHECR 2001.

Cancer

Table S22: Leading cancers[(a)], 1998

Cancer	New cases Number	Per cent	ASR[(b)]	Lifetime risk[(c)]	Deaths Number	Per cent	ASR[(b)]	PYLL[(d)]
Males								
Prostate	9,869	22.6	109.5	1 in 11	2,544	13.1	29.5	6,128
Colorectal	6,131	14.1	66.7	1 in 17	2,475	12.8	27.4	18,128
Lung	5,307	12.2	58.2	1 in 20	4,817	24.8	53.2	30,660
Melanoma	4,398	10.1	46.4	1 in 26	635	3.3	6.9	7,315
Bladder	2,068	4.7	22.9	1 in 57	564	2.9	6.4	1,985
NHL[(e)]	1,742	4.0	18.7	1 in 65	750	3.9	8.3	6,835
Unknown primary	1,629	3.7	18.0	1 in 71	1,198	6.2	13.3	8,075
Kidney	1,333	3.1	14.1	1 in 78	495	2.6	5.4	4,158
Stomach	1,238	2.8	13.5	1 in 91	765	3.9	8.5	5,235
Pancreas	860	2.0	9.4	1 in 130	814	4.2	8.9	6,333
All cancers	**43,595**	**100.0**	**474.6**	**1 in 3**	**19,400**	**100.0**	**215.3**	**141,030**
Females								
Breast	10,665	28.6	101.3	1 in 11	2,526	17.0	22.8	29,255
Colorectal	5,158	13.8	46.3	1 in 26	2,159	14.5	18.5	13,310
Melanoma	3,493	9.4	34.1	1 in 36	344	2.3	3.0	3,740
Lung	2,488	6.7	23.0	1 in 47	2,076	14.0	18.8	14,458
Unknown primary	1,538	4.1	13.1	1 in 105	1,102	7.4	9.2	6,038
NHL[(e)]	1,466	3.9	13.4	1 in 90	759	5.1	6.6	5,020
Uterus	1,399	3.8	13.2	1 in 78	246	1.7	2.1	1,130
Ovary	1,216	3.3	11.5	1 in 99	769	5.2	6.9	6,548
Pancreas	869	2.3	7.5	1 in 175	805	5.4	6.9	4,058
Cervix	868	2.3	8.6	1 in 143	264	1.8	2.4	3,795
All cancers	**37,269**	**100.0**	**346.5**	**1 in 4**	**14,870**	**100.0**	**130.1**	**119,010**

(a) Rankings are based on the number of new cases; excludes non-melanocytic skin cancers.

(b) Age-standardised rate. Per 100,000 population, age-standardised to the Australian population at 30 June 1991.

(c) Lifetime risk—a measure which approximates the risk of contracting a particular cancer in a lifetime if the risks at the year of estimation remained throughout a person's life. For the purposes of this table, 'lifetime' is defined as ages 0–74.

(d) Potential years of life lost between the ages of 0 and 74 years.

(e) Non-Hodgkin's lymphoma.

Sources: AIHW & AACR 2001; AIHW National Mortality Database.

Table S23: Major cancers, age-standardised incidence rates[a], 1990 to 1998 (per 100,000 population)

Cancer	1990	1991	1992	1993	1994	1995	1996	1997	1998
Males									
Prostate	85.3	92.4	104.2	140.9	158.3	144.0	117.4	110.9	109.5
Colorectal	64.3	67.4	66.0	66.3	67.4	68.1	69.2	68.4	66.7
Lung	68.5	66.0	64.9	62.7	64.8	60.6	60.1	59.8	58.2
Melanoma	39.0	39.1	42.4	43.8	43.7	46.4	48.0	50.1	46.4
Bladder	21.9	20.5	22.1	22.4	23.9	23.7	22.4	22.6	22.9
NHL[b]	17.3	18.2	19.0	18.7	17.7	17.6	19.4	18.6	18.7
Stomach	16.4	15.3	15.2	15.3	14.7	15.1	13.8	13.4	13.5
Kidney	12.0	13.3	13.0	12.8	13.1	13.7	13.7	13.5	14.1
Pancreas	10.0	9.6	9.7	9.5	10.2	9.3	9.4	9.2	9.4
Testis	4.8	5.2	5.6	5.5	6.0	5.7	6.0	6.2	6.1
All cancers	**448.4**	**457.9**	**476.5**	**507.5**	**530.6**	**510.4**	**489.1**	**482.7**	**474.6**
Females									
Breast	83.2	88.2	85.7	92.7	100.3	101.1	95.5	97.9	101.3
Colorectal	44.5	47.2	47.3	46.0	47.5	46.1	46.0	46.6	46.3
Melanoma	30.5	30.7	32.5	32.7	32.6	34.4	35.0	37.0	34.1
Lung	21.0	21.5	21.3	22.4	22.5	22.7	23.0	23.5	23.0
NHL[b]	11.1	12.2	12.6	12.3	12.7	13.4	13.3	13.5	13.4
Uterus	12.0	12.6	13.2	13.1	13.9	13.6	12.9	13.5	13.2
Cervix	12.3	12.4	11.2	11.0	11.9	9.9	9.4	8.0	8.6
Kidney	6.8	7.4	8.1	7.4	7.2	7.3	7.6	7.7	8.0
Pancreas	6.8	7.1	7.3	7.2	7.0	7.2	7.2	7.4	7.5
Stomach	6.5	6.8	6.4	6.1	5.9	6.4	6.0	6.5	5.8
Bladder	5.9	5.3	5.3	5.9	6.1	6.1	5.7	6.2	6.5
All cancer	**314.2**	**327.0**	**327.9**	**332.2**	**342.1**	**345.7**	**338.8**	**344.2**	**346.5**

(a) Age-standardised to the Australian population at 30 June 1991.

(b) Non-Hodgkin's lymphoma.

Source: AIHW & AACR 2001.

Table S24: Major cancers, average annual age-standardised incidence rates[(a)], States and Territories 1994-1998 and Australia 1998 (per 100,000 population)

Cancer	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust[(b)]
Males									
Prostate	130.1	124.3	115.3	132.6	144.7	147.5	169.6	84.0	109.5
Colorectal	67.0	70.2	69.2	65.0	68.2	65.1	63.0	54.4	66.7
Lung	59.6	60.8	63.0	62.1	60.9	68.0	41.6	79.5	58.2
Melanoma	47.3	35.0	68.0	49.1	40.3	37.1	43.7	29.4	46.4
Bladder	18.5	30.2	29.9	14.3	16.4	28.7	18.7	12.5	22.9
NHL[(c)]	18.8	19.5	17.6	16.6	18.3	17.7	18.8	12.4	18.7
Stomach	13.8	15.3	13.3	13.8	13.7	14.7	12.7	11.4	13.5
Kidney	13.9	13.4	14.9	9.8	14.6	15.0	12.6	11.8	14.1
Pancreas	9.4	9.9	9.7	9.4	9.3	9.7	9.2	6.8	9.4
Testis	6.1	5.9	5.9	5.5	6.5	6.3	7.5	3.5	6.1
Females									
Breast	100.0	100.9	96.7	100.2	100.5	94.9	104.0	71.5	101.3
Colorectal	45.0	47.2	49.4	43.6	48.1	51.3	41.9	42.0	46.3
Melanoma	31.2	30.4	48.3	35.3	34.7	34.0	30.1	17.8	34.1
Lung	22.8	23.4	22.1	24.5	21.8	25.8	25.2	42.5	23.0
NHL[(c)]	13.3	13.8	12.3	11.9	15.1	14.5	15.9	10.2	13.4
Uterus	12.2	15.2	13.6	11.4	15.1	12.5	14.4	9.7	13.2
Cervix	9.5	9.5	10.3	10.2	7.1	11.0	8.5	18.0	8.6
Kidney	8.2	7.1	8.6	6.0	6.9	6.9	6.3	6.2	8.0
Pancreas	7.3	7.2	7.0	7.6	7.6	8.5	7.3	9.4	7.5
Stomach	5.8	6.7	5.7	6.5	6.0	6.6	6.9	4.5	5.8
Bladder	5.2	7.5	8.4	3.4	4.2	6.9	3.6	2.8	6.5

(a) Age-standardised to the Australian population at 30 June 1991.

(b) State and Territory averages for 1994–1998 do not equate to a single-year average for Australia.

(c) Non-Hodgkin's lymphoma.

Source: AIHW & AACR 2001.

Table S25: Major cancers, age-standardised incidence rates[(a)], selected countries 1988–1992 and Australia 1992 and 1998 (per 100,000 population)

Males	Colorectal	Lung	Melanoma	Prostate	Stomach	All cancers[(b)]
Australia 1992	***46.6***	***44.3***	***32.4***	***63.4***	***10.4***	***327.2***
Australia 1998	**47.5**	**40.3**	**36.1**	**73.6**	**9.4**	**340.9**
Canada	43.0	65.4	7.7	64.7	10.6	322.1
England and Wales[(c)]	33.9	62.4	4.6	28.0	16.1	261.1
Italy (Venice)	35.4	81.9	6.1	26.8	19.9	355.9
Japan (Osaka)	34.2	43.5	0.2	6.8	65.0	272.8
Netherlands	36.4	73.0	6.9	39.6	15.4	288.4
New Zealand (non-Maori)	51.3	46.5	25.0	37.8	11.0	290.3
United States (black)	46.4	99.1	0.7	137.0	14.5	454.5
United States (white)	42.4	61.3	13.1	100.8	7.5	370.9
Females	**Colorectal**	**Lung**	**Melanoma**	**Breast**	**Stomach**	**All cancers[(b)]**
Australia 1992	***32.6***	***15.0***	***26.3***	***69.4***	***4.1***	***247.2***
Australia 1998	**33.2**	**16.7**	**28.0**	**83.2**	**3.9**	**268.7**
Canada	30.5	28.0	6.9	76.8	4.5	252.8
England and Wales[(c)]	23.7	22.8	6.6	68.8	6.3	225.5
Italy (Venice)	24.3	13.9	7.0	72.6	8.8	230.6
Japan (Osaka)	19.9	12.4	0.2	24.3	27.3	154.8
Netherlands	27.8	13.0	9.8	79.6	6.1	225.0
New Zealand (non-Maori)	40.8	18.2	29.8	77.2	4.8	274.6
United States (black)	35.3	38.5	0.5	79.3	5.9	271.6
United States (white)	29.5	33.8	10.2	90.7	3.1	280.9

(a) Age-standardised to the World Standard Population.

(b) Excludes non-melanocytic skin cancer.

(c) 1988–1990.

Sources: Parkin et al. 1997; AIHW & AACR 2001.

Oral health

Table S26: Primary teeth with caries experience[(a)], 5- to 10-year-old school children, 1991 to 1998 (mean number of teeth)

	Age (years)					
	5	6	7	8	9	10
1991	1.78	1.94	2.13	2.24	2.22	1.81
1992	1.80	1.95	1.93	2.21	2.11	1.74
1993	1.76	1.90	2.01	2.15	2.13	1.73
1994	1.56	1.79	1.95	2.13	2.01	1.71
1995	1.49	1.73	1.87	2.05	1.97	1.61
1996	1.26	1.45	1.66	1.68	1.72	1.47
1997	1.28	1.50	1.63	1.78	1.75	1.47
1998	1.37	1.51	1.62	1.81	1.70	1.40

(a) As measured by dmft index (number of decayed, missing and filled primary teeth).

Source: AIHW Dental Statistics and Research Unit Child Dental Health Survey.

Table S27: Permanent teeth with caries experience[(a)], 6- to 12-year-old school children, 1991 to 1998 (mean number of teeth)

	Age (years)						
	6	7	8	9	10	11	12
1991	0.09	0.24	0.40	0.56	0.83	0.91	1.29
1992	0.09	0.21	0.38	0.53	0.69	0.90	1.22
1993	0.08	0.22	0.36	0.51	0.66	0.90	1.10
1994	0.11	0.23	0.37	0.47	0.65	0.88	1.09
1995	0.10	0.20	0.36	0.46	0.57	0.79	1.01
1996	0.07	0.18	0.30	0.38	0.49	0.66	0.90
1997	0.07	0.17	0.30	0.42	0.52	0.65	0.86
1998	0.07	0.21	0.32	0.41	0.58	0.64	0.83

(a) As measured by DMFT index (number of decayed, missing and filled permanent teeth).

Source: AIHW Dental Statistics and Research Unit Child Dental Health Survey.

Table S28: Dental caries experience[(a)] of 6-year-old and 12-year-old school children, States and Territories, 1991 to 1998 (mean number of teeth)

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
6-year-olds (dmft)									
1991	2.05	2.04	2.48	1.29	1.98	1.57	1.14	1.96	1.94
1992	2.00	2.05	2.37	1.32	1.53	1.48	1.09	1.99	1.95
1993	2.04	1.81	2.18	1.48	1.38	1.35	1.33	1.81	1.90
1994	1.93	1.67	2.27	1.37	1.17	(b)	1.17	1.99	1.79
1995	1.75	1.78	1.99	1.39	1.47	1.48	1.39	1.99	1.73
1996	0.94	1.61	2.25	1.30	1.17	1.37	0.89	1.79	1.45
1997	0.97	1.92	1.97	1.45	1.39	1.45	1.05	1.81	1.50
1998	0.90	2.08	2.04	1.43	1.24	1.40	1.40	2.00	1.51
12-year-olds (DMFT)									
1991	1.18	1.38	1.54	1.43	1.06	1.18	0.91	1.26	1.29
1992	1.19	1.77	1.50	1.22	1.04	0.98	0.76	0.91	1.22
1993	1.04	1.52	1.44	1.20	0.64	0.96	0.77	0.85	1.10
1994	1.11	1.28	1.37	1.07	0.59	(b)	0.69	0.81	1.09
1995	0.93	1.02	1.37	1.04	0.64	0.86	0.61	0.82	1.01
1996	0.64	1.09	1.30	0.99	0.47	0.96	0.56	0.71	0.90
1997	0.64	1.04	1.14	0.87	0.58	0.97	0.82	0.78	0.86
1998	0.49	1.15	1.22	0.77	0.52	1.39	0.68	0.79	0.83

(a) As measured by dmft or DMFT index (number of decayed, missing and filled primary or permanent teeth).

(b) Data not available for Tasmania in 1994.

Source: AIHW Dental Statistics and Research Unit unpublished data.

Cardiovascular risk factors

Table S29: Cardiovascular disease risk factors by age, 1999 to 2001 (per cent)

		Age group							
Risk factor	**Sex**	**18–24**	**25–34**	**35–44**	**45–54**	**55–64**	**65–74**	**75+**	**25+** [(a)]
Diabetes type 2	Male	n.a.	*	2.7	7.0	14.6	19.5	24.1	7.8
	Female	n.a.	*	2.3	5.5	9.4	15.5	22.4	6.2
High blood cholesterol[(b)]	Male	n.a.	31.0	54.2	60.7	61.8	54.1	49.2	49.9
	Female	n.a.	30.1	39.8	54.7	71.6	74.0	65.2	49.7
High blood pressure[(c)]	Male	n.a.	7.9	16.2	30.5	46.5	69.7	75.1	30.7
	Female	n.a.	4.1	7.9	22.8	42.3	66.7	77.2	25.6
Overweight[(d)]	Male	n.a.	60.2	65.5	72.5	74.0	73.7	64.3	67.3
	Female	n.a.	35.8	45.6	58.1	67.2	70.7	56.4	51.7
Smoking[(e)]	Male	24.5	29.0	26.7	22.0	15.2	11.0	4.8	22.0 [(f)]
	Female	23.7	23.8	23.8	17.5	13.5	6.6	4.4	18.4 [(f)]
Physical inactivity[(g)]	Male	18.1	46.7	44.5	47.6	50.1	45.8 [(h)]	n.a	42.0 [(i)]
	Female	32.4	40.1	46.3	52.0	46.9	46.1 [(h)]	n.a	43.5 [(i)]

n.a. Not available.

* Not included as the relative standard error is greater than 50%.

(a) Age-standardised to the Australian population at 30 June 1991.

(b) High blood cholesterol is defined as above 5.5 mmol/L.

(c) High blood pressure is defined as systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg and/or receiving treatment for high blood pressure.

(d) Overweight is defined as body mass index (BMI) ≥ 25.

(e) The daily smoking of tobacco products, including packet cigarettes, roll-your-own cigarettes, pipes and cigars.

(f) Data for ages 18 and over.

(g) Physical inactivity is defined as less than 150 minutes of physical activity for recreation or exercise (including walking for transport) in the previous week.

(h) Data for ages 65–75.

(i) Data for ages 18–75.

Sources: AIHW analysis of 1999–2000 Australian Diabetes, Obesity and Lifestyle Study (AusDiab); 2000 National Physical Activity Survey; 2001 National Drug Strategy Household Survey.

Use of hospitals

Table S30: Separations from public hospitals, States and Territories, 1999–00

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Males									
Under 1	23,656	17,115	11,206	5,343	6,136	1,200	1,122	1,563	67,341
1–4	31,021	19,578	16,820	9,076	7,802	1,585	1,437	1,567	88,886
5–14	35,545	23,127	21,461	10,413	8,435	1,835	1,496	1,450	103,762
15–24	40,179	28,497	27,728	11,513	10,365	2,406	1,982	1,757	124,427
25–34	47,889	40,726	32,962	18,282	14,736	3,440	2,833	3,275	164,143
35–44	56,421	48,700	38,674	20,640	16,831	3,993	3,734	4,771	193,764
45–54	66,539	55,973	43,613	21,336	21,312	4,240	4,417	5,212	222,642
55–64	76,656	68,823	49,969	23,576	22,303	5,160	4,947	2,746	254,180
65–74	104,986	94,183	56,087	28,205	30,012	6,563	5,280	2,775	328,091
75+	99,357	73,623	39,379	22,368	29,953	5,880	3,005	869	274,434
Total	**582,249**	**470,346**	**337,899**	**170,752**	**167,885**	**36,302**	**30,253**	**25,987**	**1,821,673**
Females									
Under 1	16,980	12,093	8,287	3,899	4,453	938	868	1,346	48,864
1–4	21,414	13,003	11,952	6,059	5,427	1,153	836	1,173	61,017
5–14	24,231	16,772	15,169	7,892	6,579	1,381	1,248	1,066	74,338
15–24	65,860	49,737	45,257	20,350	21,216	4,570	3,182	4,525	214,697
25–34	115,309	98,429	66,180	32,862	34,872	6,628	5,528	6,290	366,098
35–44	75,317	67,160	47,069	25,030	24,052	5,040	4,158	5,232	253,058
45–54	61,727	58,841	42,429	22,144	20,179	4,570	3,857	5,516	219,263
55–64	67,488	58,283	40,027	20,376	19,399	4,258	4,006	4,398	218,235
65–74	89,991	71,206	44,999	23,074	24,619	4,750	4,013	1,420	264,072
75+	125,246	87,725	48,646	27,956	31,339	6,350	3,324	865	331,451
Total	**663,564**	**533,250**	**370,015**	**189,642**	**192,135**	**39,638**	**31020**	**31,832**	**2,051,096**
Total separations	**1,245,814**	**1,003,609**	**707,914**	**360,394**	**360,020**	**75,951**	**61,273**	**57,840**	**3,872,815**

Note: Totals include separations for which age and/or sex was not reported.

Source: AIHW National Hospital Morbidity Database.

Table S31: Separations from private hospitals, States and Territories, 1999-00

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Males									
Under 1	4,436	3,355	2,487	1,959	511	635	571	n.a.	13,954
1–4	5,052	3,257	4,194	2,581	1,337	543	330	n.a.	17,294
5–14	7,477	5,530	5,475	3,441	1,689	849	389	n.a.	24,850
15–24	15,078	13,889	10,506	7,231	4,486	1,193	739	n.a.	53,122
25–34	19,090	16,352	12,205	8,076	5,024	1,494	590	n.a.	62,831
35–44	27,996	23,921	19,197	10,818	6,897	2,347	937	n.a.	92,113
45–54	41,278	33,447	32,524	14,340	11,405	3,123	1,524	n.a.	137,641
55–64	46,895	36,400	33,671	14,838	11,532	3,183	1,700	n.a.	148,219
65–74	51,799	43,754	39,785	15,628	14,081	3,879	1,897	n.a.	170,823
75+	54,677	47,236	49,469	16,943	13,215	4,381	1,831	n.a.	187,752
Total	**273,778**	**227,141**	**209,513**	**95,855**	**70,177**	**21,627**	**10,508**	**n.a.**	**908,599**
Females									
Under 1	2,861	2,238	1,576	1,378	312	486	467	n.a.	9,318
1–4	3,147	2,185	2,943	1,803	951	324	187	n.a.	11,540
5–14	6,439	4,709	4,381	3,027	1,489	693	276	n.a.	21,014
15–24	23,410	17,667	12,956	11,395	4,919	2,252	860	n.a.	73,459
25–34	49,786	42,137	32,597	19,998	9,730	4,830	1,971	n.a.	161,049
35–44	47,458	42,953	33,172	17,723	10,573	4,238	2,131	n.a.	158,248
45–54	49,218	44,574	37,194	18,493	14,666	4,487	2,203	n.a.	170,835
55–64	44,238	37,555	34,509	15,361	12,784	3,725	1,649	n.a.	149,821
65–74	48,242	44,178	38,926	13,878	13,700	3,716	1,253	n.a.	163,893
75+	55,695	54,492	44,643	16,183	20,493	5,110	1,576	n.a.	198,192
Total	**330,498**	**292,688**	**242,897**	**119,239**	**89,617**	**29,861**	**12,573**	**n.a.**	**1,117,373**
Total separations	**604,276**	**519,838**	**452,410**	**215,095**	**159,794**	**51,495**	**23,081**	**n.a.**	**2,025,989**

n.a. Not available.

Note: Totals include separations for which age and/or sex was not reported.

Source: AIHW National Hospital Morbidity Database.

Table S32: Patient-days in public hospitals, States and Territories, 1999–00

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Males									
Under 1	111,416	82,663	63,041	28,829	31,286	7,527	7,283	9,874	341,919
1–4	59,287	36,219	30,040	18,128	13,841	2,710	2,365	5,827	168,417
5–14	73,696	45,731	42,282	22,988	16,663	3,780	2,930	5,364	213,434
15–24	172,386	94,710	118,219	41,999	38,864	8,095	7,927	7,162	489,362
25–34	213,195	126,864	141,899	61,545	56,207	10,565	8,889	11,654	630,818
35–44	230,010	146,214	168,663	64,119	53,024	12,183	11,227	14,215	699,655
45–54	292,524	168,742	149,516	66,279	63,893	14,924	12,394	12,327	780,599
55–64	333,102	222,592	224,134	76,729	78,136	21,475	15,626	11,500	983,294
65–74	548,798	364,225	271,747	110,865	137,342	32,411	20,556	9,812	1,495,756
75+	707,178	467,951	297,330	135,109	213,278	46,251	16,588	4,922	1,888,607
Total	**2,741,592**	**1,756,007**	**1,506,871**	**626,590**	**702,534**	**159,921**	**105,785**	**92,660**	**7,691,960**
Females									
Under 1	89,149	64,049	50,032	22,824	23,746	6,902	5,120	10,309	272,131
1–4	43,669	24,061	21,187	12,369	10,900	2,038	1,720	6,415	122,359
5–14	55,955	36,694	32,905	18,853	13,839	2,741	2,453	4,399	167,839
15–24	188,427	129,766	121,372	63,437	54,507	12,923	9,868	14,201	594,501
25–34	349,475	264,317	205,027	98,544	94,965	19,538	19,063	19,138	1,070,067
35–44	276,946	183,237	125,970	72,807	67,386	15,959	13,135	14,023	769,463
45–54	227,635	167,660	150,238	63,875	57,194	14,012	13,751	11,451	705,816
55–64	262,029	180,021	139,111	66,911	64,934	17,191	12,619	11,247	754,063
65–74	450,864	306,213	209,872	87,009	115,130	26,371	15,333	4,889	1,215,681
75+	1,083,475	716,955	478,056	217,115	273,752	78,761	24,457	5,839	2,878,410
Total	**3,027,625**	**2,073,679**	**1,533,770**	**723,744**	**776,353**	**196,436**	**117,519**	**101,915**	**8,551,041**
Total patient-days	**5,769,219**	**3,829,729**	**3,040,641**	**1,350,334**	**1,478,887**	**356,373**	**223,304**	**194,628**	**16,243,115**

Note: Totals include separations for which age and/or sex was not reported.

Source: AIHW National Hospital Morbidity Database.

Table S33: Patient-days in private hospitals, States and Territories, 1999–00

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Males									
Under 1	19,337	13,673	12,311	7,830	2,208	2,670	2,562	n.a.	60,591
1–4	6,277	3,684	5,431	3,384	1,420	671	427	n.a.	21,294
5–14	12,661	7,448	7,900	4,439	2,040	1,159	558	n.a.	36,205
15–24	24,840	29,094	16,956	13,104	8,363	2,239	1,263	n.a.	95,859
25–34	34,303	36,947	21,113	14,069	9,480	2,964	1,261	n.a.	120,137
35–44	51,846	46,838	36,700	19,124	13,989	4,817	2,305	n.a.	175,619
45–54	90,372	70,130	73,323	30,274	25,404	7,581	5,522	n.a.	302,606
55–64	108,913	91,349	84,494	35,495	29,778	8,220	5,156	n.a.	363,405
65–74	149,485	136,166	126,120	53,677	46,773	14,523	7,571	n.a.	534,315
75+	243,069	235,181	267,289	96,958	62,742	24,197	10,142	n.a.	939,578
Total	**741,103**	**670,510**	**651,637**	**278,354**	**202,197**	**69,041**	**36,767**	**n.a.**	**2,649,609**
Females									
Under 1	16,083	10,579	9,846	6,262	2,045	1,868	2,238	n.a.	48,921
1–4	4,224	2,563	4,221	2,434	997	406	238	n.a.	15,083
5–14	11,204	6,536	6,374	4,117	1,937	940	345	n.a.	31,453
15–24	43,972	35,664	27,012	21,348	10,229	5,081	2,328	n.a.	145,634
25–34	136,698	120,400	91,348	60,901	30,638	13,827	7,782	n.a.	461,594
35–44	110,677	107,233	78,100	48,353	29,554	11,137	7,551	n.a.	392,605
45–54	111,628	106,119	87,266	45,105	36,242	11,986	6,550	n.a.	404,896
55–64	110,422	97,214	84,615	40,430	37,019	10,916	5,210	n.a.	385,826
65–74	155,323	151,627	135,493	51,393	49,713	16,044	6,252	n.a.	565,845
75+	303,741	336,862	334,529	106,653	132,275	33,454	11,915	n.a.	1,259,429
Total	**1,003,976**	**974,797**	**858,804**	**386,996**	**330,649**	**105,659**	**50,409**	**n.a.**	**3,711,290**
Total patient-days	**1,745,079**	**1,645,396**	**1,510,441**	**665,353**	**532,846**	**174,708**	**87,176**	**n.a.**	**6,360,999**

n.a. Not available.

Note: Totals include separations for which age and/or sex was not reported.

Source: AIHW National Hospital Morbidity Database.

Table S34: Separations, same-day separations, patient-days and average length of stay by principal diagnosis, grouped into ICD-10-AM chapters, public hospitals, 1999–00

Principal diagnosis		**Separations**	**Per cent same-day separations**	**Patient-days**	**ALOS (days)**	**ALOS (days) excluding same-day**
A00–B99	Infectious and parasitic	72,863	22.2	268,523	3.7	4.5
C00–D48	Neoplasms	240,852	44.5	1,191,798	4.9	8.1
D50–D89	Blood, blood forming organs, immunological	48,663	62.7	121,284	2.5	5.0
E00–E90	Endocrine, nutritional, metabolic	49,030	28.7	268,886	5.5	7.3
F00–F99	Mental disorders	160,475	25.3	2,386,714	14.9	19.6
G00–G99	Nervous system diseases	81,068	35.9	448,728	5.5	8.1
H00–H59	Eye diseases	60,692	74.4	84,714	1.4	2.5
H60–H95	Ear diseases	32,951	61.9	51,612	1.6	2.5
I00–I99	Circulatory diseases	296,513	18.8	1,696,889	5.7	6.8
J00–J99	Respiratory diseases	251,160	13.5	1,100,123	4.4	4.9
K00–K93	Digestive diseases	352,973	47.4	998,143	2.8	4.5
L00–L99	Skin diseases	73,253	37.2	334,030	4.6	6.7
M00–M99	Musculoskeletal diseases	145,784	40.2	602,220	4.1	6.2
N00–N99	Genitourinary diseases	208,758	48.3	577,382	2.8	4.4
O00–O99	Pregnancy, childbirth, puerperium	324,839	22.6	955,616	2.9	3.5
P00–P96	Perinatal diseases	39,718	7.3	368,633	9.3	9.9
Q00–Q99	Congenital anomalies	24,161	46.8	90,462	3.7	6.2
R00–R99	Symptoms, signs, abnormal findings	229,808	39.8	604,053	2.6	3.7
S00–T98	Injuries and poisoning	333,258	30.3	1,336,980	4.0	5.3
Z00–Z99	Factors influencing health status and contact with health services	844,156	87.5	2,733,863	3.2	18.9
	Not reported	1,840	56.6	22,462	12.2	26.8
Total		**3,872,815**	**45.6**	**16,243,115**	**4.2**	**6.9**

ALOS = average length of stay.

Source: AIHW National Hospital Morbidity Database.

Table S35: Separations, same-day separations, patient-days and average length of stay by principal diagnosis, grouped into ICD-10-AM chapters, private hospitals, 1999–00

Principal diagnosis		Separations	Per cent same-day separations	Patient-days	ALOS (days)	ALOS (days) excluding same-day
A00–B99	Infectious and parasitic	13,815	29.6	59,076	4.3	5.7
C00–D48	Neoplasms	182,246	55.0	657,459	3.6	6.8
D50–D89	Blood, blood forming organs, immunological	15,414	60.9	37,828	2.5	4.7
E00–E90	Endocrine, nutritional, metabolic	14,555	26.0	71,642	4.9	6.3
F00–F99	Mental disorders	84,242	63.5	555,845	6.6	16.3
G00–G99	Nervous system diseases	45,976	31.2	149,177	3.2	4.3
H00–H59	Eye diseases	107,427	78.2	116,944	1.1	1.4
H60–H95	Ear diseases	22,850	73.7	29,791	1.3	2.2
I00–I99	Circulatory diseases	134,391	25.5	659,296	4.9	6.2
J00–J99	Respiratory diseases	74,704	12.5	346,810	4.6	5.2
K00–K93	Digestive diseases	347,048	72.0	622,087	1.8	3.8
L00–L99	Skin diseases	32,191	57.9	119,691	3.7	7.5
M00–M99	Musculoskeletal diseases	184,638	40.5	656,433	3.6	5.3
N00–N99	Genitourinary diseases	146,105	57.4	333,905	2.3	4.0
O00–O99	Pregnancy, childbirth, puerperium	102,494	28.5	400,578	3.9	5.1
P00–P96	Perinatal diseases	9,949	5.5	71,598	7.2	7.6
Q00–Q99	Congenital anomalies	9,629	51.1	20,456	2.1	3.3
R00–R99	Symptoms, signs, abnormal findings	92,862	56.7	221,950	2.4	4.2
S00–T98	Injuries and poisoning	81,447	23.9	405,506	5.0	6.2
Z00–Z99	Factors influencing health status and contact with health services	320,738	84.6	814,235	2.5	11.0
	Not reported	3,268	66.8	10,692	3.3	7.8
Total		**2,025,989**	**56.1**	**6,360,999**	**3.1**	**5.9**

ALOS = average length of stay.

Source: AIHW National Hospital Morbidity Database.

Table S36: Separations, same-day separations, patient-days and average length of stay by procedure, grouped into ICD-10-AM chapters, public hospitals, 1999–00

Procedure		Separations	Per cent same-day separations	Patient-days	ALOS (days)	ALOS (days) excluding same-day
1–86	Operations on the nervous system	77,452	31.2	554,140	7.2	9.9
110–129	Operations on the endocrine system	5,939	2.8	29,386	4.9	5.1
160–256	Operations on the eye	61,366	74.4	102,849	1.7	3.6
300–333	Operations on the ear	30,148	66.9	52,134	1.7	3.2
370–422	Operations on the nose, mouth and pharynx	52,475	27.0	105,555	2.0	2.4
450–490	Dental services	29,454	83.3	217,219	7.4	39.1
520–569	Operations on the respiratory system	58,671	22.7	126,416	2.2	16.7
600–767	Operations on the cardiovascular system	142,670	22.7	1,235,790	8.7	10.9
800–817	Operations on the blood and blood-forming organs	24,846	31.0	204,310	8.2	11.5
850–1011	Operations on the digestive system	378,433	53.5	1,544,670	4.1	7.6
1040–1128	Operations on the urinary system	584,819	88.2	1,100,135	1.9	8.5
1160–1203	Operations on the male genital organs	41,535	54.2	118,802	2.9	5.1
1230–1299	Gynaecological procedures	171,662	65.1	342,954	2.0	3.9
1330–1347	Obstetric procedures	174,490	5.8	676,694	3.9	4.1
1360–1579	Operations on the musculoskeletal system	206,070	30.4	1,082,831	5.3	7.1
1600–1718	Dermatological and plastic procedures	164,924	47.5	901,242	5.5	9.5
1740–1759	Operations on the breast	20,397	44.9	57,247	2.8	4.3
1780–1799	Chemotherapeutic and radiation oncology procedures	144,631	81.1	360,412	2.5	8.9
1820–1899	Miscellaneous procedures	368,259	40.1	2,499,363	6.8	10.7
1940–2016	Imaging services	268,101	12.9	2,699,609	10.1	11.4
2050–2140	Allied health interventions	638,776	4.1	7,439,380	11.6	12.1
	No procedure or not reported	1,052,862	29.8	4,341,519	4.1	5.4
Total		**3,872,815**	**45.6**	**16,243,115**	**4.2**	**6.9**

ALOS = average length of stay.

Note: As more than one procedure can be reported for each separation, the totals are not the sums of the rows of the table.

Source: AIHW National Hospital Morbidity Database.

Table S37: Separations, same-day separations, patient-days and average length of stay by procedure, grouped into ICD-10-AM chapters, private hospitals, 1999–00

Procedure		Separations	Per cent same-day separations	Patient-days	ALOS (days)	ALOS (days) excluding same-day
1–86	Operations on the nervous system	68,194	42.0	342,373	5.0	7.9
110–129	Operations on the endocrine system	3,991	1.6	14,448	3.6	3.7
160–256	Operations on the eye	105,967	78.2	118,706	1.1	1.6
300–333	Operations on the ear	24,567	71.8	30,313	1.2	1.8
370–422	Operations on the nose, mouth and pharynx	47,812	29.6	66,961	1.4	1.6
450–490	Dental services	60,974	87.0	65,259	1.1	1.5
520–569	Operations on the respiratory system	16,553	33.3	148,584	9.0	13.0
600–767	Operations on the cardiovascular system	86,745	22.5	473,828	5.5	6.8
800–817	Operations on the blood and blood-forming organs	12,514	29.2	73,301	5.9	7.9
850–1011	Operations on the digestive system	432,460	75.0	925,949	2.1	5.6
1040–1128	Operations on the urinary system	146,613	71.7	364,853	2.5	6.3
1160–1203	Operations on the male genital organs	36,354	45.9	108,576	3.0	4.7
1230–1299	Gynaecological procedures	133,896	71.4	265,512	2.0	4.4
1330–1347	Obstetric procedures	59,577	2.9	328,293	5.5	5.6
1360–1579	Operations on the musculoskeletal system	204,463	40.0	736,555	3.6	5.3
1600–1718	Dermatological and plastic procedures	127,598	63.3	322,221	2.5	5.2
1740–1759	Operations on the breast	24,724	39.7	58,007	2.3	3.2
1780–1799	Chemotherapeutic and radiation oncology procedures	104,290	88.6	176,338	1.7	7.1
1820–1899	Miscellaneous procedures	157,428	42.5	881,564	5.6	9.0
1940–2016	Imaging services	79,184	13.4	717,547	9.1	10.3
2050–2140	Allied health interventions	230,810	14.5	2,344,822	10.2	11.7
	No procedure or not reported	231,686	26.2	1,091,849	4.7	6.0
Total		**2,025,989**	**56.1**	**6,360,999**	**3.1**	**5.9**

ALOS = average length of stay.

Note: As more than one procedure can be reported for each separation, the totals are not the sums of the rows of the table.

Source: AIHW National Hospital Morbidity Database.

Table S38: Separations[(a)], same-day separations, patient-days, average length of stay and cost by Major Diagnostic Category, public hospitals, 1999–00

Major Diagnostic Category[(b)]		Separations	Per cent same-day separations	Patient-days	ALOS (days)	ALOS (days) excluding same-day	Estimated cost ($'000)[(c)]
01	Nervous system	183,544	30.4	1,127,585	6.1	8.4	660,481
02	Eye diseases, disorders	70,837	72.0	105,739	1.5	2.8	134,937
03	Ear, nose, mouth, throat	169,482	45.2	285,162	1.7	2.2	272,287
04	Respiratory system	229,017	13.8	1,151,221	5.0	5.7	738,691
05	Circulatory system	315,510	21.3	1,379,382	4.4	5.3	1,224,173
06	Digestive system	407,032	47.8	1,086,870	2.7	4.2	851,018
07	Hepatobiliary, pancreas	72,423	17.6	307,135	4.2	4.9	264,904
08	Musculoskeletal system and connective tissue	294,422	34.9	1,240,296	4.2	5.9	1,106,118
09	Skin, subcutaneous tissue and breast	155,107	50.8	467,725	3.0	5.1	333,569
10	Endocrine, nutritional and metabolic	43,467	21.5	203,260	4.7	5.7	142,172
11	Kidney and urinary tract	591,462	87.3	882,396	1.5	4.9	516,836
12	Male reproductive	46,103	54.4	111,027	2.4	4.1	92,101
13	Female reproductive	135,633	62.2	276,709	2.0	3.8	254,985
14	Pregnancy, childbirth and puerperium	336,929	23.4	981,946	2.9	3.5	732,512
15	Newborns, neonates	51,217	9.4	417,561	8.2	8.9	301,924
16	Blood, blood-forming organs, immunological	55,800	62.9	132,078	2.4	4.8	96,816
17	Neoplastic disorders	164,880	87.5	301,239	1.8	7.6	217,810
18	Infectious and parasitic diseases	46,463	18.3	222,907	4.8	5.6	159,706
19	Mental diseases and disorders	124,234	27.1	1,301,406	10.5	14.0	444,293
20	Alcohol/drug use and disorders	26,902	21.8	113,901	4.2	5.1	51,630
21	Injury, poison, toxic effects of drugs	106,958	36.9	302,401	2.8	3.9	268,368
22	Burns	6,108	24.6	38,330	6.3	8.0	38,880
23	Factors influencing health status, other contacts	96,349	71.1	269,702	2.8	7.2	144,215
ED	Edit DRG[(d)]	11,791	30.4	102,391	8.7	12.0	79,835
PR	Pre-MDC[(d)]	9,226	2.7	265,230	28.7	29.5	440,491
Total		**3,750,896**	**46.2**	**13,073,599**	**3.5**	**5.6**	**9,568,752**

(a) Separations for acute and unspecified episodes of care only.

(b) Major Diagnostic Categories are groupings of AR-DRGs within the AR-DRG (casemix) classification.

(c) The estimated total hospital cost is the sum of the estimated costs for each AR-DRG within the Major Diagnostic Category, calculated using the estimated average cost for each AR-DRG in public hospitals in 1999–00.

(d) 'Pre-MDC' is a group of particularly resource-intensive AR-DRGs such as transplants. Separations in the 'Edit DRG' grouping did not have a valid AR-DRG.

Note: Abbreviations: ALOS = average length of stay; MDC = Major Diagnostic Category; DRG = diagnosis-related group.

Source: AIHW National Hospital Morbidity Database.

Table S39: Separations[a], same-day separations, patient-days, average length of stay and cost, by Major Diagnostic Category, private hospitals, 1999–00

Major Diagnostic Category[b]		Separations	Per cent same-day separations	Patient-days	ALOS (days)	ALOS (days) excluding same-day	Estimated cost ($'000)[c]
01	Nervous system	53,798	33.2	302,493	5.6	7.9	158,138
02	Eye diseases, disorders	112,755	78.3	124,799	1.1	1.5	151,991
03	Ear, nose, mouth, throat	139,967	60.8	183,108	1.3	1.8	148,383
04	Respiratory system	62,308	7.3	365,800	5.9	6.3	165,320
05	Circulatory system	122,841	19.0	567,175	4.6	5.5	466,119
06	Digestive system	366,061	73.8	717,050	2.0	4.7	439,578
07	Hepatobiliary, pancreas	28,171	9.5	113,834	4.0	4.4	81,837
08	Musculoskeletal system and connective tissue	239,276	37.9	925,364	3.9	5.6	741,833
09	Skin, subcutaneous tissue and breast	118,972	62.0	284,543	2.4	4.7	189,784
10	Endocrine, nutritional and metabolic	15,022	20.9	65,570	4.4	5.3	41,134
11	Kidney and urinary tract	123,317	75.6	226,940	1.8	4.4	116,340
12	Male reproductive	36,261	50.2	97,970	2.7	4.4	59,091
13	Female reproductive	109,069	66.1	230,439	2.1	4.3	162,782
14	Pregnancy, childbirth and puerperium	105,466	28.9	411,476	3.9	5.1	222,962
15	Newborns, neonates	14,581	11.0	89,384	6.1	6.8	50,518
16	Blood, blood-forming organs, immunological	17,211	62.9	40,081	2.3	4.6	22,463
17	Neoplastic disorders	110,702	91.4	158,881	1.4	6.1	72,628
18	Infectious and parasitic diseases	10,035	11.6	61,680	6.1	6.8	29,309
19	Mental diseases and disorders	63,745	66.5	361,281	5.7	14.9	108,504
20	Alcohol/drug use and disorders	8,903	48.2	51,099	5.7	10.1	14,059
21	Injury, poison, toxic effects of drugs	17,558	26.9	65,916	3.8	4.8	35,407
22	Burns	436	20.0	2,384	5.5	6.6	1,339
23	Factors influencing health status, other contacts	70,905	82.7	147,553	2.1	7.3	81,866
ED	Edit DRG[d]	11,233	59.2	49,261	4.4	9.3	40,083
PR	Pre-MDC[d]	1,294	4.5	34,936	27.0	28.2	42,749
Total		**1,959,887**	**56.4**	**5,679,017**	**2.9**	**5.4**	**3,644,217**

(a) Separations for acute and unspecified episodes of care only.

(b) Major Diagnostic Categories are groupings of AR-DRGs within the AR-DRG (casemix) classification.

(c) The estimated total hospital cost is the sum of the estimated costs for each AR-DRG within the Major Diagnostic Category, calculated using the estimated average cost for each AR-DRG in public hospitals in 1999-00.

(d) 'Pre-MDC' is a group of particularly resource-intensive AR-DRGs such as transplants. Separations in the 'Edit DRG' grouping did not have a valid AR-DRG.

Note: ALOS = average length of stay; MDC = Major Diagnostic Category; DRG = diagnosis related group.

Source: AIHW National Hospital Morbidity Database.

Health expenditure

Table S40: Commonwealth government receipts from the Medicare levy and total taxation revenue, current prices, 1984–85 to 2000–01 ($ million)

Revenue type	1984–85	1989–90	1990–91	1992–93	1994–95	1996–97	1998–99	2000–01
Medicare levy	1,223	2,545	2,480	2,415	3,030	3,664	4,100	4,580
Total taxation revenue	53,208	91,343	93,225	89,435	105,687	125,815	139,202	144,255
Medicare levy as a proportion of total taxation revenue	2.3%	2.8%	2.7%	2.7%	2.9%	2.9%	2.9%	3.2%

Source: Commonwealth of Australia Budget Papers, various years.

Table S41: Health-related taxation expenditures, current and constant[(a)] prices, 1989–90 to 1999–00 ($ million)

Year	Current prices	Constant prices
1989–90	61	76
1990–91	85	101
1991–92	82	95
1992–93	91	104
1993–94	95	106
1994–95	91	100
1995–96	105	113
1996–97	125	131
1997–98	290	297
1998–99	325	325
1999–00	345	338

(a) See Box 5.4 for explanation of constant price estimating method.

Source: AIHW Health Expenditure Database.

Table S42: Total health services expenditure (current prices), by source of funds[(a)], 1998–99 ($ million)

	Government sector			Non-government sector				
Health service type	**Common-wealth**	**State and local**	**Total**	**Health insurance funds**	**Indi-viduals**	**Other[(b)]**	**Total**	**Total all sectors**
Total hospitals	7,555	6,516	14,071	2,358	664	938	3,960	18,031
Public (non-psychiatric hospitals	6,638	6,146	12,784	242	288	361	891	13,675
Public psychiatric hospitals	7	369	376	—	9	13	21	397
Private hospitals	911	—	911	2,116	367	565	3,048	3,959
High-level residential aged care	3,011	244	3,255	—	789	22	811	4,066
Ambulance	37	322	359	105	179	52	336	694
Total institutional	*10,604*	*7,081*	*17,685*	*2,463*	*1,632*	*1,012*	*5,107*	*22,792*
Medical services	7,372	—	7,372	212	936	480	1,628	9,001
Other professional services	232	—	232	197	1,191	240	1,628	1,860
Pharmaceuticals	3,092	—	3,092	30	2,697	—	2,727	5,819
Benefit paid pharmaceuticals	3,086	—	3,086	—	601	—	601	3,688
All other items	6	—	6	30	2,096	—	2,126	2,132
Aids and appliances	118	—	118	156	301	58	515	634
Other non-institutional services	1,534	2,262	3,796	1,002	1,716	138	2,856	6,652
Community/public health[(c)]	879	1,775	2,654	1	76	84	161	2,815
Dental services	104	305	408	506	1,640	11	2,157	2,566
Health administration	551	182	733	495	—	43	538	1,271
Research	510	93	603	—	—	122	122	725
Total non-institutional	*12,859*	*2,355*	*15,214*	*1,597*	*6,841*	*1,037*	*9,476*	*24,689*
Total recurrent expenditure	**23,462**	**9,436**	**32,899**	**4,061**	**8,473**	**2,049**	**14,583**	**47,481**
Capital expenditure	*71*	*1,597*	*1,668*	*n.a.*	*n.a.*	*n.a.*	*1,009[(d)]*	*2,677*
Capital consumption	*34*	*819*	*853*	*..*	*..*	*..*	*..[(e)]*	*853*
Total health expenditure[(f)]	**23,567**	**11,852**	**35,420**	**n.a**	**n.a**	**n.a**	**15,591**	**51,011**

nec Not elsewhere classified.

(a) This table shows funding provided by the Commonwealth Government, State and Territory governments, local government authorities and by the major non-government sources of funding for health services. It does not show gross outlays on health services by the different service provider sectors.

(b) 'Other' includes expenditure on health services by providers of workers compensation and compulsory motor vehicle third party insurance cover as well as other sources of income (e.g. interest earned) of service providers.

(c) Includes expenditure that was previously classified as 'other non-institutional (nec)' as well as expenditure on community and public health services.

(d) Capital outlays for the non-government sector cannot be allocated according to source of funds.

(e) Non-government capital consumption (depreciation) is included as part of recurrent expenditure.

(f) Not adjusted for tax expenditure.

Source: AIHW Health Expenditure Database.

Table S43: Annual growth in recurrent expenditure on health services (constant prices)[(a)], 1989-90 to 1998-99 (per cent)

Health service type	1989–90 to 1990–91	1990–91 to 1991–92	1991–92 to 1992–93	1992–93 to 1993–94	1993–94 to 1994–95	1994–95 to 1995–96	1995–96 to 1996–97	1996–97 to 1997–98	1997–98 to 1998–99	1989–90 to 1998–99	1989–90 to 1992–93	1992–93 to 1997–98
Total institutional	*3.0*	*2.5*	*1.2*	*1.7*	*3.3*	*5.4*	*4.5*	*5.7*	*5.0*	*3.6*	*2.2*	*2.3*
Hospitals	2.2	2.8	1.3	1.7	4.1	5.2	5.2	4.5	3.8	3.4	2.1	2.3
Public (non-psychiatric hospitals	0.3	1.9	0.9	0.9	3.1	4.7	5.2	5.4	3.5	2.9	1.0	2.1
Public psychiatric hospitals	1.7	–2.0	–10.2	–5.0	–4.3	–7.4	–11.3	–9.1	1.9	–5.2	–3.6	–4.2
Private hospitals	11.8	8.4	5.8	6.8	9.6	8.9	7.7	2.9	5.3	7.4	8.6	3.9
High-level residential aged care	7.4	0.9	0.3	-0.1	0.9	5.5	7.2	8.6	10.6	4.5	2.8	2.4
Ambulance	–0.1	3.4	2.7	0.9	-6.6	11.6	–2.7	24.5	5.3	4.0	2.0	2.7
Other institutional (nec)	7.3	4.1	–1.3	66.7	6.3	7.4	. .	. .	. .	–43.5	3.3	. .
Total non-institutional	*1.8*	*5.3*	*6.6*	*5.4*	*5.5*	*5.3*	*5.4*	*2.5*	*2.5*	*4.5*	*4.5*	*2.6*
Medical services	1.1	10.2	6.2	6.0	5.7	4.9	2.8	2.3	2.2	4.6	5.8	2.4
Other health professionals	5.4	–0.4	5.0	1.9	4.1	1.2	17.7	1.0	9.0	4.8	3.3	2.7
Pharmaceuticals	5.6	6.3	9.2	9.0	9.6	7.9	6.8	4.7	8.8	7.5	7.0	4.1
Benefit-paid items	–4.9	5.7	19.6	16.1	11.2	17.1	8.8	3.1	8.6	9.2	6.3	6.0
All other items	18.3	7.0	-0.9	0.6	7.5	–5.0	3.4	7.5	9.1	5.1	7.9	1.5
Aids and appliances	6.3	4.9	2.5	4.4	–3.0	–1.3	2.4	–4.1	–22.9	–1.6	4.5	–0.2
Other non-institutional services	2.9	–1.3	–1.7	–0.3	0.9	–1.3	. .	. .	. .	. .	–0.1	. .
Community/public health	–15.1	–5.5	16.2	11.4	–4.9	16.1	18.1	5.5	9.9	4.7	–2.0	4.4
Dental services	4.6	0.3	13.3	1.5	1.5	4.6	2.6	–2.3	–4.1	2.4	6.0	0.9
Health administration	7.8	7.9	–10.9	–6.3	19.9	–3.3	–4.8	11.7	–13.9	0.3	1.2	1.6
Research	2.4	2.8	–0.1	11.3	10.0	5.1	5.7	–6.0	8.5	4.3	1.7	2.8
Total recurrent expenditure	**2.4**	**3.9**	**3.9**	**3.6**	**4.4**	**5.4**	**5.0**	**4.0**	**3.7**	**4.0**	**3.4**	**2.5**

nec Not elsewhere classified

(a) See Box 5.4 for explanation of constant price estimating method.

Source: AIHW Health Expenditure Database.

Table S44: Total health services expenditure, current and constant prices[(a)], and annual growth rates, 1989–90 to 1999–00

	Amount ($ million)		Growth rate (%)	
Year	**Current**	**Constant**	**Current**	**Constant**
1989–90	28,800	35,347	. .	. .
1990–91	31,270	36,136	8.6	2.2
1991–92	33,087	37,403	5.8	3.5
1992–93	34,993	39,043	5.8	4.4
1993–94	36,787	40,613	5.1	4.0
1994–95	38,967	42,314	5.9	4.2
1995–96	41,783	44,329	7.2	4.8
1996–97	44,851	46,757	7.3	5.5
1997–98	47,648	48,849	6.2	4.5
1998–99	51,011	51,011	7.1	4.4
1999–00[(b)]	53,657	52,535	5.2	3.0
Average annual growth rates				
1989–90 to 1992–93			6.7	3.4
1992–93 to 1997–98			6.4	4.6
1997–98 to 1999–00			6.1	3.7
1989–90 to 1999–00			6.4	4.0

(a) See Box 5.4 for explanation of constant price estimating method.

(b) Based on preliminary AIHW and ABS estimates.

Source: AIHW Health Expenditure Database.

Table S45: Estimated health expenditures for Aboriginal and Torres Strait Islander Australians and other Australians, total and per person, 1998–99

Delivery	Total ($m)		Per person ($)		Ratio
	Indigenous	Other Australian	Indigenous	Other Australian	Indigenous/ other Australian
Through State programs					
Admitted patient expenditure	453	10,096	1,115	548	2.04
Other through State program expenditure	443	6,850	1,090	372	2.93
Total through State programs	**896**	**16,947**	**2,205**	**920**	**2.40**
Through Commonwealth programs					
Indigenous-specific Commonwealth programs	121	10	298	1	. .
Medicare/PBS	91	11,071	224	601	0.37
Other Commonwealth programs	69	6,196	169	336	0.50
Total through Commonwealth programs	**281**	**17,277**	**691**	**938**	**0.74**
Through local government programs	8	206	20	11	1.78
Services through private sector programs	60	11,982	148	650	0.23
Total recurrent expenditure	**1,245**	**46,412**	**3,065**	**2,518**	**1.22**

Source: AIHW 2001a.

Table S46: Recurrent expenditure on health services (current prices), 1989–90 to 1998–99 (per cent)

Health service type	1989–90	1990–91	1991–92	1992–93	1993–94	1994–95	1995–96	1996–97	1997–98	1998–99
Total institutional	*50.5*	*50.3*	*49.8*	*48.3*	*47.2*	*46.6*	*46.7*	*46.5*	*47.2*	*48.0*
Hospitals	40.6	40.1	39.7	38.6	37.7	37.6	37.5	37.6	37.8	38.0
Public (non-psychiatric) hospitals	32.3	31.3	30.7	29.8	28.8	28.5	28.3	28.3	28.8	28.8
Public psychiatric hospitals	2.0	1.9	1.8	1.6	1.4	1.3	1.1	1.0	0.9	0.8
Private hospitals	6.3	6.9	7.2	7.3	7.5	7.8	8.1	8.3	8.2	8.3
High-level residential aged care	8.3	8.6	8.4	8.1	7.8	7.5	7.5	7.6	7.9	8.6
Ambulance	1.5	1.4	1.4	1.4	1.4	1.2	1.3	1.2	1.4	1.5
Other institutional (nec)	0.2	0.2	0.2	0.2	0.3	0.3	0.4	—	—	—
Total non-institutional	*49.5*	*49.7*	*50.2*	*51.7*	*52.8*	*53.4*	*53.3*	*53.5*	*52.8*	*52.0*
Medical services	18.4	18.7	19.0	19.6	20.0	20.2	20.0	19.4	19.1	19.0
Other health professionals	3.7	3.9	3.7	3.7	3.6	3.6	3.4	3.8	3.7	3.9
Pharmaceuticals	9.3	9.5	9.9	10.4	11.0	11.6	11.8	12.0	12.0	12.3
Benefit-paid items	5.4	5.0	5.2	6.0	6.6	7.0	7.6	7.7	7.6	7.8
All other items	3.9	4.5	4.7	4.5	4.4	4.6	4.2	4.2	4.4	4.5
Aids and appliances	2.1	2.2	2.2	2.2	2.2	2.1	2.0	2.0	1.8	1.3
Other non-institutional services(a)	14.4	13.8	13.8	14.4	14.4	14.3	14.5	14.7	14.7	14.0
Community/public health(b)	5.6	4.7	4.4	4.9	5.2	4.7	5.1	5.6	5.7	5.9
Dental services	5.1	5.3	5.3	5.9	6.0	5.9	6.0	6.0	5.8	5.4
Health administration	3.7	3.8	4.1	3.6	3.2	3.6	3.3	3.0	3.2	2.7
Research(c)	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.5	1.5
Total recurrent expenditure	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

nec Not elsewhere classified

(a) 'Other non-institutional services' is a summary of community and public health, dental services and administration.

(b) Includes expenditure that was previously classified as 'other non-institutional (nec)' as well as expenditure on community and public health services.

(c) Health services research expenditure has been allocated according to the level of government or the private sector organisation that actually undertakes the research activity, not according to source of funds.

Source: AIHW Health Expenditure Database.

Table S47: Total recurrent expenditure on health services, constant prices[a], 1989–90 to 1998–99 ($ million)

Health service type	1989–90	1990–91	1991–92	1992–93	1993–94	1994–95	1995–96	1996–97	1997–98	1998–99
Total institutional	*16,624*	*17,118*	*17,546*	*17,749*	*18,048*	*18,642*	*19,652*	*20,538*	*21,702*	*22,792*
Hospitals	13,334	13,622	14,003	14,186	14,432	15,024	15,802	16,624	17,368	18,031
Public (non-psychiatric) hospitals	10,614	10,647	10,845	10,948	11,042	11,385	11,924	12,539	13,216	13,675
Public psychiatric hospitals	642	652	640	574	546	522	484	429	390	397
Private hospitals	2,078	2,323	2,518	2,663	2,844	3,117	3,394	3,656	3,761	3,959
High-level residential aged care	2,733	2,933	2,961	2,969	2,965	2,993	3,158	3,385	3,676	4,066
Ambulance	488	487	503	517	521	487	544	529	659	694
Other institutional (nec)	71	76	79	78	130	138	148	—	—	—
Total non-institutional	*16,679*	*16,976*	*17,880*	*19,052*	*20,073*	*21,173*	*22,295*	*23,501*	*24,088*	*24,689*
Medical services	6,020	6,087	6,709	7,125	7,553	7,986	8,381	8,612	8,808	9,001
Other health professionals	1,215	1,280	1,275	1,338	1,364	1,420	1,436	1,691	1,707	1,860
Pharmaceuticals	3,028	3,198	3,400	3,713	4,047	4,436	4,786	5,112	5,350	5,819
Benefit-paid items	1,665	1,584	1,674	2,002	2,325	2,585	3,028	3,294	3,396	3,688
All other items	1,363	1,613	1,726	1,711	1,721	1,851	1,758	1,818	1,954	2,132
Aids and appliances	732	778	816	837	873	848	836	856	821	634
Other non-institutional services[b]	5,188	5,125	5,158	5,517	5,655	5,844	6,184	6,520	6,735	6,652
Community/public health[c]	1,873	1,619	1,538	1,763	1,944	1,858	2,127	2,460	2,583	2,815
Dental services	2,081	2,177	2,184	2,476	2,514	2,551	2,668	2,738	2,676	2,566
Health administration	1,234	1,330	1,435	1,278	1,197	1,435	1,388	1,321	1,476	1,271
Research[d]	496	508	522	522	581	639	672	710	668	725
Total recurrent expenditure	**33,304**	**34,094**	**35,426**	**36,802**	**38,121**	**39,815**	**41,947**	**44,039**	**45,790**	**47,481**

nec Not elsewhere classified

(a) See Box 5.4 for explanation of constant price estimating method.

(b) 'Other non-institutional services' is a summary of community and public health, dental services and administration.

(c) Includes expenditure that was previously classified as 'other non-institutional (nec)' as well as expenditure on community and public health services.

(d) Health services research expenditure has been allocated according to the level of government or the private sector organisation that actually undertakes the research activity, not according to source of funds.

Source: AIHW Health Expenditure Database.

Table S48: Expenditure by Commonwealth, States and Territories on core public health categories including overheads and program-wide expenditure ($), 1998–99

Category	Total direct and overhead expenditure by the Commonwealth (excluding grants to States and Territories)	Total direct and overhead expenditure by States and Territories (including Commonwealth grants to States and Territories)	Total expenditure through States, Territories & Commonwealth
Communicable disease control	24,193,170	120,953,126	145,146,296
Selected health promotion activities	40,128,117	147,116,876	187,244,993
Immunisation	72,493,136	105,943,194	178,436,330
Environmental health	31,670,639	39,988,676	71,659,314
Food standards & hygiene	9,006,112	13,350,594	22,356,706
Breast cancer screening	5,133,327	85,679,611	90,812,938
Cervical screening	59,652,592	21,271,644	80,924,235
Research (Commonwealth only)	16,993,750	—	16,993,750
All other core public health	6,602,095	78,722,505	85,324,600
Administration of public health grants[(a)]	840,156	. .	840,156
Total expenditure	**266,713,095**	**613,026,225**	**879,739,320**
Percentage of total	**30%**	**70%**	**100%**

. . Not applicable.

(a) This represents the overheads associated with administering the grants to States and Territories by the Commonwealth Department of Health and Ageing. It is made up of $498,300 in population health running costs, and $341,856 in non-grant program costs. The grants to States and Territories of $192m help to fund the expenditure of the States and Territories of $613m.

Source: AIHW 2001b.

Table S49: Health services expenditure as a proportion of GDP[(a)], Australia and other selected OECD countries, 1989 to 1999 (per cent)

Year[(b)]	Aust	Can	Fra	Ger[(c)]	Jpn	NZ	UK	USA	Eight-country mean[(d)]	Seven-country mean[(e)]	Six-country mean[(f)]
1989	7.5	8.6	8.5	. .	6.2	6.6	5.9	11.2	9.3[(g)]	7.0[(g)]	7.5[(g)]
1990	7.9	9.0	8.6	. .	6.1	7.0	6.0	11.9	9.6[(g)]	7.0[(g)]	7.7[(g)]
1991	8.2	9.8	8.9	9.1	6.1	7.5	6.4	12.6	10.0	7.6	8.5
1992	8.2	10.1	9.1	9.7	6.3	7.6	6.9	13.0	10.3	8.0	8.9
1993	8.2	9.9	9.5	9.7	6.6	7.2	6.9	13.2	10.6	8.1	8.9
1994	8.2	9.6	9.4	9.8	6.9	7.3	7.0	13.2	10.6	8.2	8.9
1995	8.2	9.3	9.6	10.2	7.2	7.3	6.9	13.2	10.7	8.4	9.1
1996	8.4	9.1	9.5	10.6	7.1	7.3	7.0	13.2	10.7	8.4	9.2
1997	8.4	9.0	9.4	10.5	7.4	7.6	6.7	13.0	10.7	8.4	9.0
1998	8.6	9.3	9.3	10.3	7.5	8.1	6.8	12.9	10.7	8.5	9.0
1999	8.5	9.3	9.3	n.a.	n.a.	8.1	6.9	12.9	n.a.	n.a.	n.a

(a) Some of these ratios have changed since Health Expenditure Bulletin 17 due to changes in the OECD estimates of gross domestic product (GDP).

(b) Australian data relate to the year commencing 1 July; data for France and Germany relate to the calendar year indicated; data for New Zealand prior to 1990 relate to the year commencing 1 April, and data for 1990 onwards refer to the year commencing 1 July; data for Canada, Japan and the United Kingdom relate to the year commencing 1 April; United States data relate to the year ending 30 September.

(c) Data for 1991 onwards refer to the unified Germany.

(d) Mean weighted by GDP.

(e) Weighted mean excluding the United States.

(f) Weighted mean excluding the United States and Japan.

(g) Excludes Germany in 1989 and 1990.

Sources: AIHW Health Expenditure Database; OECD 2001.

Table S50: Components of growth in health services expenditure, Australia and other selected OECD countries, 1989 to 1999[(a)] (per cent)

	Aust	Can	Fra	Ger[(b)]	Jpn[(c)]	NZ[(d)]	UK[(e)]	USA
Nominal growth in health services expenditure	6.4	6.0	4.5	7.9	7.8	8.2	7.0	6.9
Health services inflation	2.3	2.2	1.5	3.2	1.5	3.8	5.3	3.7
General inflation	1.6	1.6	1.8	2.8	0.7	1.9	4.0	2.4
Excess health inflation[(f)]	0.7	0.6	-0.2	0.3	0.8	1.9	1.2	1.3
Real growth in health services expenditure	4.0	3.7	2.9	4.6	6.2	4.2	1.6	3.1
Population growth	1.2	1.1	0.4	0.5	0.3	1.6	0.4	1.0
Per person real growth	2.8	2.6	2.5	4.1	5.9	2.6	1.3	2.1

(a) Australian data relate to the year commencing 1 July; data for France and Germany relate to the calendar year indicated; data for New Zealand prior to 1990 relate to the year commencing 1 April, and data for 1990 onwards refer to the year commencing 1 July; data for Canada, Japan and the United Kingdom relate to the year commencing 1 April; United States data relate to the year ending 30 September.

(b) Germany from 1991 to 1996.

(c) Japan to 1997.

(d) New Zealand to 1995.

(e) UK to 1996.

(f) Excess health inflation rate is the rate by which changes in the prices of health services exceed changes in prices throughout the general community. A positive excess health inflation rate indicates that health prices are rising faster than the general rate of inflation; a negative rate indicates that health prices are falling or not rising as fast as the general rate of inflation.

Sources: AIHW Health Expenditure Database; OECD 2001.

Table S51: Contributions income and direct health expenditure by Registered Health Benefits Funds, Australia, constant prices[(a)], 1984–85 to 2000–01 ($ million)

Year	Contributions income	Annual growth rate (%)	Benefits paid[(b)]	Annual growth rate (%)
1984–85	2,494	. .	2,061	. .
1985–86	2,701	8.3	2,399	16.4
1986–87	3,094	14.5	2,782	15.9
1987–88	3,379	9.2	3,021	8.6
1988–89	3,396	0.5	3,069	1.6
1989–90	3,502	3.1	3,230	5.3
1990–91	3,833	9.5	3,559	10.2
1991–92	4,308	12.4	3,778	6.2
1992–93	4,496	4.4	3,918	3.7
1993–94	4,535	0.9	3,963	1.2
1994–95	4,458	–1.7	3,994	0.8
1995–96	4,449	–0.2	4,129	3.4
1996–97	4,559	2.5	4,317	4.6
1997–98	4,814	5.6	4,229	–2.0
1998–99	5,027	4.4	4,336	2.5
1999–00	5,462	8.7	4,468	3.0
2000–01	6,825	24.9	5,117	14.5
Average annual growth rates				
1984–85 to 2000–01		6.5		5.8
1984–85 to 1988–89		8.0		10.5
1989–90 to 2000–01		6.3		4.3
1996–97 to 2000–01		10.6		4.3

. . Not applicable.

(a) Constant price estimates have been derived using the implicit price deflator for household expenditure on hospital services, referenced to 1999–00.

(b) Benefits paid include levies paid to State and Territory Governments for ambulance services; excludes administration expenditure.

Source: AIHW Health Expenditure Database.

Table S52: Net assets of registered health benefits funds, current and constant[(a)] prices, 1989–90 to 2000–01 ($ million)

	Net assets of funds		
Year	**Current prices**	**Constant prices[(a)]**	**Annual real growth rate (%)**
1989–90	862	549	. .
1990–91	851	573	4.3
1991–92	991	685	19.5
1992–93	1,205	841	22.8
1993–94	1,350	950	13.0
1994–95	1,409	1,009	6.2
1995–96	1,295	1,004	–0.5
1996–97	1,174	1,014	1.1
1997–98	1,173	1,099	8.3
1998–99	1,304	1,245	13.3
1999–00	1,662	1,662	33.5
2000–01	2,387	2,521	51.6

(a) Constant price estimates have been derived using the implicit price deflator for household expenditure on hospital services, referenced to 1999–00.

Source: PHIAC 2002.

Health labour force

Table S53: Employment in the health industry, August 1981 to August 2001

Year	Employed in health industry ('000)	All employed persons ('000)	Proportion of all employed persons (%)	Civilian labour force[(a)] ('000)	Proportion of civilian labour force[(a)] (%)
1981	406.1	6,393.7	6.4	6,774.3	6.0
1982	424.5	6,379.3	6.7	6,840.7	6.2
1983	440.6	6,241.1	7.1	6,927.9	6.4
1984	453.6	6,466.1	7.0	7,070.1	6.4
1985	461.6	6,675.6	6.9	7,248.3	6.4
1986	489.2	6,918.6	7.1	7,516.2	6.5
1987	510.5	7,092.3	7.2	7,694.4	6.6
1988	530.7	7,353.4	7.2	7,892.1	6.7
1989	520.3	7,727.6	6.7	8,197.0	6.3
1990	557.9	7,825.0	7.1	8,412.5	6.6
1991	580.0	7,669.2	7.6	8,475.2	6.8
1992	575.3	7,679.3	7.5	8,585.7	6.7
1993	561.4	7,621.0	7.4	8,537.0	6.6
1994	547.2	7,885.7	6.9	8,683.5	6.3
1995	591.9	8,217.7	7.2	8,939.6	6.6
1996	590.2	8,319.7	7.1	9,090.8	6.5
1997	610.2	8,315.5	7.3	9,080.1	6.7
1998	598.7	8,537.2	7.0	9,261.5	6.5
1999	600.4	8,731.6	6.9	9,384.4	6.4
2000	656.9	9,070.8	7.2	9,645.3	6.8
2001	669.2	9,124.2	7.3	9,768.2	6.9
1991 to 2001 increase (%)	**15.4**	**19.0**		**15.3**	

(a) Includes unemployed persons.

Sources: ABS Cat No. 6203.0; ABS Labour Force Survey estimates on microfiche.

Use of professional services

Table S54: Medical and optometrical services, fees and benefits under Medicare, 1994–95 to 2000–01

Year	Number of services (million)	Fees charged ($ million)	Schedule fees ($ million)	Benefits paid ($ million)
GP attendances				
1994–95	98.4	2,361.5	2,582.7	2,195.6
1995–96	102.1	2,484.4	2,722.3	2,314.4
1996–97	102.5	2,517.8	2,752.6	2,339.7
1997–98	103.1	2,564.5	2,786.6	2,367.8
1998–99	102.6	2,605.0	2,818.6	2,395.4
1999–00	101.5	2,675.3	2,884.3	2,452.3
2000–01	100.6	2,811.0	3,014.2	2,561.1
Special attendances				
1994–95	17.5	1,031.2	1,005.7	847.3
1995–96	18.1	1,084.0	1,053.5	887.8
1996–97	18.2	1,109.3	1,066.6	897.7
1997–98	18.2	1,133.1	1,078.9	907.5
1998–99	18.6	1,183.3	1,119.2	941.3
1999–00	18.9	1,231.4	1,152.8	969.2
2000–01	19.3	1,303.8	1,197.5	1,005.3
Obstetrics				
1994–95	0.7	93.9	70.8	55.0
1995–96	1.3	100.7	74.1	58.7
1996–97	1.6	98.9	70.7	56.8
1997–98	1.6	97.4	68.2	54.9
1998–99	1.6	101.3	71.9	57.7
1999–00	1.5	106.3	75.2	60.0
2000–01	1.5	120.1	78.5	62.5
Anaesthetics				
1994–95	1.7	184.0	152.1	115.0
1995–96	1.7	201.6	160.6	121.6
1996–97	1.7	218.6	166.0	125.7
1997–98	1.7	225.2	168.9	127.9
1998–99	1.8	235.2	175.5	132.9
1999–00	1.8	249.6	182.3	138.0
2000–01	2.1	294.5	206.4	156.2
Pathology				
1994–95	47.0	869.9	926.3	778.3
1995–96	48.6	901.4	966.7	812.8
1996–97	50.3	945.3	1,020.2	857.8
1997–98	52.4	1,014.5	1,099.6	924.2
1998–99	55.6	1,096.3	1,199.0	1,008.4
1999–00	58.8	1,173.9	1,292.7	1,087.6
2000–01	62.1	1,246.7	1,375.6	1,156.8

(continued)

Table S54 (continued): Medical and optometrical services, fees and benefits under Medicare, 1994–95 to 2000–01

Year	Number of services (million)	Fees charged ($ million)	Schedule fees ($ million)	Benefits paid ($ million)
Diagnostic imaging				
1994–95	9.9	904.2	925.9	797.1
1995–96	10.5	983.7	1,016.1	875.9
1996–97	10.4	992.2	1,029.9	880.1
1997–98	10.8	1,063.8	1,105.6	938.2
1998–99	11.4	1,199.9	1,250.9	1,064.7
1999–00	11.7	1,257.5	1,296.7	1,105.0
2000–01	12.3	1,346.8	1,361.2	1,159.5
Operations				
1994–95	5.2	761.6	679.6	537.2
1995–96	5.3	799.6	708.6	560.7
1996–97	5.4	841.2	736.2	682.1
1997–98	5.4	861.4	744.7	587.2
1998–99	5.5	898.0	770.6	607.8
1999–00	5.6	951.3	803.8	634.3
2000–01	5.8	1,074.7	875.9	688.9
Optometry				
1994–95	3.3	131.5	152.7	129.8
1995–96	3.6	143.2	166.9	141.9
1996–97	3.7	147.3	172.0	146.2
1997–98	3.8	144.2	167.8	142.7
1998–99	3.9	147.9	171.7	146.1
1999–00	4.1	156.8	182.3	155.1
2000–01	4.2	164.6	191.5	162.9
All other services[(a)]				
1994–95	4.4	257.9	255.0	216.4
1995–96	4.5	283.3	280.9	238.2
1996–97	4.7	301.2	292.9	247.6
1997–98	4.8	321.0	309.8	260.7
1998–99	5.5	394.8	377.7	314.9
1999–00	5.6	429.4	410.9	343.5
2000–01	5.9	476.0	447.3	373.6
Total services				
1994–95	188.1	6,633.3	6,784.2	5,696.4
1995–96	196.0	7,022.4	7,185.0	6,038.4
1996–97	198.8	7,209.1	7,339.5	6,158.0
1997–98	202.2	7,460.7	7,560.1	6,333.5
1998–99	206.3	7,861.8	7,955.2	6,669.1
1999–00	209.6	8,231.4	8,281.0	6,945.0
2000–01	213.9	8,838.0	8,748.1	7,326.8

(a) Includes radiotherapy and nuclear medicine therapy, assistance at operations and other miscellaneous services.

Source: DHAC 2001b.

Table S55: Medicare services, age-specific rates, 1993–94 to 2000–01 (services per person)

Sex/age group	1993–94	1994–95	1995–96	1996–97	1997–98	1998–99	1999–00	2000–01
Males								
0–4	9.85	9.60	9.80	9.60	9.47	9.27	9.05	8.79
5–9	5.43	5.24	5.30	5.31	5.25	5.12	4.75	4.59
10–14	4.60	4.50	4.54	4.48	4.53	4.44	4.25	4.16
15–19	4.68	4.67	4.86	4.83	4.77	4.73	4.74	4.60
20–24	5.00	5.02	5.32	5.26	5.12	5.02	4.92	4.75
25–34	5.58	5.77	5.97	5.93	5.84	5.75	5.66	5.53
35–44	6.60	6.91	7.11	7.07	7.05	7.08	7.10	7.17
45–54	8.82	9.23	9.48	9.45	9.54	9.61	9.70	9.78
55–64	13.35	14.01	14.41	14.42	14.59	14.74	14.99	14.83
65–74	15.82	17.11	18.35	19.07	20.11	21.09	22.10	22.94
75+	19.85	20.38	20.69	20.54	20.66	20.26	19.77	19.8
Crude rate	**8.07**	**8.35**	**8.68**	**8.71**	**8.81**	**8.87**	**8.91**	**8.95**
ASR[(a)]	**8.20**	**8.45**	**9.01**	**9.01**	**8.79**	**8.81**	**8.81**	**8.86**
Females								
0–4	9.01	8.80	8.98	8.82	8.67	8.52	8.29	8.02
5–9	5.44	5.23	5.26	5.21	5.23	5.15	4.75	4.57
10–14	4.79	4.67	4.66	4.60	4.64	4.62	4.38	4.24
15–19	8.27	8.37	8.64	8.43	8.26	8.28	8.22	8.05
20–24	11.43	11.64	12.12	11.72	11.35	11.16	10.87	10.54
25–34	12.62	13.05	13.57	13.51	13.36	13.30	13.09	12.98
35–44	11.61	12.11	12.23	12.17	12.13	12.21	12.19	12.35
45–54	13.52	14.00	14.06	14.02	14.04	14.19	14.31	14.46
55–64	15.54	16.20	16.67	16.87	17.19	17.56	17.99	17.88
65–74	18.57	19.21	20.08	20.45	20.97	21.60	22.31	22.76
75+	22.87	23.43	24.10	24.36	24.63	24.88	25.46	25.38
Crude rate	**12.14**	**12.49**	**12.84**	**12.85**	**12.89**	**13.01**	**13.07**	**13.10**
ASR[(a)]	**11.88**	**12.19**	**12.28**	**12.24**	**12.46**	**12.53**	**12.53**	**12.57**

(a) Age-standardised rate. Age-standardised to the Australian population at 30 June 1991.

Sources: HIC 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001.

Table S56: Medicare services, age-specific rates, States and Territories, 2000–01 (services per person)

Sex/age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Males									
0–4	9.27	8.83	8.91	7.64	8.89	7.27	7.68	4.98	8.77
5–9	4.91	4.84	4.37	3.83	4.61	3.77	4.04	2.58	4.58
10–14	4.44	4.17	4.22	3.78	4.12	3.48	3.78	2.19	4.17
15–19	4.90	4.60	4.54	4.16	4.75	4.16	3.90	2.27	4.60
20–24	5.16	4.83	4.66	3.95	5.01	4.65	3.69	2.19	4.77
25–34	5.97	5.67	5.38	4.68	5.64	5.33	4.75	2.82	5.55
35–44	7.84	7.20	6.97	6.12	7.07	6.21	6.14	4.54	7.18
45–54	10.67	9.65	9.87	8.68	9.49	8.50	8.61	6.84	9.85
55–64	16.54	14.83	15.16	13.39	14.29	13.21	13.12	10.45	15.19
65–74	24.67	22.92	22.49	20.47	21.64	20.04	20.83	13.91	22.98
75+	21.08	21.19	18.97	19.47	20.16	15.18	18.77	12.43	20.31
Crude rate	**9.75**	**9.06**	**8.76**	**7.69**	**9.12**	**8.00**	**7.28**	**4.52**	**9.00**
ASR[(a)]	**9.51**	**8.89**	**8.69**	**7.80**	**8.68**	**7.67**	**7.75**	**5.35**	**8.86**
Females									
0–4	8.42	7.99	8.17	7.04	8.17	6.51	6.96	4.53	7.99
5–9	4.83	4.84	4.36	3.90	4.59	3.75	4.06	2.53	4.56
10–14	4.43	4.30	4.28	3.94	4.33	3.68	4.00	2.37	4.26
15–19	8.22	7.76	8.53	7.84	8.00	8.14	7.25	5.13	8.06
20–24	11.04	10.25	10.97	9.80	10.34	11.15	9.21	7.38	10.57
25–34	13.43	13.26	12.91	12.50	12.47	12.24	11.78	8.84	13.02
35–44	13.00	12.48	12.23	11.60	11.85	11.27	11.13	8.78	12.38
45–54	15.33	14.42	14.86	13.56	13.91	13.60	13.03	10.43	14.60
55–64	19.43	17.98	18.46	16.65	17.33	16.84	16.82	12.45	18.30
65–74	23.96	22.55	23.09	20.76	21.44	20.16	21.21	14.27	22.78
75+	26.08	26.45	25.98	24.42	25.42	22.56	24.14	15.92	25.82
Crude rate	**13.83**	**13.29**	**13.07**	**11.97**	**13.12**	**12.22**	**11.37**	**7.53**	**13.18**
ASR[(a)]	**13.11**	**12.56**	**12.66**	**11.69**	**12.13**	**11.56**	**11.39**	**8.34**	**12.57**

(a) Age-standardised rate. Age-standardised to the Australian population at 30 June 1991.

Source: HIC 2001.

Table S57: Medicare services, percentage of enrolled persons by number of items, 2000–01

	Number of services					
Sex/age group	**0**	**1**	**2**	**3**	**4**	**5 or more**
Males						
0–4	9.48	6.50	7.23	7.50	7.28	62.01
5–9	14.88	13.26	11.94	10.22	8.54	41.16
10–14	21.67	15.90	12.94	10.33	8.04	31.12
15–19	21.30	15.18	11.95	9.55	7.58	34.44
20–24	22.84	14.16	10.93	8.63	6.90	36.54
25–34	26.18	13.88	10.25	7.85	6.33	35.51
35–44	23.61	12.46	9.20	7.11	5.96	41.66
45–54	17.70	10.58	7.78	6.13	5.35	52.46
55–64	12.81	6.84	5.34	4.46	4.19	66.36
65–74	10.04	3.44	3.01	2.79	2.77	77.95
75+	31.47	3.54	2.94	2.29	2.44	57.32
All ages	**19.93**	**11.03**	**8.67**	**7.00**	**5.92**	**47.45**
Females						
0–4	10.30	7.37	7.96	8.07	7.88	58.42
5–9	15.27	13.69	12.13	10.30	8.58	40.03
10–14	21.40	16.11	13.06	10.27	7.93	31.23
15–19	15.07	12.36	10.80	8.89	7.26	45.62
20–24	8.56	6.71	6.73	6.41	6.08	65.51
25–34	10.37	6.06	5.58	5.53	5.36	67.10
35–44	11.31	6.85	5.77	5.86	5.59	64.62
45–54	8.86	5.93	5.06	4.91	4.85	70.39
55–64	7.16	4.08	3.67	3.68	3.77	77.64
65–74	8.08	2.62	2.57	2.52	2.68	81.53
75+	19.97	1.80	1.88	1.82	2.01	72.52
All ages	**11.91**	**7.07**	**6.30**	**5.83**	**5.39**	**63.50**

Source: HIC 2001.

Table S58: Indicators for cardiovascular health

Descriptor	Baseline		Most recent data	
	Year	Value	Year	Value
Incidence rate for myocardial infarction, ages 30–79[(a)] (events per 100,000 population)				
Males	1993–1994	441	1997–1998	377
Females	1993–1994	144	1997–1998	119
Hospital separation rate for principal diagnosis of unstable angina pectoris, ages 0–79 (per 100,000 population)				
Males	1993–94	178	1999–00	312
Females	1993–94	101	1999–00	153
Hospital separation rate for principal diagnosis of congestive heart failure, ages 0–79 (per 100,000 population)				
Males	1993–94	102	1999–00	90
Females	1993–94	63	1999–00	52
Death rate for coronary heart disease, ages 0–79 (per 100,000 population)[(b)]				
Males	1986	203	2000	88
Females	1986	89	2000	36
Death rate for coronary heart disease among rural and remote area residents, ages 0–79 (per 100,000 population)[(b)(c)]				
Males, remote	1988–1990	202	1998–2000	133
Males, rural	1988–1990	184	1998–2000	102
Males, metropolitan	1988–1990	176	1998–2000	93
Females, remote	1988–1990	101	1998–2000	61
Females, rural	1988–1990	82	1998–2000	43
Females, metropolitan	1988–1990	74	1998–2000	37
Prevalence rate for people whose main/underlying disabling condition is stroke, ages 25 or more[(d)] (per 100,000 population)				
Males	1993	297	1998	474
Females	1993	268	1998	490
Death rate for stroke, ages 0–79 (per 100,000 population)[(b)]				
Males	1986	46	2000	25
Females	1986	35	2000	17

(continued)

(a) Currently, data are available only for ages 35–69. Rates are standardised to the 1993 Australian population.

(b) Comparability factor applied to enable comparison between ICD-9 (baseline) and ICD-10 (most recent) coded data.

(c) Rural Remote and Metropolitan Area (RRMA) classification aggregated to three categories: metropolitan, rural and remote.

(d) Although the prevalence of stroke may have increased between 1993 and 1998, a change in the data collection method may also have contributed to the increased reported rate. In 1993, it was based on the underlying cause of the main disabling condition, whereas in 1998, survey participants were asked directly whether they had had a stroke.

Note: Except for the incidence of myocardial infarction, rates have been age-standardised to the 1991 Australian population.

Table S58 (continued): Indicators for cardiovascular health

Descriptor	Baseline		Most recent data	
	Year	Value	Year	Value
Death rate for stroke among rural and remote area residents, ages 0–79 (per 100,000 population)(b)(c)				
Males, remote	1988–1990	48	1998–2000	35
Males, rural	1988–1990	41	1998–2000	26
Males, urban	1988–1990	40	1998–2000	25
Females, remote	1988–1990	37	1998–2000	25
Females, rural	1988–1990	31	1998–2000	19
Females, urban	1988–1990	30	1998–2000	18
Hospital separation rate for major amputation for peripheral vascular disease, ages 0–79 (per 100,000 population)				
Males	1993–94	1	1999–00	4
Females	1993–94	0	1999–00	2
Hospital separation rate for emergency and elective surgery for abdominal aortic aneurysm, ages 0–79 (per 100,000 population)				
Males	1993–94	19	1999–00	16
Females	1993–94	3	1999–00	3

(a) Currently data are available only for ages 35–69. Rates are standardised to the 1993 Australian population.

(b) Comparability factor applied to enable comparison between ICD-9 (baseline) and ICD-10 (most recent) coded data.

(c) Rural Remote and Metropolitan Area (RRMA) classification aggregated to three categories: urban, rural and remote.

(d) Although the prevalence of stroke may have increased between 1993 and 1998, a change in the data collection method may also have contributed to the increased reported rate. In 1993, it was based on the underlying cause of the main disabling condition, whereas in 1998, survey participants were asked directly whether they had had a stroke.

Note: Except for the incidence of myocardial infarction, rates have been age-standardised to the 1991 Australian population.

Sources: AIHW National Mortality Database; AIHW National Hospital Morbidity Database; DHAC & AIHW 1999a.

Table S59: Indicators for health risk factors

Descriptor	Baseline		Most recent data	
	Year	Value	Year	Value
Proportion of adults who smoke regularly, ages 18 or more (per cent)				
Males	1991	33	1998	31
Females	1991	27	1998	25
Proportion of secondary school students who smoke, age 15 (per cent)				
Males	1984	29	1996	24
Females	1984	34	1996	29
Proportion of adults not engaged in regular physical activity, ages 18–75 (per cent)				
Males	1997	37	2000	42
Females	1997	39	2000	44
Proportion of adults who are overweight, ages 25–64 (per cent)[a]				
Males	1989	53	1999–2000	65
Females	1989	36	1999–2000	45
Proportion of adults with high blood pressure and/or on antihypertensive treatment, ages 25–64 (per cent)[a][b]				
Males	1989	33	1999–2000	22
Females	1989	21	1999–2000	16
Mean blood pressure levels, ages 25–64 (mm Hg)[a]				
Males, systolic BP	1989	130	1999–2000	128
Males, diastolic BP	1989	83	1999–2000	75
Females, systolic BP	1989	123	1999–2000	121
Females, diastolic BP	1989	78	1999–2000	68
Proportion of adults with high blood cholesterol, ages 25–64 (per cent)[a][c]				
Males	1989	51	1999–2000	47
Females	1989	43	1999–2000	44
Contribution of saturated fat as a proportion of total energy intake, ages 25–64 (per cent)[a]				
Males	1983	16	1995	13
Females	1983	16	1995	13

(a) Baseline sample conducted in capital cities.

(b) Hypertension is defined as systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg and/or receiving treatment for high blood pressure.

(c) High blood cholesterol is defined as a level equal to or greater than 5.5 mmol/L.

Note: Age-standardised to the Australian population at 30 June 1991.

Sources: AIHW analysis of 1983 National Dietery Survey of Adults (NHF 1986, 1987); 1989 NHF Risk Factor Prevalence Survey; 1995 ABS National Nutrition Survey; 1997, 1999, 2000, Physical Activity Surveys; 1999–2000 Australian Diabetes, Obesity and Lifestyle Study; DHAC & AHIW 1999a; Hill & White 1995; Hill et al. 1990; Hill et al. 1987.

Table S60: Indicators for cancer control

	Baseline		Most recent data	
Descriptor	**Year**	**Value**	**Year**	**Value**
Incidence of cervical cancer among women aged 20–74 years (new cases per 100,000 population)				
Females	1988	18	1998	12
Death rate for cervical cancer among women aged 20–74 years (deaths per 100,000 population)[(a)]				
Females	1991	4	2000	3
Five-year relative survival proportions for cervical cancer (per cent)				
Females	1982–1986	70	1992–1997	75
Proportion of females aged 20–69 years screened within intervals for cervical cancer (per cent)				
Females	1996–1997	62	1997–1998	64
Incidence of breast cancer among women aged 50–74 years (new cases per 100,000 population)				
Females	1988	202	1998	297
Death rate for breast cancer among women aged 50–74 years (deaths per 100,000 population)[(a)]				
Females	1992	67	2000	59
Five-year relative survival proportions for breast cancer (per cent)				
Females	1982–1986	72	1992–1997	84
Proportion of females aged 50–69 years screened for breast cancer (per cent)				
Females	1996–1997	51	1997–1998	54
Incidence of prostate cancer (new cases per 100,000 population)				
Males	1988	71	1998	110
Death rate for prostate cancer (deaths per 100,000 population)[(a)]				
Males	1992	33	2000	29
Five-year relative survival proportions for prostate cancer (per cent)				
Males	1982–1986	59	1992–1997	83
Incidence of colorectal cancer (new cases per 100,000 population)				
Males	1988	62	1998	67
Females	1988	43	1998	46
Death rate for colorectal cancer (deaths per 100,000 population)[(a)]				
Males	1992	29	2000	27
Females	1992	19	2000	18
Incidence of melanoma of the skin (new cases per 100,000 population)				
Males	1991	39	1998	46
Females	1991	31	1998	34
Death rate for melanoma of the skin (deaths per 100,000 population)[(a)]				
Males	1991	6	2000	6
Females	1991	3	2000	3
Five-year relative survival proportions for melanoma of the skin (per cent)				
Males	1982–1986	83	1992–1997	90
Females	1982–1986	91	1992–1997	95
Incidence of non-melanocytic skin cancer (new cases per 100,000 population)				
Males	1990	1,187	1995	1,374
Females	1990	769	1995	857

(continued)

(a) Comparability factor applied to enable comparison between ICD-9 (baseline) and ICD-10 (most recent) coded data.

Note: Age-standardised to the Australian population at 30 June 1991.

Table S60 (continued): Indicators for cancer control

	Baseline		Most recent data	
Descriptor	**Year**	**Value**	**Year**	**Value**
Death rate for non-melanocytic skin cancer (deaths per 100,000 population)[(a)]				
Males	1991	2	2000	3
Females	1991	1	2000	1
Incidence of cancer of the trachea, bronchus and lung (new cases per 100,000 population)				
Males	1983	73	1998	58
Females	1983	16	1998	23
Death rate for cancer of the trachea, bronchus and lung (deaths per 100,000 population)[(a)]				
Males	1986	63	2000	48
Females	1986	16	2000	20

(a) Comparability factor applied to enable comparison between ICD-9 (baseline) and ICD-10 (most recent) coded data.

Note: Age-standardised to the Australian population at 30 June 1991.

Sources: AIHW National Mortality Database; AIHW National Hospital Morbidity Database; National Cancer Statistics Clearing House.

Table S61: Indicators for diabetes mellitus

	Baseline		Most recent data	
Descriptor	**Year**	**Value**	**Year**	**Value**
Prevalence rates for Type 1 and Type 2 diabetes in the general population, in the Indigenous population, and among people from non-English-speaking backgrounds (NESB) (per 100,000 population)				
Self-reported diabetes, all ages				
Males, Type 1 diabetes, general population	1995	283		
Males, Type 2 diabetes, general population	1995	2,772		
Females, Type 1 diabetes, general population	1995	245		
Females, Type 2 diabetes, general population	1995	2,461		
Males, Type 2 diabetes, NESB(a)	1995	4,174		
Females, Type 2 diabetes, NESB(a)	1995	3,565		
Males, all diabetes, Indigenous population	1994	7,597		
Females, all diabetes, Indigenous population	1994	9,763		
Measured diabetes, age 25 and over				
Males, Type 2 diabetes, general population	1999–2000	7,753		
Females, Type 2 diabetes, general population	1999–2000	6,156		
Incidence rates for Type 1 diabetes in the general population (per 100,000 population aged less than 15)				
Males, Type 1 diabetes, general population	2000	19		
Females, Type 1 diabetes, general population	2000	19		
Prevalence rates for obesity (BMI ≥ 30) and overweight (25 ≤BMI <30) in the general population, and among persons with Type 2 diabetes (per 1,000 persons aged 25 and over)(b)				
Males, Type 2 diabetes, overweight	1999–2000	266		
Males, Type 2 diabetes, obese	1999–2000	622		
Females, Type 2 diabetes, overweight	1999–2000	216		
Females, Type 2 diabetes, obese	1999–2000	428		
Males, general population, overweight	1999–2000	480		
Males, general population, obese	1999–2000	187		
Females, general population, overweight	1999–2000	294		
Females, general population, obese	1999–2000	214		
Rates for non-participation(c) in regular, sustained, moderate aerobic exercise in the general population, and among persons with Type 2 diabetes (per 1,000 persons aged 25 and over)(b)				
Males, Type 2 diabetes, insufficient	1999–2000	292		
Males, Type 2 diabetes, sedentary	1999–2000	282		
Females, Type 2 diabetes, insufficient	1999–2000	553		
Females, Type 2 diabetes, sedentary	1999–2000	124		

(continued)

(a) NESB is based on a country of birth other than Australia, New Zealand, United Kingdom or Ireland.

(b) Measured diabetes.

(c) Sedentary persons reported undertaking no leisure-time physical activity in the week prior to interview. Insufficient activity is defined as reporting some leisure-time physical activity, but less than 150 minutes total, in the week prior to interview.

(d) Comparability factor applied to enable comparison between ICD-9 (baseline) and ICD-10 (most recent) coded data.

(e) NESB is based on a country of birth other than Australia, New Zealand, United States of America, Canada, South Africa, United Kingdom or Ireland.

(f) Mortality and population data is based on Queensland, Western Australia, South Australia & the Northern Territory.

Table S61 (continued): Indicators for diabetes mellitus

Descriptor	Baseline		Most recent data	
	Year	Value	Year	Value
Rates for non-participation(c) in regular, sustained, moderate aerobic exercise in the general population, and among persons with Type 2 diabetes (per 1,000 persons aged 25 and over)(b)				
Males, general population, insufficient	1999–2000	282		
Males, general population, sedentary	1999–2000	140		
Females, general population, insufficient	1999–2000	357		
Females, general population, sedentary	1999–2000	168		
Prevalence rates for high blood pressure among persons with Type 2 diabetes, aged 25–59, 60 and over (per 1,000 persons)(b)				
Males, aged 25–59 years	1999–2000	607		
Males, aged 60 years and over	1999–2000	528		
Females, aged 25–59 years	1999–2000	322		
Females, aged 60 years and over	1999–2000	552		
Prevalence rates for high levels of lipoproteins in the general population, and among persons with Type 1 and Type 2 diabetes (per 1,000 persons aged 25 and over)(b)				
Males, Type 1 diabetes, total cholesterol	1999–2000	n.a.		
Males, Type 2 diabetes, total cholesterol	1999–2000	577		
Males, general population, total cholesterol	1999–2000	502		
Males, Type 1 diabetes, HDL cholesterol	1999–2000	n.a.		
Males, Type 2 diabetes, HDL cholesterol	1999–2000	224		
Males, general population, HDL cholesterol	1999–2000	177		
Females, Type 1 diabetes, total cholesterol	1999–2000	n.a.		
Females, Type 2 diabetes, total cholesterol	1999–2000	692		
Females, general population, total cholesterol	1999–2000	496		
Females, Type 1 diabetes, HDL cholesterol	1999–2000	n.a.		
Females, Type 2 diabetes, HDL cholesterol	1999–2000	241		
Females, general population, HDL cholesterol	1999–2000	52		
Prevalence rates for fasting hypertriglyceridaemia in the general population and among among persons with Type 1 and Type 2 diabetes (per 1,000 persons aged 25 and over)(b)				
Males, Type 1 diabetes	1999–2000	n.a.		
Males, Type 2 diabetes	1999–2000	77		
Males, general population	1999–2000	38		
Females, Type 1 diabetes	1999–2000	n.a.		
Females, Type 2 diabetes	1999–2000	65		
Females, general population	1999–2000	15		

(continued)

(a) NESB is based on a country of birth other than Australia, New Zealand, United Kingdom or Ireland.

(b) Measured diabetes.

(c) Sedentary persons reported undertaking no leisure-time physical activity in the week prior to interview. Insufficient activity is defined as reporting some leisure-time physical activity, but less than 150 minutes total, in the week prior to interview.

(d) Comparability factor applied to enable comparison between ICD-9 (baseline) and ICD-10 (most recent) coded data.

(e) NESB is based on a country of birth other than Australia, New Zealand, United States of America, Canada, South Africa, United Kingdom or Ireland.

(f) Mortality and population data is based on Queensland, Western Australia, South Australia & the Northern Territory.

Table S61 (continued): Indicators for diabetes mellitus

Descriptor	Baseline		Most recent data	
	Year	Value	Year	Value
Rate of new cases of persons with end-stage renal disease with diabetic nephropathy as a causal factor (per 1,000 persons aged 25–84 years)				
Total	1991	130	2000	229
Prevalence rate for foot problems among clinically diagnosed persons with diabetes (per 1,000 persons)				
Current foot ulcer	1999	14	2000	17
Previous foot ulcers	1999	30	2000	33
Incidence rate for myocardial infarction or stroke among clinically diagnosed persons with diabetes (per 1,000 persons)				
Myocardial infarction	1999	12	2000	10
Stroke	1999	10	2000	8
Hospital separation rate for end-stage renal disease (ICD-9-CM 584–585, ICD-10-AM N17–N18) as the principal diagnosis with diabetes (ICD-9-CM 250, ICD-10-AM E10–E14) as an associated diagnosis (per 100,000 persons)				
Males	1993–94	7	1999–00	15
Females	1993–94	6	1999–00	12
Hospital separation rate for coronary heart disease (ICD-9-CM 410–414, ICD-10-AM I20–I25) or stroke (ICD-9-CM 430–438, ICD-10-AM G45, G46 & I10–I69) as the principal diagnosis with diabetes as an associated diagnosis (per 100,000 persons)				
Males	1993–94	156	1999–00	244
Females	1993–94	93	1999–00	131
Hospital separation rate for diabetes both as the principal diagnosis and as an associated diagnosis with conditions other than end-stage renal disease and coronary heart disease/stroke as the principal diagnosis (per 100,000 persons)				
Males	1993–94	858	1999–00	1,606
Females	1993–94	703	1999–00	1,265
Death rates for diabetes (ICD-9 250, ICD-10 E10–E14) in the general population, in the Indigenous population, and among people from non-English-speaking backgrounds (NESB) (per 100,000 population)				
Males, general population(d)	1991	16	2000	17
Females, general population(d)	1991	11	2000	11
Males, NESB(d)(e)	1991	22	2000	21
Females, NESB(d)(e)	1991	19	2000	15
Males, Indigenous population(f)	1998–2000	117		
Females, Indigenous population(f)	1998–2000	152		

(continued)

(a) NESB is based on a country of birth other than Australia, New Zealand, United Kingdom or Ireland.

(b) Measured diabetes.

(c) Sedentary persons reported undertaking no leisure-time physical activity in the week prior to interview. Insufficient activity is defined as reporting some leisure-time physical activity, but less than 150 minutes total, in the week prior to interview.

(d) Comparability factor applied to enable comparison between ICD-9 (baseline) and ICD-10 (most recent) coded data.

(e) NESB is based on a country of birth other than Australia, New Zealand, United States of America, Canada, South Africa, United Kingdom or Ireland.

(f) Mortality and population data is based on Queensland, Western Australia, South Australia & the Northern Territory.

Table S61 (continued): Indicators for diabetes mellitus

	Baseline		Most recent data	
Descriptor	**Year**	**Value**	**Year**	**Value**
Death rates for coronary heart disease (ICD-9 410–414, ICD-10 I20–I25) and stroke (ICD-9 430–438, ICD-AM G45, G46 & I10–I69) as the underlying cause of death where diabetes (ICD-9 250, ICD-10 E10–E14) was an associated cause in the general population, and among people from non-English-speaking backgrounds (NESB) (per 100,000 population)				
Coronary heart disease				
Males, general population	1997	16	2000	15
Females, general population	1997	10	2000	8
Males, NESB(e)	1997	20	2000	17
Females, NESB(e)	1997	13	2000	11
Stroke				
Males, general population	1997	5	2000	4
Females, general population	1997	3	2000	3
Males, NESB(e)	1997	5	2000	6
Females, NESB(e)	1997	4	2000	4
Self-assessed health status of persons with and without diabetes (per 1,000 persons aged 25 and over)				
Good, very good or excellent				
Males, with diabetes	1999–2000	657		
Males, without diabetes	1999–2000	859		
Females, with diabetes	1999–2000	684		
Females, without diabetes	1999–2000	870		
Fair or poor				
Males, with diabetes	1999–2000	343		
Males, without diabetes	1999–2000	141		
Females, with diabetes	1999–2000	316		
Females, without diabetes	1999–2000	130		

(a) NESB is based on a country of birth other than Australia, New Zealand, United Kingdom or Ireland.

(b) Measured diabetes.

(c) Sedentary persons reported undertaking no leisure-time physical activity in the week prior to interview. Insufficient activity is defined as reporting some leisure-time physical activity, but less than 150 minutes total, in the week prior to interview.

(d) Comparability factor applied to enable comparison between ICD-9 (baseline) and ICD-10 (most recent) coded data.

(e) NESB is based on a country of birth other than Australia, New Zealand, United States of America, Canada, South Africa, United Kingdom or Ireland.

(f) Mortality and population data is based on Queensland, Western Australia, South Australia & the Northern Territory.

Note: Age-standardised to the Australian population at 30 June 1991.

Sources: AIHW National Mortality Database; AIHW National Hospital Morbidity Database; AIHW National Diabetes Register; AIHW analysis of 1999–2000 Australian Diabetes, Obesity and Lifestyle Study; 1995 National Health Survey, 1995 National Nutrition Survey; 1994 National Aboriginal and Torres Strait Islander Survey; Disney 1992; Russ 2001; NADC National Diabetes Clinical Data Collection Project.

Table S62: Indicators for injury prevention and control[a][b]

Descriptor	Baseline		Most recent data	
	Year	Value	Year	Value
Death rate for injury and poisoning (per 100,000 population)[c]				
Persons	1992	44	2000	40
Hospital separation rate for injury and poisoning in the total population (per 100,000 population)				
Persons	1991–92	1,714	1999–00	2,300
Death rate ratio comparing the injury status of males and females				
Male:female	1992	2.6	2000	2.6
Death rate ratio comparing the injury status among people living in rural and remote areas with the general population				
Males, capital cities	1991–1995	0.9	1997–2000	0.9
Males, other metropolitan areas	1991–1995	1.0	1997–2000	1.0
Males, large rural centres	1991–1995	1.1	1997–2000	1.0
Males, small rural centres	1991–1995	1.1	1997–2000	1.2
Males, other rural areas	1991–1995	1.3	1997–2000	1.3
Males, remote centres	1991–1995	1.5	1997–2000	1.6
Males, other remote areas	1991–1995	1.9	1997–2000	1.9
Females, capital cities	1991–1995	0.9	1997–2000	0.9
Females, other metropolitan areas	1991–1995	1.0	1997–2000	1.0
Females, large rural centres	1991–1995	1.0	1997–2000	1.1
Females, small rural centres	1991–1995	1.0	1997–2000	1.1
Females, other rural areas	1991–1995	1.2	1997–2000	1.2
Females, remote centres	1991–1995	1.3	1997–2000	1.7
Females, other remote areas	1991–1995	2.0	1997–2000	1.7
Death rate for road transport-related injury in the total population and among males aged 15–24 years (per 100,000 population)[c]				
Total population	1992	11	2000	9
Males aged 15–24 years	1992	30	2000	27
Hospital separation rate for road transport-related injury in the total population and among males aged 15–24 years (per 100,000 population)				
Total population	1990	232	1999–00	241
Males aged 15–24 years	1990	858	1999–00	567
Death rate due to falls among people aged 65 years and over (per 100,000 population)				
Persons aged 65 years and over	1992	40	1998	39[d]

(continued)

(a) All indicators: case selection for most recent data is in terms of the ranges of ICD-10 External Cause codes considered to be most comparable to the ranges of ICD-9 External Cause in terms of which the indicators were originally defined.

(b) All indicators based on hospital data: case inclusion and calculation follow the NHPA Report Injury Prevention and Control 1997. The values reflect numbers of separation events included in the Australian Hospital Morbidity Data collection. They should not be interpreted as valid measures of levels or trends in the population incidence of injury.

(c) Comparability factor applied to enable comparison between ICD-9 (baseline) and ICD-10 (most recent) coded data.

(d) Accidental falls categories under ICD-9 (E880–E888) and ICD-10 (W00–W19) are not comparable without re-specification of the indicator. The reported value is for the last year coded to ICD-9. The (non-comparable) value for ICD-10 range W00–W19 in 2000 is 15 deaths per 100,000 population.

Table S62 (continued): Indicators for injury prevention and control[(a)(b)]

	Baseline		Most recent data	
Descriptor	**Year**	**Value**	**Year**	**Value**
Hospital separation rate due to falls among people aged 65 years and over (per 100,000 population)				
Males aged 65–74 years	1991–92	668	1999–00	1,087
Males aged 75 years and over	1991–92	2,242	1999–00	4,364
Females aged 65–74 years	1991–92	1,225	1999–00	1,599
Females aged 75 years and over	1991–92	4,554	1999–00	6,758
Hospital separation rate due to falls among children aged 0–4 and 5–9 years (per 100,000 population)				
Children aged 0–4 years	1991–92	502	1999–00	630
Children aged 5–9 years	1991–92	868	1999–00	800
Death rate for homicide among people aged 20–39 years (per 100,000 population)[(c)]				
Males	1992	3	2000	3
Females	1992	2	2000	2
Death rate for homicide among children aged 0–9 years (per 100,000 population)[(d)]				
Children aged 0–9 years	1992	1	2000	1
Death rate for injury resulting from fire, burns and scalds among people aged 55 years and over (per 100,000 population)[(c)]				
Persons aged 55 years and over	1992	2	2000	1
Hospital separation rate for injury resulting from fire, burns and scalds among children aged 0–4 years (per 100,000 population)				
Boys	1991–92	167	1999–00	221
Girls	1991–92	127	1999–00	167
Hospital separation rate due to poisoning among children aged 0–4 years (per 100,000 population)				
Children aged 0–4 years	1991–92	302	1999–00	267
Death rate for drowning in the total population and among children aged 0–4 years (per 100,000 population)[(c)]				
Total population	1992	2	2000	1
Children aged 0–4 years	1992	6	2000	4
Hospital separation rate for near drowning among children aged 0–4 years (per 100,000 population)				
Children aged 0–4 years	1991–92	30	1999–00	25
Incidence rate for persistent spinal cord injury from traumatic causes (per 100,000 population)				
Persons	1995–96	1	1999–2000	1

(a) All indicators: case selection for most recent data is in terms of the ranges of ICD-10 External Cause codes considered to be most comparable to the ranges of ICD-9 External Cause in terms of which the indicators were originally defined.

(b) All indicators based on hospital data: case inclusion and calculation follow the NHPA Report Injury Prevention and Control 1997. The values reflect numbers of separation events included in the Australian Hospital Morbidity Data collection. They should not be interpreted as valid measures of levels or trends in the population incidence of injury.

(c) Comparability factor applied to enable comparison between ICD-9 (baseline) and ICD-10 (most recent) coded data.

(d) Accidental falls categories under ICD-9 (E880–E888) and ICD-10 (W00–W19) are not comparable without re-specification of the indicator. The reported value is for the last year coded to ICD-9. The (non-comparable) value for ICD-10 range W00–W19 in 2000 is 15 deaths per 100,000 population.

Note: Age-standardised to the Australian population at 30 June 1991.

Sources: DHFS & AIHW 1998; AIHW National Mortality Database; AIHW National Hospital Morbidity Database; AIHW NISU unpublished data.

Table S63: Indicators for mental health, focusing on depression

Descriptor	Baseline		Most recent data	
	Year	Value	Year	Value
Prevalence rate for depressive disorders (per 100,000 population)				
Males	1997	4	n.a.	n.a.
Females	1997	7	n.a.	n.a.
Prevalence rate for anxiety disorders (per 100,000 population)				
Males	1997	7	n.a.	n.a.
Females	1997	12	n.a.	n.a.
Hospital separation rate for suicide and self-inflicted injury among young adults aged 15–24 years, and older people aged 65 years and over (per 100,000 population)				
Males, aged 15–24 years	1993–94	142	1999–00	193
Females, aged 15–24 years	1993–94	236	1999–00	337
Males, aged 65 years and over	1993–94	38	1999–00	44
Females, aged 65 years and over	1993–94	30	1999–00	44
Death rate for suicide among young adults aged 15–24 years and people aged 65 years and over (per 100,000 population)[(a)]				
Males, aged 15–24 years	1986	21	2000	19
Females, aged 15–24 years	1986	5	2000	6
Males, aged 65 years and over	1986	30	2000	22
Females, aged 65 years and over	1986	7	2000	6
Death rate for suicide in urban, rural and remote areas among young adults aged 15–24 years (per 100,000 population)[(a)]				
Males, 15–24 years, capital cities	1986–1996	22	1990–2000	22
Males, 15–24 years, other metropolitan areas	1986–1996	24	1990–2000	26
Males, 15–24 years, large rural centres	1986–1996	27	1990–2000	29
Males, 15–24 years, small rural centres	1986–1996	31	1990–2000	29
Males, 15–24 years, other rural areas	1986–1996	33	1990–2000	35
Males, 15–24 years, remote centres	1986–1996	30	1990–2000	38
Males, 15–24 years, other remote areas	1986–1996	41	1990–2000	57
Females, 15–24 years, capital cities	1986–1996	5	1990–2000	5
Females, 15–24 years, other metropolitan areas	1986–1996	4	1990–2000	5
Females, 15–24 years, large rural centres	1986–1996	4	1990–2000	6
Females, 15–24 years, small rural centres	1986–1996	4	1990–2000	5
Females, 15–24 years, other rural areas	1986–1996	5	1990–2000	5
Females, 15–24 years, remote centres	1986–1996	5	1990–2000	6
Females, 15–24 years, other remote areas	1986–1996	6	1990–2000	7

(continued)

(a) Comparability factor applied to enable comparison between ICD-9 (baseline) and ICD-10 (most recent) coded data.

Table S63 (continued): Indicators for mental health, focusing on depression

Descriptor	Baseline Year	Baseline Value	Most recent data Year	Most recent data Value
Death rate for suicide in urban, rural and remote areas among people aged 65 years and over (per 100,000 population)[(a)]				
Males, 65+ years, capital cities	1986–1996	26	1990–2000	24
Males, 65+ years, other metropolitan	1986–1996	30	1990–2000	28
Males, 65+ years, large rural centres	1986–1996	28	1990–2000	26
Males, 65+ years, small rural centres	1986–1996	30	1990–2000	27
Males, 65+ years, other rural areas	1986–1996	33	1990–2000	31
Males, 65+ years, remote centres	1986–1996	50	1990–2000	46
Males, 65+ years, other remote areas	1986–1996	39	1990–2000	36
Females, 65+ years, capital cities	1986–1996	8	1990–2000	7
Females, 65+ years, other metropolitan	1986–1996	5	1990–2000	6
Females, 65+ years, large rural centres	1986–1996	7	1990–2000	5
Females, 65+ years, small rural centres	1986–1996	5	1990–2000	5
Females, 65+ years, other rural areas	1986–1996	4	1990–2000	4
Females, 65+ years, remote centres	1986–1996	0	1990–2000	0
Females, 65+ years, other remote areas	1986–1996	7	1990–2000	6

(a) Comparability factor applied to enable comparison between ICD-9 (baseline) and ICD-10 (most recent) coded data.

Note: Age-standardised to the Australian population at 30 June 1991.

Sources: AIHW National Mortality Database; AIHW National Morbidity Database; DHAC & AIHW 1999b.

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Methods and conventions

Methods

Details of methods used in particular sections of the report are included in the text and boxes, and in footnotes to figures and tables. Entries in columns of tables may not add to the totals shown, due to rounding.

Age standardisation has been used to facilitate the comparison of populations with differing age compositions, either different populations at one time or the same population at different times. The 1991 Australian population (ABS 1993) has been used as the standard population for all intra-Australia comparisons. The 1988 Australian population was used for these comparisons in editions of *Australia's Health* prior to the 1996 edition; some statistics may thus differ slightly from those in previous editions.

The European and the World Standard Populations have been used for some international comparisons. Details of these standard populations are provided.

Table A1: Age composition of the Australian population at 30 June 1991, and of European and World Standard Populations

Age group (years)	Australia, 30 June 1991	European Std	World Std
0	259,085	1,600	2,400
1–4	1,012,618	6,400	9,600
5–9	1,272,208	7,000	10,000
10–14	1,241,619	7,000	9,000
15–19	1,364,074	7,000	9,000
20–24	1,396,764	7,000	8,000
25–29	1,399,663	7,000	8,000
30–34	1,425,735	7,000	6,000
35–39	1,328,387	7,000	6,000
40–44	1,294,271	7,000	6,000
45–49	1,029,145	7,000	6,000
50–54	846,934	7,000	5,000
55–59	725,950	6,000	4,000
60–64	736,868	5,000	4,000
65–69	671,390	4,000	3,000
70–74	510,755	3,000	2,000
75–79	384,495	2,000	1,000
80–84	229,828	1,000	500
85 and over	154,247	1,000	500
Total	**17,284,036**	**100,000**	**100,000**

Sources: ABS 1993; WHO 1996.

Within Australia, most regional comparisons are among States and Territories. For within-State comparisons, Australian Bureau of Statistics sources use capital city statistical areas and the rest of each State. Definitions for regional comparisons from other sources are not consistent, and are stated at appropriate places in the text.

Average annual rates of change or growth rates have been calculated as geometric rates:

Average rate of change = $((P_n/P_o)^{1/N} - 1) \times 100$

where	Pn = value in later time period
	Po = value in earlier time period
	N = number of years between the two time periods.

The classification of deaths follows the Tenth Revision of the International Classification of Diseases (WHO 1992). Diseases treated in hospitals and the procedures performed during a hospital stay are classified using the first edition of the International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification (ICD-10-AM) (NCCH 1998).

Symbols

$	Australian dollars, unless otherwise specified
–	nil or rounded to zero
%	per cent
g	gram
kg	kilogram
kJ	kilojoule
km^2	square kilometres
'000	thousands
m	million
mm	millimetre
mm Hg	millimetres of mercury
mmol/L	millimoles per litre
n.a.	not available
. .	not applicable
nec	not elsewhere classified
n.p.	not published by the data source
npr	not previously reported
wk	week

>	more than
<	less than
≥	more than or equal to
≤	less than or equal to
*	value subject to sampling variability too high for most practical purposes and/or the relative standard error is 25% to 50%.
**	value subject to sampling variability too high for most practical purposes and/or the relative standard error is more than 50%.

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Abbreviations

ABS	Australian Bureau of Statistics
ACIR	Australian Childhood Immunisation Register
AHMAC	Australian Health Ministers' Advisory Council
AIDS	Acquired immune deficiency syndrome
AIHW	Australian Institute of Health and Welfare
AN-DRG	Australian National Diagnosis Related Group
ANZDATA	Australian and New Zealand Dialysis and Transplant Registry
AR-DRG	Australian Refined Diagnosis Related Group
AusDiab	Australian Diabetes, Obesity & Lifestyle Study
BEACH	Bettering the Evaluation And Care of Health
BMI	Body mass index
CABG	Coronary artery bypass grafting
CHD	Coronary heart disease
COPD	Chronic obstructive pulmonary disease
CVD	Cardiovascular disease
DALY	Disability-adjusted life years
DMFT	Decayed, missing or filled permanent teeth
dmft	Decayed, missing or filled primary teeth
DTP	Diphtheria, tetanus, pertussis (triple antigen vaccine)
DVA	Department of Veterans' Affairs
GIFT	Gamete intra-fallopian transfer
GP	General practitioner
GPSCU	General Practice Statistics and Classification Unit
Hib	Haemophilus influenzae type b
HDL	high-density lipoprotein
HIC	Health Insurance Commission
HIV	Human immunodeficiency virus
ICD-10	International Classification of Diseases, 10th Revision
ICD-10-AM	International Classification of Diseases, 10th Revision, Australian Modification
ICD-9	International Classification of Diseases, 9th Revision
ICD-9-CM	International Classification of Diseases, 9th Revision, Clinical Modification
ICF	International Classification of Functioning, Disability and Health
ICIDH	International Classification of Impairments, Disabilities and Handicaps
ID	Intravenous drug

IRSD	Index of relative socioeconomic disadvantage
LDL	low-density lipoprotein
MMR	Measles, mumps and rubella (vaccine)
NACCHO	National Aboriginal Community Controlled Health Organisation
NADC	National Association of Diabetes Centres
NDSHS	National Drug Strategy Household Survey
NESB	Non-English-speaking background
NHIA	National Health Information Agreement
NHIMAC	National Health Information Management Advisory Committee
NHIMG	National Health Information Management Group
NHMRC	National Health and Medical Research Council
NHPA	National Health Priority Area
NHPC	National Health Performance Committee
NMSC	Non-melanocytic skin cancer
NNDSS	National Notifiable Diseases Surveillance System
OECD	Organisation for Economic Co-operation and Development
RPBS	Repatriation Pharmaceutical Benefits Scheme
RRMA	Rural, Remote and Metropolitan Areas classification
RRV	Ross River virus
SAAP	Supported Accommodation Assistance Program
SBP	Systolic blood pressure
SCRCSSP	Steering Committee for the Review of Commonwealth/State Service Provision
SEIFA	Socio-Economic Indexes for Areas
SMR	Standardised mortality ratio
UN	United Nations
WHO	World Health Organization

Abbreviations of places

ACT	Australian Capital Territory
Aust	Australia
Can	Canada
Fra	France
Ger	Germany
Jpn	Japan
NSW	New South Wales
NT	Northern Territory
NZ	New Zealand
Qld	Queensland
SA	South Australia

Tas	Tasmania
UK	United Kingdom
USA	United States of America
USSR	Former Union of Soviet Socialist Republics
Vic	Victoria
WA	Western Australia

Glossary

Aboriginal: A person of Aboriginal descent who identifies as an Aboriginal and is accepted as such by the community in which he or she lives.

accommodation (of eye): How the eye automatically adjusts so it can focus at various distances, mainly by changing the shape of its lens.

acute: Coming on sharply and often brief, intense and severe.

acute hospitals: Public, Department of Veterans' Affairs (repatriation) and private hospitals which provide services primarily to admitted patients with acute or temporary ailments. The average length of stay is relatively short.

Addiction/addictive use: A condition marked by repeated and compulsive activity in a manner or at a level that is harmful or dangerous. Term is most often applied to addictive drug use, such as with alcohol, tobacco or other drugs, but could be applied to gambling or many other practices.

admission: Admission to hospital. In this report, the number of separations has been taken as the number of admissions. Hence an admission rate is the same as a separation rate.

admitted patient: A patient who undergoes a hospital's formal admission process. See Box 5.6, page 283.

affective disorders: Mood disorders such as *depression*, *mania* and *bipolar affective disorder*. (Do not include anxiety disorders, which are classified as a separate group.)

age-specific death rate: See Box 2.6, page 68.

age-specific rate: A rate for a specific age group. The numerator and denominator relate to the same age group.

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, then the disease rates that would have occurred with that structure are calculated and compared.

age-standardised death rate: See Box 2.6, page 68.

agoraphobia: Fear of being in public places from which it may be difficult to escape.

Alzheimer's disease: A disease (named after a German physician) in which there is progressive loss of brainpower shown by worsening short-term memory, confusion and disorientation. A form of *dementia*.

ambulatory care: Care provided to hospital patients who are not admitted to the hospital, such as patients of emergency departments and outpatients clinics. The term is also used to refer to care provided to patients of community-based (non-hospital) healthcare services.

anaemia: A reduced level of haemoglobin, the protein that carries oxygen in the red blood cells. Has many causes, including bleeding (loss of red blood cells), low production of red blood cells and processes that damage them. Can cause paleness, tiredness and even breathlessness.

AN-DRGs: See *DRGs*.

angina: Temporary chest pain or discomfort when the heart's own blood supply is inadequate to meet extra needs, as in exercise. See also *cardiovascular disease*.

anencephalus: A congenital condition with partial or complete absence of the skull and hemispheres of the brain.

angioplasty: A method of reducing a blockage in an artery by opening out a balloon placed inside the artery at the point of narrowing. If the artery is a coronary artery the procedure is technically known as percutaneous transluminal coronary angioplasty (PTCA).

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*.

arrhythmia: A disturbed rhythm of the heart beat—either too fast, too slow or irregular.

arthritis: A group of disorders in which there is inflammation of the joints, which can become stiff, painful, swollen or deformed. The two main types of arthritis are *osteoarthritis* and *rheumatoid arthritis*.

asthma: An inflammatory disease of the air passages that makes them prone to narrow too easily and too much, causing episodes of shortness of breath and wheezing or coughing. The narrowing is due to many 'triggers' which include the house dust mite, exercise, pollens, cold weather, throat and chest infections, tobacco smoke and other factors.

atherosclerosis: A process that gradually clogs arteries, through fatty and fibre-like deposits that build up on the inner walls of the arteries. It is the main underlying condition in *heart attack*, *angina*, *stroke* and *peripheral vascular disease*.

atrial fibrillation: A condition marked by an irregular rapid heart beat. Arises because the heart's collecting chambers (atria) stop beating rhythmically and quiver uselessly (fibrillate).

auto-immune diseases: Diseases, such as *rheumatoid arthritis* and *Type 1 diabetes*, in which the immune system reacts against body tissues, damaging them.

available beds: Beds immediately available for use by admitted patients.

average length of stay (ALOS): The average of the length of stay for admitted patient episodes.

benchmark: A standard or point of reference for measuring quality or performance. See also *benchmarking*.

benchmarking: A continuous process of measuring quality or performance against the highest standards. See also *benchmark*.

bipolar affective disorder: A mental disorder where the person may be depressed at one time and manic at another. Formerly known as manic depression.

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.

body mass index (BMI): The most commonly used method of assessing whether a person is normal weight, underweight, overweight or obese. Calculated by dividing the person's weight (in kilograms) by their height (in metres) squared, i.e. $kg \div m^2$. Also known as Quetelet's Index. For both men and women, underweight is a BMI below 18.5, acceptable weight is from 18.5 to less than 25, overweight is 25 and above but less than 30, and obese is 30 and over.

bronchitis: Inflammation of the main air passages (the bronchi). May be acute (due to infection) or chronic (most often due to tobacco smoking).

campylobacteriosis: A disease usually marked by diarrhoea, abdominal pain, fever, nausea and vomiting for a few days, caused by some types of Campylobacter bacteria and often food-borne.

cancer: A range of diseases where some of the body's cells begin to multiply out of control, can invade and damage the area around them, and can also spread to other parts of the body to cause further damage.

cardiovascular disease: Any disease of the heart (cardio) or blood vessels (vascular). Includes *heart attack*, *angina*, *stroke* and *peripheral vascular disease*. Also known as circulatory disease.

capital expenditure: Expenditure on large-scale fixed assets (for example, new buildings and equipment with a useful life extending over a number of years).

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 healthcare resources, so that the activity and cost-efficiency of different hospitals can be compared. See *DRGs*—diagnosis related groups.

cause of death: From information reported on the medical certificate of cause of death, each death is classified by the underlying cause of death according to rules and conventions of the 10th revision of the International Classification of Diseases. The underlying cause is defined as the disease that initiated the train of events leading directly to death. Deaths from injury or poisoning are classified according to the circumstances of the violence which produced the fatal injury, rather than to the nature of the injury.

cerebrovascular disease: See *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.

cholesterol: see *blood cholesterol*.

chronic: Persistent and long-lasting.

chronic bronchitis: Long-term condition with inflammation of the bronchi, the lung's main air passages, causing frequent coughing attacks and coughing up of mucus.

chronic diseases: Term applied to a diverse group of diseases, such as heart disease, cancer and arthritis (to name a few), that tend to be long-lasting and persistent in their symptoms or development. Although these features also apply to some communicable diseases (infections), the general term chronic diseases is usually confined to non-communicable diseases.

chronic obstructive pulmonary disease (COPD): Serious, progressive and disabling long-term lung disease where damage to the lungs, usually due to both *emphysema* and *chronic bronchitis*, obstructs oxygen intake and causes increasing shortness of breath. By far the greatest cause is cigarette smoking.

circulatory disease: See *stroke*.

cirrhosis: Permanently damaged structure of the liver due to extensive death of its cells with resultant scarring. Main causes are chronic alcohol abuse and hepatitis C.

cohort: A group of individuals being studied who have experienced the same event at a specified period in time, e.g. 'birth cohort' refers to people born in the same year.

colonoscopy: A procedure whereby the inside of the large bowel (colon) is viewed using a long flexible tube inserted through the anus.

colorectal cancer: Cancer of the colon (the lower 1.5 to 2 metres of the intestine) or of the rectum (the final 15 cm at the end of the colon, ending with the anus).

communicable diseases (infectious diseases): Diseases or illnesses due to infectious organisms or their toxic products. Communication to a person may occur directly or indirectly via contact with other humans, animals or other environments that harbour the organism.

co-morbidity: When a person has two or more health problems at the same time.

complication: A secondary problem that arises from or occurs with a disease or its treatment (such as surgery), worsening the patient's condition and making treatment more complicated.

confidence interval: A statistical term describing a range (interval) of values within which we can be 'confident' that the true value lies, usually because it has a 95% or higher chance of doing so.

congenital: A condition that is recognised at birth, or that is believed to have been present since birth, including conditions which are inherited or caused by environmental factors.

coronary heart disease: See *ischaemic heart disease*.

crude death rate: See Box 2.6, page 68.

cryptosporidiosis: A disease usually marked by diarrhoea with cramping abdominal pain and other symptoms, caused by Cryptosporidiosis parvum, a protozoan parasite and transmitted directly from person to person, or foodborne.

dementia: A general and worsening loss of brain power such as memory, understanding and reasoning.

dentate: Having one or more natural teeth.

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.

diabetes (diabetes mellitus): A chronic condition in which the body makes too little of the hormone insulin or cannot use it properly. This raises the blood level of the body's major energy source, the sugar glucose, and causes other widespread disturbance of the body's energy processes. For the three main types of diabetes see *Type 1 diabetes*, *Type 2 diabetes* and *gestational diabetes*.

dialysis/haemodialysis: A process used to treat kidney failure. A machine is connected to the patient's bloodstream so it can take on the role of the kidneys by removing excess substances and waste from the blood.

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. Preventable by vaccine.

direct bill: The process by which a medical practitioner or optometrist sends the bill for services direct to Medicare, often referred to as bulk billing.

disability: 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.

disability-adjusted life year (DALY): Years of healthy life lost through premature death or living with disability due to illness or injury.

donovanosis: Donovanosis which was previously called granuloma inguinale, is caused by the bacteria *Chlamydia granulomatis*. It features painless genital ulcers with tissue destruction, and can result in secondary infection and scarring.

DRGs (diagnosis related groups): A widely used type of *casemix* classification system. In the case of Australian acute hospitals, AN-DRGs (Australian National Diagnosis Related Groups) classify admissions into groups with similar clinical conditions (related diagnoses) and similar resource usage. This allows the activity and performance of hospitals to be compared on a common basis. See also *casemix*.

dysthymia: A disorder characterised by constant or constantly recurring chronic depression of mood, lasting at least 2 years.

emphysema: A long-term lung disease where over expansion or destruction of the lung tissue blocks oxygen intake, leading to shortness of breath and other problems.

endoscopy: The viewing of internal parts of the body, such as the inside of the lower bowel (the colon) with a colonoscope.

encephalitis: Inflammation of the brain.

encephalocele: An abnormal protrusion of the brain through a congenital opening in the skull. Encephaloceles can occur with spina bifida or as a separate condition.

enterohaemorrhagic E. coli infection: A disease marked by diarrhoea that can be mild or severe and bloody, and sometimes also the haemolytic-uraemic syndrome (sudden kidney failure and anaemia in children) and other symptoms. It is caused by some types of E. coli bacteria and is usually food-borne.

epidemic: An outbreak of a disease or its occurrence at a level that is clearly higher than previously existed.

epidemiology: The study of the patterns and causes of health and disease in populations, and the application of this study to improve health.

expectation of life: See *life expectancy*.

external cause: Environmental event, circumstance and/or condition as the cause of injury, poisoning and/or other adverse effect. Used in disease classification.

foetal death: Birth of a foetus 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.

foetal death rate: Number of foetal deaths per 1,000 total births (foetal deaths plus live births).

freestanding day hospital facility: A private hospital where only minor operations and other procedures not requiring overnight stay are performed, not forming part of any private hospital providing overnight care.

gastroscopy: A procedure whereby the inside of the stomach is viewed using a flexible tube passed down into it via the mouth.

generalised anxiety disorder: A mental disorder where a person is overly and unrealistically anxious and worried about many things over a long period. One of the group of anxiety disorders.

gestational diabetes: Diabetes which is first diagnosed during pregnancy (gestation). It may disappear after pregnancy but signals a high risk of diabetes occurring later on.

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.

haemodyalisis: See *dialysis*.

handicap: A disadvantage resulting from impairment or disability that limits or prevents the fulfilment of a role that is normal.

health: Term relating to whether the body (which includes the mind) is in a good or bad state. With good health the state of the body and mind are such that a person feels and functions well, given their circumstances, and can continue to do so for as long as possible. See also *public health*.

health indicator: See *indicator*.

health outcome: A change in the health of an individual or population due to a preventive or clinical intervention.

health promotion: Activities to improve health and prevent disease.

health status: An individual's or population's overall level of health, taking account of various aspects such as life expectancy, amount of disability, levels of disease risk factors and so forth.

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 cannot pump strongly enough to keep the blood circulating around the body at adequate rate.

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): A bacterial infection of infants and children that can cause meningitis, pneumonia and other serious effects. Preventable by vaccine.

Highly specialised drugs: Under Section 100 of the National Health Act, certain drugs (for example, Cyclosporin) can only be supplied to community patients through hospitals because the hospitals can provide the facilities or staff necessary for the appropriate use of the drugs. These drugs are funded by the Commonwealth separately from the PBS.

Hodgkin's disease (Hodgkin's lymphoma): A cancer marked by progressive painless enlargement of lymph nodes throughout the body. A form of lymphoma. Named after the English physician who described it.

hostel: Establishment for people who cannot live independently but who do not need nursing care in a hospital or nursing home. Hostels provide board, lodging or accommodation and cater mostly for the aged, distressed or disabled. Residents are generally responsible for their own provisions but may be given domestic assistance such as help with meals, laundry and personal care.

hypertensive disease: Occurs when blood pressure is high long term, especially when this leads to damage of the heart, brain or kidneys.

hypomania: A lesser degree of mania characterised by a persistent mild abnormal elevation of mood and increased activity lasting at least 4 days.

hypospadias: A congenital abnormality of the penis, where its opening is on the underside rather than at the end.

immunisation: Inducing immunity against infection by the use of antigen to stimulate the body to produce its own antibodies. See *vaccination*.

impairment: Any loss or abnormality of psychological, physiological or anatomical structure or function.

incidence: The number of *new* cases (of an illness or event etc.) occurring during a given period. Compare with *prevalence*.

indicator (health indicator): A key statistic that indicates an aspect of population health status, health determinants, interventions, services or outcomes. Indicators are designed to help assess progress and performance, as a guide to decision making. They 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.

Indigenous: A person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander and is accepted as such by the community with which he or she is associated.

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 the *auto-immune* disorders.

International Classification of Diseases: The World Health Organization's internationally accepted classification of death and disease. The 10th Revision (ICD-10) is currently in use. In this report, causes of death classified before 1979 under previous revisions have been reclassified to ICD-10 by the AIHW.

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.

insulin: Hormone that is produced by the pancreas and regulates the body's energy sources, most notably the sugar glucose.

ischaemia: Reduced or blocked blood supply. See also *ischaemic heart disease*.

ischaemic heart disease: Heart attack and *angina* (chest pain). Also known as *coronary heart disease*.

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 expectancy: An indication of how long a person can expect to live. Technically it is the number of years of life remaining to a person at a particular age if death rates do not change.

listeriosis: A disease which normally appears in otherwise healthy people as an acute, mild fever, sometimes with influenza-like symptoms, caused by the bacteria Listeria monocytogenes and usually foodborne. It can cause more severe symptoms in newborns, the elderly, people with poor immunity and pregnant women (in whom it can also cause abortion).

low birthweight: Birth of a baby weighing less than 2,500 grams.

lymphoma: A cancer of the lymph nodes. Lymphomas are divided into two broad types, *Hodgkin's disease*/lymphoma and *non-Hodgkin's lymphoma* (NHL).

major diagnostic categories (MDCs): A high level of groupings of patients used in the AN-DRG classification.

malignancy: See *cancer*.

mammogram: X-ray of the breast. May be used to assess a breast lump or as a screening test in women with no evidence of cancer.

mania: A mental disorder where the person is overexcited, overactive and excessively and unrealistically happy and expansive. It is the opposite of depression and can alternate with it in the same person in what is known as *bipolar affective disorder* (formerly known as manic depression).

manic depression; manic depressive disorder: See *bipolar affective disorder*; *mania*; and *depression*.

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. Preventable by vaccine.

median: The midpoint of a list of observations ranked from the smallest to the largest.

Medicare: A national, government-funded scheme that subsidises the cost of personal medical services, and that covers all Australians to help them afford medical care.

melanoma: A cancer of the body's cells that contain pigment (melanin), mainly affecting the skin.

meningitis: Inflammation of the brain's covering (the meninges), as can occur with some viral or bacterial infections.

mental disorders: Disturbances of mood or thought that can affect behaviour and distress the person or those around them, so the person cannot function normally. Includes *anxiety disorders*, *depression* and *schizophrenia*.

metastasis: The spread of a cancer from its original site to other parts of the body.

morbidity: Refers to ill health in an individual and to levels of ill health in a population or group.

mortality: Death.

motor neurone disease: A disease of the nervous system with progressive wasting of muscles, weakness and paralysis.

multiple sclerosis: One of the most common nervous system disorders, with varied symptoms such as loss of control of limbs, sudden vision problems and disturbed sensations.

mumps: A contagious viral disease marked by acute and painful swelling of the saliva-producing glands, often similarly affecting the testicles and sometimes other parts.

musculoskeletal: Relating to the muscles, joints and bones.

myocardial infarction: Term still commonly used to mean a *heart attack*, but more correctly refers only to those heart attacks which have caused some death of heart muscle.

neonatal death: Death of an infant within 28 days of birth.

neonatal mortality rate: Number of neonatal deaths per 1,000 live births.

neural tube defects: Defects such as spina bifida and anencephalus that have arisen in the neural tube, the part of the embryo that develops into the brain and spinal cord.

neurosis/neurotic disorders: A broad category of mental disorders with anxiety as their main feature and whose symptoms are mostly exaggerations of normal emotions or behaviour. Includes *anxiety disorders*, *obsessive–compulsive disorder*, stress reactions and other problems.

non-Hodgkin's lymphoma: A range of cancers of the lymphatic system (lymph glands and the channels they are linked to) which are not of the Hodgkin's variety.

non-admitted patient: A patient who receives care from a recognised non-admitted patient service/clinic of a hospital.

nursing homes: Establishments which provide long-term care involving regular basic nursing care to chronically ill, frail, disabled or convalescent people or senile inpatients.

obesity: Marked degree of overweight, defined as body mass index 30 and over. See also overweight.

obsessive–compulsive disorder: A form of anxiety disorder where repeated and unwanted thoughts and impulses disturb and dominate a person. Often involves rituals such as excessive-hand washing, checking and counting, which in turn cause anxiety if they are prevented or out of control.

occasion of service: Occurs when a patient receives some form of service from a functional unit of the hospital, but is not admitted.

ophthalmology: A medical specialty dealing with eye diseases.

Organisation for Economic Co-operation and Development (OECD): An organisation of 24 developed countries, including Australia.

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.

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.)

overweight: Defined as a body mass index 25 and over but less than 30. See also obesity.

panic disorder: Marked by panic attacks (episodes of intense fear or discomfort) that occur suddenly and unpredictably.

Pap smear: Papanicolaou smear, a procedure to detect cancer and pre-cancerous conditions of the female genital tract.

parasuicide: The deliberate or ambivalent act of self-damage which is potentially life-threatening, but not resulting in death.

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.

performance indicators: Measures of the efficiency and effectiveness of health services (hospitals, health centres, etc.) in providing health care.

perinatal: Pertaining to or occurring in the period shortly before or (usually 28 days) after birth.

perinatal death: Foetal or neonatal death.

perinatal mortality rate: Number of perinatal deaths per 1,000 total births (foetal deaths plus live births).

peripheral vascular disease: Pain in the legs due to an inadequate blood supply to them.

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. Preventable by vaccine.

Pharmaceutical Benefits Scheme (PBS): A national, government-funded scheme that subsidises the cost of a wide range of pharmaceutical drugs, and that covers all Australians to help them afford standard medications.

phobia: A form of anxiety disorder in which there is persistent, unrealistic fear of an object or situation and which interferes with the person's life as they seek to avoid the object of their fear. Different phobias include fear of heights, flying, open spaces, social gatherings, animals such as spiders and snakes, etc.

poliomyelitis (polio): Muscle paralysis, wasting and deformity of limbs after infection by a common virus (poliovirus) that can damage the so-called motor nerves in the spinal cord. Preventable by vaccine.

post-traumatic stress disorder (PSD): A form of anxiety disorder in which a person has a delayed and prolonged reaction after being in an extremely threatening or catastrophic situation such as a war, natural disaster, terrorist attack, serious accident or witnessing violent deaths.

potential years of life lost (PYLL): Number of potential years of life lost in a population as a result of premature death.

prescription drugs: Pharmaceutical drugs available only on the prescription of a registered medical practitioner and available only from pharmacies.

prevalence: The number or proportion (of cases, instances, etc.) present in a population at a given time. Compare with *incidence*.

prevention (of disease): Action to reduce or eliminate the onset, causes, complications or recurrence of disease.

principal diagnosis: The diagnosis describing the problem that was chiefly responsible for the patient's episode of care in hospital.

principal procedure: The most significant procedure that was performed for treatment of the principal diagnosis.

private health insurance: See Box 5.5, page 262.

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 paramedical practitioners. Includes private freestanding day hospital facilities.

private patients: Persons admitted to a private hospital; or persons admitted to a public hospital who decide to choose the doctor(s) who will treat them and to have private ward accommodation. This means they will be charged for medical services, food and accommodation.

prostate cancer: Cancer of the prostate, the male organ that sits next to the urinary bladder and contributes to the semen (sperm fluid).

psychiatric hospitals: Establishments devoted primarily to the treatment and care of inpatients with psychiatric disorders.

psychosis: A broad grouping for a more severe degree of mental disturbance, often involving fixed, false beliefs known as delusions.

public health: Term variously referring to the level of health in the population, to actions that improve that level or to related study. Activities that aim to benefit a population tend to emphasis prevention, protection and health promotion as distinct from treatment tailored to individuals with symptoms. Examples include provision of a clean water supply and good sewerage, conduct of anti-smoking education campaigns and screening for diseases such as cancer of the breast and cervix.

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 who need it.

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 the patient is not charged.

quintile: A group derived by ranking the population according to specified criteria and dividing it into five equal parts.

radiology: The use or study of X-rays and other rays to help view internal parts of the body as a guide to diagnosis as well as to treatment and its progress.

real expenditure: Expenditure expressed in terms which have been adjusted for inflation (for example, in 1989–90 dollars). This enables comparisons to be made between expenditures in different years.

recurrent expenditure: Expenditure on goods and services which are used up during the year, for example, salaries. It may be contrasted with capital expenditure, such as expenditure on hospital buildings and large-scale diagnostic equipment, the useful life of which extends over a number of years.

refraction: The eye's ability to bend light rays that enter it, to form an image at the back of the eye.

renal dialysis: A treatment for kidney failure where the patient is connected to a machine which does the kidneys' work by filtering the blood to control its contents.

revascularisation ('re-vesseling'): Restoring adequate blood flow to the heart or other part of the body, usually after the supply has been reduced or blocked, as in *angina* or a *heart attack*. Revascularisation includes methods such as *angioplasty* and *bypass graft surgery*.

rheumatic fever: An acute, serious disease that affects mainly children and young adults and can damage the heart valves, the heart muscle and its lining, the joints and the brain. Is brought on by a reaction to a throat infection by a particular bacterium. Now very rare in the non-Indigenous population but is still at unacceptably high levels among Indigenous Australians living in remote areas. See *rheumatic heart disease*.

rheumatic heart disease: Disease from damaged heart valves caused by childhood attack of rheumatic fever.

rheumatoid arthritis: A chronic, multi-system disease whose most prominent feature is joint inflammation, most often affecting the hand joints in symmetrical fashion. Can occur in all age groups but most commonly appears between ages 20 to 40 years. Causes not certain but involve *auto-immune* processes.

risk factor: Any factor which 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.

rubella (German measles): A contagious viral 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. Preventable by vaccine.

salmonellosis: a disease commonly marked by sudden onset of headache, abdominal pain, fever, diarrhoea, nausea and sometimes vomiting, caused by some types of Salmonella bacteria and often food-borne.

same-day patients: Admitted patients who are admitted and separated on the same day.

schizophrenia: A group of serious mental disorders where imagined and disordered thoughts are key features, often with problems of behaviour, mood and motivation, and a retreat from social life.

separation: The formal process by which a hospital records the completion of treatment and/or care for an admitted patient. See Box 5.6, page 283.

SF-36: Short Form 36—widely used questionnaire to measure general health and wellbeing.

shigellosis: A disease characterised by acute diarrhoea with fever, nausea and sometimes other symptoms, usually transmitted directly from person to person via the faecal–oral route. It is caused by Shigella species bacteria, including Shigella dysenteriae 1, the cause of dysentery.

sign (clinical): An indication of a disorder that is detected by a clinician or other observer who examines the person affected. Unlike with *symptoms*, a patient does not necessarily notice or complain of a sign and many signs are detected only with special techniques used by the person doing the examination.

social phobia: A persistent, irrational fear of being the focus of attention, or fear of behaving in a way that will be embarrassing or humiliating.

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 just due to chance. A statistical result is usually said to be 'significant' if it would occur by chance only once in twenty times or less often.

stent: A metal mesh tube that is expanded within an artery at a point of narrowing and left there to hold the artery open.

stillbirth: See *foetal death*.

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 disorders: Result from harmful use and/or dependence on illicit or licit drugs, including alcohol, tobacco and prescription drugs.

suicide: Deliberately ending one's own life.

symptom: Any indication of a disorder that is apparent to the person affected. Compare with *sign (clinical)*.

tetanus: A serious infection with a bacterial nerve poison causing spasm of the jaw muscles (lockjaw) and body muscles generally, from a bacterium entering through a wound. The disease is preventable by vaccine.

thrombolysis: Emergency 'clot-busting' drug treatment for a heart attack.

TIA, transient ischaemic attack: A 'mini' *stroke*, with temporary problems in speech or paralysis that last for 24 hours or less, often only minutes. A strong warning sign of a more severe stroke.

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.

Type 1 diabetes: A form of *diabetes* usually arising in childhood or youth ('juvenile onset'), 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 years and over and marked by reduced or less effective insulin.

tuberculosis: 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.

underweight: Defined 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 onset of chest pain with exertion or pain that accelerates by coming on more easily, more often or for longer than previously.

vaccination: The process of administering a vaccine to a person to produce immunity against infection. See *immunisation*.

ventricular septal defect: A congenital defect of the heart that occurs as an abnormal opening in the wall that separates the left and right main pumping chambers (the ventricles).

whooping cough: See *pertussis*.

yersiniosis: a disease typically involving acute diarrhoea, fever, and other abdominal symptoms, caused by the bacteria Yersinia pseudotuberculosis and Yersinia enterocolitica and often food-borne.

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