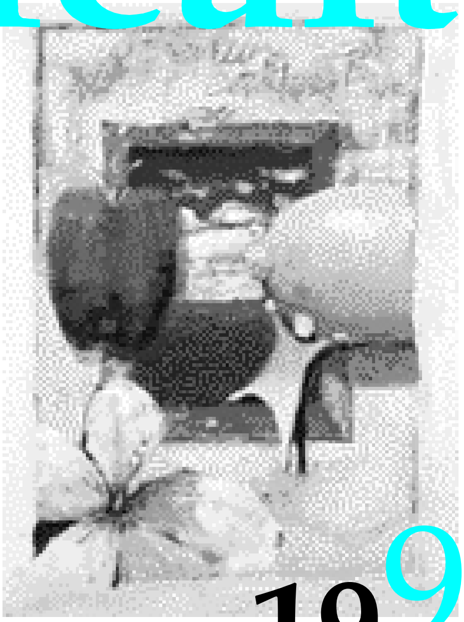
AUSTRALIA'S
Health



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of the Australian Institute
of Health and Welfare

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Australian Institute of Health and Welfare

The Institute is an independent health and welfare statistics and information agency in the Commonwealth Health and Family Services portfolio. The Institute's mission is to inform community discussion and decision making through national leadership in the development and provision of authoritative and timely information and analysis on the health and welfare of Australians.

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AIHW
AUSTRALIAN INSTITUTE
OF HEALTH & WELFARE

The Hon Dr Michael Wooldridge MP
Minister for Health and Family Services
Parliament House
Canberra ACT 2600

Dear Minister

The Institute is pleased to present to you *Australia's Health 1998*, a report containing statistics and related information concerning the health of the people of Australia and health services in Australia. The report is required under the *Australian Institute of Health and Welfare Act 1987.*

Yours sincerely

J Reid

Professor Janice Reid
Chairperson of the Board

1 June 1998

For health and welfare
statistics and information

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The Institute wishes particularly to thank those people from other organisations who have contributed to *Australia's Health 1998*.

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Preface

Welcome to the sixth edition of *Australia's Health*, the two-yearly summary of information on health in Australia. It is now regarded as Australia's most authoritative source on patterns of health and illness, the supply and use of health services, and their cost and performance.

The present edition reports specifically on Australia's five national health priority areas: cancer control, cardiovascular health, injury prevention and control, mental health and diabetes.

Australia's Health 1998 continues to report Australia's high health status overall, but also continuing poor Indigenous health and the lower health status of people living in rural and remote areas.

Australia's Health and its companion, *Australia's Welfare*, are the cornerstones of information on current health and welfare issues in Australia. The Institute is required by law to produce these reports every 2 years, as part of its mission to inform community discussion and policy debate on health and welfare issues in Australia. The Institute intends to keep these publications at the forefront of its work, so that public debate can take place against a background of factual and objective information.

Health and health care is always the subject of vigorous debate in Australia. Some commentators argue that Australia's health services are of very high quality by world standards and are accessible to those who need them. Others express concern about waiting time, about the frequency of quality lapses, or whether current practice is sufficiently based on scientific evidence. There is debate about the role and relationships between institutional and community-based services and about the contribution of public health action. Arguments about who should pay are always part of these debates. These matters are as pertinent to individual consumers as they are to health professionals, planners and purchasers, funders and service providers.

Australia's Health cannot of itself deliver answers on these issues. But the facts it contains hopefully will be equally useful to all parties and so make a major contribution to 'healthy' debate.

The 1998 edition is the product of the hard work of many in the Institute and some from other organisations. My thanks to all of them. Tony Wood, as editor, had the task of bringing the many contributions together and deserves special thanks.

Richard Madden
Director

x

1 Introduction

Australia is one of the healthiest countries in the world and Australians are becoming even healthier. This is shown by declining death rates, increasing life expectancy, a low rate of life-threatening infectious diseases and, for most people, ready access to health care when needed. But there is still room for improvement; good health is not enjoyed by all, and the health of Aboriginal and Torres Strait Islander peoples is poor by any standard.

This first chapter discusses what health is, what determines it, and the need for good information on the causes and patterns of health and illness in the community. Chapter 2 outlines how long Australians live, the major diseases they die from, illnesses reported and levels of disability and handicap. In chapter 3, the health and ill-health of special populations are discussed. Chapter 4 looks at the actions taken and progress made in improving the health of Australians in the priority areas of cardiovascular health, cancer control, injury prevention and control, mental health and diabetes mellitus. Chapter 5 focuses on other diseases and risk factors that are amenable to public health action. The cost of health services, employment in the health industry, and the provision and performance of institutional health services are examined in chapter 6. Chapter 7 discusses the question of access to and use of hospital, medical and other health services. The final chapter looks at current developments in health information, and identifies some of the gaps and deficiencies in health statistics.

A wide range of statistical tables is included after chapter 8. These tables include 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. Tables have also been included for some of the figures in the report, for the benefit of readers who may wish to examine the data in more detail.

1.1 Health and its determinants

What is health?

In 1946 the World Health Organization (WHO) defined health as ‘a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity’ (WHO 1946). This definition remains widely used. It emphasises health as a positive experience and places it in a broad social context.

Concepts and measures of health vary depending on the frames of reference used by consumers, different groups of health professionals, health economists and others (Noack 1997). Biomedical concepts of health are concerned with the biological processes of health and ill-health. Clinical and epidemiological approaches consider mainly death, disease, disability, life expectancy, and years of healthy life. The social sciences focus more on social, emotional and material wellbeing as well as the quality of life. Some measures are of everyday factors, such as whether people feel good, energetic or resilient. The understanding and measurement of health, therefore, needs to take account of the processes of disease, the management of illness, and the many factors which lead to improved health and wellbeing.

People can often feel perfectly fit and well despite underlying disease processes that will in time show up dramatically, and often suddenly, as serious illness such as heart attack or cancer. The factors that often play a major role in these processes, such as cigarette smoking and high blood cholesterol, are known as risk factors because they increase the risk of certain diseases. For these reasons many experts now see a truly healthy person as one who is not only symptom-free but also free of those risk factors that can be quietly 'hatching' disease. However, as discussed below, health is ultimately determined by many factors, not just physiological and behavioural risk factors.

Despite the broad context of health described above, much of the information available (and reported in this volume) is concerned with ill-health. This reflects the difficulty of measuring such concepts as 'wellbeing' and 'quality of life'.

What determines health?

Ideas about what determines health owe much to the evolution of epidemiology—the study of the causes and distribution of health and illness in populations. Epidemiology arose in the seventeenth century from a concern to improve public health and to reduce inequalities in mortality across society (Susser & Susser 1996). In the nineteenth century, the Sanitary Movement in England drew attention to the toll of sickness and death linked with industrial and urban living. Advances in microbiology led to the single-cause germ theory of disease, which dominated medical and public health sciences well into the twentieth century. The rise of chronic diseases in modern times forced a departure from the specific-cause model of the germ theory.

A multicausal framework is now generally used to explain population patterns of health and disease, sometimes referred to as the 'web of causation' (Krieger 1994). Some twenty years ago, a major Canadian government report depicted disease as an outcome of the interaction of human biology, lifestyle and environmental factors, as well as being modified by health care (Lalonde 1974). An analysis of factors contributing to the 10 leading causes of death in the United States attributed 50% of premature mortality to unhealthy behaviour and lifestyles, 20% to human biology, 20% to the physical environment and 10% to inadequate health care (Centers for Disease Control 1977).

Syme (1986) noted that there was a graded association between socioeconomic status and a range of health outcome measures. He suggested the need to consider environmental risk factors in understanding the causes of disease, and that these factors should be built into prevention programs. Psychological, cultural, educational and economic factors are important elements of the social environment for health and disease. Occupation, sex, marital status, major life events, social networks and social support are some of the other important related aspects. Health and economic wellbeing are related in that economic prosperity generally contributes to the health of the population.

The Ottawa Charter (WHO 1986) reflected these developing views by emphasising the need for broad health promotion strategies to improve the physical, social and economic environment. It recognised that for public policy to have the best influence on health, action was needed from a range of sectors, not just the traditional 'health systems'.

The Ottawa Charter also recognised that the capacity of individuals to alter their behaviour is greatly influenced by social and cultural factors. One of the health promotion strategies suggested was to help individuals develop personal skills to exercise more control over their own health and environments and to make healthy choices.

Figure 1.1 presents a simple model of health.

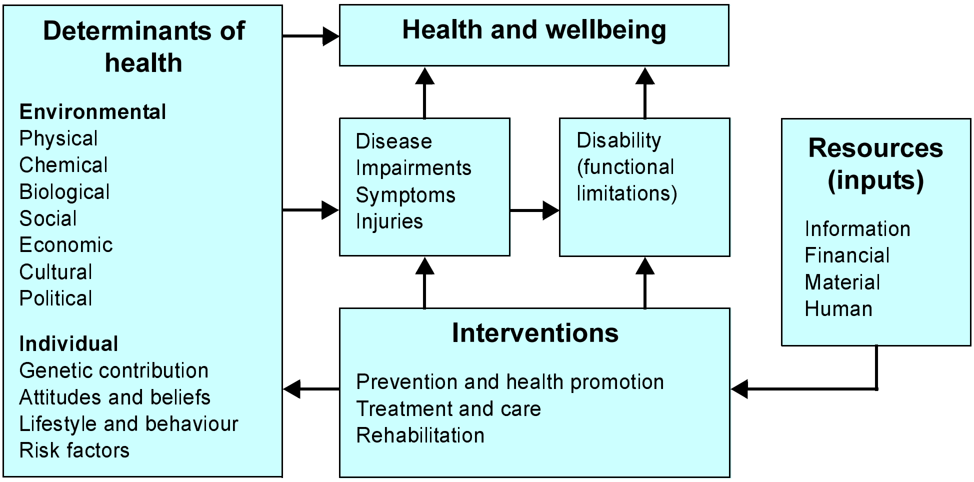


Figure 1.1: A conceptual framework for health

Large changes in global health patterns and technology (particularly in molecular biology and information technology) have broadened thinking about health even further (Susser & Susser 1996). Krieger (1994) proposed an 'ecosocial' framework that integrated biomedical and social approaches to understanding health. It was recognised that combating new infections such as HIV (human immunodeficiency virus) need efforts on many fronts, from research on the infecting agent and processes at the molecular level, to the behaviour of individuals and the societies they live in, through to the interactions among societies on a global scale. Developments in global communications, which provide instant access to health and social data stored around the world, have opened new possibilities for understanding and controlling disease, subject to privacy safeguards.

Implications for interventions

A better understanding of the determinants of good health has widened the scope for improvement. Rather than simply responding to immediate needs, it is now possible, through health promotion and control of risk factors, to ensure sustainable improvements in health and a better quality of life—at least for the population as a whole.

Chapter 4 looks at developments and progress in those areas of public health chosen as priorities for action. For maximum improvements, the health sector must develop partnerships with a wide range of other sectors to develop health-related activities that ensure the best use of limited resources. It must also ensure that other sectors take into account the possible health impact of their decisions.

Reorienting health care services along these lines remains central to public health policy. Australia's approach to the planning and delivery of health care is changing. Governments are faced with growing demands on treatment and care services. Population growth and ageing, the introduction of new technologies, uneven distribution of doctors, changing patterns of medical practice and patient expectations are all affecting service supply and demand. Responses to these pressures, such as the introduction of output-based funding for hospitals in some States and coordinated care trials, have tried to achieve efficiency gains without compromising the effectiveness of health care for individuals.

Also, since much illness and injury in the community is potentially preventable, it is a major challenge to develop approaches that get the right balance between treatment and prevention when allocating scarce resources within the health system.

Since the 1980s, Australia has implemented a series of national public health strategies and programs to tackle health problems in society, including HIV/AIDS, breast and cervical cancer, alcohol, tobacco and illicit drugs, immunisation, and mental health. These programs have involved a broad range of stakeholders (in both the health sector and the broader community) and have focused on health outcomes as a measure of their effectiveness. The discussion paper *Health Australia* (NHMRC 1995) has suggested the key factors in the success of these strategies are technical capacity, policy and strategic direction, and supportive structures. These lessons now need to be applied across the whole of the public health system.

Ultimately, a strong partnership between public health and clinical medical care is necessary to achieve and maintain the best health status of the population. Public health can help the health of all people, including those in medical care. Similarly, medical care has an important role in all aspects of prevention that operate at the individual level.

1.2 The role of health information

Reliable information on the determinants of health, the causes of ill-health, and the patterns and trends of health and illness in populations is fundamental to developing effective health policies and programs. In the area of public health, information is required to:

- monitor trends in the health and wellbeing of the community;
- help determine priorities for public health initiatives;
- identify emerging issues that require action;
- contribute to the design (or re-design) and management of public health activities; and
- monitor the effects of those activities.

Public health information is required for a range of target populations and to cover both population health activities and clinical medical care (especially primary health care). Valid and reliable data on prevalence, trends in a range of health outcomes, behavioural and environmental risk factors, and quality, cost and effectiveness of strategies are needed to support effective health system development as well as to further the broad research and development effort (WHO 1996).

Later sections of this report use health information to indicate the effectiveness of some of the public health strategies. For example, there has been a continuing decline in the death rate for cardiovascular disease associated with improved blood pressure levels among the population and a fall in smoking rates. There have also been declines in death rates for lung cancer among males and colorectal cancer among both males and females. The effectiveness of injury prevention and control programs is shown by the continuing decline in the injury death rate.

However, information also shows areas where further action is required. For example, more Australians are becoming overweight, smoking among young adults remains at a high level, suicide among young males is about three times the rate in 1960, and higher rates of childhood immunisation are required to achieve population immunity. Also, little progress has been made in reducing the gap between the health of Aboriginal and Torres Strait Islander populations and other Australians.

A national partnership approach to public health information is being established in Australia. This is a collaborative arrangement between the Commonwealth and the States and Territories, whereby data are collected in a standard way and pooled to produce national information. A nationwide linking of public health information with that in personal health care would also provide a more strategic approach to public health. The likely benefits of a national approach include greater:

- capacity to describe national public health problems and take concerted national action;
- capacity to produce national information, and comparable State and Territory information;
- capacity to observe and respond to emerging public health problems;
- pooling of information on rare events for epidemiological analysis;
- sharing of expertise across jurisdictions; and
- consistency and better coordination in tackling public health issues.

References

Centers for Disease Control 1977. Ten leading causes of death in the United States, 1975. Atlanta, GA: Centers for Disease Control.

Krieger N 1994. Epidemiology and the web of causation: has anyone seen the spider? Soc Sci Med 39(7):887–903.

Lalonde M 1974. A new perspective on the health of Canadians. Ottawa: Information Canada.

National Health and Medical Research Council (NHMRC) 1995. Health Australia: promoting health in Australia. Discussion paper. Canberra: NHMRC.

Noack RH 1997. Research for health promotion. Working paper for Fourth International Conference on Health Promotion, Jakarta, Indonesia, 21–25 July.

Susser M & Susser E 1996. Choosing a future for epidemiology. Am J Public Health 86(5):668–77.

Syme SL 1986. Strategies for health promotion. Prev Med 15:492–507.

World Health Organization (WHO) 1946. Constitution of the WHO. Reprinted in: Basic documents, 37th ed. Geneva: WHO.

World Health Organization (WHO) 1986. Ottawa Charter for health promotion. Document endorsed by the First International Conference on Health Promotion. Ottawa: WHO.

World Health Organization (WHO) 1996. Investing in health research and development. Report of the Ad Hoc Committee on Health Research Relating to Future Intervention Options. Geneva: WHO.

2 The health of Australians

2.1 Mortality

Over the past 5 years there were approximately 125,000 deaths each year in Australia. As Australia's population continues to grow and to age (12% were aged more than 65 years in 1996), the numbers of deaths each year are expected to increase over the next several decades. The pattern of these deaths in terms of cause, age, sex, population group and geographical distribution, and their resource and community impact is of interest to epidemiologists, health care personnel, and those working in health and social policy, planning and administration.

Mortality is one of the best known measures of health or ill-health in the community, and certainly the most widely available. Comparing mortality across population and disease groups, nationally and internationally, helps answer questions such as: is the mortality rate in one place lower or higher than in another?, is life expectancy in one population group better or worse than in another?, is the risk of this disease increasing or decreasing? However, mortality data do not answer questions directly about disease incidence or severity or quality of life before death, but do, nevertheless, provide a basis for investigating these issues. Often, mortality data are the only national information available on particular diseases due to their rarity, or the inability of the health information system to capture adequate diagnostic information at a reasonable cost.

Mortality patterns

Of the 128,719 deaths recorded in Australia in 1996, 68,206 were males and 60,513 were females. For as long as mortality data have been collected in Australia, male mortality rates have exceeded the female rates. For example, in 1921 males had a mortality rate 19% higher than females, and in 1996 this differential was 38%, having peaked in the early 1970s at approximately 40%. The difference in mortality rates can be explained by the differential impact of the various causes of death on each of the sexes.

Deaths of people aged 70 years and over account for 69% of all deaths, 21% occur at ages 50–69, 8% at ages 20–49, and 2% at ages less than 20 years. The sex difference is most marked in the age group 20–49, where the age-specific rate in males (166 per 100,000) is over twice that in females (77 per 100,000 population).

The major causes of death may be categorised in various ways. They are coded according to the International Classification of Diseases (WHO 1977) system, and can be grouped on the basis of similar disease groupings (e.g. infectious diseases or cancer), or may be disaggregated into specific disease entities (e.g. tuberculosis or breast cancer). Using the specific disease entity classification, five major causes of death stand out: ischaemic heart disease, cerebrovascular disease (stroke), lung cancer, chronic obstructive pulmonary disease, and colorectal cancer. These five causes of death affect both men and women. To these can be added the two most common sex-specific causes of death—cancer of the prostate in males and cancer of the breast in females. Together, these seven causes accounted for approximately half of all deaths in Australia in 1996.

It is important to note that although these causes are the most common overall, different causes of death are relatively more common in certain age groups. For those aged 50 years and over, the most common causes of death are generally the same as for the total population. However, causes of death in the younger age groups are significantly different. Suicide, ischaemic heart disease, motor vehicle accidents, drugs of dependence and breast cancer are the major causes of death in those aged 20–49. For the adolescents (15–19 age group) deaths from suicide and motor vehicle accidents are the most common. For children aged between 1 and 14 years, motor vehicle-related deaths, drowning, congenital anomalies and brain cancers are the most important. Infant deaths (aged less than 1 year) are comprised mostly of deaths attributable to congenital anomalies, complications of low birthweight and sudden infant death syndrome.

Trends in death rates between 1987 and 1996 for the most common causes of death indicate the following:

- **Ischaemic heart disease** has continued its steady decline which began in the late 1960s and is currently declining at 3.6% per annum for males and 3.5% for females. In 1996 the mortality rate was 196 per 100,000 population for males (down from a peak

Box 2.1: Comparing death rates

Statistics relating to deaths are sometimes presented as ***crude death rates****, that is, the number of deaths in a year divided by the number in the corresponding population. For example, the crude death rate in Australia in 1996 was 700 per 100,000 population.*

Since the risk of dying varies greatly with age and sex, even small differences in the age and sex structure of populations may affect comparison of crude death rates. One way around this difficulty is to compare ***age-specific death rates****, that is, mortality at particular ages for each sex, but this means that a separate comparison has to be made for each of many age and sex groups.*

Age-standardised death rates *are summary measures that allow comparison of populations with different age distributions, either different populations at the same time or the same population at different times. They are usually presented separately for males and females.*

For comparisons of Australian death rates over time, rates have been standardised to the Australian population at 30 June 1991 (ABS 1993a). AIHW and ABS have agreed to adopt this as the national standard until population estimates for 2001 become available. The standard used in Australia's Health 1996 *was 30 June 1991, whereas the 1992 and 1994 editions used the population at 30 June 1988 as a standard population for Australian death rates. Although rates in this publication cannot be directly compared with those in the 1992 and 1994 editions, the differences generally are small.*

The WHO European standard population (WHO 1995) has been used for calculating age-standardised rates for international comparisons, as it was in previous editions of Australia's Health.

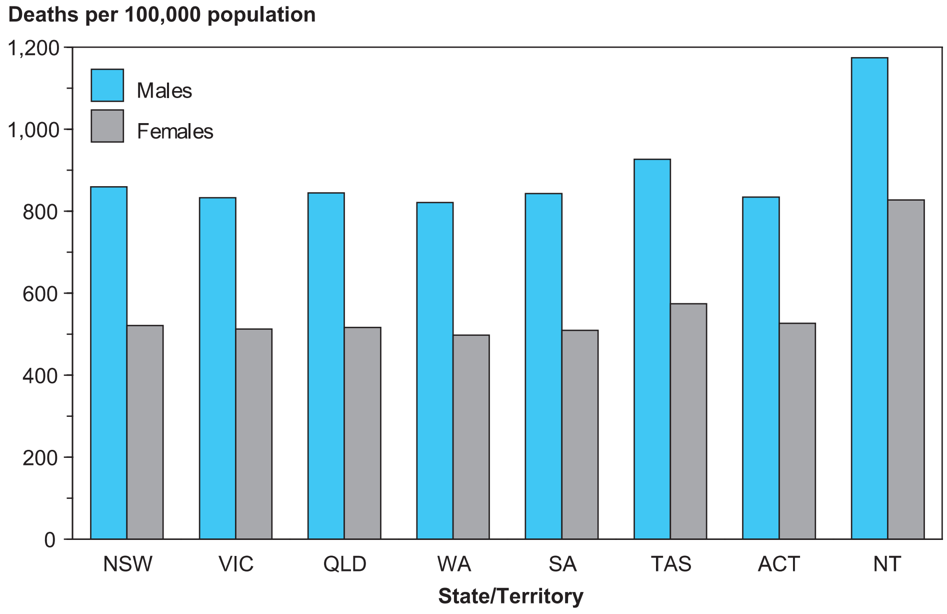
of 497 in 1968) and 106 per 100,000 for females (down from a peak of 250 in 1968). The gap between the sexes in 1996 was the smallest it has been in the last 10 years. This decline in mortality rates is believed to be due both to prevention, notably the fall in smoking rates and the control of blood pressure, and to improved management of the disease through the use of anti-hypertensive drugs and other medical interventions.

- **Cerebrovascular disease (stroke)** has also shown a steady decline from its peak in the late 1960s, and is currently declining at a rate of approximately 2.8% per annum in males and 3.0% in females. In 1996 the mortality rate was 66 per 100,000 population for males and 58 per 100,000 for females. This decline in mortality rates reflects the continuing success of health promotion messages relating to blood pressure management through anti-hypertensive drugs and a reduction in smoking levels (Hankey 1997).
- **Lung cancer** mortality rates in males appear to have peaked in the early 1980s (69 per 100,000 population) and then fell to their lowest point in 1996 (55 per 100,000), equivalent to rates experienced in the late 1960s. The recent decline has been at a rate of 1.9% per annum. The trend in mortality rates for females is one of consistent increase (3.4% per annum) with the highest rate occurring in 1996 (19 per 100,000), having doubled since 1975. The largest increases in mortality rates have occurred in women over the age of 65, although recent data indicate a significant increase in lung cancer incidence rates in some States in women under age 35. The male to female ratio of lung cancer mortality rates has fallen from being consistently above 5 in the 1970s and 1980s to its lowest in 1996 at 2.9. Smoking is the major known cause of lung cancer, and mortality rates from lung cancer reflect the changing patterns in smoking prevalence, lagged by around 20 years. Smoking in males has been falling consistently since the 1970s, whereas the prevalence of female smokers has increased.
- **Chronic obstructive pulmonary disease (COPD)** is a term for the combination of bronchitis and emphysema-related conditions and for other chronic airways obstructions (asthma is not included in this group, but is discussed elsewhere in this report). Mortality from COPD has declined in males from 60 per 100,000 population in 1987 to its lowest point of 47 per 100,000 in 1996. The greatest fall occurred in the 1987–1993 period, after which the reductions in the mortality rate have been modest. In females, the mortality rate has been relatively stable over the 1987–1996 period, just below 20 per 100,000. The mortality reductions in males have mostly been a result of a reduction in the smoking rates in males, the most common risk factor, and to a smaller degree better management of the disease. It will be important to monitor the changes in mortality rates in females as the increased smoking rates in the last 10 years take effect.
- **Colorectal cancer** mortality rates in males increased between the 1960s and early 1980s (peaking at 32 per 100,000 population), but since 1987 have shown declines of around 1% per annum to the 1996 rate of 29.2 per 100,000, a similar decline to that found in incidence rates. Mortality rates in females have been falling consistently since the mid 1940s (31 per 100,000) to their lowest point in 1996 of 19 per 100,000, with recent falls at 2.2% per annum. The falls in colorectal mortality have been a result of a combination of several factors: a reduction in disease risk through improved diet (less fat, more cereals and vegetables, reduced alcohol (Ireland & Giles 1993)), a possibly improved diagnosis (colonoscopy) and improved clinical

management. There may be further potential reductions in mortality rates as a result of asymptomatic screening using faecal occult blood testing, although the benefits in a population-based approach are currently being debated, with recommendations from the National Health and Medical Research Council (NHMRC) expected in 1998.

Mortality by State

In recent years, there have been substantial differences in death rates among the States and Territories. Generally, mortality rates in New South Wales, Victoria, Queensland and the Australian Capital Territory in both males and females are similar. Rates in Tasmania are somewhat higher than this group by approximately 10%. Western Australia and the Northern Territory have the lowest and highest mortality rates respectively (Figure 2.1).



Source: AIHW Mortality Database.

Figure 2.1: Age-standardised death rates, States and Territories, 1992–1996

Whereas death rates for many conditions have fallen in most States and the Australian Capital Territory, the Northern Territory has gone against this general trend, and has experienced increases in many death rates, most notably those from lung cancer and stroke.

Table S19, page 266, shows age-standardised death rates for the major causes of death for each of the States and Territories and the changes that have occurred over the two most recent 5-year periods, 1987–1991 and 1992–1996. The most significant trends are:

- Ischaemic heart disease rates have fallen significantly for both males and females in all States and Territories.

- Mortality rates for stroke have fallen in all States and Territories except for the Northern Territory and for males in the Australian Capital Territory.
- Lung cancer rates are highest in the Northern Territory. Whereas male rates have fallen in all States and Territories, female rates have risen in all except the Australian Capital Territory and Tasmania.
- The Northern Territory has the highest mortality rates for chronic obstructive pulmonary disease in both sexes. The Australian Capital Territory and Queensland have the lowest in males and females respectively. Male rates have fallen in all States and Territories, and female rates have risen in all except the Australian Capital Territory.
- Colorectal cancer mortality rates for males are highest in the Australian Capital Territory and Tasmania, and for females are highest in the Northern Territory and Tasmania. Colorectal mortality rates have fallen in New South Wales, Victoria and Queensland for both males and females. There has been a sharp rise in rates for the Northern Territory, particularly for females.

Life expectancy

Life expectancy is the average number of years of life remaining to a person at a specified age if current age-specific mortality experience does not change during the person's lifetime.

An Australian boy born in 1996 could expect to live 75.4 years and a girl could expect to live 81.1 years. By comparison, in the early 1920s, life expectancy at birth was 59.2 years for boys and 63.3 years for girls.

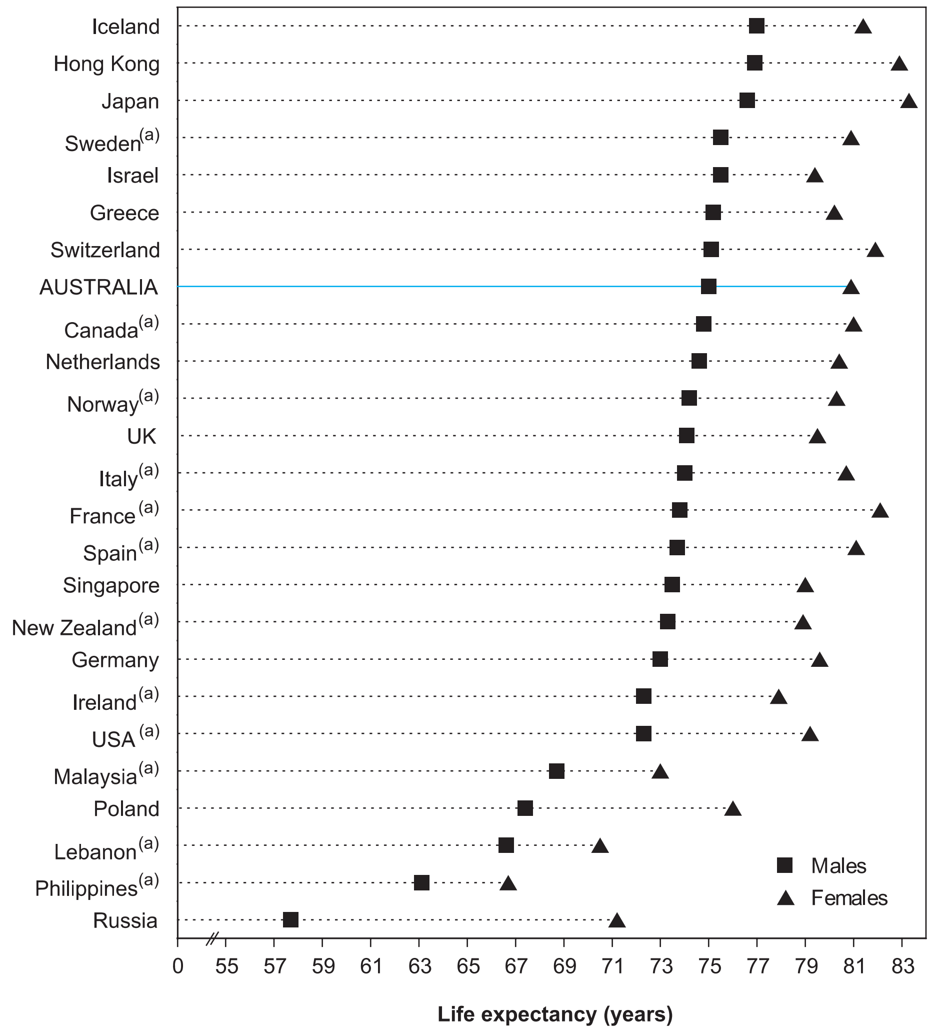
Recent reductions in the death rates at the older ages, especially from diseases of the circulatory system, have led to significant improvements in life expectancy of adults. Between 1920–22 and 1960–62, the life expectancy of men aged 65 years increased from 12.0 to 12.5 years. This gain of 0.5 years over a 40-year period may be compared with a gain of 3.2 years over the 35-year period from 1960–62 to 1996 when life expectancy for men at age 65 reached 15.9 years.

For women, life expectancy at age 65 improved by 2.1 years between 1920–22 (when it was 13.6 years) and 1960–62 (15.7 years). This compares with an increase in life expectancy of 4.0 years in the period from 1960–62 to 1996, when life expectancy for women at age 65 reached 19.5 years (Table S10, page 254).

Figure 2.2 (page 12) compares expectation of life in Australia in 1994 with that in a number of other countries. Japan has the highest life expectancy at birth for females and Iceland for males.

2.2 Diseases and illness

The 1995 National Health Survey (NHS), conducted by the Australian Bureau of Statistics, is the principal source of information on overall health status and prevalence of illness and injury in the community (see Box 2.2, page 13). Selected results from the NHS are presented in this section. Specific diseases are examined in more detail in later sections. Information on conditions treated in hospitals is in Section 7.1 (page 198).



(a) Philippines 1991; Italy, Spain, USA 1992; Canada, France, New Zealand, Norway, Sweden 1993; Ireland 1990–92; Lebanon, Malaysia 1990–95.

Sources: WHO 1995; UN 1995.

Figure 2.2: Life expectancy at birth by sex, selected countries, 1994

Self-assessed health status

Just over one-half (55%) of people aged 15 years or more reported their overall health as very good or excellent and a further 28% reported they were in good health. Proportions were similar for males and females. A further 13% rated their health as fair, and 4% considered their health to be poor. In interpreting these findings it should be noted that some of those in the worst health were excluded from the survey, for example, people living in institutions such as hospitals and nursing homes.

Self-assessed health status was strongly related to age, with the proportion reporting very good or excellent health declining with age, and the proportion reporting fair or poor health increasing with age (Figure 2.3, page 14).

The NHS collected information about illness or injury people had reported experiencing in the 2 weeks before the survey (recent illness) and about conditions they reported experiencing for 6 months or more (long-term conditions). The proportion reporting very good or excellent health was highest among those who did not report any recent or long-term condition (74%), and lowest among those reporting both recent and long-term conditions (47%).

Box 2.2: National Health Survey

The 1995 National Health Survey (NHS) is the second in a series of regular 5-yearly population surveys conducted by the ABS, designed to obtain national information on a range of health-related issues and to enable the monitoring of trends in health over time. The survey obtained information about the health status of Australians, their use of health services and facilities, and health-related aspects of their lifestyle, such as smoking, alcohol consumption and exercise. The survey collected information from a sample of about 23,800 households, over the 12-month period from February 1995 to January 1996.

The concepts and definitions used in the survey for those data items included in this section are presented below. Further information is available in the ABS publication 1995 National Health Survey: Users' Guide *(ABS 1996b).*

Recent illness: *Illness or injury experienced in the 2 weeks before interview. May include long-term conditions experienced in that period.*

Long-term condition: *Illness, injury or disability which the respondent had had for 6 months or more, or which was expected to last for 6 months or more.*

Type of condition: *As reported by respondents, and categorised using a classification developed for the survey based on ICD-9. Conditions reported are not necessarily medically diagnosed conditions.*

Serious conditions: *For the purposes of this section, includes cancer, thyroid disease, gout, diabetes, high blood sugar, glaucoma, epilepsy, paralysis, atherosclerosis, hypertension, heart disease and stroke, bronchitis and emphysema, asthma, ulcer, hernia, kidney disease, complications of pregnancy, psoriasis, arthritis, rheumatism, congenital abnormalities, fractures and internal injuries.*

Self-assessed health status: *As reported by respondents according to a 5-point Likert scale (excellent, very good, good, fair, poor).*

SF-36: *Short Form 36 questions Health Survey, developed by the Medical Outcomes Trust, Boston, USA (Ware et al. 1993). This questionnaire measures overall health and wellbeing across eight dimensions of health. From responses to the questions, scores of 0–100 for each dimension are derived; a higher score indicates a better state of health. SF-36 results from the 1995 National Health Survey are published by the ABS in* SF-36: Population Norms *(ABS 1997b).*

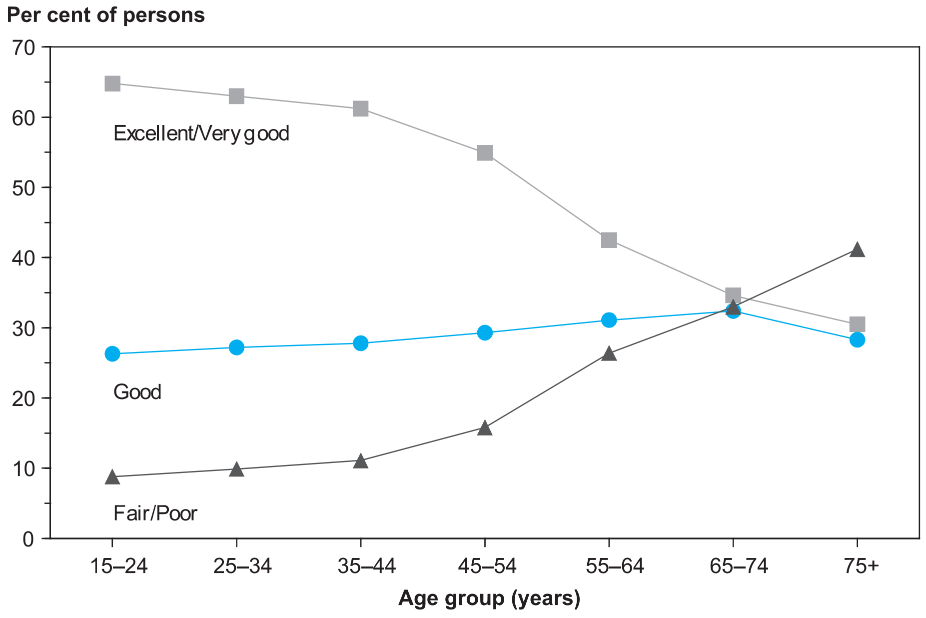
(continued)

Box 2.2 (continued): National Health Survey

Health-related action: *Actions taken in response to illness or injury or for preventive reasons in the 2 weeks before interview. They comprise hospital admission (terminating in that 2-week period); visit to emergency or outpatient unit or to a day clinic; consultation with a doctor, dentist or other health professional; other contacts for health treatment, information or advice; use of medication; and/or days away from work/school and other days of reduced activity due to illness or injury. In general, reasons for action are recorded only for the most recent occasion of each type of action in the previous 2 weeks.*

Doctor consultation: *Any occasion in the 2 weeks before interview on which a person discussed his or her own health with, or received treatment or advice from, a doctor, including consultations in person, by telephone or having someone consult on the patient's behalf. Excluded are consultations at hospitals (at casualty, outpatients or during a stay in hospital) and day clinics. Includes general practitioners and specialists.*

Use of medication: *Consumption or other use of medications, pills or ointments during the 2 weeks before interview, including vitamins and minerals and natural and herbal medications.*



Source: ABS 1997a.

Figure 2.3: Self-assessed health status by age, 1995

Recent and long-term conditions

The prevalence of illness reported here includes many minor and temporary conditions, as well as the chronic and more serious conditions.

Overall, 65% of males and 73% of females reported one or more recent illnesses, down slightly from a similar survey conducted in 1989–90 (66% and 75% respectively). Diseases of the respiratory system were the most common recent illnesses, reported by 22% of the population. The most frequently reported respiratory conditions were asthma, the common cold and influenza. Other commonly reported recent illnesses were headaches (13% of the population), diseases of the circulatory system (12%), and diseases of the digestive system (11%).

Around three-quarters of the population (73% of males, 76% of females) reported a long-term condition. Although there is some overlap between recent and long-term conditions as defined for the survey, the pattern of long-term conditions was quite different from that for recent illness outlined above. Overwhelmingly, sight conditions were the most common long-term conditions reported; for example, 21% of people were far-sighted, 20% were short-sighted and 14% had other sight disorders of refraction and accommodation. Other commonly reported long-term conditions were arthritis (15%), hay fever (14%), asthma (11%) and hypertension (10%).

Although recent and long-term conditions are of interest separately, the best estimates of the overall prevalence of conditions are obtained by combining the recent illness and long-term condition groups (Table 2.1). These combined prevalence estimates are used in the remainder of this section.

Table 2.1: Most frequently reported conditions[(a)], 1995 (per cent)

Type of condition	Males	Females
All disorders of refraction and accommodation	42	52
Far sight	19	23
Short sight	18	23
Deafness (complete or partial)	12	7
Hypertension	10	11
Asthma	11	12
Hay fever	13	15
Sinusitis	8	12
Arthritis	12	18
Headache	11	16

(a) Recent illness and long-term conditions combined.

Source: NHS unpublished data.

Conditions affecting children

Respiratory conditions were the most common conditions reported for children aged less than 15 years (Table 2.2, page 16). Overall, 37% of children were reported to have a respiratory condition, with asthma (16%), influenza, coughs and colds (16%) and hay fever (7%) the most common. Other commonly reported conditions within this age group were skin disorders (9%), sight disorders of refraction and accommodation (8%), dental problems (7%), and injuries (6%).

Table 2.2: Most frequently reported conditions among children 0–14 years, 1995 (per cent)

Type of condition	Males	Females
All respiratory conditions	*38*	*35*
Asthma	18	14
Hay fever	7	6
Cold/influenza/cough/sore throat	15	17
Sight disorders of refraction and accommodation	7	10
Injuries	7	6
Dental problems	6	7
Allergy nec	6	6
Disorders of ear and mastoid process	6	5
Eczema/dermatitis	5	5

Source: NHS unpublished data.

Conditions affecting males

Among males aged 15 years or more, the most frequently reported conditions were diseases of the nervous system and sense organs (60%), most of which were sight disorders of refraction and accommodation (53%), and deafness (15%). Respiratory conditions were reported by 35% of males in this age range, with hay fever (15%), sinusitis (10%), asthma (9%) and colds, influenza, coughs and sore throat (9%) the most common conditions. Other commonly reported conditions among males were diseases of the circulatory system (22%) and in particular hypertension (13%), diseases of the digestive system (mainly dental conditions, ulcer and hernia) and diseases of the musculoskeletal system and connective tissue, including arthritis (15%) and back problems (9%). Just over 13% of males aged 15 years or more reported endocrine, nutritional and metabolic disorders, including high cholesterol (7%), gout (3%) and diabetes (3%).

For most types of condition, the prevalence among males increased markedly with age (Table 2.3). Sight disorders of refraction and accommodation increased from 20% of males aged 15–24 years, to over 90% of those aged 55 years or more. Diseases of the circulatory system were strongly age-related, rising from around 3% of those aged 15–24 years to 60% of those aged 65 years or more. In contrast, the prevalence of respiratory conditions in total did not differ very markedly by age, from a low of 31% of males aged 45–64 years to a high of 39% of those aged 15–24 years. The prevalence of bronchitis/emphysema increased from 3% of those aged 15–24 years to 15% of those aged 75 years or more.

Conditions affecting females

Although women aged 15 years or more were more likely to report a condition than were males (88% compared with 84%), the types of conditions reported were broadly similar. Diseases of the nervous system and sense organs were the most frequently reported conditions (66%), mainly sight disorders of refraction and accommodation (63%). Respiratory conditions were reported by 40% of females aged 15 years or more, with hay fever (17%), sinusitis (15%) and asthma (11%) the most common respiratory conditions. Other commonly reported conditions among females were diseases of the musculoskeletal system (mainly arthritis 22%), and circulatory conditions, particularly hypertension (14%). Some 18% reported endocrine, nutritional, metabolic or immunity disorders, mainly high cholesterol (6%) and thyroid disorders (4%). Just under 3% of women aged 15 years or more reported they had diabetes.

As for males, the prevalence of most conditions among females increased with age (Table 2.4). Overall, 95% of all women aged 45 years or more reported one or more medical conditions. The prevalence of sight disorders of refraction and accommodation increased markedly with age from 37% of women aged 15–24 years to over 90% of those aged 55 years or more. Similarly, reporting of diseases of the circulatory system increased with age from 7% of women aged 15–24 years to around two-thirds of those

Table 2.3: Most frequently reported conditions among males, selected ages, 1995 (per cent)

Rank	25–34 years		45–54 years		65–74 years	
1	Sight disorders[(a)]	25	Sight disorders[(a)]	82	Sight disorders[(a)]	95
2	Hay fever	18	Deafness	18	Arthritis	39
3	Headache	16	Arthritis	17	Hypertension	38
4	Cold/influenza/ cough/sore throat	11	Hypertension	14	Deafness	36
5	Sinusitis	10	Headache	14	Heart disease/stroke	21
6	Back problems[(b)]	9	Back problems[(b)]	13	High cholesterol	13
7	Injuries	9	Hay fever	12	Hay fever	12
8	Asthma	8	High cholesterol	11	Bronchitis/emphysema	10
9	Deafness	7	Sinusitis	10	Diabetes	10
10	Allergy nec	6	Cold/influenza/ cough/sore throat	8	Hernia	10

(a) Disorders of refraction and accommodation.
(b) Includes disorders of intervertebral disk, curvature of the spine and back problems nec.

Source: NHS unpublished data.

Table 2.4: Most frequently reported conditions among females, selected ages, 1995 (per cent)

Rank	25–34 years		45–54 years		65–74 years	
1	Sight disorders[(a)]	39	Sight disorders[(a)]	88	Sight disorders[(a)]	97
2	Headache	24	Arthritis	26	Arthritis	56
3	Hay fever	18	Headache	18	Hypertension	43
4	Sinusitis	15	Sinusitis	17	Deafness	18
5	Cold/influenza/ cough/sore throat	12	Hay fever	17	Varicose veins	17
6	Asthma	11	Hypertension	14	High cholesterol	17
7	Varicose veins	7	Varicose veins	14	Sinusitis	13
8	Allergy nec	7	Disorders of menstruation	11	Hay fever	13
9	Back problems[(b)]	7	Asthma	10	Heart disease/stroke	11
10	Eczema/dermatitis	6	Back problems[(b)]	10	Osteoporosis	11

(a) Disorders of refraction and accommodation.
(b) Includes disorders of intervertebral disk, curvature of the spine and back problems nec.

Source: NHS unpublished data.

aged 65 years or more. The proportion of females with respiratory conditions declined progressively with age from 44% of those aged 15–24 years to 36% of those aged 65–74 years and 32% of those aged 75 years or more. The proportion of women reporting headaches declined sharply with age from around 24% of those aged 25–34 years to 5% of those aged 75 years or more.

General health and wellbeing

The 1995 NHS collected information on general health and wellbeing using the SF-36 Health Survey (Ware et al. 1993). The SF-36 scores each of eight dimensions of health—physical functioning, role limitations due to physical problems, bodily pain, general health perceptions, vitality, social functioning, role limitations due to emotional problems, and mental health, together with a separate question on perceived health status changes (health transition). Selected SF-36 results are presented in Figures 2.4 and 2.5. In interpreting these profiles, higher scores indicate better health and/or wellbeing. It is the differences between the lines that are important; the overall shape of the lines simply reflects the ordering and nature of the scales used for each of the dimensions.

The SF-36 profiles for males and females aged 18 years or more were similar, with males scoring slightly higher than females for all dimensions except the general health dimension. In general, older people had lower SF-36 scores than younger people, reflecting their relatively poorer state of health and wellbeing, particularly in those dimensions relating to physical health. There was little or no age variation in the scores for the mental health dimension.

SF-36 profiles were, in general, influenced by the type and number of conditions reported. There were big effects for conditions such as cancer, diabetes, arthritis and heart disease. Some conditions appeared to have less effect on overall health and wellbeing than others. For example, the SF-36 profiles of those with and without hay fever were almost identical, while those with and without asthma, and with and without hypertension were closer than for other conditions. This suggests that these conditions, although potentially very serious, had less effect on people's perception of their overall health and wellbeing, as measured using the SF-36.

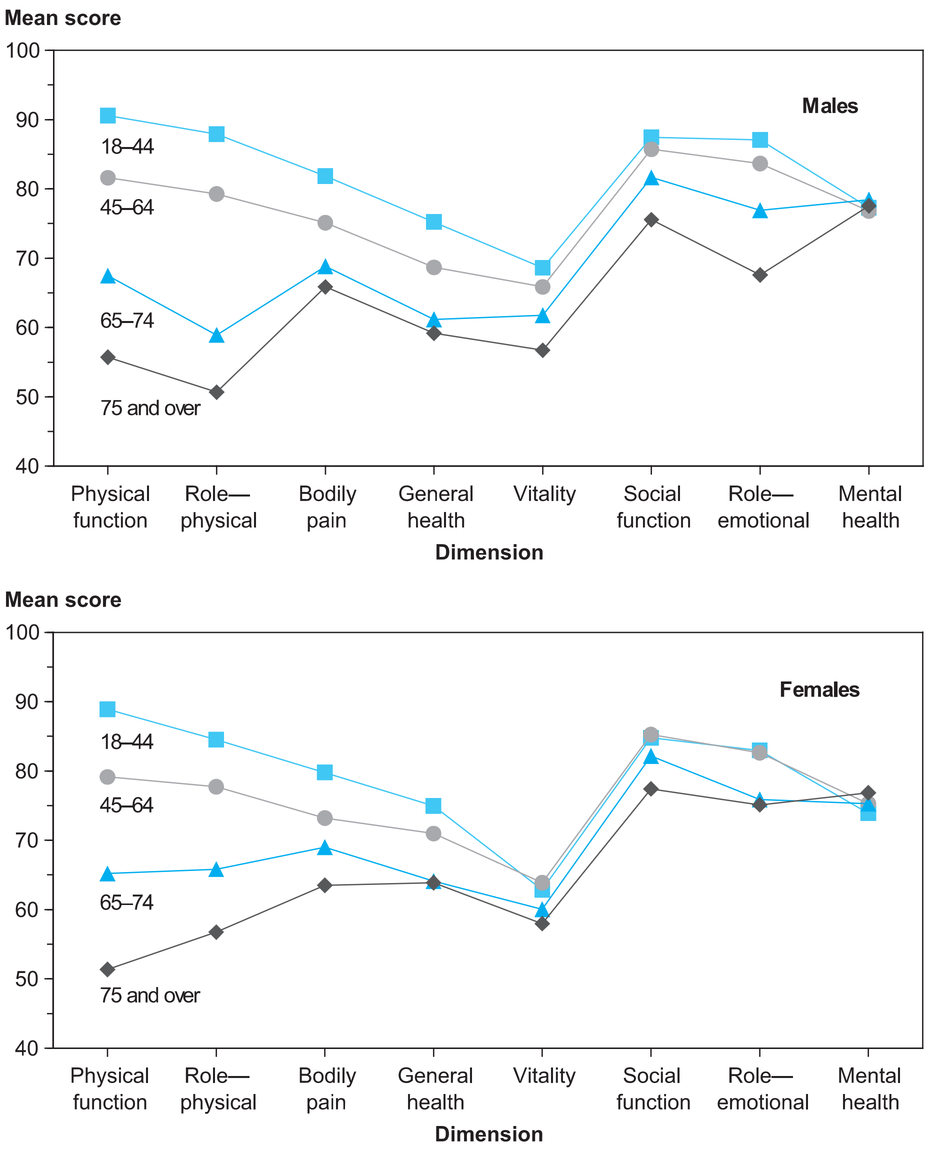
The health transition question provides an indication of change in overall health. Results show that 10% of men and 11% of women aged 18 years or more felt their health was worse than 12 months earlier, and 19% of men and 23% of women felt their health was better than 12 months earlier. Those in younger age groups were more likely to consider their health had improved, whereas older people were more likely to consider their health had worsened (Table 2.5, page 20).

There was a strong association between changes in health and self-assessed health status. For example, 19% of males and 20% of females who rated their health as excellent reported their health had improved over the past year. Conversely, 58% of males and 64% of females who rated their health as poor reported their health was worse than 12 months previously.

Health-related actions taken

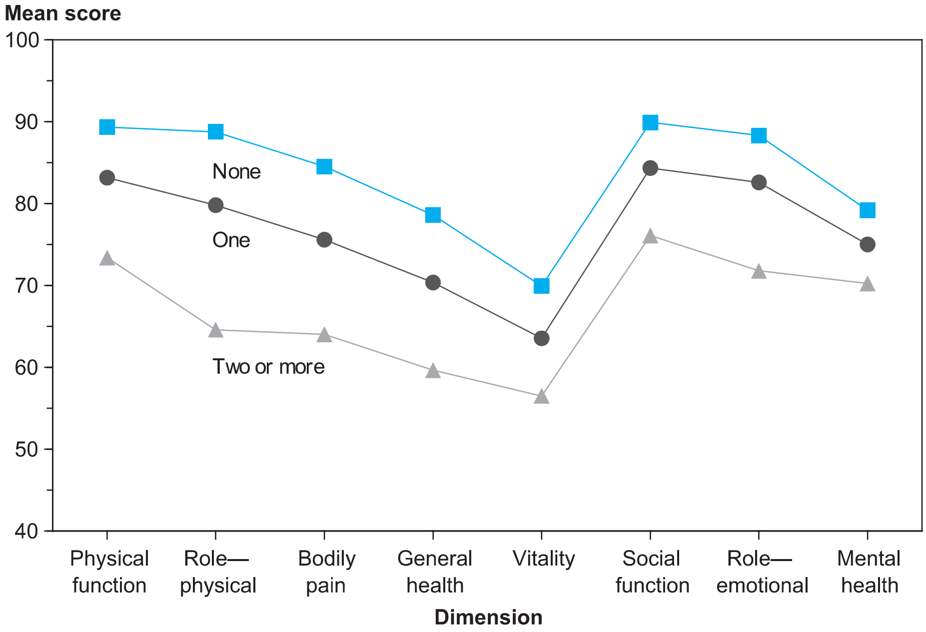
Information was collected in the 1995 NHS about health-related actions people had taken in the 2 weeks before the survey, either in response to an illness or injury or for other reasons such as check-up or other preventive health reasons.

Just over 75% of people took some action for their health in the 2 weeks before the survey. The most common actions taken were the use of medication (reported by 69% of people), consulting a doctor (23%), and consulting a dentist or other health professional (13%). Use of medications is discussed in more detail in Section 7.6 (page 222), doctor consultation is included in use of medical services (Section 7.4, page 210), and use of hospitals is discussed in Section 7.1 (page 198).



Source: ABS 1997b.

Figure 2.4: SF-36 profiles by selected age, 1996



Note: Age-standardised to the 1995 NHS population.

Source: ABS 1997b.

Figure 2.5: SF-36 profile by number of serious conditions, age- and sex-standardised, 1996

Table 2.5: Overall health compared with 12 months previously, persons 18 years and over, 1995

	Somewhat or much better	About the same	Somewhat or much worse
Age group (years)			
18–44	24	68	8
45–64	18	71	11
65 and over	13	68	20
Self-assessed health status			
Excellent/very good	22	75	3
Good	20	69	11
Fair/poor	14	47	39
Sex			
Males	19	71	10
Females	23	66	11

Source: ABS 1997b.

2.3 Disability and handicap

As well as reflecting the long-term consequences of disease and impairment, levels of disability and handicap in the Australian population provide some indicators of needs for medical, rehabilitation and welfare services. The need for and use of disability support services in Australia are described in detail in *Australia's Welfare 1997*. The most recent national Australian population survey on disability was the 1993 Survey of Disability, Ageing and Carers conducted by the Australian Bureau of Statistics. A further survey was conducted in early 1998, with results expected to become available in February 1999. Detailed results from the 1993 survey have been published elsewhere (ABS 1993b; Mathers 1996; AIHW 1997); the information presented here provides an overview of the patterns of disability and handicap in the Australian population.

The 1993 ABS survey defined 'disability' as the presence of one or more of fifteen 'restrictions, limitations or impairments' identified by survey respondents (see Box 2.3, page 22). These definitions are related to the conceptual framework embodied in the World Health Organization's International Classification of Impairments, Disabilities, and Handicaps (ICIDH) (WHO 1980). The ICIDH identifies three dimensions for the disablement process—impairment, disability and handicap.

Impairment is defined to be any loss or abnormality of psychological, physiological or anatomical structure or function and occurs at the level of organ or system function. Disability is defined in terms of restriction or lack (resulting from an impairment) of ability to perform normal functions or activities, and thus relates to the person. Handicap is a disadvantage, resulting from impairment or disability, that limits or prevents the fulfilment of a role that is normal (depending on the person's age and sex, and social and cultural factors). Handicap thus focuses on the person as a social being and reflects the interaction with and adaptation to the person's surroundings.

Disability

According to the ABS survey definition (see Box 2.3), there were 3,176,700 people in Australia with disability in 1993, representing 18.0% of the population. Although the prevalence of disability rises with age, people aged 65 years and over account for only 36% of Australians with disability. Among this older age group, 55% were female, reflecting the greater proportion of females among the older population. Among the population aged under 65, there were an estimated 2,031,900 people with disability, of whom 925,700 (45.6%) were female, and 1,106,200 (54.4%) male.

More than 70% of people with disability reported that it was primarily due to a physical condition (Table 2.6, page 23). The next most frequent group of disabling conditions was those affecting sensory abilities (18% of the population with disability). Intellectual, mental and psychiatric conditions accounted for the remaining 12%. These data do not indicate the overall prevalence of these conditions, since they count each person only once, according to the main disabling condition.

The ABS disability survey screening questions may be sources of underestimation of psychiatric disability (Madden et al. 1995). Using additional information from that survey, the AIHW has derived a prevalence estimate for psychiatric disability of 2.8% (AIHW 1997). The 1995 NHS indicated that about 3.1% of Australians living in households reported long-term mental disorders (excluding retardation and developmental delay).

Box 2.3: Areas of limitation, restriction or impairment identified by the ABS

Affirmative responses to any of the following categories 'screen' the person into the ABS survey, where the limitation, restriction or impairment has lasted or was likely to last for 6 months or more:

- *loss of sight, not corrected by glasses or contact lenses*
- *loss of hearing*
- *speech difficulties in native language*
- *blackouts, fits, or loss of consciousness*
- *slowness at learning or understanding*
- *incomplete use of arms or fingers*
- *difficulty gripping or holding small objects*
- *incomplete use of feet or legs*
- *treatment for nerves or an emotional condition*
- *restriction in physical activities or in doing physical work*
- *disfigurement or deformity*
- *long-term effects of head injury, stroke or any other brain damage*
- *a mental illness requiring help or supervision*
- *treatment or medication for a long-term condition or ailment, person still restricted*
- *any other long-term condition resulting in a restriction.*

This list thus creates the implicit definition of disability for the survey. In terms of the WHO International Classification of Impairments, Disabilities and Handicaps *(1980), the ABS definition of disability ranges over impairment, disability and even handicap and health condition.*

The ABS surveys defined a handicapped person as 'a disabled person aged 5 years or over who was further identified as being limited to some degree in his/her ability to perform tasks in relation to one or more of the following five areas: self-care, mobility, verbal communication, schooling, and/or employment'. Severity of handicap for people aged 5 years or over was assessed, for self-care, mobility, and verbal communication, as follows:

profound handicap: *personal help or supervision always required or the person is unable to perform tasks in one or more of the five areas.*

severe handicap: *personal help or supervision sometimes required.*

moderate handicap: *no personal help or supervision is required, but the person has difficulty in performing one or more of the tasks.*

(continued)

Box 2.3 (continued): Areas of limitation, restriction or impairment identified by the ABS

mild handicap: *no personal help or supervision are required and no difficulty is experienced in performing the tasks, but the person uses an aid, or has difficulty walking 200 metres or up and down stairs.*

All disabled children under the age of 5 years were regarded as having a handicap; the severity of their handicap was not assessed.

Note that these definitions of disability and handicap do not necessarily match those used in various government assistance programs. Australia's Welfare 1997 *discusses criteria used in various welfare programs in more detail.*

Source: ABS 1993c.

Table 2.6: People with a disability, by main disabling condition, sex and age, 1993 (per cent)

	Males			Females			Persons			
	0–64	**65+**	**All ages**	**0–64**	**65+**	**All ages**	**0–64**	**65+**	**All ages**	**Total ('000)**
Psychiatric[(a)]	*0.2*	*1.3*	*0.4*	*0.2*	*2.0*	*0.4*	*0.2*	*1.7*	*0.4*	*70.5*
Intellectual and other mental[(b)]	*1.5*	*1.2*	*1.5*	*1.7*	*2.0*	*1.7*	*1.6*	*1.7*	*1.6*	*283.0*
Sensory	*2.8*	*13.6*	*3.9*	*1.6*	*9.2*	*2.6*	*2.2*	*11.1*	*3.2*	*571.9*
Diseases of the eye	0.5	2.1	0.7	0.3	3.7	0.7	0.4	3.0	0.7	122.0
Diseases of the ear	2.3	11.5	3.2	1.4	5.5	1.9	1.8	8.1	2.6	450.0
Physical	*9.5*	*42.0*	*12.7*	*8.5*	*41.0*	*12.8*	*9.0*	*41.5*	*12.8*	*2,251.3*
Nervous system diseases	0.8	2.3	1.0	0.8	2.4	1.0	0.8	2.4	1.0	177.0
Circulatory diseases	0.9	9.1	1.7	0.5	7.2	1.4	0.7	8.0	1.6	276.7
Respiratory diseases	1.3	4.7	1.7	1.5	2.6	1.6	1.4	3.5	1.6	290.4
Arthritis	1.3	10.2	2.2	1.6	16.0	3.5	1.5	13.5	2.9	504.3
Other musculoskeletal disorders	2.0	4.0	2.2	1.6	3.6	1.9	1.8	3.8	2.0	359.0
Head injury/stroke/any other brain damage	0.3	1.0	0.4	0.2	1.0	0.3	0.3	1.0	0.3	59.6
All other diseases and conditions	2.8	10.7	3.6	2.2	8.1	3.0	2.5	9.2	3.3	584.4
Total	**14.0**	**58.1**	**18.4**	**12.0**	**54.3**	**17.6**	**13.0**	**55.9**	**18.0**	**3,176.7**

(a) This group is the same as the group entitled 'Mental psychoses' in ABS publications.

(b) This condition type is the same as the group entitled 'Other mental disorders' in ABS publications and includes not only 'slow at learning or understanding things', but also some psychoses and depressions; the category excludes conditions such as Down syndrome and infantile autism.

Source: AIHW 1997.

Handicap

Whereas disability refers to limitations in functional abilities, handicap refers to health-related limitations in participation in more complex tasks such as self-care, mobility and communication. The ABS survey classified handicap according to four levels of severity (see Box 2.3). Overall, 4.1% of Australians are classified as having a severe or profound handicap, requiring assistance for activities of daily living in the areas of mobility, communication and/or self-care. People with a psychiatric or nervous system condition, or head or brain injury, as a main disabling condition, were the most likely to report associated severe or profound handicap (Table 2.7). People with diseases of the ear, or circulatory or respiratory conditions, as their main disabling condition, were the least likely to report a severe or profound handicap.

Table 2.7: People with a handicap, by severity of handicap and main disabling condition, 1993 (per cent)

	Severity of handicap					All handicap	
	Profound	**Severe**	**Moderate**	**Mild**	**Not determined[c]**	**Prevalence**	**Total ('000)**
Psychiatric[a]	*0.2*	*0.0*	*0.0*	*0.0*	*0.0*	*0.4*	*64.0*
Intellectual and other mental[b]	*0.2*	*0.2*	*0.2*	*0.4*	*0.4*	*1.3*	*227.3*
Sensory	*0.2*	*0.1*	*0.1*	*1.0*	*0.3*	*1.7*	*303.8*
Diseases of the eye	0.1	0.1	0.0	0.2	0.1	0.5	91.2
Diseases of the ear	0.1	0.1	0.1	0.8	0.2	1.2	212.6
Physical	*1.7*	*1.4*	*2.2*	*4.0*	*1.5*	*10.8*	*1,905.1*
Nervous system diseases	0.4	0.1	0.1	0.2	0.1	0.9	154.0
Circulatory diseases	0.2	0.1	0.2	0.7	0.1	1.3	235.3
Respiratory diseases	0.1	0.1	0.2	0.5	0.3	1.2	215.9
Arthritis	0.3	0.4	0.6	1.0	0.2	2.5	439.9
Other musculoskeletal disorders	0.2	0.3	0.5	0.6	0.2	1.8	316.3
Head injury/stroke/any other brain damage	0.1	0.0	0.0	0.1	0.0	0.3	53.0
All other diseases and conditions	0.5	0.3	0.6	0.9	0.5	2.8	490.8
Total	**2.4**	**1.7**	**2.6**	**5.3**	**2.2**	**14.2**	**2,500.3**

(a) This group is the same as the group entitled 'Mental psychoses' in ABS publications.

(b) This condition type is the same as the group entitled 'Other mental disorders' in ABS publications and includes not only 'slow at learning or understanding things', but also some psychoses and depressions; the category excludes conditions such as Down syndrome and infantile autism.

(c) This group comprises all children with a disability aged 0–4 years and people who had a schooling or employment limitation only.

Source: AIHW 1995.

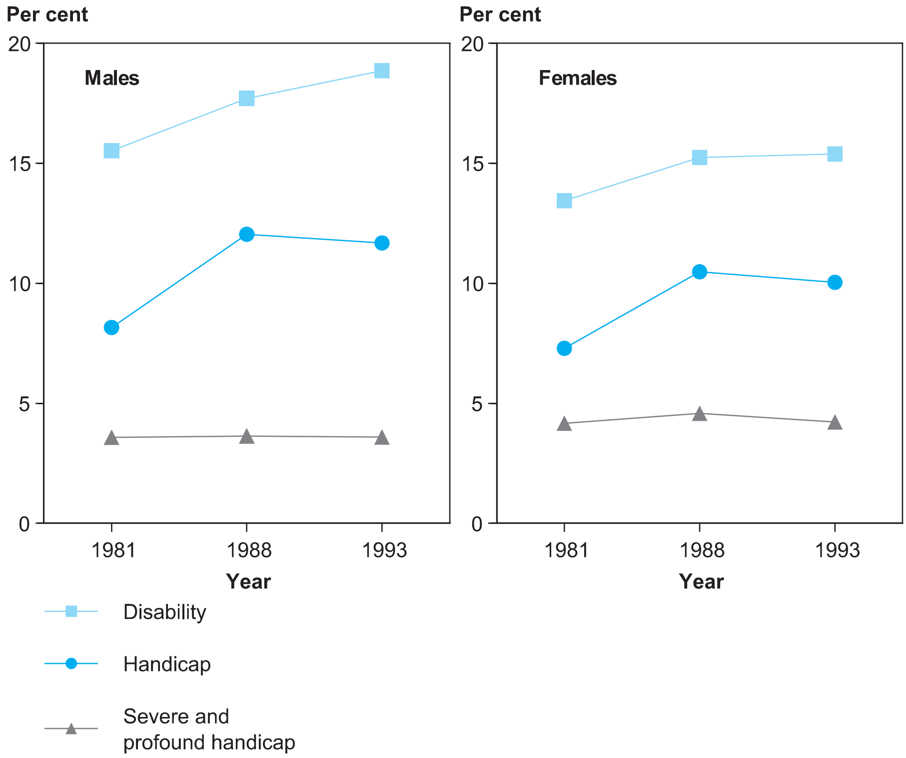
Multiple disabilities

All conditions were reported in the ABS disability survey at higher rates than indicated by their presence as a main disabling condition. Brain injury (for instance, from stroke or head injury) was frequently reported in combination with other conditions, but psychiatric conditions less commonly so. The presence of multiple disabilities or conditions is likely to be related to a more severe experience of disability for the individual. More than half the people reporting profound handicap in the ABS survey had a combination of impairments, whereas 74% of those with 'mild handicap' had only one impairment type or other condition (ABS 1996a).

Changes in prevalence

Age-standardised prevalence rates of disability and handicap reported in the ABS population surveys rose between 1981 and 1988, but tended to steady between 1988 and 1993 (Figure 2.6). However, age-standardised rates of severe and profound handicap remained stable over the three surveys, at just over 4% of the total population, and 2.5% of the population aged 15–64.

Possible factors involved in the substantial increase in reported disability and handicap prevalence levels at the less severe end of the disability spectrum have been discussed



Note: Age-standardised to the 1988 total Australian population. Prevalence rates for 1993 are derived on the basis of the 1988 form of the disability question.

Source: Mathers 1996.

Figure 2.6: Trends in age-standardised prevalence of disability, handicap and severe handicap in the Australian population aged 5 years and over, 1981 to 1993

by Mathers (1991, 1996). During this period, increasing attention has been paid to secondary prevention in health care services, and the early detection of disease and subsequent intervention to slow its progress, for many major fatal and non-fatal diseases. Self-assessment of limitations or need for assistance in relation to specified activities may have changed in line with changing community perceptions of disability and handicap. Changing attitudes may have resulted in people being more aware of disabling conditions, or more willing to report such conditions, and may also have affected how people interpreted 'need' and 'difficulty', concepts used to determine presence and severity of handicap. There has also been an increase in disability support programs.

Recent studies are providing some evidence that disability prevalence may be starting to decline in some developed countries (Crimmins 1996; Crimmins et al. 1997; Manton 1997). Although this evidence is not yet unequivocal, it is the first evidence of a trend in this direction. Such trends have not yet been observed in Australia, and the results of the 1998 ABS survey on disability and handicap are awaited with interest.

References

Australian Bureau of Statistics (ABS) 1993a. Estimated resident population by sex and age: States and Territories of Australia, June 1987 to June 1992. Cat. No. 3201.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1993b. Disability, ageing and carers: summary of findings, Australia 1993. Cat. No. 4430.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1993c. Disability, ageing and carers: user guide, Australia 1993. Cat. No. 4431.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1996a. Disability, ageing and carers: disability and disabling conditions, Australia 1993. Cat. No. 4433.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1996b. 1995 National Health Survey: users' guide, Australia. Cat. No. 4263.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1997a. 1995 National Health Survey: summary of results, Australia. Cat. No. 4364.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1997b. SF-36: population norms. Cat. No. 4399.0. Canberra: ABS.

Australian Institute of Health and Welfare (AIHW) 1995. Australia's welfare 1995: services and assistance. Canberra: AGPS.

Australian Institute of Health and Welfare (AIHW) 1997. Australia's welfare 1997: services and assistance. Canberra: AIHW.

Crimmins EM 1996. Mixed trends in population health among older adults. J Gerontol 51B:S23–S25.

Crimmins EM, Saito Y & Reynolds SL 1997. Further evidence on recent trends in the prevalence and incidence of disability among older Americans from two sources: the LSOA and the NHIS. J Gerontol 52B:S59–S71.

Hankey GJ 1997. The effect of treating people with reversible ischaemic attacks of the brain and eye on the incidence of stroke in Australia. Aust NZ J Med 27:420–30.

Ireland P & Giles G 1993. A review of diet and cancer: what are the prospects for prevention in Australia? Cancer Forum 17(2):132–55.

Madden R, Black K & Wen X 1995. The definition and categorisation of disability in Australia. Canberra: AIHW.

Manton KG 1997. Changes in the age dependence of mortality and disability: cohort and other determinants. Demography 34:135–57.

Mathers CD 1991. Disability-free and handicap-free life expectancy in Australia 1981 and 1988. Australian Institute of Health, Health Differentials Series No. 1. Canberra: AGPS.

Mathers CD 1996. Trends in health expectancies in Australia 1981–1993. J Aust Pop Assoc 13(1):1–16.

United Nations (UN) 1995. Demographic yearbook. New York: UN Department for Economic and Social Information and Policy Analysis.

Ware JE, Snow KK, Kosinski MA & Gandek B 1993. SF-36 Health Survey: manual and interpretation guide. Boston: Nimrod Press.

World Health Organization (WHO) 1977. International classification of diseases, ninth revision. Geneva: WHO.

World Health Organization (WHO) 1980. Classification of impairments, disabilities, and handicaps. Geneva: WHO.

World Health Organization (WHO) 1995. World health statistics annual, 1994. Geneva: WHO.

3 The health of subpopulations

3.1 Aboriginal and Torres Strait Islander peoples

Australia's Aboriginal and Torres Strait Islander peoples continue to experience much poorer health than the general Australian population (see ABS & AIHW 1997 for a more detailed report). It is difficult to measure precisely the extent of this health disadvantage because population survey data are scarce and not all Indigenous people are identified as such in administrative data collections such as deaths, hospital separations, cancer registries and communicable disease notifications. Incomplete identification leads to an underestimation of the difference in health between Indigenous and other Australians, the magnitude of which may vary from State to State and for different types of collections. Despite the lack of good-quality national health statistics for Australia's Indigenous population, evidence from those jurisdictions where the data are considered to be of reasonable quality indicates large differences between the health of Indigenous and other Australian populations across a range of health status measures.

Life expectancy

Estimates of life expectancy can be calculated in a number of different ways. The most straightforward approach makes use of actual data on deaths and the population age structure. As reliable data on Indigenous deaths are available only for the Northern Territory, South Australia and Western Australia, this approach can be used to derive life expectancies for these jurisdictions only (Table 3.1). In 1992–94, life expectancy at birth in Western Australia, Northern Territory and South Australia was approximately 14–18 years lower for Indigenous males and 16–20 years lower for Indigenous females than for their other Australian counterparts (Anderson et al. 1996).

An alternative approach, based on census data, allows life expectancy estimates to be derived from the changes in age structure between successive censuses (ABS unpublished Working Paper). This approach, although less direct and therefore less reliable than the one discussed above, can be used to derive life expectancies where no

Table 3.1: Life expectancy at birth, 1992–94

	Years	
Persons	**Males**	**Females**
Indigenous		
South Australia	61.0	64.6
Western Australia	57.3	63.7
Northern Territory	56.7	61.1
Other		
Australia	74.9	80.6

Source: Anderson et al. 1996.

reliable death data are available. Table 3.2 shows estimated life expectancy at birth for males and females for the Indigenous population in western Australia (Northern Territory, South Australia and Western Australia combined) and eastern Australia (New South Wales, Queensland, Australian Capital Territory, Victoria and Tasmania combined). Estimates for individual States and Territories are not sufficiently reliable to allow meaningful comparisons to be made at that level.

For both males and females, the estimated life expectancy at birth was higher among Indigenous Australians in eastern Australia than those in western Australia. However, the figures for Indigenous people are considerably below those for all Australians, regardless of geographic region.

Table 3.2: Life expectancy at birth, 1991–96

	Years	
Persons	**Males**	**Females**
Indigenous western Australia[(a)]	53.7	58.9
Indigenous eastern Australia[(b)]	59.2	63.6
Indigenous total	56.9	61.7
Total Australia	**75.2**	**81.1**

(a) Western Australia, South Australia, Northern Territory.
(b) New South Wales, Queensland, Victoria, Tasmania, Australian Capital Territory.

Sources: ABS 1998; ABS unpublished data.

Mortality

Information on trends in Indigenous death rates should be interpreted with some caution. The calculation of accurate rates depends not only on adequate identification of Indigenous deaths, but also on accurate Indigenous population figures. As discussed in the section on quality of Indigenous health statistics on page 240, there was a large increase between 1991 and 1996 in the number of Indigenous people counted in the Population Census, to an extent greater than can be explained by natural increase. As a result, estimates of the 1996 Indigenous population based on 1996 Census results are about 17% higher than previously published projections for 1996 based on the 1991 Census (ABS 1997b). Underestimation of the Indigenous population would tend to result in an overestimation of death rates, all other things being equal. Because the degree of underestimation may change over time, this can make the monitoring of trends quite difficult. It is worth noting that the smallest discrepancies between the 1991-based projections and the 1996-based estimates were observed for the Northern Territory, Western Australia and South Australia, so trends for these jurisdictions (i.e. those reported here) would be least affected by this problem.

In 1996, the age-standardised death rates for Indigenous people in Western Australia, Northern Territory and South Australia (the only jurisdictions with adequate identification for a sufficient number of years) were about three times higher than the rates for other Australians in those jurisdictions (Table 3.3, page 30).

Age-specific mortality

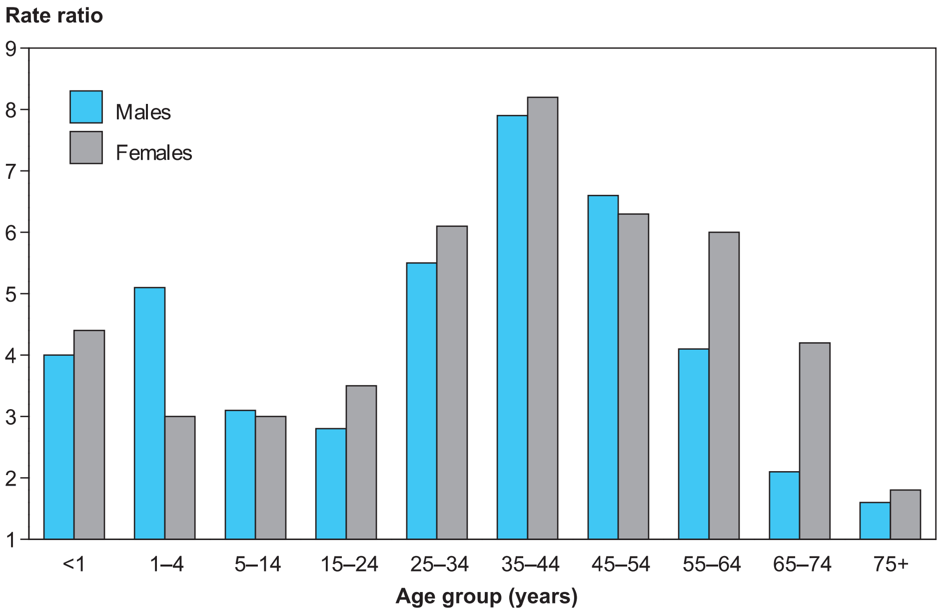
In 1992–94, the death rates for Indigenous people in Western Australia, Northern Territory and South Australia exceeded those for other Australians in every age group (Figure 3.1, page 30). The difference was most pronounced among adults aged 25–54 years (Anderson et al. 1996).

Table 3.3: Age-standardised death rates(a), Western Australia, South Australia and Northern Territory, 1996

	Indigenous			Other
State/Territory	**Males**	**Females**	**Persons**	**Persons**
Western Australia	24.7	14.6	19.4	6.3
South Australia	21.7	11.4	16.1	6.4
Northern Territory	23.8	14.1	18.6	5.8

(a) Rates are per 1,000 population and are indirectly standardised using the 1991 all-Australian rates.

Source: ABS 1997a.



Note: The rate ratio is the Indigenous rate divided by the rate for other Australians. A ratio of 1 indicates no difference. Ratios greater than 1 indicate higher rates among Indigenous peoples than among other Australians. Ratios less than 1 indicate that the rates are lower for Indigenous peoples than for other Australians.

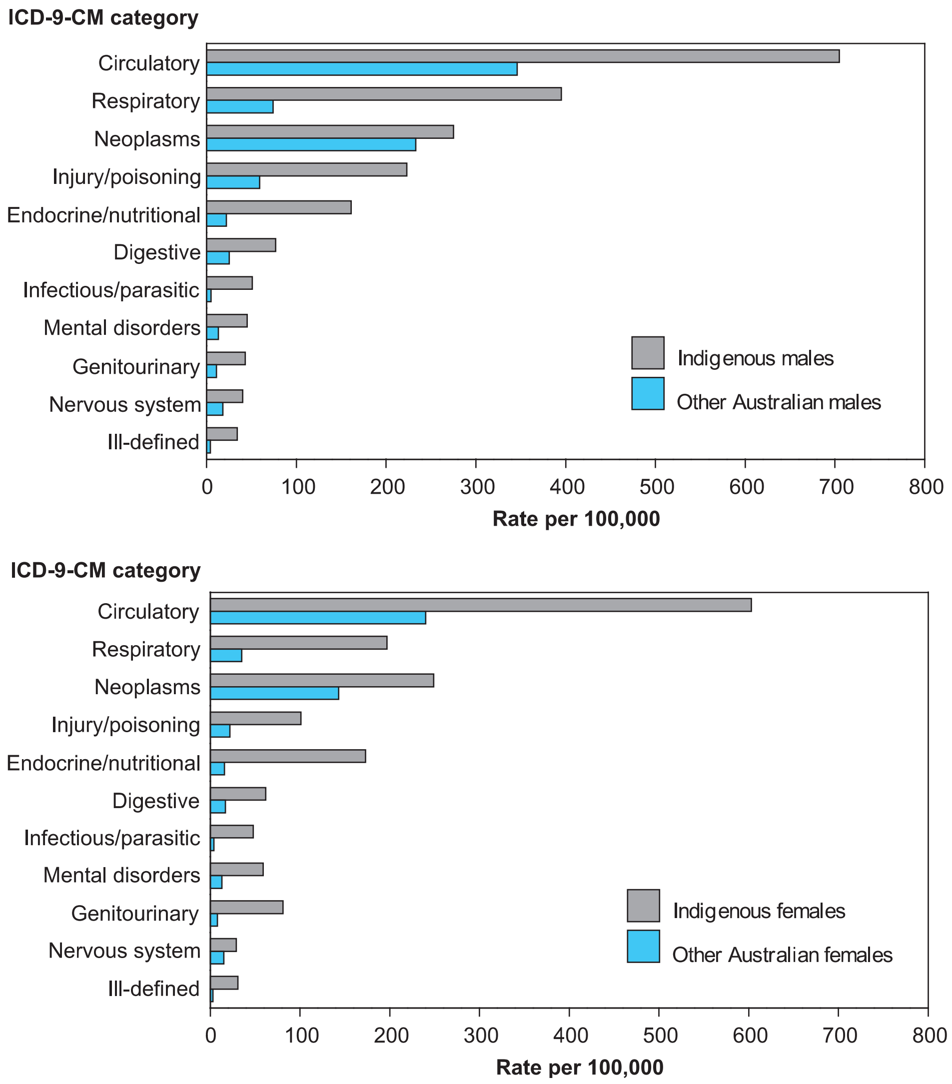
Source: Anderson et al.1996.

Figure 3.1: Age-specific death rate ratios, all causes, Western Australia, South Australia and Northern Territory, 1992–94

Causes of death

After adjusting for age, death rates were higher for Indigenous people than for other Australians both overall and for almost every specific cause of death (Figure 3.2).

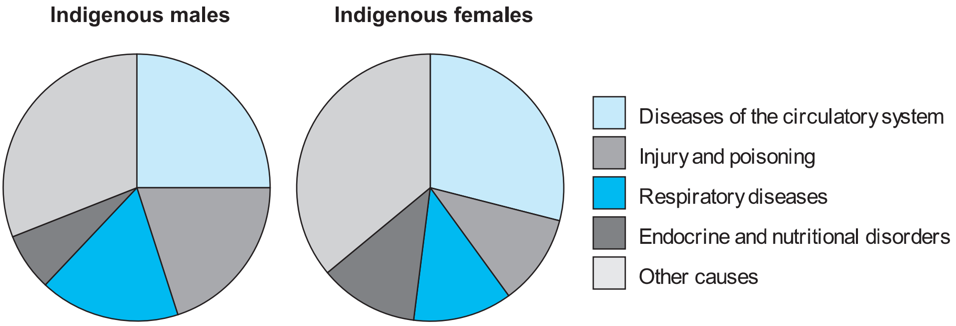
The majority of 'excess' deaths among Indigenous people relative to other Australians were due to circulatory diseases (includes ischaemic heart disease), respiratory diseases (includes pneumonia), injuries (includes road traffic accidents) and endocrine diseases (includes diabetes) (Figure 3.3, page 32).



Note: Age-standardised to the Australian population at 30 June 1991. Figures for 1994 are adjusted for late registrations and are provisional estimates.

Source: Anderson et al.1996.

Figure 3.2: Age-standardised death rates, by cause of death for selected causes, Western Australia, South Australia and Northern Territory, 1992–94



Note: Excess deaths = observed deaths – expected deaths (based on rates for other Australians).

Sources: Anderson et al. 1996; ABS & AIHW 1997.

Figure 3.3: Excess Indigenous deaths by cause, Western Australia, South Australia and Northern Territory, 1992–94

Infant mortality

In 1996, Australia's infant mortality rate was 5.8 deaths per 1,000 live births. The mortality rate for Indigenous infants in Western Australia (24.1), Northern Territory (19.4) and South Australia (12.6) was 2–4 times higher than the national average (ABS 1997a).

Trends in mortality

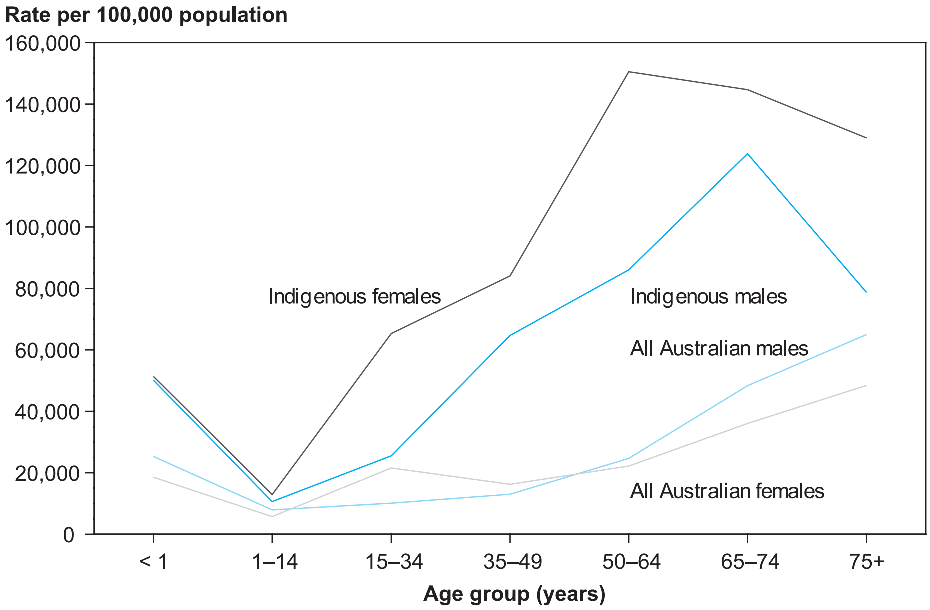
Although death rates from all causes declined among Indigenous males by an estimated 1.5% per year between 1985 and 1994, a similar reduction occurred among all Australian males, and the difference between Indigenous and other Australian males remained about the same. No evidence of a decline in death rates was observed among Indigenous females. Although there were reductions in death rates for males and females for some causes, there were marked increases for others. Especially noticeable is the rise in age-adjusted death rates from diabetes, which increased at an estimated 10% per year among Indigenous males and over 5% a year among Indigenous females between 1985 and 1994 (Anderson et al. 1996). Note that this dramatic increase probably results from a combination of factors, such as increased awareness of the condition and better coding of cause of death, as well as a true increase in diabetes-related deaths.

Hospitalisation

As with mortality data, the rates of hospitalisation among Indigenous people are underestimated to the extent that the identification of Indigenous people in hospital records is incomplete (and this is likely to vary from State to State). In 1995–96, the crude rate of hospitalisation for the total Australian population was 285 per 1,000. The crude rate of identified Indigenous hospitalisations for all States and Territories combined was more than 50% higher, at 440 per 1,000 population (AIHW 1997a). Thus a large difference is apparent, even though the real difference has likely been underestimated due to incomplete identification. In addition, crude rates do not take into account the younger age structure of the Indigenous population. Since older people are responsible for a high proportion of hospitalisations, the difference between Indigenous and all-Australian rates will be further underestimated.

In 1995–96, rates of hospitalisation were much higher among Indigenous people than all Australians in Western Australia, Northern Territory, South Australia and Queensland combined, and this was true for every age group (Figure 3.4).

Among Indigenous males, the most common causes of hospitalisation were injuries (15%) and respiratory diseases (13%). Among Indigenous females, the leading causes of hospitalisation were pregnancy and childbirth (23%), injuries (12%) and respiratory diseases (12%). For most types of condition or disease, there were between 2 and 5 times as many hospitalisations as would have been expected if the all-Australian rates had applied to the Indigenous population (AIHW National Hospital Morbidity Database).



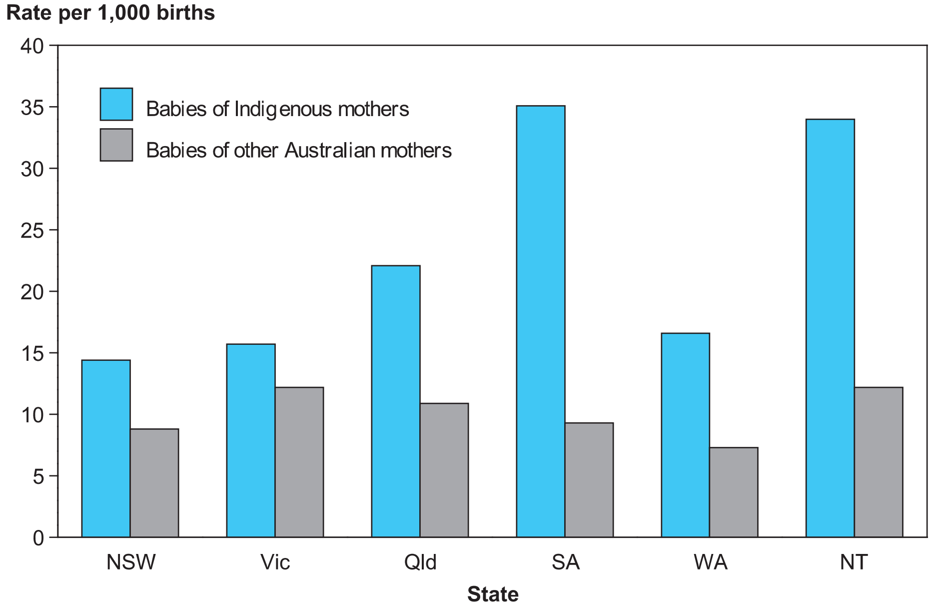
Note: Public hospitals only. Indigenous rates are for Western Australia, Northern Territory, South Australia and Queensland combined.

Source: AIHW National Hospital Morbidity Database.

Figure 3.4: All-cause hospital separation rates by age group, 1995–96

Birth outcomes for Indigenous mothers

Although there have been reductions in infant and maternal mortality among Indigenous people, the differential in birth outcomes between the Indigenous population and other Australians has not been eliminated. Indigenous mothers are about 2–3 times more likely to have babies of low birthweight (less than 2,500 grams) than other Australian mothers. Babies born to Indigenous mothers are 2–4 times more likely to be stillborn or to die within the first 28 days of life than babies born to other Australian mothers (ABS & AIHW 1997) (Figure 3.5). Some of the differences between States may be due to differences in the quality of identification (which result in an underestimation of the Indigenous perinatal death rate), rather than differences in outcomes.



Notes

1. Data are for 1994 except for Victoria (pooled data for 1983–92) and Queensland (1992). Data from Tasmania and the Australian Capital Territory were not available.
2. Perinatal deaths include stillbirths and deaths within the first 28 days of life.

Source: ABS & AIHW 1997.

Figure 3.5: Perinatal death rates

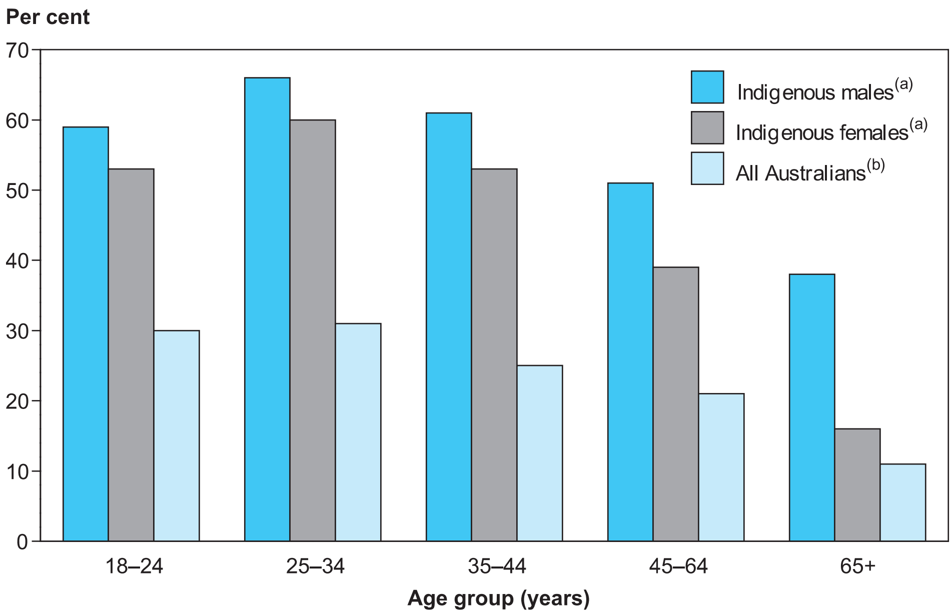
Risk factors

Overweight and obesity

Indigenous people are more likely than other Australians to be classified as obese based on their body mass index (BMI). Among Indigenous adults aged 18 years or more who were measured in the 1994 National Aboriginal and Torres Strait Islander Survey (NATSIS), about 25% of males and 28% of females were classified as obese (BMI greater than 30). This compares unfavourably with recent figures for the total Australian population from the 1995 National Nutrition Survey, which found that 19% of males and 19% of females aged 19 and over with known BMI were obese, based on measured height and weight (Cunningham & Mackerras 1998).

Cigarette smoking

Indigenous adults are about twice as likely to smoke as other Australian adults (Figure 3.6), which places them at greater risk of developing such health problems as heart disease, lung disease and cancer, as well as increasing the risk of having babies of low birthweight.



(a) 1994 National Aboriginal and Torres Strait Islander Survey.
(b) 1995 National Health Survey.

Source: Cunningham 1997.

Figure 3.6: Smoking prevalence by age group

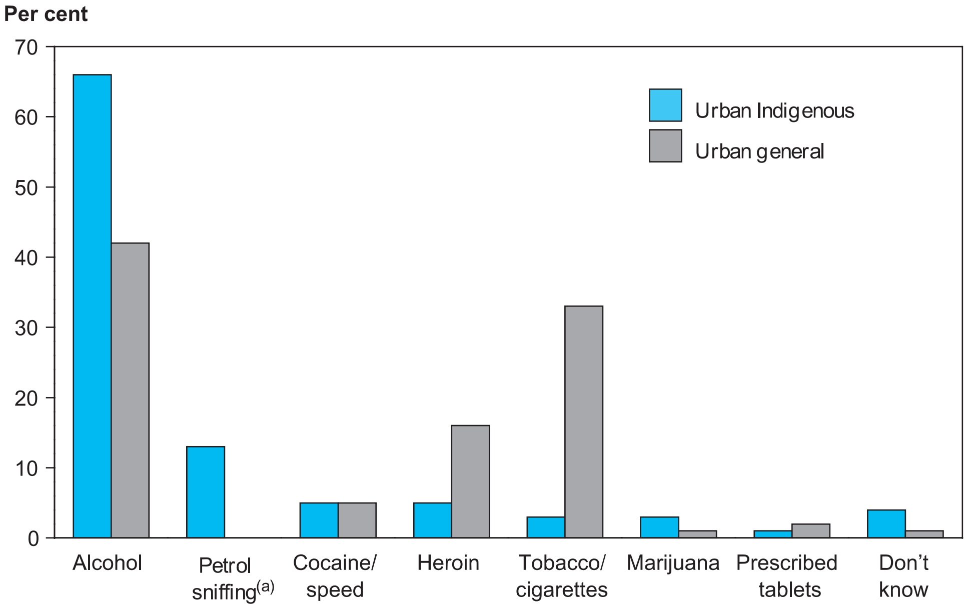
Alcohol

Although Indigenous people are less likely than other Australians to drink alcohol, those who do drink are more likely to drink at unsafe levels. In the 1994 NATSIS, about 1 in 5 Indigenous males and 1 in 3 Indigenous females aged 13 years or more said they never drank alcohol (ABS & AIHW 1997). In a separate survey conducted in urban areas, 33% of Indigenous people said they were current regular drinkers, compared with 45% of the general urban population. Urban Indigenous people were more than twice as likely as people in the general urban population to say they no longer drank (22% versus 9%) (DHSH 1995). Among current drinkers, however, 79% of urban Indigenous people compared with 12% of the general urban population reported drinking at levels deemed harmful by the National Health and Medical Research Council, that is, more than 4 'standard' drinks per day for females and more than 6 'standard' drinks per day for males (DHSH 1995).

Alcohol is of major concern to Indigenous people, with the majority of respondents in the 1994 NATSIS nominating it as an important health problem (58%) and an important substance use problem (75%) (ABS & AIHW 1997).

Among urban people, alcohol was most commonly nominated by both Indigenous people and the general population as the substance responsible for the most deaths (Figure 3.7).

Despite the well-documented health consequences of cigarette smoking, urban Indigenous people were less likely to nominate smoking as a direct or indirect cause of death than petrol sniffing, cocaine or heroin.



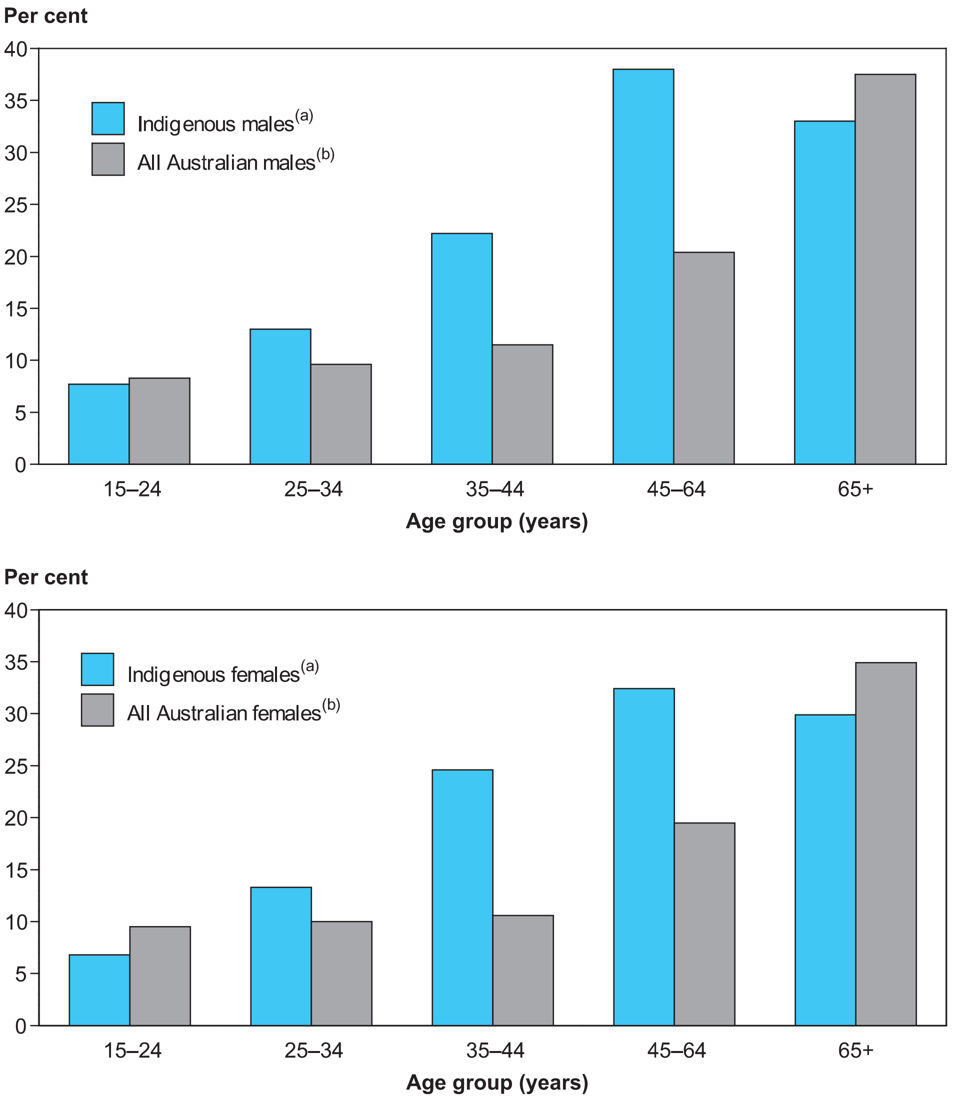
(a) Not included in the general survey.

Source: DHSH 1995.

Figure 3.7: Substances believed to cause the most deaths, either directly or indirectly

Self-assessed health status

Despite the health disadvantage described above, about 83% of Indigenous people aged 13 or more said they thought their health was 'excellent', 'very good' or 'good', while 13% reported their health to be 'fair' or 'poor'. These figures are very similar to those reported for all Australians in the 1995 National Health Survey. This similarity is misleading, however, as the Indigenous population is much younger overall than the total Australian population, and reports of poor or fair health increase with age. Large differences in the proportions reporting poor or fair health were observed in the age groups between 25 and 64, which roughly corresponds to the period during which the relative risk of mortality is highest among Indigenous people (Figure 3.8) (Cunningham et al. 1997).



(a) 1994 National Aboriginal and Torres Strait Islander Survey.
(b) 1995 National Health Survey.

Source: Cunningham et al. 1997.

Figure 3.8: Self-assessed health status, proportion reporting 'poor' or 'fair' health

Aboriginal and Torres Strait Islander health services expenditure

The first comprehensive analysis of expenditure on health services for Aboriginal and Torres Strait Islander peoples was conducted in 1997 by AIHW and the National Centre for Epidemiology and Population Health (NCEPH). The project was commissioned by the Commonwealth Office for Aboriginal and Torres Strait Islander Health Services (OATSIHS). The results, which appear below, contrast with commonly held views on what is currently spent on Indigenous health.

Total recurrent health expenditure for Aboriginal and Torres Strait Islander persons for all services and from all sources of funds in 1995–96 was estimated at $853 million. This was 2.2% of total Australian recurrent health expenditure. Total spending for and by Aboriginal and Torres Strait Islander peoples was $2,320 per person, about 8% higher than for other Australians. Expenditure on the health of Aboriginal and Torres Strait Islander peoples appears to have been similar to that for other Australians in the same income category, but the health status of Indigenous people is worse, and hence the need for services greater.

Total expenditure on health services for Aboriginal and Torres Strait Islander peoples in 1995–96 through government programs was estimated at $822 million, mainly through State and local government-subsidised programs (Table 3.4). State and local governments expenditure in 1995–96 was $649 million or nearly 80% of all expenditures. Commonwealth expenditure is relatively small in comparison. Commonwealth programs include grants to the community-controlled Aboriginal medical and substance-abuse services as well as small amounts of funding allocated to specialist services, mental health, training relief and hearing services. In addition, there is Commonwealth government expenditure through Medicare and the Pharmaceutical Benefits Scheme (PBS) and some other minor programs. Medicare benefits and PBS outlays for Aboriginal and Torres Strait Islander peoples in 1995–96 were only 0.55% and 0.42% of total benefits and outlays, despite 2% of the population identifying as Aboriginal or Torres Strait Islander.

Gross expenditure through government-subsidised programs in 1995–96 per Indigenous person was around $2,235, 44% higher than the amount for other Australians (Table 3.5). State and local government spending per head on Indigenous people was more than twice that for other Australians. On the other hand, total gross expenditure through Commonwealth-subsidised programs was significantly less per head for Indigenous people, mainly because of the lower per-person Medicare and PBS expenditures.

Table 3.4: Gross expenditures[(a)] on health services to Indigenous people through government-subsidised programs, 1995–96

Delivery	Amount ($m)	Per cent
Through State and local governments	*649*	*79.0*
Through Medicare and the PBS[(b)]	47	5.7
Through Aboriginal health organisations and other Commonwealth programs	126	15.3
All Commonwealth	*173*	*21.0*
Total	**822**	**100.0**

(a) Gross expenditures include all private out-of-pocket payments and funding from non-government organisations. Services not covered are private hospitals, dentistry, optometry, private ancillary services (e.g. physiotherapy, chiropractic) and over-the-counter pharmaceuticals.

(b) Pharmaceutical Benefits Scheme.

Source: AIHW Health Expenditure Database.

Table 3.5: Gross expenditures per person through government-subsidised programs, 1995–96

	Amount ($)		
Delivery	**Indigenous**	**Other**	**Ratio[a]**
Through State and local governments	*1,763*	*806*	*2.19:1*
Through Medicare and the PBS[b]	128	535	0.24:1
Through Aboriginal health organisations and other Commonwealth programs	344	213	1.62:1
All Commonwealth	*472*	*748*	*0.63:1*
Total	**2,235**	**1,554**	**1.44:1**

(a) Ratio of per-person Indigenous expenditures to expenditures for other Australians.
(b) Pharmaceutical Benefits Scheme.

Source: AIHW Health Expenditure Database.

On a per person basis, funding provided through States was greater for Indigenous people than other Australians, for all areas of expenditure. However, on average, Aboriginal and Torres Strait Islander peoples used hospital services at about twice the rate of the rest of the population. The differential was slightly higher for outpatient services. They were also major users of community health services, and expenditure on their transport was also high, at 3.5 times the per person level of other Australians. Because a number of public health programs are directed towards conditions to which Aboriginal and Torres Strait Islander peoples are particularly prone, the allocation of public health expenditures to them was also relatively large.

Just over two-thirds of the $645 million gross State expenditures accruing to Aboriginal and Torres Strait Islander peoples were for public acute care institutions (e.g. hospitals), the bulk of which was directed to inpatient services (Table 3.6). Institutional mental health and nursing home services received the smallest amounts of funding on health services for Aboriginal and Torres Strait Islander peoples.

Table 3.6: Gross expenditures through State Governments, by type of service, total and per person, 1995–96

	Total ($m)		Per person ($)		Per cent of all expenditure		
Service type	**Indigenous**	**Other**	**Indigenous**	**Other**	**Indigenous**	**Other**	**Ratio[a]**
Acute care institutions							
Admitted patients	340	8,441	924	474	52.7	60.3	1.9:1
Non-admitted patients	98	2,128	267	119	15.2	15.2	2.2:1
Mental health institutions	10	418	28	23	1.6	3.0	1.2:1
Nursing homes for the aged	12	458	33	26	1.9	3.3	1.3:1
Community health services	107	1,326	291	74	16.6	9.5	3.9:1
Patient transport	30	414	81	23	4.7	3.0	3.5:1
Public health	21	374	57	21	3.3	2.7	2.7:1
Health administration and research	27	422	74	24	4.2	3.0	3.1:1
All services	**645**	**13,981**	**1,755**	**784**	**100.0**	**100.0**	**2.2:1**

(a) Ratio of per-person Indigenous expenditures to expenditures for other Australians.

Notes: Percentages may not add to 100.0 due to rounding. Local government expenditures are not included.

Source: AIHW Health Expenditure Database.

On a per person basis, Northern Territory was the highest spender of all jurisdictions on health services for Aboriginal and Torres Strait Islander peoples (Table 3.7). The Territory's 1995–96 expenditure was $3,221, followed by Western Australia with $2,152 and Queensland ($1,518). The Australian Capital Territory was estimated to have a low per person expenditure of $659, which may be due to the special characteristics of the Australian Capital Territory Indigenous population, although there may also be data problems. Northern Territory also recorded the highest ratio of Indigenous to other Australian per person spending on health services. Northern Territory and Western Australia were the only two States where the ratio exceeded the national average of 2.2.

Table 3.7: Gross expenditures per person, through States and Territories, 1995–96

	Amount ($)		
State/Territory	**Indigenous**	**Other**	**Ratio[(a)]**
NSW	1,334	825	1.6:1
Vic	1,326	747	1.8:1
Qld	1,518	716	2.1:1
WA	2,152	807	2.7:1
SA	1,500	827	1.8:1
Tas	1,227	788	1.6:1
ACT	659	869	0.8:1
NT	3,221	963	3.3:1
Australia	**1,755**	**784**	**2.2:1**

(a) Ratio of per-person Indigenous expenditures to expenditures for other Australians.

Note: Local government expenditures are not included.

Source: AIHW Health Expenditure Database.

3.2 Rural and remote populations

The health of populations living in rural and remote areas of Australia is worse than those living in capital cities and other metropolitan areas (Mathers 1994). Mortality and illness levels increase as one travels away from metropolitan centres to rural areas and remote locations (Titulaer et al. 1998).

Relatively poor access to health services, lower socioeconomic status and employment levels, exposure to comparatively harsher environments, sparse infrastructure and occupational hazards contribute to these inequalities. Attitudes towards illness, poor uptake of health promotion and self-care messages, and more frequent indulgence in risky behaviours are other possible contributory factors.

The following sections profile the health of rural Australians in terms of mortality, morbidity and risk factor data using the Rural, Remote and Metropolitan Areas (RRMA) classification (Box 3.1).

Mortality

Death rates for all causes combined for the period 1991–95 are greater among people living in rural and remote zones of Australia than for those living in metropolitan areas (Figure 3.9, page 42). Rates in the remote zone are highest, with rates among males and females in 'other remote areas' 22% and 32% higher respectively than males and females in 'capital cities'. Rates are higher among males than females across all three RRMA zones, with sex ratios ranging from 1.52 to 1.67 (Table 3.8, page 43).

Among major causes of mortality, coronary heart disease (CHD) is higher in rural and remote zones (Table 3.8), as is injury. In contrast, there is little variation in cancer mortality across zones.

Box 3.1: The RRMA classification

The Rural, Remote and Metropolitan Areas (RRMA) classification was developed by the Commonwealth Departments of Primary Industries and Energy (DPIE) and the (then) Human Services and Health (DHSH), based primarily on population numbers and an index of remoteness (DPIE & DHSH 1994). The RRMA zones and area categories are defined as follows:

Structure of the Rural, Remote and Metropolitan Areas (RRMA) classification

Zone	*Category*
Metropolitan areas	*Capital cities* *Other metropolitan centres (urban centres population ≥ 100,000)*
Rural zone	*Large rural centres (urban centres population 25,000–99,000)* *Small rural centres (urban centres population 10,000–24,999)* *Other rural areas (urban centres population < 10,000)*
Remote zone	*Remote centres (urban centres population ≥ 5,000)* *Other remote areas (urban centres population < 5,000)*

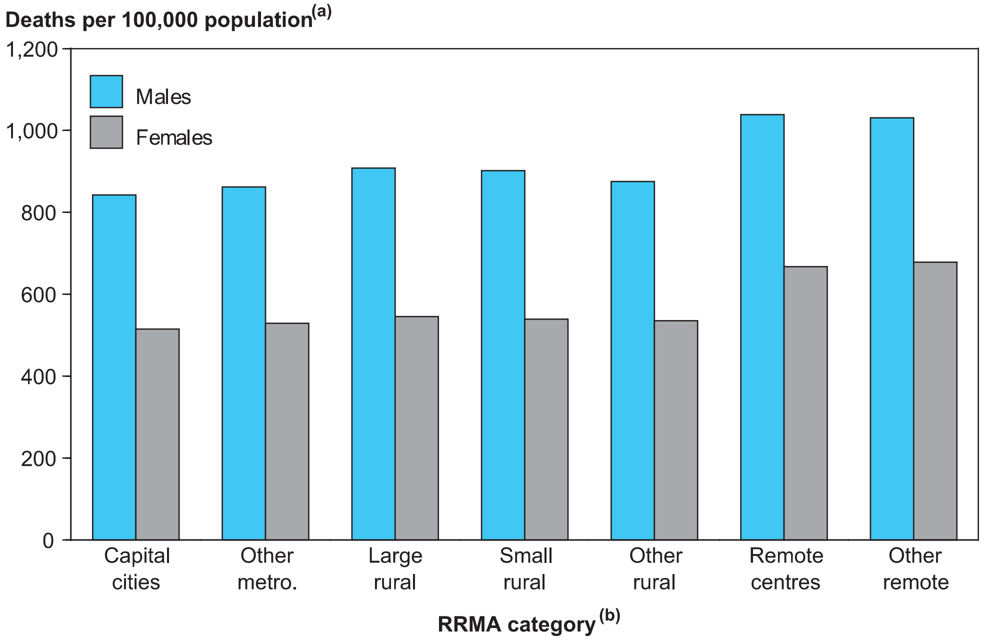
Box 3.2: RRMA population distribution in Australia

		Population (1995)			Indigenous population (1991)[(a)]	
RRMA category[(b)]	Total area (km^2)	Number	Population per km^2	Per cent of total population	Number	Indigenous component (per cent)
Capital cities	33,591	11,400,821	339.41	63	77,330	0.7
Other metro. centres	7,206	1,352,130	187.64	7	16,693	1.3
Large rural centres	18,451	1,088,312	58.98	6	21,849	2.2
Small rural centres	64,935	1,197,533	18.44	7	23,267	2.1
Other rural areas	953,409	2,455,778	2.58	14	45,399	1.9
Remote centres	821,233	220,719	0.27	1	23,645	10.9
Other remote areas	5,769,747	335,937	0.06	2	75,193	22.0
Total	**7,668,571**	**18,051,230**	**2.35**	**100**	**283,376**	**1.6**

(a) 1995 estimates of the Indigenous population by statistical local area (SLA) were not available.

(b) See Box 3.1.

Source: AIHW, derived from ABS SLA population estimates.



(a) Age-standardised to the Australian population at 30 June 1991.
(b) See Box 3.1.

Source: Titulaer et al. 1998.

Figure 3.9: Death rates for all causes by area, 1991–95

Death rates for injury show a graduated increase from 'capital cities' (lowest) to 'other rural' (highest). For males, injury death rates in 'large rural centres' and 'remote centres' are respectively 22% and 69% higher than in 'capital cities'. Female death rates due to injury are around one-third of the male rates for all seven RRMA categories, but the increase across zones from metropolitan to remote is slightly less than that for males.

Death rates from homicide and diabetes are also significantly higher in the remote zone. This reflects the high death rates for these causes among Indigenous people, who form a relatively high proportion of the remote population.

Hospital separations

Hospitalisation rates in remote areas are highest, with the rate in 'other remote' areas 23% higher than the rate in 'capital cities' for males and 40% higher for females (Figure 3.10, page 44). Differences between the rural and remote area rates are substantial, though the differences between rates within the three rural categories and within the two remote categories are relatively small. Rates of hospitalisation are higher overall for females as a result of much higher rates of hospitalisation in the child-bearing age group 15–44 years.

Table 3.8: Death rates[(a)], 1991–1995

	Metropolitan		Rural			Remote		
Cause of death	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	Total
All causes								
Males	842.6	861.8	908.5	901.8	875.4	1,038.9	1,030.5	861.9
Females	515.4	529.3	545.5	539.5	535.2	667.6	678.4	525.9
Coronary heart disease								
Males	213.2	224.7	242.0	235.5	227.9	238.8	239.5	220.5
Females	117.0	126.0	133.8	127.6	124.8	151.0	128.8	121.1
Cancer								
Males	234.8	241.9	244.7	245.2	228.9	253.4	228.3	235.8
Females	141.0	137.8	137.1	138.7	138.7	154.2	149.1	140.2
Skin cancer								
Males	6.8	8.7	7.8	7.6	6.1	4.5	5.9	6.9
Females	3.0	3.2	3.7	3.7	3.2	1.9	3.9	3.1
Injury								
Males	53.7	59.0	66.3	65.2	76.8	91.1	114.5	60.2
Females	20.9	21.8	21.8	22.9	26.4	29.6	43.6	22.3
Road accidents								
Males	13.5	15.9	18.7	18.9	27.3	32.5	35.1	16.7
Females	5.7	6.4	7.1	8.0	11.6	9.6	17.1	7.0
Homicide								
Males	2.2	2.0	1.8	2.4	2.1	5.9	8.1	2.3
Females	1.3	1.7	0.9	1.4	1.1	3.1	7.8	1.4
Asthma								
Males	3.7	3.6	5.0	4.0	5.3	5.9	6.6	4.1
Females	4.2	4.2	4.9	4.8	4.9	5.9	5.4	4.4
Diabetes								
Males	16.2	13.1	15.0	18.0	17.8	29.9	27.2	16.5
Females	11.1	10.3	13.1	12.1	13.9	23.7	30.4	11.9

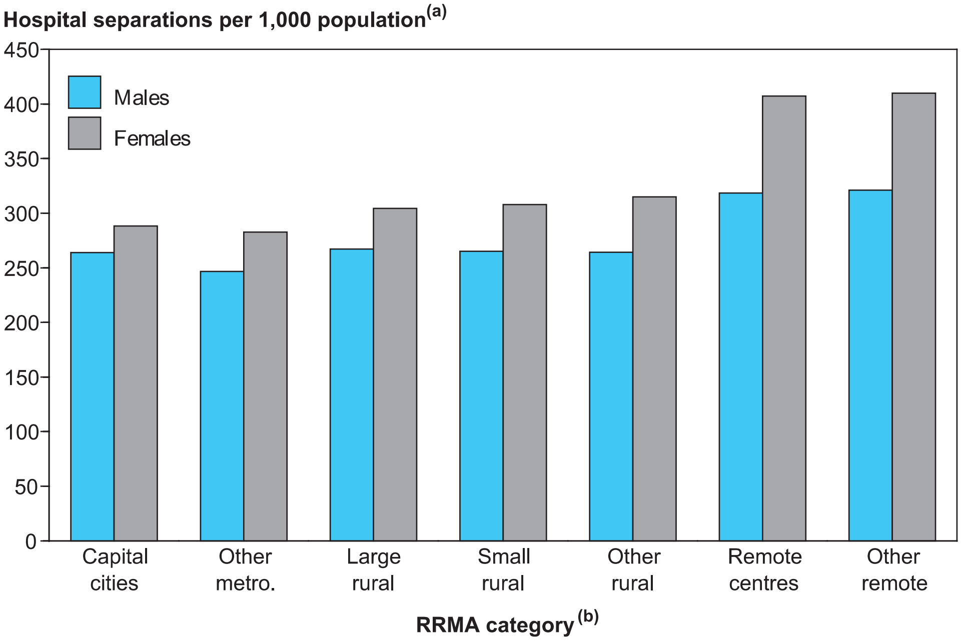
(a) Rates per 100,000 age-standardised to the Australian population at 30 June 1991.

Source: AIHW Mortality Database.

General practice consultations

Statistics on general practice consultations were derived from Medicare payments data on general practitioners (GPs) in private practice. The number of GP consultations per 1,000 persons is lower in rural and remote areas. The rate of GP consultations in ‘other remote areas’ in 1995–96 was less than 50% of the rate in ‘capital cities’. Substantial differences were also found between rural and metropolitan areas (Table 3.9, page 44). Some of these gaps are offset by increased use of other services in rural and remote areas, such as hospital services, salaried community medical services (especially Aboriginal Medical Services), and substitute primary care providers such as Aboriginal health workers and registered nurses.

GP consultations are much less common among males than females, with males visiting their GPs 26% less often than females in 1995–96. Some of the visits to GPs by females can be attributed to pregnancy and related conditions. This difference in GP consultation rates between the two sexes becomes progressively wider with rurality and remoteness. Males in 'capital cities' visit the GP 24% less often than female counterparts, and males in 'other remote areas' visit the GP 35% less often than females.



(a) Age-standardised to the Australian population at 30 June 1991.
(b) See Box 3.1.

Source: AIHW National Hospital Morbidity Database.

Figure 3.10: Hospital separation rates by area, 1995–96

Table 3.9: General practice consultations per capita[a], 1995–96

RRMA category[b]	Males	Females	Persons	Male:female rate ratio
Capital cities	5.3	7.0	6.1	0.76
Other metropolitan centres	4.7	6.3	5.5	0.74
Large rural centres	4.1	5.6	4.9	0.73
Small rural centres	3.8	5.4	4.6	0.71
Other rural areas	3.4	4.9	4.2	0.70
Remote centres	3.0	4.4	3.7	0.67
Other remote areas	2.4	3.7	3.0	0.65
Total	**4.7**	**6.4**	**5.6**	**0.74**

(a) Age-standardised to the Australian population at 30 June 1991.
(b) See Box 3.1.

Source: Unpublished DHFS data.

Distribution of medical practitioners

The much lower rates of GP consultation in rural areas may reflect doctor supply as well as demand factors. In 1995, 15.4% of medical practitioners worked in rural and remote areas, serving 30% of the total Australian population. The highest concentration of primary care medical practitioners was in 'capital cities' and the lowest in 'other remote areas' (Table 3.10). Practitioners in 'remote centres' probably have catchment areas that would include many patients in 'other remote areas'.

Table 3.10: Distribution of primary care medical practitioners, registered by State/Territory, 1995

	Practitioners per 100,000 persons			
RRMA category[(a)]	**VRGPs[(b)]**	**RACGP trainees[(c)]**	**OMPs[(d)]**	**Total**
Capital cities	109.4	8.6	12.1	130.0
Other metropolitan centres	98.4	7.6	8.8	114.8
Large rural centres	94.9	6.1	5.8	106.8
Small rural centres	85.3	5.8	5.6	96.6
Other rural areas	70.7	4.8	3.6	79.1
Remote centres	70.7	6.8	6.3	83.8
Other remote areas	45.0	6.0	14.0	64.9
Total	**99.1**	**7.6**	**9.8**	**116.5**

(a) See Box 3.1.
(b) Vocationally Registered General Practitioners.
(c) Royal Australian College of General Practitioners trainees.
(d) Other medical practitioners.

Source: Unpublished AIHW data.

Other issues

Rural and remote Australians display different patterns for risk factors and health-related actions compared with their metropolitan counterparts (Titulaer et al. 1998). For example, more than 53% of males and 43% of females in 'other remote areas' were overweight compared with 49% of males and 34% of females living in 'metropolitan areas'. Other self-reported conditions such as diabetes, hypertension and high cholesterol revealed a slightly different pattern, with reported prevalence rates generally lower in the remote zone than in the metropolitan and rural zones. Some of these patterns, especially diabetes, were actually in contrast with expectations, given morbidity and mortality statistics, and may be due to differences in awareness rather than prevalence across the various zones.

3.3 Overseas-born persons

The 1996 Population Census found that almost one in four Australians were born overseas, with the immigrant population coming generally from a wide range of service countries. On several measures, the health of immigrants is better than the Australian-born population. These include lower death rates and hospitalisation rates, as well as lower prevalence of certain lifestyle-related risk factors.

Several factors are likely to contribute to this health advantage. Perhaps most important is the so-called 'healthy migrant effect', whereby those in good health are more likely to meet eligibility criteria and be willing to migrate. Social, cultural, environmental, biological and genetic factors also contribute (Kliewer & Jones 1997). However, this advantage is known to become smaller with increasing length of residence in Australia (Young 1992).

The profile of the health of the overseas-born presented here uses the latest statistics on mortality, hospital separations, health risk factors and self-reported health status. No attempt has been made to adjust for the effect length of residence may have on health outcomes. Similarly, no account has been taken of possible differences in reporting due to language limitations or cultural differences.

Significant health heterogeneity also exists within the overseas-born population. To provide some insight into this diversity, immigrants have been grouped into four broad birthplace groups. These are the United Kingdom and Ireland, 'Other Europe', Asia and 'Other' (Box 3.3). Although each of the four migrant groups forms a similar proportion of the Australian population, the age-structures of each group are different. Migrants from Australia's traditional source countries, the United Kingdom and Ireland, and 'Other Europe', have median ages of around 50 years. In contrast, migrants from Asia and 'Other' regions are much younger, with large proportions aged between 20 and 44 years.

Box 3.3: Country of birth categories

Countries classified according to the Australian Standard Classification of Countries for Social Statistics (ASCCSS) were grouped into four birthplace groups. Individuals born in the ***United Kingdom or Ireland*** *form a distinct category of their own. Other categories for the country of birth data presented here are defined as follows:*

Other Europe: *Continental Europe including Eastern Europe, former USSR and Baltic States.*

Asia: *North-East, South-East and Southern Asia.*

Other: *Middle East, Northern and Southern Africa, the Americas, New Zealand and the Pacific region. New Zealand is the largest source country, making up around 30% of this group.*

Mortality

Table 3.11 compares the mortality of the overseas-born with the Australian-born for the period 1994–96 using standardised mortality ratios (SMRs). SMRs are lower for both males and females in all four birthplace groups. The lowest SMRs were experienced by migrants born in Asia, with the SMR 38% less for Asian males and 30% less for Asian females than their Australian-born counterparts. The three other birthplace groups each had SMRs around 10% less than the Australian-born population.

Mortality by cause of death shows significant variation between overseas-born population groups. The mortality patterns for those born in the United Kingdom and Ireland and 'Other Europe' are similar, except for diabetes which was much higher for people born in other European countries (SMRs of 1.32 and 1.87 for males and females respectively). Both groups had the highest mortality rates from lung cancer among males (SMRs of 1.23 and 1.09 respectively). Females born in the United Kingdom and Ireland also had the highest mortality rates due to lung cancer (SMR of 1.50), although this was not the case for females born in the 'Other Europe' group. Since current and former smokers account for most of the individuals dying of lung cancer (Minna 1996), these smoking-related SMRs may reflect a higher level of smokers (or former smokers) in migrants from the United Kingdom and Ireland.

Although the overall numbers are small, infectious and parasitic diseases have much higher SMRs for those born in Asia and 'Other' countries. This was also the case for mortality from diabetes, with 10–60% higher than for the Australian-born. Cervical cancer mortality is also higher for females born in Asia and 'Other' countries (SMRs of 1.15 and 1.19 respectively). These results may reflect differences in risk factors such as

Table 3.11: Mortality differentials by birthplace, cause of death and sex, aged 15 years and over, 1994–96

	Males					Females				
		Standardised mortality ratio(a) (Australian-born = 1.0)					Standardised mortality ratio(a) (Australian-born = 1.0)			
ICD-9-CM	Total	UK and Ireland	Other Europe	Asia	Other	Total	UK and Ireland	Other Europe	Asia	Other
Infectious	2,128	*0.82	0.93	*1.32	*1.34	1,483	*0.80	1.13	*1.67	*1.32
AIDS(b)	1,671	*0.69	*0.60	*0.41	*1.32	83	n.a.	n.a.	n.a.	n.a.
Cancers	58,194	*0.97	*0.91	*0.62	*0.80	44,576	*1.06	*0.91	*0.71	*0.91
Lung	14,165	*1.23	*1.09	*0.59	*0.88	5,906	*1.50	*0.68	*0.70	*0.80
Skin	2,562	*0.48	*0.37	*0.14	*0.56	1,263	*0.62	*0.46	*0.13	*0.42
Prostate	7,781	*0.81	*0.60	*0.34	*0.82	n.a.	n.a.	n.a.	n.a.	n.a.
Breast	n.a.	n.a.	n.a.	n.a.	n.a.	7,875	*1.08	*0.88	*0.62	0.99
Cervix	n.a.	n.a.	n.a.	n.a.	n.a.	962	0.91	0.95	1.15	1.19
Diabetes	4,191	*0.84	*1.32	1.12	*1.43	4,181	*0.89	*1.87	*1.37	*1.58
Cardiovascular	79,091	*0.89	*0.88	*0.63	*0.91	81,876	*0.88	*0.84	*0.71	*0.91
Ischaemic	48,313	*0.90	*0.87	*0.59	*0.90	40,831	*0.89	*0.85	*0.63	*0.90
Stroke	15,428	*0.85	*0.86	*0.80	*0.89	22,610	*0.85	*0.78	*0.86	*0.89
Respiratory	16,620	0.96	*0.58	*0.54	*0.67	12,547	1.01	*0.53	*0.59	*0.70
Digestive	5,848	*0.88	*0.93	*0.52	*0.69	5,619	0.96	*0.76	*0.65	*0.75
Injury	14,882	*0.90	0.99	*0.59	*0.87	6,025	1.07	0.98	0.94	1.04
Motor vehicle	3,927	0.89	1.06	*0.73	0.93	1,601	*1.19	1.14	*1.28	*1.25
Suicide	5,568	0.99	1.00	*0.37	*0.81	1,366	*1.21	*1.31	0.91	1.03
Homicide	590	0.83	1.02	*1.37	*1.31	304	0.89	*1.44	0.93	*1.28
All causes	**196,361**	**0.92**	**0.87**	**0.62**	**0.85**	**174,631**	**0.94**	**0.84**	**0.70**	**0.89**

* Significantly different from 1.0 at the 5% level.

(a) The standardised mortality ratio 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 relatively greater mortality in that population than for the Australian-born. Likewise, ratios less than 1.00 indicate less mortality from a given cause than for the Australian-born.

(b) All deaths where AIDS is mentioned on the death certificate, regardless of whether or not it is identified as the primary cause of death.

Note: Standardised to the Australian population at 30 June 1991.

Source: AIHW Mortality Database.

early initial sexual activity, number of sex partners and smoking (Young 1996). Also, migrant women from these countries have lower Pap smear rates (Ling et al. 1996).

Mortality due to skin cancer is very low among the overseas-born. The SMR for those born in Asia was only 14% of the rate for the Australian-born population. Death rates from prostate cancer among males were also consistently lower for those born overseas. However, for breast cancer, only 'Asia' and 'Other Europe' have significantly lower mortality rates relative to the Australian-born population.

Hospitalisation

Hospital separation rates for 1995–96 for the overseas-born generally reflect the mortality patterns and were lower relative to those of the Australian-born for both males and females. Previous studies have reported a similar pattern (Kliewer & Butler 1995).

Migrants from 'Other Europe' experienced rates closest to the Australian-born population, but were still 21% below the Australian-born rate for males and 19% below for females. Asian-born migrants had the lowest rates, being 46% and 37% lower than the corresponding male and female rates for the Australian-born population.

The pattern of hospital utilisation by principal diagnosis was similar to that for mortality by cause of death, with generally lower hospitalisation rates among the overseas-born (Table 3.12). However, there were some exceptions. Asian-born migrants had far higher rates for tuberculosis than other population groups. They also had the highest hospital separation rates for cervical cancer.

One of the most notable differences was for melanoma, for which the hospitalisation rate for Australian-born residents was more than double that for the overseas-born. Risk factors for melanomas include increased exposure to sun early in life, fair complexions, red or blond hair, blue eyes, freckles and ease of sunburn. Immigrants arriving after childhood have lower melanoma rates than those who migrated before age 10 (Sober et al. 1996). If migrants arrive as adults and have skin that does not sunburn easily, these factors may be reflected in the lower overall skin cancer standardised mortality ratios for migrants relative to Australian-born individuals.

Health determinants and risk factors

Questions were asked in the 1995 National Health Survey about health risk factors such as diabetes, body weight, hypertension and cholesterol, as well as health-related actions such as smoking, alcohol consumption, walking for exercise, frequency of Pap smear tests and breast examinations, and the use of sun-protection measures.

Age-standardised percentages for each of these determinants and risk factors show marked differences between birthplace groups (Table 3.13, page 50). A much smaller proportion of Asian migrants reported being overweight, smoking, and high alcohol consumption than other birthplace groups, but were less likely to walk for exercise, use sun protection or to have a regular Pap smear test or breast examination. Migrants from the United Kingdom and Ireland provided similar responses to the Australian-born population, although there was a higher prevalence of smoking for both sexes. As noted previously, migrants from the United Kingdom and Ireland have higher mortality rates from lung cancer than all other birthplace groups including Australia.

Certain reported health indicators mirror the mortality and hospitalisation patterns. The lower proportion of Asian-born women who have regular Pap smear tests appears to be reflected in both their relatively high mortality and hospitalisation rates from cervical cancer. The 'Other' birthplace group also reported a lower proportion having a regular Pap smear test than for the Australian-born population. This group also experiences relatively high mortality and hospitalisation rates from cervical cancer. Self-reported prevalence of diabetes was high for those migrants born in Asia, 'Other Europe', and 'Other' countries, consistent with the pattern exhibited in the mortality statistics.

Table 3.12: Standardised hospital separation ratios by principal diagnosis, birthplace and sex, ages 15 years and over, 1995–96

	Males					Females				
		Standardised hospital separation ratio[a] (Australian-born = 1.0)					Standardised hospital separation ratio[a] (Australian-born = 1.0)			
Principal diagnosis	**Total**	**UK and Ireland**	**Other Europe**	**Asia**	**Other**	**Total**	**UK and Ireland**	**Other Europe**	**Asia**	**Other**
Infectious	24,546	*0.74	*0.67	*0.88	*1.03	23,426	*0.85	*0.67	*0.73	*0.83
Tuberculosis	523	0.89	1.01	*9.73	*1.93	427	0.65	*1.74	*19.47	*3.58
Cancers	165,402	*0.67	*0.68	*0.41	*0.66	172,916	*0.81	*0.78	*0.58	*0.79
Melanoma	3,316	*0.35	*0.23	*0.05	*0.49	2,663	*0.48	*0.37	*0.04	*0.43
Lung	11,071	0.96	*1.12	*0.42	0.97	4,835	*1.30	*0.59	*0.69	*0.84
Prostate	12,856	*0.69	*0.57	*0.39	*0.64	n.a.	n.a.	n.a.	n.a.	n.a.
Breast	n.a.	n.a.	n.a.	n.a.	n.a.	16,452	*0.88	*0.86	*0.52	*0.82
Cervix	n.a.	n.a.	n.a.	n.a.	n.a.	1,948	0.90	0.99	*1.43	*1.16
Diabetes	10,331	*0.62	*0.72	*0.53	*0.69	9,362	*0.56	0.84	*0.52	*0.80
Mental	88,572	*0.79	*0.60	*0.25	*0.55	95,867	*0.85	*0.60	*0.27	*0.55
Cardiovascular	230,118	*0.75	*0.82	*0.54	*0.87	180,634	*0.77	*0.87	*0.55	*0.88
Ischaemic	99,546	*0.74	*0.81	*0.60	*0.93	53,175	*0.78	*0.82	*0.58	*0.93
Stroke	26,272	*0.66	*0.77	*0.58	*0.78	24,841	*0.70	*0.74	*0.68	*0.76
Respiratory	99,563	*0.76	*0.71	*0.48	*0.74	94,522	*0.83	*0.58	*0.42	*0.73
Asthma	9,678	*0.66	*0.44	*0.46	*0.74	19,367	*0.83	*0.40	*0.35	*0.67
Digestive	281,901	*0.75	*0.79	*0.56	*0.76	302,890	*0.78	*0.77	*0.50	*0.74
Injury	186,914	*0.75	*0.61	*0.33	*0.69	138,664	0.79	*0.64	*0.45	*0.72
All causes	**2,041,224**	***0.73**	***0.79**	***0.54**	***0.82**	**2,579,213**	***0.80**	***0.81**	***0.63**	***0.84**

* Significantly different from 1.0 at the 5% level.

(a) The standardised hospital separation ratio is a measure of how much an overseas-born population used hospital services relative to the Australian-born population. 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.

Table 3.13: Selected health indicator differentials by birthplace, 1995[(a)]

	Standardised prevalence ratio[(a)] (Australian-born = 1.0)							
	Males				Females			
Indicator	UK and Ireland	Other Europe	Asia	Other	UK and Ireland	Other Europe	Asia	Other
Diabetes	1.02	1.69	1.49	1.65	1.07	1.88	1.32	1.43
Overweight	0.91	1.03	*0.50	1.03	0.86	1.12	*0.45	1.03
Hypertension	0.88	0.85	0.79	0.92	0.78	0.93	0.77	0.93
Cholesterol	0.96	1.18	0.98	0.93	0.93	1.22	1.15	1.12
Tobacco smoking	1.03	1.09	0.66	1.02	1.10	0.80	*0.17	0.89
Excess alcohol consumption	0.92	0.41	0.16	0.99	1.51	0.22	0.23	0.87
No sun protection	0.93	*1.69	*1.96	*1.64	0.89	*1.74	*2.02	*1.80
Walking for exercise	1.12	0.91	0.85	1.00	1.01	0.87	0.73	0.90
Regular Pap smear test	n.a.	n.a.	n.a.	n.a.	0.99	0.92	*0.71	0.88
Regular breast examination	n.a.	n.a.	n.a.	n.a.	0.81	0.82	*0.57	0.93

* Significantly different from 1.0 at the 5% level.

(a) The standardised prevalence ratio is a measure of how prevalent a specific health indicator is in an overseas-born population relative to the Australian-born population. The ratio for Australian-born is 1.00, and ratios that exceed 1.00 indicate relatively greater prevalence in that population than for the Australian-born. Likewise, ratios less than 1.00 indicate less prevalence of that indicator than for the Australian-born.

Note: Ratios compiled from rates age-standardised to the Australian population as at 30 June 1991.

Source: 1995 ABS National Health Survey.

3.4 Mothers and infants

Live births and birth rates

There were 253,834 live births registered in Australia in 1996 (ABS 1997c), 0.9% fewer than in 1995, and 8.2% fewer than the peak annual registration of 276,362 live births in 1972. After declining to 223,129 in 1979, the annual numbers of births gradually increased to 264,151 in 1992 and has since declined again.

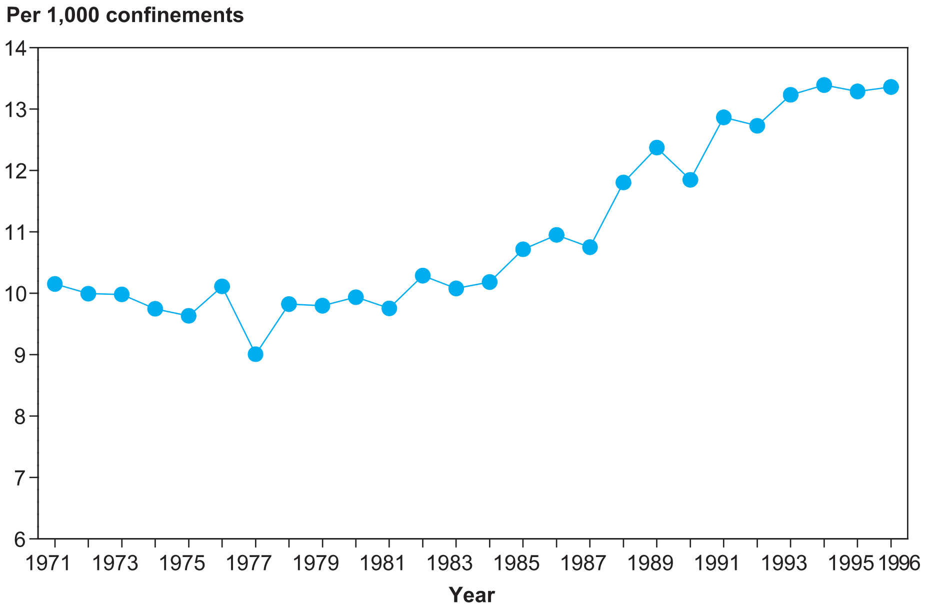
The crude birth rate relates the number of live births in any one year to the total population size. This rate has declined from 21.7 per 1,000 people in 1971 to 14.9 per 1,000 in 1991, and 13.9 per 1,000 in 1996.

Age-specific birth rates express the number of women in selected 5-year age groups giving birth in a year as a proportion of the number of women in that age group in the population. Recent trends in these rates have differed with age. For teenagers 15–19 years, the birth rate increased slightly each year from a rate of 20.3 live births per 1,000 women in 1988 to 22.1 live births per 1,000 in 1991, and has since decreased annually to 20.1 per 1,000 women in 1996, an historical low. The birth rates for women in their twenties declined to their lowest levels ever in 1996, down to 64.6 per 1,000 for women aged 20–24 years and 116.7 per 1,000 for women aged 25–29 years. Age-specific birth rates for older women have generally increased in recent years, reflecting the trend for some women to defer child bearing until their thirties, or even later. Women aged 30–34 years had their lowest birth rates in the mid-1970s, those aged 35–39 in the late 1970s, and those aged 40–44 in the mid-1980s.

Multiple births

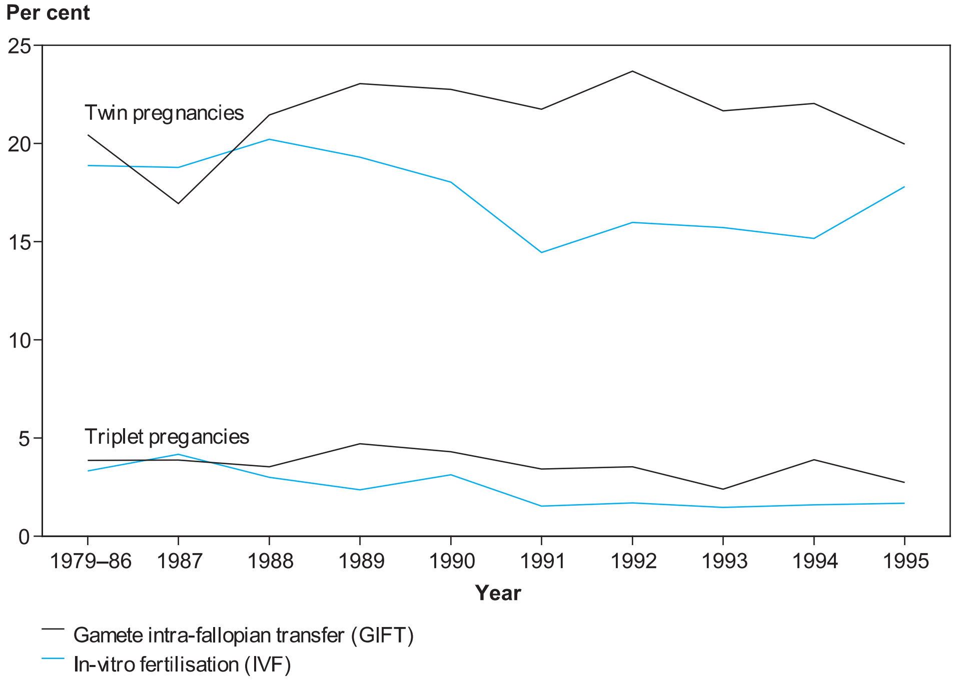
Twin confinements have increased since the mid-1970s, and reached their highest rate ever in Australia in 1994 when there were 13.4 twin confinements per 1,000 confinements. In 1996, there were 3,345 twin confinements among a total of 250,363 confinements, a rate of 13.4 per 1,000 confinements, slightly higher than the rate of 13.3 per 1,000 confinements in 1995 (Figure 3.11). There were 104 confinements of triplets and higher-order multiple births in 1996. Because multiple births increase with advancing maternal age up to the late thirties, rates of multiple births are influenced by changes in maternal age distribution. The increasing use of assisted conception (in-vitro fertilisation and related techniques) to treat infertility has also contributed to the higher rates of multiple births in the last decade or so.

In 1995, assisted conception accounted for 10.4% of twin confinements in Australia and 37% of triplets. Among the more than 23,400 confinements resulting from assisted conception since it began in Australia in 1979, twins occurred in 17.2%, triplets in 2.2%, and other multiple births in 0.1%. These multiple births usually follow transfer of more than one embryo into the uterus, or more than one egg into the fallopian tube, in the course of the various treatment procedures. In the past few years, the policy of reducing the number of embryos or eggs transferred during assisted conception has been partly effective in reducing the incidence of multiple births (Figure 3.12, page 52) (AIHW National Perinatal Statistics Unit & Fertility Society of Australia 1997). An unknown proportion of other multiple births occurs after fertility drugs are used independently of assisted conception.



Source: AIHW National Perinatal Statistics Unit, derived from ABS data.

Figure 3.11: Twin confinement rates, 1971 to 1996



Source: AIHW National Perinatal Statistics Unit 1997.

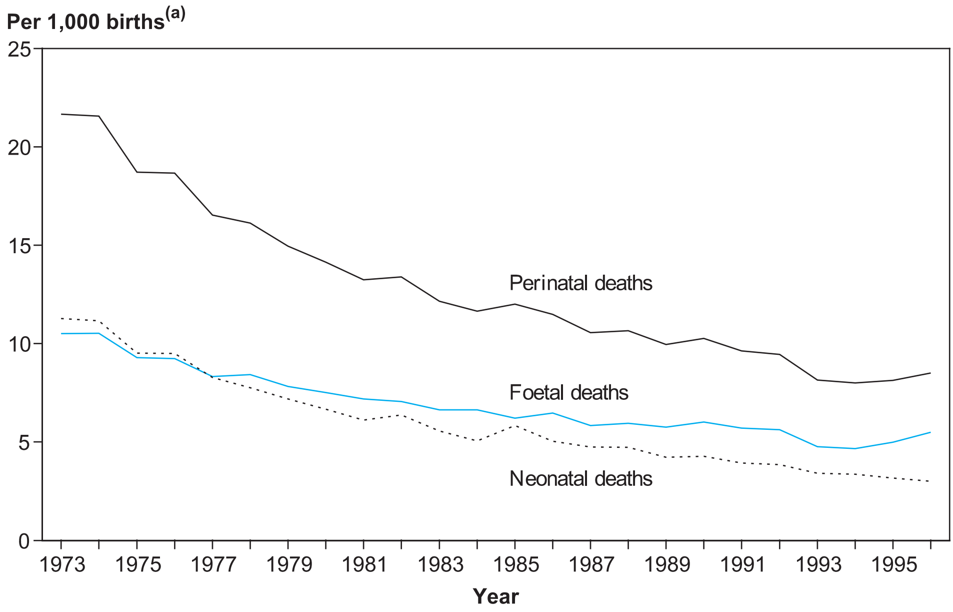
Figure 3.12: Multiple pregnancies of at least 20 weeks' gestation after assisted conception, Australia and New Zealand, 1979–86 to 1995

Termination of pregnancy

National information on fertility patterns and induced abortions is lacking because only South Australia and the Northern Territory collect population-based data on induced abortions. In South Australia in 1996, there were 5,535 induced abortions and 18,784 confinements; thus 29.5% of all pregnancies (excluding miscarriages) ended in abortions (Chan et al. 1997). More than half (51.0%) of all teenage pregnancies were terminated.

Perinatal mortality

The perinatal death rate declined markedly in the last two decades, but rose slightly in 1996 to 8.5 deaths per 1,000 total births (ABS 1997d), higher than the rate of 8.1 in 1995 and 8.0 deaths per 1,000 total births in 1994, the lowest rate ever achieved (Figure 3.13). Foetal deaths (5.5 per 1,000 total births) accounted for 65.0% of perinatal deaths, and neonatal deaths (3.0 per 1,000 live births) accounted for 35.0%. The perinatal death rate for males (9.2 per 1,000 total births) was higher than for females (7.8 per 1,000 total births).



(a) Per 1,000 total births for foetal deaths and perinatal deaths. Per 1,000 live births for neonatal deaths.

Note: Perinatal deaths include all infants who died within 28 days of birth and all foetuses weighing at least 500 grams or, when birthweight is unavailable, having the corresponding gestational age (22 weeks) or body length (25 cm crown–heel).

Source: AIHW National Perinatal Statistics Unit, derived from ABS data.

Figure 3.13: Foetal, neonatal and perinatal death rates, Australia, 1973 to 1996

Birthweight

A key indicator of the health of babies born in Australia is the proportion having a birthweight of less than 2,500 grams. These low-birthweight infants have a greater risk of dying, of requiring a longer period of hospitalisation after birth, and of developing significant disabilities or handicaps. In 1995, there were 16,571 infants of low birthweight, a rate of 6.4% (AIHW National Perinatal Statistics Unit 1997), slightly higher than the rate of 6.3% in years 1991 to 1994. Low birthweight is more common in the Northern Territory due to the relatively high proportion of Indigenous births. Of 7,846 births to Indigenous mothers nationally in 1995, 11.8% were of low birthweight.

Type of delivery

Obstetric intervention may be needed if complications arise during pregnancy or labour, although there is debate about the most appropriate rate of intervention. Caesarean birth rates have increased markedly in the last few decades (AIHW National Perinatal Statistics Unit 1993). In 1995, the national caesarean birth rate was 19.3% (Table 3.14, page 54), a rate slightly lower than the rate of 19.4% in 1994 but higher than the rates in earlier years. South Australia (23.2%) had the highest caesarean rate in 1995 and New South Wales (17.5%) the lowest. The caesarean rate for Indigenous mothers was 18.1%, slightly less than for all mothers, but young Indigenous mothers had relatively high caesarean rates. There was also considerable variation among the States and Territories in the rates of forceps deliveries and the use of vacuum extraction (Table 3.14).

Table 3.14: Type of delivery, States and Territories, 1995

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					(Number)				
Total confinements	86,263	62,732	47,864	25,090	19,310	6,682	4,830	3,607	256,378
					(Per cent)				
Spontaneous vertex	71.0	67.5	68.8	64.6	63.5	70.5	63.5	72.3	68.4
Forceps	7.1	10.9	5.7	5.5	9.2	8.8	9.0	4.6	7.8
Vacuum extraction	3.4	1.5	3.8	9.2	3.4	1.0	6.4	1.2	3.5
Vaginal breech	1.1	1.0	0.8	0.6	0.7	0.9	0.9	0.7	0.9
Caesarean section	17.5	19.1	20.8	20.2	23.2	18.8	20.3	21.1	19.3

Source: AIHW National Perinatal Statistics Unit 1997.

Congenital malformations

All States and Territories notify foetuses and infants with major congenital malformations to a national monitoring system (AIHW National Perinatal Statistics Unit 1998). Malformations can be grouped into the main anatomical systems, based on the International Classification of Diseases, or can be tabulated individually. In 1995, the malformation rate was highest in the musculoskeletal system (50.6 per 10,000 births), followed by malformations of the heart and circulatory system (44.4), genital malformations (26.2), and chromosomal abnormalities (26.1). These high rates can be attributed to congenital dislocation of the hip, ventricular septal defect (hole between chambers of the heart), hypospadias (incomplete development of the underside of the penis), and Down syndrome. Another relatively common malformation was cleft lip and palate (Table 3.15).

Table 3.15: Selected congenital malformations, Australia, 1995

ICD-9 code	Congenital malformation	Number	Rate per 10,000 births
740	Anencephalus	37	1.4
741	Spina bifida	94	3.6
742.3	Hydrocephalus	103	4.0
745.1	Transposition of great vessels	95	3.7
745.4	Ventricular septal defect	446	17.2
749	Cleft lip and/or cleft palate	462	17.8
750.3	Tracheo-oesophageal fistula, oesophageal atresia and stenosis	74	2.8
751.2	Atresia and stenosis of large intestine, rectum and anus	86	3.3
752.6	Hypospadias	604	23.2
753.0	Renal agenesis and dysgenesis	97	3.7
754.3	Congenital dislocation of hip	478	18.4
756.6	Diaphragmatic hernia	86	3.3
758.0	Down syndrome	374	14.4

Note: Foetuses and infants may be counted in more than one congenital malformation.

Source: AIHW National Perinatal Statistics Unit 1998.

Anencephalus, spina bifida and encephalocele are serious malformations of the brain and spine, known collectively as neural tube defects (NTD), which often result in death or major disability and handicap. In 1995, the reported malformation rate for NTD was 15.0 per 10,000 births. A randomised controlled trial by the Medical Research Council in the United Kingdom has shown that supplements of the vitamin folic acid are effective in preventing recurrence of these neural tube defects (Medical Research Council Vitamin Study Research Group 1991). Other studies indicate that supplements of folic acid are also likely to prevent many first occurrences of neural tube defects. The National Health and Medical Research Council 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 neural tube defects, stressing the importance of commencing the supplementation before conception and continuing it for the first three months of pregnancy (NHMRC 1993).

3.5 Children and young adults

In 1996, there were almost 4 million children aged under 15 years in Australia. In the same year there were 2.7 million persons aged between 15 and 24 years (ABS 1997e). The majority of Australian children and young adults lead safe, healthy lives. A high standard of living, ready access to quality health care and programs to encourage healthy lifestyles contribute to their development. Nevertheless, some groups of young people face serious health challenges.

This section provides an overview of the health of Australian children and young people principally using mortality, hospital morbidity and disability information. For children, information can be found elsewhere in this report on diseases and illnesses experienced (Section 2.2, page 11), injuries (Section 4.4, page 97) and immunisation status (Section 5.2, page 123). The reader is also referred to *Australia's Health 1996*, which discussed health differentials in children according to socioeconomic disadvantage, and reported the results of a survey of blood lead levels in children aged 1–4 years. *Australia's Welfare 1997* (AIHW 1997b) includes a section on child abuse and neglect.

Child health

Biological factors, events during pregnancy, and socioeconomic and physical circumstances are some of the factors that affect the health of children. Following birth, a child's ability to fight disease is enhanced by breastfeeding, immunisation against vaccine-preventable diseases, and living in a healthy environment. But congenital malformations, conditions originating in the perinatal period, infectious and parasitic diseases, injuries resulting from accidents, juvenile diabetes and childhood asthma may have short-term and occasionally long-term effects on the health of children. The effects of some of these conditions will continue into adulthood and later life.

From the available information it is apparent that the health experience of boys is generally worse than girls. Boys experience higher mortality rates, higher rates of hospitalisation, and higher disability and handicap rates. Also, more boys than girls were identified as having mental health problems (Zubrick et al. 1995).

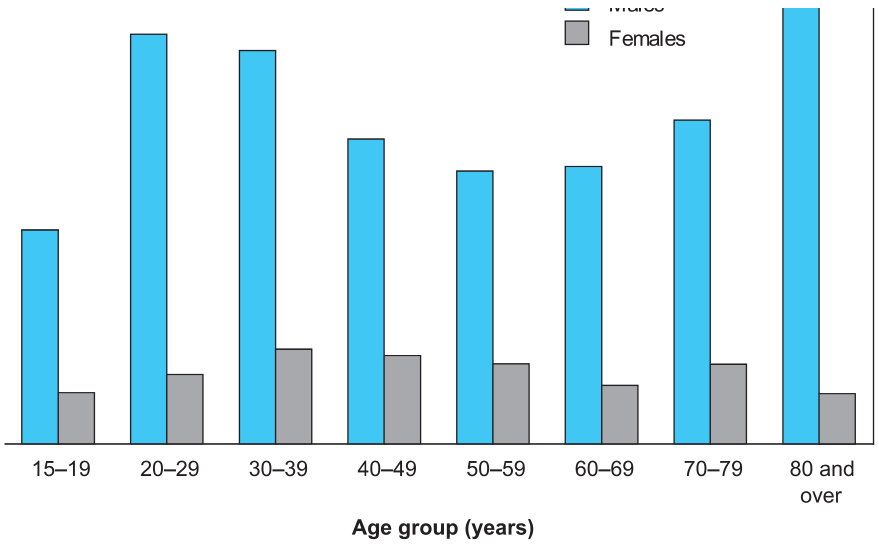
Mortality

A total of 2,252 deaths were registered in 1996 for children under the age of 15 years (ABS 1997a). The majority of these childhood deaths occurred in the first year of life, and of these infant deaths slightly over half (52%) were babies under 28 days old. There has been a steady downward trend in infant mortality rates over the last several decades to a low of 6.5 male deaths per 1,000 live births and 5.0 female deaths per 1,000 live births in 1996 (Figure 3.14). During this period, the infant mortality rate due to sudden infant death syndrome (SIDS) declined from 2.2 per 1,000 live births in 1987, to 0.8 per 1,000 live births in 1996.

In 1996, the leading cause of death among children under 1 year was conditions originating in the perinatal period, accounting for 48% of deaths (Table 3.16). These conditions include disorders relating to low birthweight or birth trauma, for example. Other leading causes of death were congenital anomalies (26%) and sudden infant death syndrome (14%).

A total of 792 children aged 1–14 years died in 1996. There were more male than female deaths. Death rates in this age group have also declined consistently over the past several decades, and were at their lowest in 1996 (Figure 3.15).

Injuries resulting from accidents, poisonings and violence were the causes of more than 4 out of 10 deaths among these children (Table 3.17, page 58). Malignant neoplasms, disorders of the nervous system and sense organs and congenital abnormalities were the other major causes of death in 1996.



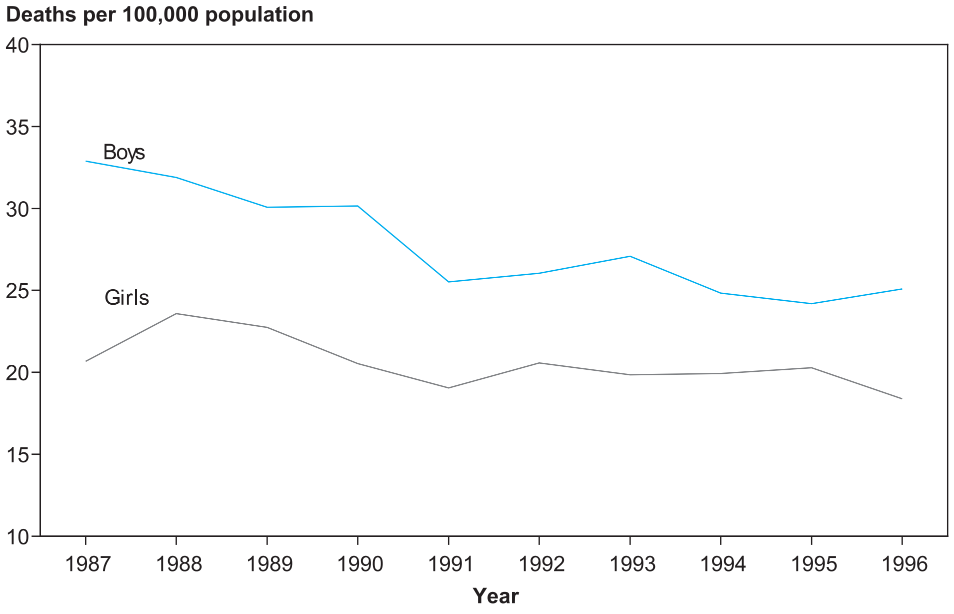
Source: AIHW Mortality Database.

Figure 3.14: Infant mortality rates, Australia, 1987 to 1996

Table 3.16: Main causes of infant mortality, 1996

	Deaths	
Cause of death	**Number**	**%**
Certain conditions originating in the perinatal period	693	47.5
Disorders relating to short gestation and unspecified low birthweight	237	16.2
Hypoxia, birth asphyxia and other respiratory conditions	197	13.5
Congenital abnormalities	372	25.5
Of circulatory system	127	8.7
Of nervous system	55	3.8
Sudden infant death syndrome (SIDS)	210	14.4
Other causes	185	12.7
All causes	**1,460**	**100.0**

Source: ABS 1997d.



Source: AIHW Mortality Database.

Figure 3.15: Death rates for children aged 1–14 years, 1987 to 1996

Table 3.17. Main causes of deaths among children aged 1–14 years, 1996

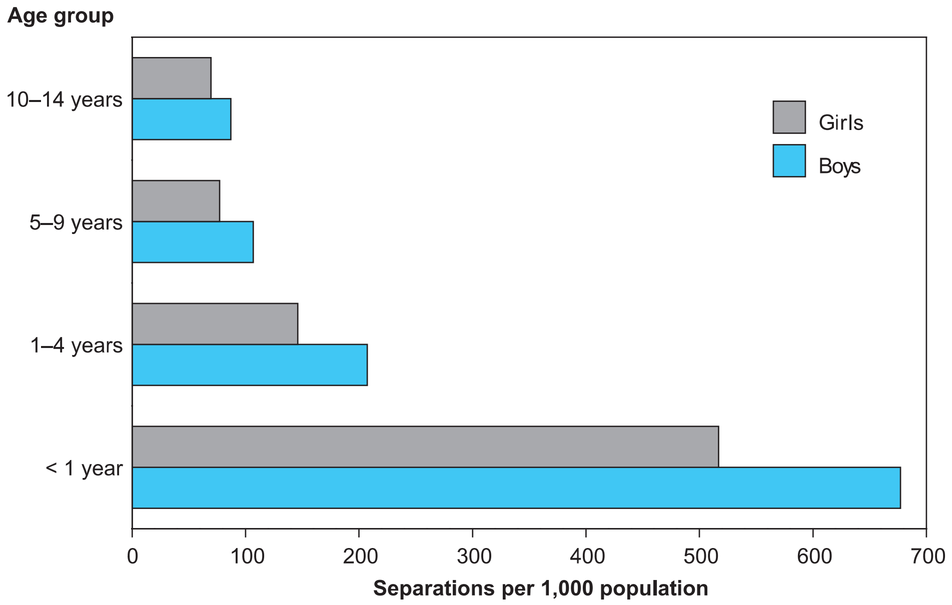
	Deaths	
Cause of death	**Number**	**%**
Accidents, poisonings and violence	344	43.4
Motor vehicle traffic accidents	136	17.2
Accidents caused by submersion, suffocation and foreign bodies	86	10.9
Malignant neoplasms	134	16.9
Of lymphatic system and haematopoietic tissue	58	7.3
Congenital abnormalities	77	9.7
Diseases of the nervous system and sense organs	86	10.9
Other causes	151	19.1
All causes	**792**	**100.0**

Source: ABS 1997d.

Illness and injury

Hospital separations provide an indication of the level of illness or injury requiring hospitalisation, but analysis is complicated by differing admission practices, the unknown number of multiple admissions for chronic conditions, and differential access to services. Some information is also available on recent and long-term health conditions from the 1995 National Health Survey.

The highest number of separations was for children under the age of 1 year (Figure 3.16), followed by other age groups in chronological order. Boys accounted for higher hospital separation rates than did girls in all age groups.



Source: AIHW National Hospital Morbidity Database.

Figure 3.16: Hospital separations among children aged 0–14 years, 1995–96

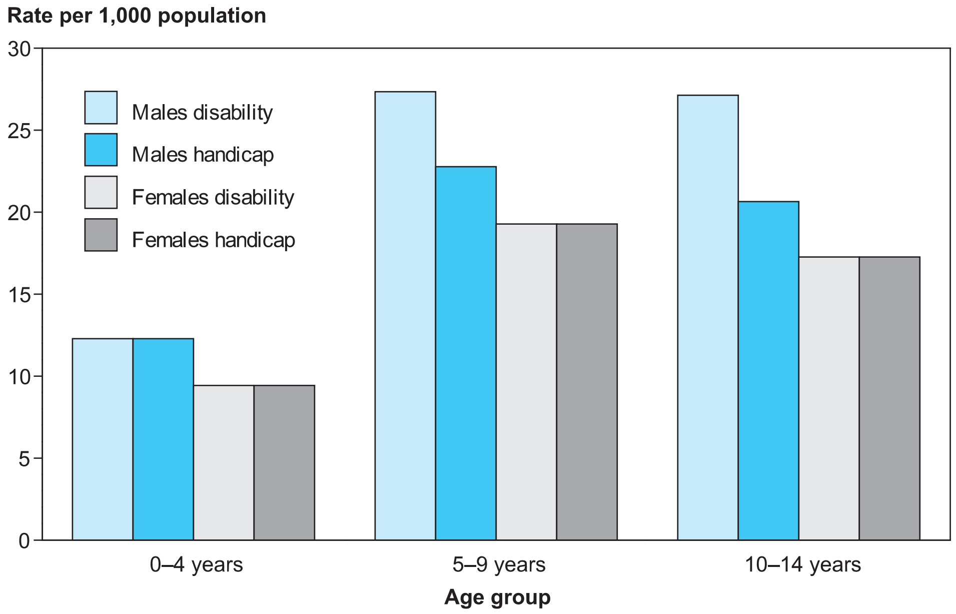
The largest cause of hospital admission for boys and girls less than 1 year of age was conditions originating in the perinatal period followed by acute respiratory infections (AIHW 1997a). For boys aged 1–4 years, diseases of the ear and mastoid process, acute respiratory infections and chronic obstructive pulmonary disease were the main reasons for admission. For girls, diseases of the ear and mastoid process was the main reason for admission.

For children aged 5–14 years, fractures, dislocations, sprains and strains among boys and upper respiratory tract disease among girls were the main reasons for hospital admission.

Concern for children experiencing violence relates to both the physical effects of the injury, and the short- and long-term emotional effects. In 1995–96, there were almost 1,000 hospital separations for children aged under 15 years with a reported external cause of injury purposely inflicted by other persons (AIHW National Hospital Morbidity Database). This included 404 cases of child battering and other mistreatment. This figure may be under-reported to the extent that some cases of external injury may not have been identified as the result of child abuse.

Disability and handicap

In 1993, 4.4% of children aged 0–4 years and 8.3% of children aged 5–14 years were reported to have one or more disabilities (ABS 1993a). The rates were higher for males than for females in all age groups (Figure 3.17).



Source: ABS 1993a.

Figure 3.17: Disability and handicap rates in children aged 0–14 years, 1993

There is a marked increase in rates in the 5–9 year age group, possibly as parents become aware of disabilities when their children enter school. This is also supported by the observation that nearly all children under 5 years with a reported disability were also reported to be handicapped, suggesting that only the more severe disabilities are identified in younger children. The age-specific patterns and sex differential for handicapped children is similar to those for disability, with more males than females reporting handicap at most ages.

Mental health

There is very little information available on the mental health of children at a national level. Information on the mental health of children in Western Australia was collected as part of the Western Australian Child Health Survey, conducted in 1993 (Zubrick et al. 1995). The survey found that 16% of children aged 4–11 years and about 21% of children aged 12–16 years had a mental health problem. Mental health problems were more prevalent in boys than girls. The planned Child and Adolescent component of the National Survey of Mental Health and Wellbeing to be conducted in 1998 will provide more up-to-date information at a national level.

Health of young adults

Those aged between 15 and 24 years are commonly regarded as among the healthiest people, and least in need of health services. But during transition to adulthood, many young people are at risk of physical, developmental, psychological, emotional or behavioural problems.

Consequently, although mortality is relatively low in this age group compared with other groups, morbidity is more common. Some of the health problems are associated with conflict, such as environments with high levels of stress possibly involving physical, sexual or emotional abuse (Broadbent & Bentley 1997). The potential consequences of abuse include depression and other psychological difficulties during adolescence and adulthood and may include delinquency and homelessness. In 1996–97, persons aged 15–24 years were the largest group (38%) receiving services from the Supported Accommodation Assistance Program (SAAP) (AIHW 1997c).

Alcohol and other drug use places young people at risk of immediate health problems, such as motor vehicle accidents, as well as potential long-term problems. Homeless and runaway youths are at an increased risk of a wide variety of mental and physical health problems.

Sexuality becomes an important health issue for this age group, including issues such as sexual preference and levels of sexual activity. The health consequences of planned and unplanned pregnancies are significant for this age group.

Sex differences in the health experience of young adults are similar to that for children. Mortality rates are higher for males than females. Disability and handicap rates are also higher for males, although the sex differential is not as great as for children. However, females aged 15–24 years have a higher hospitalisation rate than the corresponding male population, largely due to admissions for obstetric reasons.

Mortality

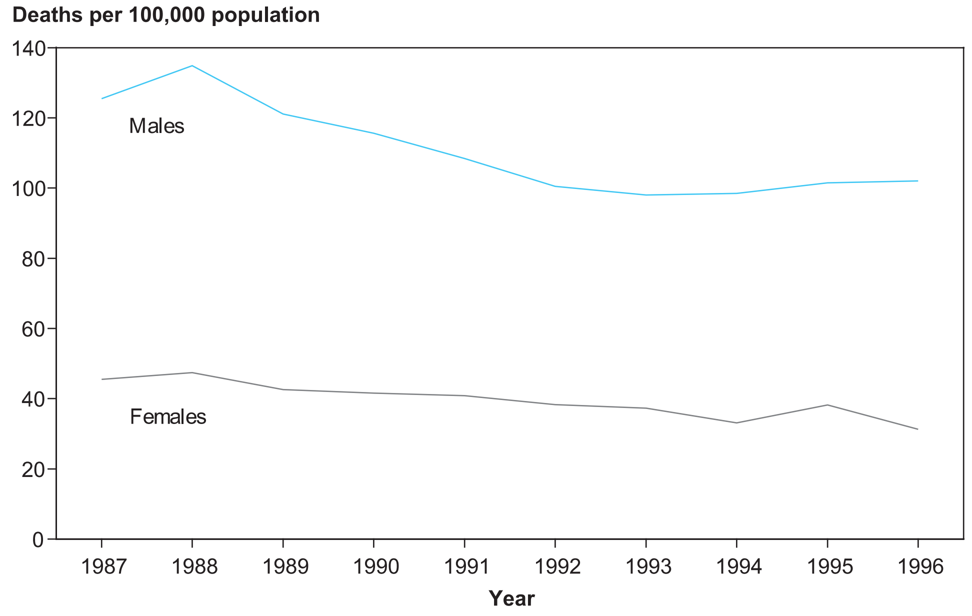
Young adults as a group have among the lowest death rates of all Australians. However, they are more likely than younger and older Australians to die of injury. The major causes of death in young people are accidents, poisoning, violence, suicide and cancer.

The death rate among those aged 15–24 years declined steadily between 1987 and 1996. The male death rate fell from 125 to 102 and the female death rate fell from 45 to 31 deaths per 100,000 population over the 10-year period. The death rates for males have been consistently higher than for females (Figure 3.18).

In 1996, injury accounted for 71% of all deaths at ages 15–24 years (Table 3.18, page 62) including injury from traffic accidents, sporting activities, peer group violence or self-harming behaviour.

Motor vehicle accidents were responsible for 30% of deaths of young adults in 1996 (31% of male deaths and 27% of female deaths). Over the period 1987 to 1996, the death rates were particularly high among males, although falling from 55 deaths per 100,000 population in 1988 to 32 per 100,000 in 1996 (Figure 3.19, page 62).

Suicide was the second largest cause of injury deaths for those aged 15–24 years in 1996. In that year, 80% as many young men died from suicide as from road accidents. There was also disparity between male and female mortality from suicide, with suicide accounting for 33% of male injury deaths and 24% of female injury deaths. There were over 6 times as many male suicide deaths than female suicide deaths.



Source: AIHW Mortality Database.

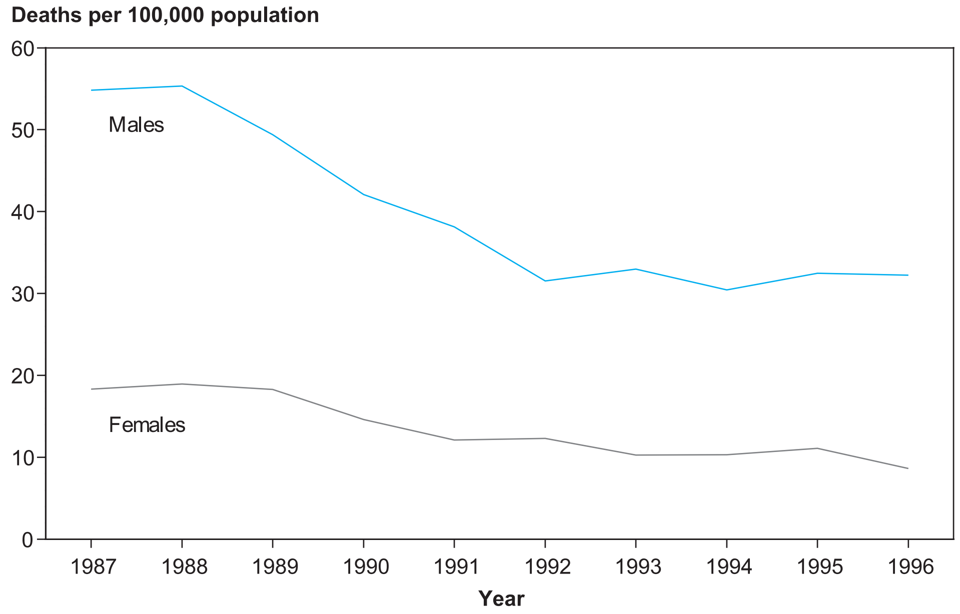
Figure 3.18: Trends in death rates for all causes, persons aged 15–24 years, 1987 to 1996

The youth suicide death rate increased dramatically between the 1950s and 1980s (DHFS 1997). In the early 1950s, the youth suicide death rate was a little over 5 per 100,000 persons (close to 10 per 100,000 males and 2 per 100,000 females). By the mid-1990s, the rate was over 15 per 100,000 persons (nearly 25 per 100,000 males and 5 per 100,000 females).

Table 3.18: Major causes of death among youths aged 15–24 years, 1996

	Deaths	
Cause of death	Number	%
Accidents, poisonings and violence	1,291	71.1
Motor vehicle traffic accidents	546	30.0
Suicide	407	22.4
Malignant neoplasms	120	6.6
Other causes	406	22.3
All causes	**1,817**	**100.0**

Source: ABS 1997d.



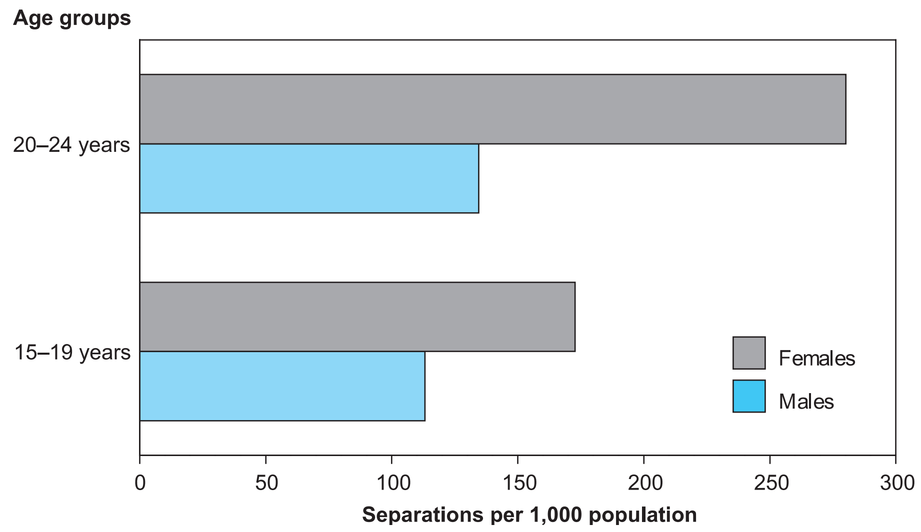
Source: AIHW Mortality Database.

Figure 3.19: Death rates for road accidents, persons aged 15–24 years, 1987 to 1996

Illness and injury

In contrast to hospital admission rates for children, there were more admissions for females than males in the 15 to 24 years age group (Figure 3.20). This is mainly due to obstetric admissions, including pregnancy, labour and delivery (AIHW 1997a). The next most common reason for female admissions was for diseases of the oral cavity, salivary glands and jaws.

The most common conditions requiring admission for males were: fractures, dislocations, sprains and strains; diseases of the musculoskeletal system and connective tissue; and mental disorders. There were over 16,000 admissions for young people aged between 15 and 24 years with a principal diagnosis of juvenile diabetes in 1995–96.



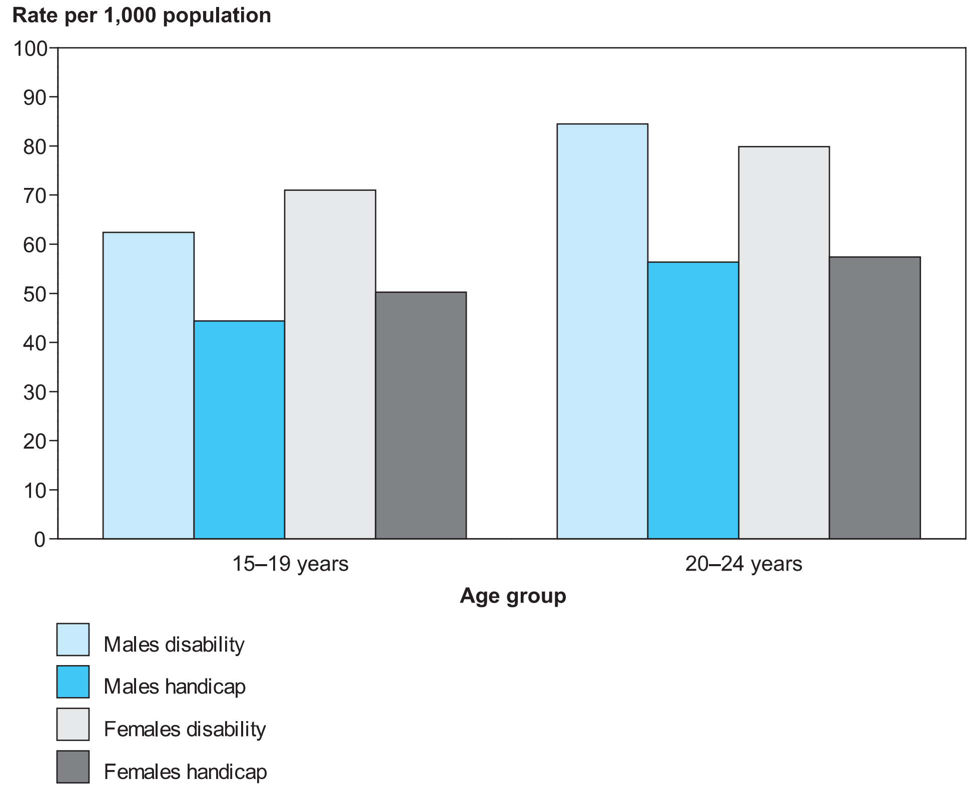
Source: AIHW National Hospital Morbidity Database.

Figure 3.20: Hospital separations, persons aged 15–24 years, 1995–96

Disability

In 1993 there were an estimated 74 per 1,000 young people between 15 and 24 years of age with one or more disabilities. An estimated 52 per 1,000 population aged 15–24 years also reported a handicap (ABS 1993b).

Males reported a marginally higher rate of disability than did females in the 20–24 age group. However, there was a smaller difference in the rates of handicap between males and females (Figure 3.21, page 64). The most frequently reported area of handicap for those aged 15–24 years was employment (males 41.8, females 41.3 per 1,000 population) and mobility (males 35.6, females 49.9 per 1,000 population).



Source: ABS 1993a.

Figure 3.21: Disability and handicap rates, persons aged 15–24 years, 1993

3.6 Older people

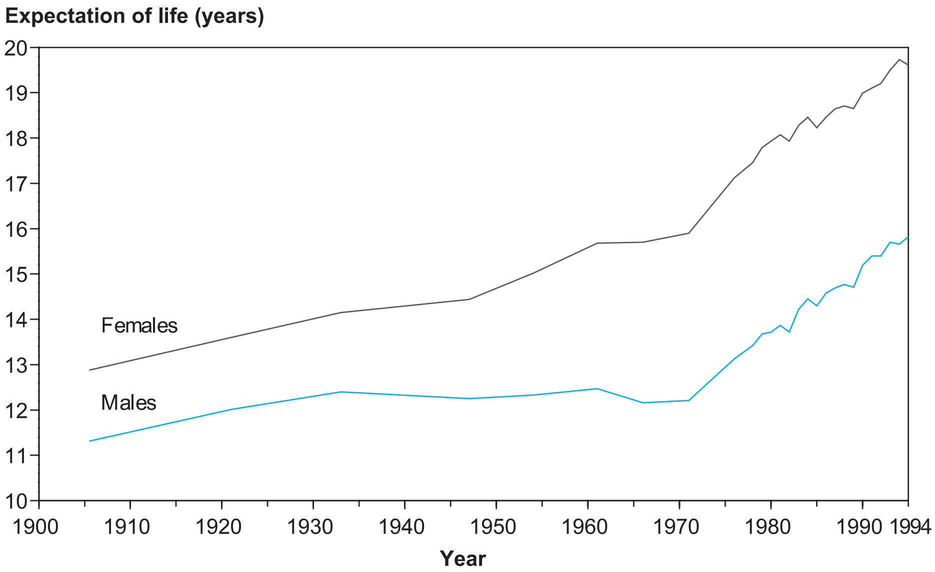
The Australian population has been ageing since the early 1970s, and this trend is expected to continue for at least the next 50 years. Annual rates of population increase projected for the period 1976 to 2016 are significantly higher for the older population than for the overall population, with rates of increase highest among the very old (ABS 1996). Twenty years ago, 9% of the population (or 1.3 million people) were aged 65 years and over. By 1996, this had increased to 12% (2.2 million) and by 2016 is projected to increase to 16% or 3.5 million people. In 1976, one in six older people was aged 80 and over; by 1996 it was one in five and by 2016 it will be one in four.

Ageing of the Australian population is of particular relevance with regard to planning for health services and long-term care. This section provides an overview of trends in the health status of older people and of their use of health services. The demand for health services and long-term care is influenced by changes in the health status of older people as well as by the ageing of the population, and changes in the supply of health services.

Increasing life expectancy

Gains in life expectancy since the 1960s have been concentrated among the middle-aged and older population. Over the last three decades, life expectancy at age 65 has increased by 3.3 years for men and 3.9 years for women compared with increases of only 0.9 years and 2.8 years respectively over the entire first six decades of the century (Figure 3.22). Mortality at older ages has fallen dramatically since the 1960s in Australia and in other developed countries. Recent analyses have shown that mortality rates for the very old (80–89 years and 90–99 years) have been declining in a number of developed countries since the 1950s and that the rate of decline has been increasing in recent decades (Vaupel 1997).

For the period 1994–1996, the life expectancy of Australians aged 65 years was 15.8 years for men and 19.6 years for women. Australian men and women aged 65 years now have around the sixth highest life expectancy in the world, following countries such as Japan, France, Hong Kong and Switzerland (see Table S12, page 255).



Sources: ABS 1997a; Cumpston 1989.

Figure 3.22: Trends in life expectancy at age 65, 1905 to 1994

Causes of death

These increases in life expectancy are due to marked declines in mortality among older adults since the mid-1960s. There have been dramatic declines in death due to some causes, particularly cardiovascular disease (mainly coronary heart disease and stroke). Between 1968 and 1996, age-adjusted death rates from cardiovascular disease declined by 62% for both men and women.

Cancer and coronary heart disease are the leading causes of death in the elderly, accounting for 29% of male and 21% of female deaths in 1996 among the population aged 65 years and over (ABS 1997d). Coronary heart disease is more significant than cancer in those aged 75 years and over (Table 3.19). Stroke (cerebrovascular disease) is also prominent as a cause of death, accounting for 12% of all deaths in the elderly. For those aged 85 years and over, stroke is the second leading cause of death.

The decline in tobacco smoking among middle-aged and older Australians over the last three decades has contributed significantly to these mortality reductions, as have improvements in the control of other cardiovascular risk factors such as high blood pressure and high serum cholesterol. Improvements in medical treatment interventions have also played an important role, although the relative importance of treatment and prevention is difficult to quantify.

Reductions in death rates due to different causes of death will have varying impacts on trends in morbidity and disability at older ages. This is discussed in more detail on page 69.

Table 3.19: Major causes of death: numbers of deaths for persons aged 65 years and over, 1996

	Age group (years)			
Cause of death	**65–74**	**75–84**	**85 and over**	**Total**
Coronary heart disease	6,530	10,822	8,463	25,815
Cancer	10,562	10,159	4,052	24,773
Stroke	1,974	4,888	4,974	11,836
Diseases of the respiratory system	2,587	3,688	2,811	9,086
Mental disorders	235	1,017	1,670	2,922
Diseases of the digestive system	762	1,100	1,030	2,892
Diabetes mellitis	766	1,090	633	2,489
Accidents, poisonings and violence	628	715	589	1,932

Source: ABS 1997d.

The most common health problems of older Australians

Arthritis was the most common long-term condition reported in the 1995 National Health Survey (ABS 1997f) by people aged 65 and over. Around half of this population reported suffering from arthritis for periods of 6 months or longer (Table 3.20). The condition was more prevalent in females than males.

Vision and hearing problems were almost as prevalent as arthritis among older Australians. Almost half of the population aged 65–74 years reported being far-sighted, and another one-third reported short-sighted vision. One-third of people aged 65–74 years, and more than 40% of people aged 75 years and over reported deteriorating near vision focus. The incidence of reported deafness progressively increased with age, with 26% of people aged 65–74 and 36% of people aged 75 and over reporting some level of deafness.

Hypertension was also reported as a major long-term health condition, with around 40% of the population aged 65 and over experiencing this condition.

Table 3.20: Most common long-term health conditions, prevalence (per cent) for persons aged 65 years and over, 1995

	Age group (years)					
	Males		Females		Persons	
Condition	65–74	75 and over	65–74	75 and over	65–74	75 and over
Arthritis	39	43	56	59	48	52
Far-sighted	48	41	50	39	49	40
Short-sighted	30	28	34	28	32	28
Deteriorating near vision focus	31	41	33	42	32	42
Deafness (complete/partial)	36	42	18	32	26	36
Hypertension	38	40	43	45	41	43
Heart disease	17	19	9	17	13	18
Varicose veins	9	7	17	15	13	12

Source: AIHW analysis of 1995 National Health Survey.

Perceived health of older Australians

The majority of older Australians living in the community rate their health as either good, very good or excellent (64%), according to the 1995 National Health Survey. Just over one-third (36%) reported their health as fair or poor, with people in older age groups rating their health more poorly than those at younger ages.

Overall, men and women living in the community had similar profiles for self-rated health. Although the 'poor' response was comparable for men and women in their mid to late sixties (9%), there was increasing divergence at older age groups. The proportions reporting poor health rose to 27% for men but only 12% for women in the 85–89 age group. Variations between men and women in self-rated health may reflect differences in the types and levels of health problems experienced by older men and women, but may also reflect differences in perception of and responses to poor health, including adaptation and expectations.

However, increasing age alone is not the only important factor associated with poor health among older people. Older men and women with low family income or low education level reported that their health was worse, were generally more likely to be inactive, overweight and/or smokers, and reported higher levels of health service use (Mathers 1995). In particular, older men and women who left school before the age of 15 were around 50% more likely to report that their health was fair or poor (rather than excellent or good) than those with post-school qualifications.

Dementia

The number of people with dementia is increasing in Australia as more people live to an advanced age where the prevalence of dementia is highest. Dementia is characterised initially by the development of difficulties with everyday tasks of daily living, by personality changes and by a later progression to the loss of the capacity to act independently. Estimates vary depending on definition but, given this proviso, the number of people with dementia in Australia in 1996 has been estimated at 134,800 (6% of the population aged 65 years and over). Approximately half of those with dementia live in the community, but higher levels of cognitive loss are generally associated with greater use of residential care (Gibson et al. 1997).

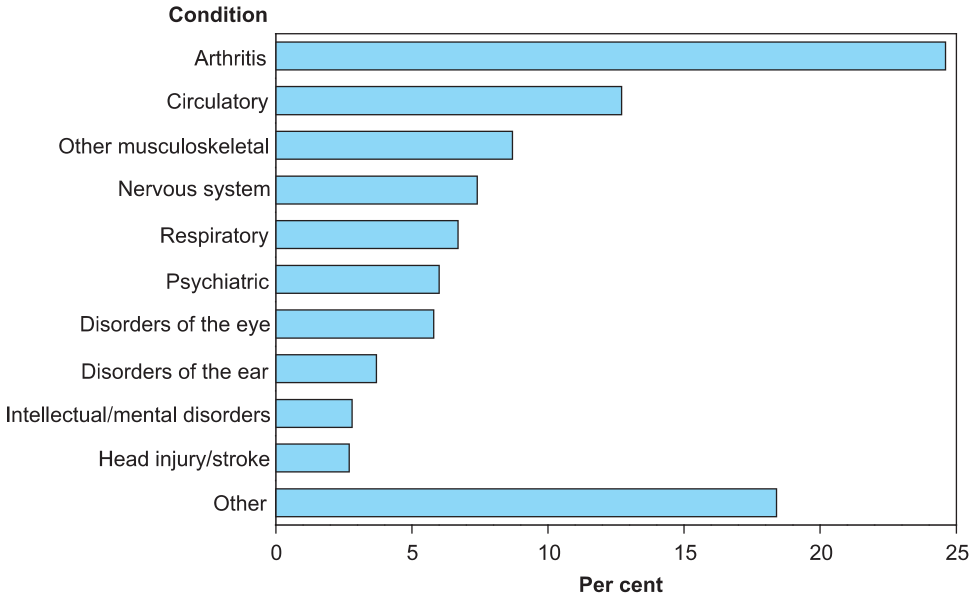
Although dementia accounts for only 3% of all deaths among the population aged 65 years and over, its significance as a cause of death is likely to increase as the population continues to age.

Disability, handicap and dependency

Since 1981 the ABS has conducted three surveys to measure the extent of disability and handicap in the community, with a fourth conducted in 1998 (Section 2.3, page 21). For the older population, disability and handicap rates have remained relatively stable across the three surveys, particularly in the profound or severe handicap category.

In 1993 it was estimated that 3.2 million people in Australia had a disability (18% of the total population), with 36% of these aged 65 years and over. Almost half (48%) of all older people had a handicap, with 17% reporting a profound or severe handicap, 10% a moderate handicap and 21% a mild or not determined handicap. Among very old people, these proportions increase considerably, with 71% aged 80 years and over having a handicap and 41% a profound or severe handicap.

Of the 550,900 older people with a profound, severe or moderate handicap, the most prevalent disabling condition was arthritis, which was reported by almost 25% of older Australians (Figure 3.23). Circulatory diseases were the next most frequently reported main disabling condition (13%), followed by musculoskeletal conditions other than arthritis (9%), nervous system diseases (7%) and respiratory diseases (7%). These trends



Source: Gibson et. al. 1997.

Figure 3.23: Main disabling condition of persons aged 65 and over with a profound, severe or moderate handicap, 1993

vary by age and sex—the prevalence of arthritis and respiratory conditions decreased with age, and eye problems (excluding sight problems corrected by glasses) and psychiatric conditions increased substantially with age. Women aged 65 and over were more likely than men to report arthritis as their main disabling condition (29% compared with 17%), and respiratory conditions were more common among men than women (10% compared with 5%).

Age-standardised prevalence rates of disability and handicap reported in the ABS population surveys for older people rose between 1981 and 1988, but tended to steady between 1988 and 1993. However, age-standardised rates of severe and profound handicap remained fairly steady over the three surveys, at just over 15% for men and 20% for women aged 65 years and over. These survey data suggest that the declines in mortality at older ages have not resulted in the increased survival of people with severe handicap (as would occur if the mortality declines were due to the increasing ability of medical interventions to reduce the fatality of disabling illnesses). It appears more likely that the declines in mortality have resulted from a combination of improved medical care and primary prevention (e.g. through reductions in smoking). The increase in the prevalence of less severe disability and handicap between 1981 and 1988 is thought to be primarily related to changes in reporting behaviour associated with changing community expectations and awareness.

The results presented above also highlight the importance of the chronic non-fatal diseases such as arthritis and eyesight and hearing problems as causes of disability and handicap in older people. Prevention or remedial treatment of such diseases would result in a significant reduction in disability at older ages. At the other extreme, elimination of highly fatal diseases such as cancer would result in an increase in life expectancy and thus an increase in the likelihood of disability due to other non-fatal diseases. For diseases such as cardiovascular diseases, which cause substantial disability as well as mortality, the effect of prevention may decrease the overall likelihood of disability in older age (Mathers 1998).

Health expenditure

Health expenditure per person aged 65 years and over was $4,919 on average in 1993–94. This was nearly four times greater than the average expenditure of $1,301 per person for those aged under 65 years. Although older Australians constitute only 12% of the total population, they accounted for $11 billion (35%) of the $31 billion total expenditure on health services in 1993–94.

In the period 1982–83 to 1994–95, Australian real health expenditure per person grew by 2.8% per year. Only one-fifth of this increase or 0.6% per year can be accounted for by the ageing of the population.

Hospital use

Older Australians account for a large number of hospital separations. They have a higher rate of admission to hospital than the general population, and tend to stay longer. In 1995–96, patients aged 65 years and over accounted for 1.5 million hospital separations (30% of all separations) and 11 million patient days (48% of all patient days). Although older men and older women accounted for roughly equal numbers of separations (763,600 and 772,600), women predominated in terms of patient days

(4,864,300 for men and 6,306,400 for women). This reflects the larger proportion of women than men in the older population, particularly at more advanced ages where length of stay tends to be longer.

For both males and females, separation rates increased markedly with age, particularly for males (Table 3.21). Although separation rates were higher for females than for males in the general population (due in part to a higher rate of admissions among women for reproductive health care), among the older population, men had higher rates of hospital separations than older women. This is possibly because more very old women are in nursing homes, whereas older men are more likely to be living with a spouse in the community.

Older patients generally stay longer in hospitals, on average 7.3 days compared with 4.5 days for all age groups. Older women had longer average lengths of stay in hospital than did older men, 8.2 days on average compared with 6.4 days. The differences between men and women were most marked among the very old, with men aged 85 years and over on average staying for 11 days in hospital compared with 14 days for women of the same age group.

Table 3.21: Hospital separations and patient days by age and sex, for patients aged 65 and over, 1995–96

Age by sex	Separations per 1,000 population	Patient days per 1,000 population	Average length of stay (days)
Males			
65–69	640	3,060	4.8
70–74	811	4,371	5.4
75–79	934	6,255	6.7
80–84	978	8,310	8.5
85 and over	1,058	11,668	11.3
Total	**806**	**5,136**	**6.4**
Females			
65–69	508	2,617	5.1
70–74	588	3,603	6.1
75–79	664	5,420	8.2
80–84	752	7,958	10.6
85 and over	813	11,157	13.7
Total	**628**	**5,126**	**8.2**

Source: AIHW 1997a.

Changing patterns of care 1988–1993

One of the more important policy developments in Australia over the last decade has been the shift in the balance of care away from the more intensive types of residential care and towards home-based care. Between 1988 and 1993, the proportion of people aged 80 and over with a severe or profound handicap living in the community increased from 50% to 59%, and the comparable increase among people with a severe or profound handicap in the 65–79 age group was from 79% to 84% (AIHW 1995). These findings are also supported by analyses of administrative by-product data on residency in both hostels and nursing homes, which show an overall reduction in age-specific utilisation rates for nursing homes and hostels (AIHW 1997b).

In addition, there has also been a shift away from the more intensive nursing home level of provision towards the less intensive hostel care system, in keeping with policy directions set by the Commonwealth Government. Between 1991–92 and 1995–96, permanent (as opposed to respite) admissions to nursing homes declined from 113 to 85 admissions per 1,000 people aged 65 years and over with a severe or profound handicap, and permanent admissions to hostels increased from 44 to 51 admissions per 1,000 people aged 65 years and over with a severe or profound handicap.

Conclusions

Australia's population is ageing, but since the 1960s there have been unprecedented improvements in life expectancy at older ages. The reported prevalence of mild and moderate handicap among older people has increased, but the prevalence of severe and profound handicap has remained stable. It is likely that the expansion of mild and moderate handicap reflects rising expectations of health among older people rather than increasing levels of disability (Mathers 1991). Evidence is starting to emerge in some developed countries of decreases in the incidence and prevalence of disability at older ages (see Section 2.3, page 21), and there is a strong prospect that advances in prevention and medical care will continue to reduce mortality and, to some extent, morbidity at older ages. It will thus become increasingly important to direct research and health system resources to the prevention and treatment of the non-fatal disabling diseases of older age such as dementia, arthritis, hip fracture and loss of vision and hearing.

References

AIHW National Perinatal Statistics Unit 1993. Caesarean births in Australia 1985–1990. Sydney: AIHW National Perinatal Statistics Unit.

AIHW National Perinatal Statistics Unit & Fertility Society of Australia 1997. Assisted conception, Australia and New Zealand, 1995 and 1996. Assisted Conception Series No. 3. Sydney: AIHW National Perinatal Statistics Unit.

AIHW National Perinatal Statistics Unit 1997. Australia's mothers and babies 1995. Perinatal Statistics Series No. 6. Sydney: AIHW National Perinatal Statistics Unit.

AIHW National Perinatal Statistics Unit 1998. Congenital malformations, Australia 1995. Birth Defects Series No. 3. Sydney: AIHW National Perinatal Statistics Unit.

Anderson P, Bhatia K & Cunningham J 1996. Mortality of Indigenous Australians. Occasional Paper. ABS Cat. No. 3315.0, AIHW Cat. No. IHW 1. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1993a. Disability, ageing and carers, Australia 1993. Summary of findings. Cat. No. 4430.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1993b. Disability, ageing and carers: data reference package. Cat. No. 4432.0. Canberra: AGPS.

Australian Bureau of Statistics (ABS) 1996. Projections of the population of Australia, States and Territories, 1995–2051. Cat No. 3222.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1997a. Deaths Australia, 1996. Cat. No. 3302.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1997b. Population distribution: Indigenous Australians. Cat. No. 4705.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1997c. Births Australia, 1996. Cat. No. 3301.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1997d. Causes of death Australia, 1996. Cat. No. 3303.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1997e. Australian demographic statistics. 1996 Census Edition. Cat. No. 3101.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1997f. 1995 National Health Survey: summary of results, Australia. Cat. No. 4364.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1998. Experimental estimates of the Indigenous population. Cat. No. 3230.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) and Australian Institute of Health and Welfare (AIHW) 1997. The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples. ABS Cat. No. 4704.0, AIHW Cat. No. IHW 2. Canberra: ABS.

Australian Institute of Health and Welfare (AIHW) 1995. Australia's welfare 1995: services and assistance. Canberra: AGPS.

Australian Institute of Health and Welfare (AIHW) 1997a. Australian hospital statistics 1995–96. Health Services Series No. 10. AIHW Cat. No. HSE 3. Canberra: AIHW.

Australian Institute of Health and Welfare (AIHW) 1997b. Australia's welfare 1997: services and assistance. Canberra: AIHW.

Australian Institute of Health and Welfare (AIHW) 1997c. SAAP national data collection annual report 1996–97, Australia. SAAP NDCA report. Series 2. AIHW Cat. No. HOU 10. Canberra: AIHW.

Broadbent A & Bentley R 1997. Child abuse and neglect, Australia 1995–96. Child Welfare Series No. 17. AIHW Cat. No. CWS 1. Canberra: AIHW.

Chan A, Scott J, McCaul K & Keane R 1997. Pregnancy outcomes in South Australia 1996. Adelaide: South Australian Health Commission.

(Commonwealth) Department of Human Services and Health (DHSH) 1995. National drug strategy household survey: urban Aboriginal and Torres Strait Islander peoples supplement 1994. Canberra: DHSH.

(Commonwealth) Department of Health and Family Services (DHFS) 1997. Youth suicide in Australia: a background monograph. 2nd ed. Canberra: AGPS.

(Commonwealth) Department of Primary Industries and Energy (DPIE) and (Commonwealth) Department of Human Services and Health (DHSH) 1994. Rural, remote and metropolitan areas classification, 1991 Census edition. Canberra: AGPS.

Cumpston JHL (Lewis MJ ed.) 1989. Health and disease in Australia: a history. Department of Community Services and Health. Canberra: AGPS.

Cunningham J 1997. Cigarette smoking among Indigenous Australians. Occasional Paper. ABS Cat. No. 4701.0. Canberra: ABS.

Cunningham J & Mackerras D 1998. Overweight and obesity, Indigenous Australians. Occasional Paper. ABS Cat. No. 4702.0. Canberra: ABS.

Cunningham J, Sibthorpe B & Anderson I 1997. Self-assessed health status, Indigenous Australians. Occasional Paper. ABS Cat. No. 4707.0. Canberra: ABS.

Gibson D, Mathur S & Racic L (eds) 1997. Older Australia at a glance. Canberra: AIHW and DHFS.

Human Rights and Equal Opportunity Commission 1989. Our homeless children: report of the national inquiry into homeless children. Canberra: AGPS.

Kliewer EV & Butler JRG 1995. Hospital morbidity patterns and costs. Canberra: The National Centre for Epidemiology and Population Health, Australian National University.

Kliewer EV & Jones R 1997. Immigrant health and the use of medical services, results from the longitudinal survey of immigrants to Australia. Canberra: Department of Immigration and Multicultural Affairs.

Ling GX, Redman S, Hua M & Barratt AL 1996. Reducing the incidence and mortality from cervical cancer. Med J Aust 164:318–19.

Mathers C 1991. Disability-free and handicap-free life expectancy in Australia 1981 and 1988. Australian Institute of Health, Health Differentials Series No. 1. Canberra: AGPS.

Mathers C 1994. Health differentials among adult Australians aged 25–64 years. Health Monitoring Series No. 1. Canberra: AGPS.

Mathers C 1995. Health differentials among older Australians. Health Monitoring Series No. 2. Canberra: AIHW.

Mathers C 1998. Gains in health expectancy from the elimination of diseases among older people. Disabil Rehabil (in press).

Medical Research Council Vitamin Study Research Group 1991. Prevention of neural tube defects: results of the Medical Research Council Vitamin Study Research Group. Lancet 338:131–37.

Minna JD 1996. Neoplasms of the lung. In: Harrison's principles of internal medicine, 14th ed. New York: McGraw-Hill, 552.

Moller J, Dolinis J & Cripps R 1996. Aboriginal and Torres Strait Islander peoples injury-related hospitalisations 1991/92. A comparative overview. Adelaide: AIHW National Injury Surveillance Unit.

National Health and Medical Research Council (NHMRC) 1993. Revised statement on the relationship between dietary folic acid and neural tube defects such as spina bifida. Canberra: NHMRC.

Sober AJ, Koh HK & Tran NT 1996. Melanoma and other skin cancers. In: Harrison's principles of internal medicine, 14th ed. New York: McGraw-Hill, 543–49.

Thomson N & Briscoe N 1991. Overview of Aboriginal health status in South Australia. Australian Institute of Health, Aboriginal and Torres Strait Islander Health Series No. 3. Canberra: AGPS.

Titulaer I, Trickett P & Bhatia K 1998. Rural public health in Australia—1997. Canberra: AIHW (in press).

Vaupel JW 1997. Demographic analysis of ageing and longevity. Plenary address. 23rd International Population Conference, International Union for the Scientific Study of Populations, Beijing, 11–17 October 1997.

Young C 1992. Mortality: the ultimate indicator of survival: the differential experience between birthplace groups. In: Donovan J, d'Espaignet ET, Merton, C & van Ommeran M, eds. Immigrants in Australia: a health profile. Australian Institute of Health, Ethnic Health Series No.1. Canberra: AGPS, 34–70.

Young RC 1996. Gynecologic malignancies. In: Harrison's principles of internal medicine, 14th ed. New York: McGraw-Hill, 609–10.

Zubrick SR, Silburn SR, Garton A, Burton P, Dalby R, Carlton J, Shepherd C & Lawrence D 1995. Western Australian child health survey: developing health and well-being in the nineties. Perth: ABS and the Institute for Child Health Research.

4

National health priorities

4.1 National Health Priority Areas

The National Health Priority Areas (NHPA) initiative is a collaborative effort involving Commonwealth Government and State and Territory Governments that seeks to focus public attention and health policy on those areas that are considered to contribute significantly to the burden of illness in the community, and for which there is potential for health gain. The NHPAs agreed to by Australian Health Ministers in 1996 are cardiovascular health, cancer control, injury prevention and control, mental health and diabetes mellitus.

The NHPA initiative draws on expert advice from the National Health and Medical Research Council (NHMRC), the Australian Institute of Health and Welfare (AIHW), non-government organisations, clinicians and consumers. The initiative recognises that in order to reduce the burden of illness, strategies should be holistic, encompassing the continuum of care from prevention through to treatment and management.

From National Health Goals and Targets to National Health Priority Areas

In 1981, the member states of the World Health Organization (WHO), including Australia, adopted the WHO global strategy ‘Health for All by the Year 2000’. In response to this charter, the *Health for All Australians* report represented Australia’s ‘first national attempt to compile goals and targets for improving health and reducing inequalities in health status among population groups’ (Health Targets and Implementation Committee 1988). A total of 20 goals and 65 targets were proposed, focusing on population groups, major causes of death and morbidity, and risk factors.

A revised set of goals and targets was published in 1993 in the *Goals and Targets for Australia’s Health in the Year 2000 and Beyond* report (Nutbeam et al. 1993). The focus of this report was on four main areas: reductions in mortality and morbidity, reductions in health risk factors, improvements in health literacy, and creation of health-supportive environments.

The 1994 *Better Health Outcomes for Australians* report (DHSH 1994), put forward a refined National Health Goals and Targets program. Four main areas were identified for action: cardiovascular health, cancer control, injury prevention and control, and mental health.

Further development of the program culminated in the endorsement by Australian Health Ministers of the current NHPA initiative in July 1996. Ministers required that a national report on each health priority area be prepared every 2 years, providing an overview of their impact on the health of Australians. These reports would include trend analysis for a set of agreed indicators. It was also agreed that diabetes mellitus should become the fifth NHPA.

Progress in the priority areas

To improve health outcomes in the selected priority areas, the NHPA program initiative seeks to:

- monitor health outcomes and progress towards set targets;
- identify the most appropriate and cost-effective points of intervention;
- identify the most appropriate role for government and non-government organisations in fostering the adoption of best practice;
- identify and discourage inappropriate practice; and
- investigate some of the basic determinants of health such as education, employment, socioeconomic status.

It is important to monitor actual health gains, estimate the impact of health programs, and adjust or revise indicators and strategies in the light of this information. The AIHW has been commissioned to help the National Health Priority Committee (NHPC) monitor and report progress in respect of the National Health Priority Areas. Tables S53–56, pages 298–301, list the current indicators and their status.

The *First Report on National Health Priority Areas 1996*, reporting on the five priority areas, was released in 1997 (AIHW & DHFS 1997). Biennial reporting on progress in each of the five priority areas has started. Reports on injury prevention and control, and cancer control have already been submitted to Australian Health Ministers for their consideration. Reports in 1998 will cover cardiovascular health, mental health and diabetes mellitus.

The following is a brief summary of progress in each of the priority areas. The other sections in this chapter provide broad overviews of the five health priority areas.

Cardiovascular health

The decline in the death rate for coronary heart disease, which began during the late 1960s, is continuing. Consistent with this are declines in a number of risk factors, such as the prevalence of smoking among adults and the proportion of adults with high blood pressure. These two risk factors are known to have short lead times between their modification and their effect on mortality. However, there has been little improvement in participation rates in physical activity. There are no recent data on blood cholesterol levels, but surveys in the 1980s showed no favourable overall trends. The trend in Australia towards greater body fatness matches similar observations in other developed countries. If this trend continues it may counter the favourable trends in other risk factors and associated morbidity and mortality.

Cancer control

Seven priority cancers have been identified for the priority area of cancer control. These are cancers of the lung, breast, cervix, prostate, skin (melanoma and non-melanocytic), and bowel (colorectal). Issues relating to risk factors, screening, incidence, management and mortality require specific initiatives for each type of cancer. Although there have been reductions in incidence and mortality for some cancers (e.g. cancer of the cervix in females and lung cancer in males), others such as colorectal cancer have shown little change over time. The decline in cervical cancer in females can be attributed largely to earlier detection of pre-malignant lesions via screening. The decline in lung cancer in males can be attributed largely to a reduction in smoking levels, a primary risk factor.

Injury prevention and control

The effectiveness of preventive measures as a means of injury prevention and control is reflected in the annual decline of 2.8% in the injury death rate between 1986 and 1996. There have also been reductions in death rates for road-transport-related deaths in the total population, drowning among children aged 0–4 years, deaths due to homicide among females aged 20–39 years, and deaths resulting from fire, burns and scalds among people aged 55 years and over.

Mental health

The prevailing rate of decline in the suicide rate is 0.4% annually. However, contrary to the overall trend, the suicide rate among males aged 15–34 years continues to rise, increasing at a rate of 1.0% annually. At present suicide is the only indicator that can be supported by available data. Information from the 1997 National Survey of Mental Health and Wellbeing, when available, will enable other aspects of mental health to be considered.

Diabetes mellitus

The continuing rise in the incidence of diabetes suggests that concerted efforts will be required to reduce its impact upon the health of a large number of Australians (McCarty et al. 1996). Indicators are being finalised to enable reporting in 1998 on the prevalence of diabetes and its complications in Australia.

4.2 Cardiovascular health

Cardiovascular disease (CVD) comprises all diseases involving the heart and blood vessels. In Australia its main forms are coronary heart disease, stroke and peripheral vascular disease which are caused by damaged blood supply to the heart, brain and legs. The main underlying problem in cardiovascular disease is a process known as atherosclerosis that clogs blood-supply vessels. It is most serious when it affects the blood supply to the heart, causing angina or a heart attack, or to the brain, which can lead to a stroke.

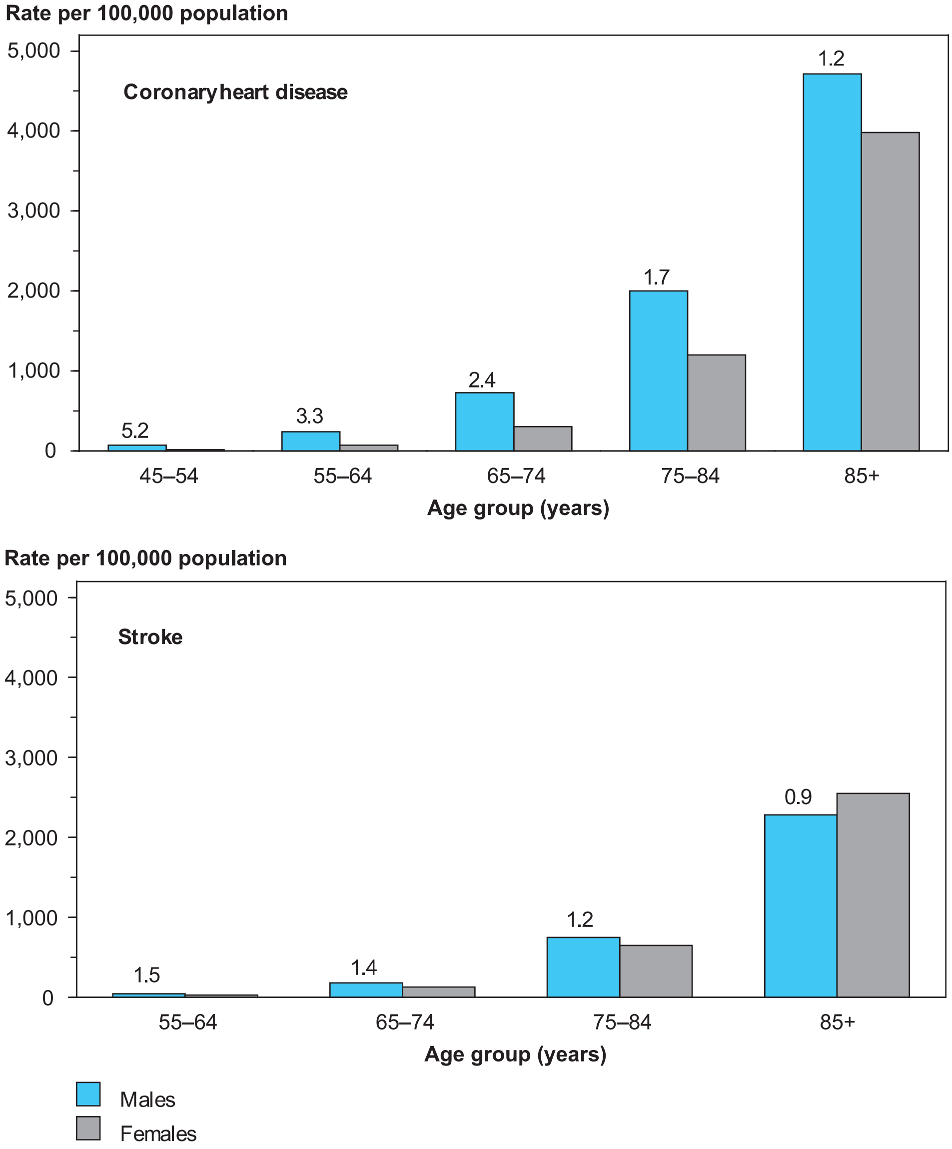
Cardiovascular disease is a major health and economic burden for Australia. The risk of developing the disease is associated with factors such as smoking, high blood cholesterol, high blood pressure, physical inactivity, obesity and excess alcohol use (see Section 5.6, page 142).

Mortality

Cardiovascular disease accounted for 53,989 deaths or 41.9% of all deaths among Australians in 1996. Coronary heart disease (CHD) was the major cardiovascular cause of death, accounting for 23.0% of all deaths (ABS 1997a). Stroke accounted for 9.9%, heart failure for 2.3% and peripheral vascular disease for 1.6% of all deaths.

Males were more likely than females to die from CHD across most age groups, but the differentials declined with increasing age (Figure 4.1, page 78). For stroke, the sex differentials were not as marked as for CHD. Females were more likely than men to die from stroke at ages higher than 84 years.

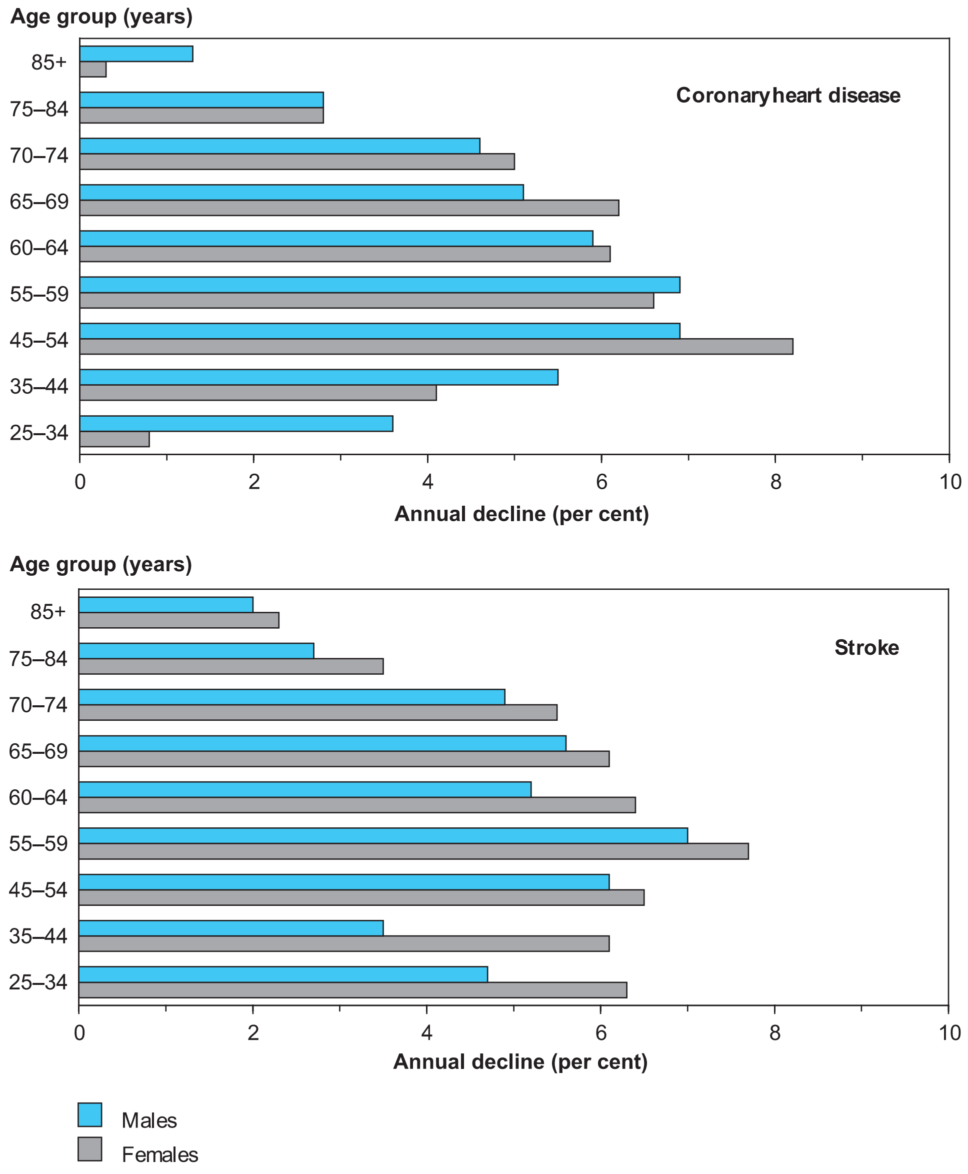
Certain groups in the population have significantly higher CVD death rates than others. Indigenous Australians die from CVD at approximately twice the rate of the total Australian population. Death rates from CVD are highest in the Northern Territory and Tasmania, and lowest in the Australian Capital Territory for males, and in Western



Source: ABS 1997a.

Figure 4.1: Coronary heart disease and stroke: age-specific death rates and male:female ratios, 1996

Australia for females (Gajanayake & Bennett 1997). People of lower socioeconomic status are more likely to die from CVD than those of higher socioeconomic status and people born in Australia have higher CVD death rates than Australian residents who were born overseas (Bennett 1996; Mathers 1994).



Source: AIHW Mortality Database.

Figure 4.2: Coronary heart disease and stroke: annual decline in age-specific death rates, 1984–1995

Cardiovascular mortality continues to decline among both males and females, and more rapidly than for total mortality. Between 1984 and 1995, CVD mortality is estimated to have been declining at 3.6% for males and 3.3% for females. The corresponding rates for all causes of mortality are 2.0% and 1.7% respectively. Coronary heart disease mortality is estimated to be declining at 3.8% among males per year and 3.2% among females. Mortality from heart attacks, the major contributor to coronary heart disease mortality, is declining at an annual rate of 5.1% among males and 4.2% among females. Mortality from stroke is currently declining at 3.5% per year among males and 3.9% among females, and is occurring in all age groups (Figure 4.2, page 79). In both sexes, premature mortality (between ages 25 and 74) is declining at a faster rate than at older ages.

The trend in CVD mortality for the Indigenous population differs between males and females. Between 1985 and 1994, the annual rate for males declined by about 2%, whereas for females it increased by about 2%. Most noticeably, mortality from stroke among Indigenous females increased by about 8.5% per year. Mortality from coronary heart disease did not show a clear trend among either males or females (Anderson et al. 1996).

Table 4.1: Cardiovascular disease mortality, age-standardised rates[(a)] by sex and selected countries, latest available year (per 100,000 population)

		Males			Females		
Country	Year	Cardiovascular disease	Coronary heart disease	Stroke	Cardiovascular disease	Coronary heart disease	Stroke
Australia	**1994[(b)]**	**212**	**130**	**40**	**130**	**66**	**34**
Canada	1993	201	126	31	112	58	25
Chile	1990	215	84	68	149	50	51
England and Wales	1994	251	163	44	142	72	39
France	1993	153	54	35	84	21	24
Germany	1994	272	135	54	163	62	42
Greece	1994	228	81	70	170	33	69
Hong Kong	1994	124	50	43	87	30	36
Israel	1993	225	120	47	159	68	42
Italy	1992	212	81	56	133	35	44
Japan	1994	140	30	54	88	15	37
Netherlands	1994	219	104	41	119	43	33
New Zealand	1993	258	166	44	156	81	44
Northern Ireland	1994	293	197	54	175	96	49
Norway	1993	255	147	52	133	60	40
Poland	1994	438	117	59	255	41	42
Russian Federation	1994	733	394	222	402	176	157
Scotland	1994	308	201	64	183	94	58
Singapore	1994	223	127	61	157	74	56
Spain	1992	191	68	52	124	27	42
Sweden	1993	250	149	43	136	64	33
Switzerland	1994	190	88	31	110	38	24
USA	1992	248	139	30	146	71	26

(a) Age-standardised to the World Standard Population.
(b) 1994 chosen for comparability with other countries.

Sources: WHO 1996; AIHW Mortality Database.

In Table 4.1, Australia's 1994 CVD death rates are compared with the latest available from selected other countries. For all CVD, Australian death rates are towards the lowest of those shown, but even so are 71% higher (males) than for Hong Kong in 1994 and 55% higher (females) than for France in 1993. Australia's relative position is different for the two major components of CVD. Australian coronary heart disease death rates rank towards the middle of those shown in Table 4.1, and are four times greater (males and females) than for Japan in 1994. Australian stroke death rates are among the lowest of those shown, but the rate for males was 33% higher than for the United States in 1992, and for females was 42% higher than for France in 1993.

Morbidity

Hospital stays

Hospital data provide a measure of cardiovascular morbidity based on stays in hospital (measured as separations). In 1995–96, 8% of all public acute and private hospital separations were associated with a principal diagnosis of cardiovascular disease (412,785 separations). Of these, 37% were due to coronary heart disease (152,736 separations), 12% to stroke (51,288 separations), and 10% to heart failure (40,710 separations). Hospital separation rates for cardiovascular conditions tended to increase with age after age 1 (Table 4.2, page 82).

In 1995–96, males were significantly more likely than females to have a principal diagnosis of cardiovascular disease. This was generally true for specific cardiovascular conditions such as coronary heart disease, heart attack, stroke and peripheral vascular disease, but for rheumatic heart disease and hypertensive disease, separations tended to be higher among females than males (Table 4.2, page 82).

The average length of stay associated with a principal diagnosis of cardiovascular disease in 1995–96 was 6.6 days, compared with an average of 4.3 days for all hospital stays. Stroke had the longest average length of stay (12.5 days), followed by heart failure (9.6 days), peripheral vascular disease (9.1 days), rheumatic heart disease and hypertensive disease (7.5 days), heart attack (7.2 days), and coronary heart disease (5.3 days).

Although males had higher separation rates than females for most cardiovascular conditions, females tended to have longer average lengths of stay (Figure 4.3, page 83).

Incidence of coronary heart disease

Trends in the rates of heart attacks (fatal and non-fatal) were monitored in Newcastle and Perth from 1984 to 1993 as part of the World Health Organization's Multinational Monitoring of Trends and Determinants in Cardiovascular Disease (MONICA) Project. The internationally accepted MONICA diagnosis uses data on symptoms, enzymes, electrocardiographs, past medical history and post-mortem findings. Rates of non-fatal heart attacks among people aged 35–64 years fell significantly in the two Australian centres over the 10 years (Beaglehole et al. 1997). In Newcastle, the estimated average annual fall in the rate of non-fatal heart attacks was 3.7% among men and 3.5% among women. In Perth, the estimated average falls were 3.4% per year for men and 2.5% per year for women. The rate of first heart attacks, fatal or non-fatal, also fell, indicating a declining incidence of heart attacks.

A consortium at the Universities of Newcastle and Western Australia and the Queensland Department of Health has developed a method to estimate the rate of non-fatal heart attacks and all coronary events—fatal or non-fatal—using routinely collected data and adjustment factors from the MONICA project. National estimates using this method show that among men, non-fatal heart attacks are three times more common

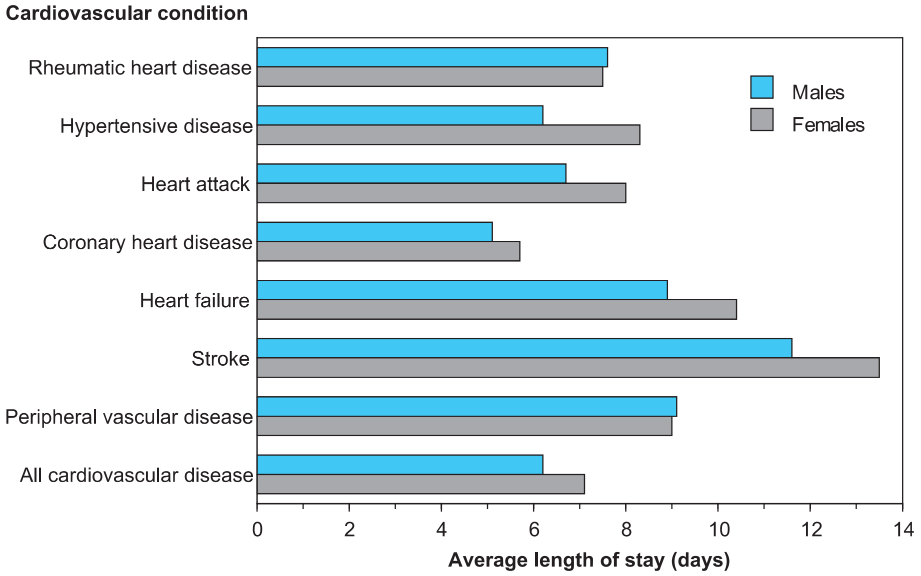
Table 4.2: Hospital separations[(a)] for cardiovascular conditions by principal diagnosis by sex and age, public acute and private hospitals, 1995–96 (per 100,000 population)

	Age group (years)									
Sex/Condition (ICD-9-CM code)	**< 1**	**1–14**	**15–24**	**25–34**	**35–44**	**45–54**	**55–64**	**65–74**	**75 and over**	**All ages**
Males										
Rheumatic heart disease (390–398)	0.0	4.2	4.0	4.3	5.0	7.1	16.7	23.5	30.3	8.0
Hypertensive disease (401–405)	17.8	3.8	5.4	10.3	21.7	48.6	85.4	115.8	161.3	34.3
Heart attack (410)	0.0	0.1	1.5	14.8	100.8	333.2	647.8	1,004.5	1,465.3	239.6
Coronary heart disease (410–414)	0.0	0.6	3.1	42.0	384.0	1,480.4	3,323.2	5,263.3	5,225.7	1,093.5
Heart failure (428)	31.8	2.5	3.3	7.5	15.5	68.0	295.7	1,024.1	2,985.7	221.7
Stroke (430–438)	26.4	4.2	10.2	18.6	48.9	155.8	512.8	1,445.4	3,030.3	289.8
Peripheral vascular disease (441–444)	0.8	0.5	2.3	6.9	11.9	38.7	205.2	635.6	933.5	104.2
All cardio-vascular disease (390–459)	**227.2**	**47.0**	**161.2**	**417.9**	**1,088.6**	**2,805.4**	**6,149.0**	**11,402.7**	**16,199.1**	**2,540.3**
Females										
Rheumatic heart disease (390–398)	2.5	3.8	3.5	6.9	7.9	15.0	31.9	40.4	31.5	13.0
Hypertensive disease (401–405)	4.1	2.7	5.4	11.5	24.9	63.0	114.4	195.3	313.2	58.0
Heart attack (410)	0.0	0.1	0.2	3.0	18.4	65.7	203.1	484.5	936.1	121.8
Coronary heart disease (410–414)	0.8	0.2	1.3	11.2	91.4	404.0	1,249.6	2,618.7	3,502.7	579.0
Heart failure (428)	23.7	2.9	1.4	5.1	10.4	35.9	168.2	636.9	2,511.5	223.5
Stroke (430–438)	13.1	2.9	7.8	22.0	43.4	111.7	305.9	892.1	2,504.2	271.2
Peripheral vascular disease (441–444)	2.5	0.3	3.2	4.8	9.5	24.0	59.4	224.0	414.5	52.7
All cardio-vascular disease (390–459)	**159.4**	**38.2**	**143.0**	**443.7**	**853.8**	**1,622.3**	**3,344.0**	**6,860.7**	**12,362.0**	**1,976.2**

(a) Age-specific separations per 100,000 population at 30 June 1996.

Source: AIHW National Hospital Morbidity Database.

than among women during ages 35–69, and rise sharply with age (Table 4.3). Unlike estimates for Newcastle and Perth, the national estimates are based on data for 3 years only, and therefore do not show a clear trend over time. Non-fatal heart attacks accounted for just over 60% of total coronary events during the 3-year period ending June 1996.



Source: AIHW National Hospital Morbidity Database.

Figure 4.3: Average length of stay for cardiovascular conditions by sex, public acute and private hospitals, 1995–96

Table 4.3: Rates of non-fatal heart attacks and all coronary events, 1993–94 to 1995–96 (per 100,000 population)

	Non-fatal heart attacks			Fatal and non-fatal coronary events		
Group	**1993–94**	**1994–95**	**1995–96**	**1993–94**	**1994–95**	**1995–96**
Males						
35–54	137	137	144	187	186	192
55–64	497	487	484	804	771	755
65–69	735	733	704	1,422	1,373	1,292
35–69[(a)]	**273**	**271**	**272**	**441**	**428**	**421**
Females						
35–54	26	26	28	38	37	39
55–64	173	165	162	275	256	247
65–69	352	360	365	605	596	580
35–69[(a)]	**90**	**89**	**90**	**144**	**139**	**137**

(a) Rates standardised to the Australian population aged 35–69 years at December 1993.

Note: Estimates are derived from the numbers of coronary deaths and hospital separations using the adjustment factors developed by the Universities of Newcastle and Western Australia, and Queensland Department of Health.

Sources: AIHW National Hospital Morbidity Database; AIHW Mortality Database.

ABS National Health Survey 1995

The population health surveys conducted by the Australian Bureau of Statistics provide a picture of the prevalence of cardiovascular conditions in Australia based on self-reported data. Results from the 1989–90 survey were reported in *Australia's Health 1994*.

In the 1995 National Health Survey, respondents were asked to report both long-term and short-term conditions. A long-term condition is one which has lasted at least 6 months or which the person expects to last for 6 months or more. A recent condition is one experienced in the 2 weeks before interview and may include long-term conditions experienced in the period.

In 1995, an estimated 2.8 million people or 16% of the population reported experiencing a recent and/or long-term cardiovascular condition. Hypertension was the most common cardiovascular condition, reported by 10% of males and 11% of females. Overall, prevalence was higher among males than females for heart disease, stroke and atherosclerosis. However, proportionately more females than males reported hypertension, ill-defined heart conditions and 'other circulatory diseases'. For both males and females, the prevalence of each cardiovascular condition tended to increase with age (Table 4.4).

A comparison of the 1989–90 and 1995 National Health Surveys suggests an overall increase in the prevalence of cardiovascular conditions, although care should be taken in interpreting trends as changes in survey methodology may affect comparability between the surveys. There was little change in the rates of reported hypertension, heart disease, stroke or atherosclerosis. However, the age-standardised reported prevalence of 'other circulatory diseases' (which includes aortic aneurysm and other peripheral vascular disease) increased from 1.7% to 3.1% in men, and from 1.7% to 4.5% in women.

Table 4.4: Persons with cardiovascular conditions[(a)] by age group and sex, 1995 (per 1,000 population)

	Age group (years)							
Sex/ type of condition	0–24	25–34	35–44	45–54	55–64	65–74	75+	All ages
Males								
Hypertension	4.1	39.1	67.1	144.1	286.4	375.5	397.3	100.1
Heart disease	2.8	4.1	9.8	27.4	86.1	171.6	187.7	32.3
Stroke	0.7	1.2	1.2	1.7	12.9	50.1	50.3	7.2
Atherosclerosis	0.0	0.0	0.0	0.7	4.2	10.6	12.3	1.6
Ill-defined	6.3	5.6	6.7	11.2	35.2	82.5	111.4	18.2
Other circulatory	2.7	10.6	14.3	33.5	73.3	142.1	144.7	30.2
Total[(b)]	**15.7**	**56.0**	**88.7**	**186.5**	**380.1**	**541.4**	**593.2**	**142.0**
Females								
Hypertension	6.5	25.8	46.7	142.6	297.8	430.3	450.4	114.2
Heart disease	2.3	3.6	3.8	14.0	43.3	93.8	166.6	23.8
Stroke	0.2	0.6	0.7	2.8	10.9	24.1	42.4	5.7
Atherosclerosis	0.0	0.0	0.0	0.7	1.6	7.7	6.7	1.2
Ill-defined	4.6	8.3	11.3	18.5	35.8	70.6	121.8	22.1
Other circulatory	9.2	52.7	58.6	51.9	61.2	110.2	135.8	47.9
Total[(b)]	**22.4**	**86.2**	**115.2**	**210.2**	**378.0**	**554.0**	**614.9**	**173.3**

(a) Reported as a recent and/or long-term condition.

(b) Each person may have reported more than one type of condition and therefore components do not add to totals.

Source: ABS 1995 National Health Survey.

Box 4.1: Cardiovascular disease as defined in the ABS 1995 National Health Survey

Respondents in this survey were regarded as having cardiovascular disease if they reported any of the following conditions:

- *hypertension*
- *heart disease (including coronary heart disease, heart attack, coronary thrombosis, angina and leaking valve)*
- *atherosclerosis*
- *stroke (cerebrovascular disease)*
- *other circulatory diseases (including thrombosis)*
- *ill-defined heart conditions (such as irregular heartbeat and palpitations).*

4.3 Cancer control

Cancer is a diverse group of diseases characterised by the proliferation and spread of abnormal cells. These abnormal cells invade and destroy surrounding tissue and spread (metastasise) to other parts of the body. Cancer can develop from most types of cells, and each cancer has its own pattern of local behaviour and metastasis. Although some cancers share common risk factors, most cancers have a unique set of risk factors which can be responsible for their onset.

It is estimated that 30% of cancers occur as a direct result of smoking, 30% are due to dietary influences, 2% are due to radiation exposure, between 5 and 15% to infectious agents, and the remainder to other causes (Trichopoulos et al. 1996). Although some of these causes are modifiable through lifestyle changes, other characteristics are inherited and although they cannot be avoided, the risk of death due to particular cancers may be reduced through intense monitoring of individuals, reducing other risk factors and treating newly diagnosed cancers early in their development.

Each year, approximately 345,000 new cancer cases are diagnosed in Australia. A large proportion of these, approximately 270,000, are non-melanocytic skin cancers (NMSC) which, if treated early, are less life-threatening than most other cancers. Cancer accounts for 29% of male deaths and 25% of female deaths, and has been the leading cause of death since 1991.

The registration of cancer is required by law in each of the States and Territories, where the data are collated by cancer registries.

Cancer control is a priority area identified by the National Health Priority Areas (NHPA) initiative. It is represented by a cross-section of indicators reflecting the continuum of care, from illness prevention to treatment, support services and palliative care. Seven cancers have been targeted—lung cancer, melanoma, non-melanocytic skin cancer, colorectal cancer, prostate cancer in males and cancers of the cervix and breast in females—as these cancers have a significant impact on the health status of the Australian population and are of universal concern in all States and Territories.

Cancer incidence

Cancer registries collect clinical and demographic information about people with newly diagnosed cancer. This information is collected from hospitals, pathologists, radiation oncologists, cancer treatment centres and nursing homes. Information related to deaths from cancer is collected by Registrars of Births, Deaths and Marriages. By combining information from these sources, the State and Territory cancer registries produce statistics of cancer incidence and mortality. A national collection of cancer data is maintained by the National Cancer Statistics Clearing House at the Australian Institute of Health and Welfare, where data for incidence are currently available to 1994 and for mortality to 1996.

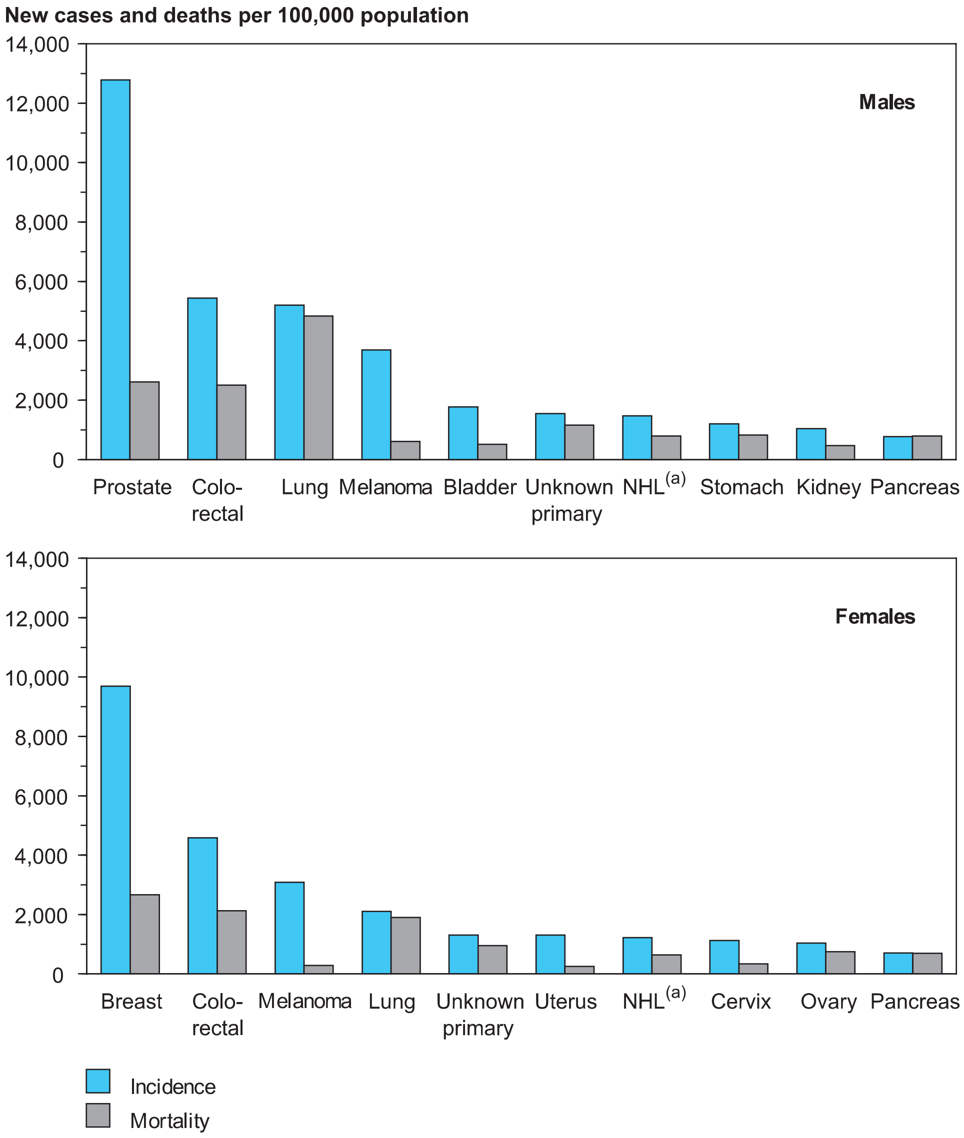
Excluding non-melanocytic skin cancers (NMSC), there were 42,619 new cancers in males and 32,879 new cancers in females in 1994, with age-standardised incidence rates of 516 per 100,000 males and 334 per 100,000 females. In the same year, there were 19,132 male deaths due to cancer at an age-standardised death rate of 237 per 100,000, and 14,312 female deaths due to cancer at the rate of 139 per 100,000 (AIHW 1998).

Details of NMSC are not recorded by all cancer registries as most are not histologically confirmed, or not reported. These skin cancers are often self-detected and are usually removed in doctors' surgeries. Marks et al. (1993) estimated, using survey methods, that the national age-standardised treatment rate for NMSC in 1990 was 1,260 cases per 100,000 per year.

The incidence of the other most common cancers is presented in Figure 4.4. Prostate cancer is the most common cancer in men accounting for 30.0% of all cancers in males. Between 1989 and 1994, there was a dramatic rise in the number of new cases of prostate cancer registered. Data for some States indicate a fall in incidence since 1994, although not to pre-1989 levels. The rise and then fall in prostate cancer incidence rates has been the focus of much discussion, particularly in respect to prostate cancer's suitability for screening, and its treatment, and is discussed in more detail later in this chapter. Breast cancer accounts for 29.5% of all cancers in women and is a major focus of public health campaigns, particularly because of the benefits of early detection through mammography.

The risk of cancer is lowest in late childhood, and in adult life it increases with age. Figure 4.5 (page 88) presents age-specific incidence rates for all cancers. Males have a higher incidence than females beyond 55 years of age. Females have a higher incidence than males between ages 25 and 54 years because female-only cancers of the cervix, uterus, ovary and breast have an incidence almost seven times that of the male-only cancers in this age range.

Trends in incidence rates between 1983 and 1994 have varied. For men, incidence of melanoma and cancer of the liver showed increases of approximately 4.5% per annum. The incidence of prostate cancer increased steadily until 1989 but has risen dramatically since then by 16% per annum. The incidence of cancers of the stomach and larynx have fallen by approximately 3% per year. Between 1983 and 1989, the incidence of lung cancer among men fell by an average of 2% per year but has since slowed to a decrease of 0.6% per year. The incidence among women of cancer of the lung and kidney and of melanoma showed annual increases around 2%. Liver cancer incidence in women has almost doubled since 1983. The incidence of breast cancer rose steadily by 2% per annum between 1983 and 1990 but has increased sharply since then at an average annual rate of 5%. Cancers of the larynx, stomach and cervix have shown a decreased incidence in women. Increases or decreases in these cancers are due to a range of risk

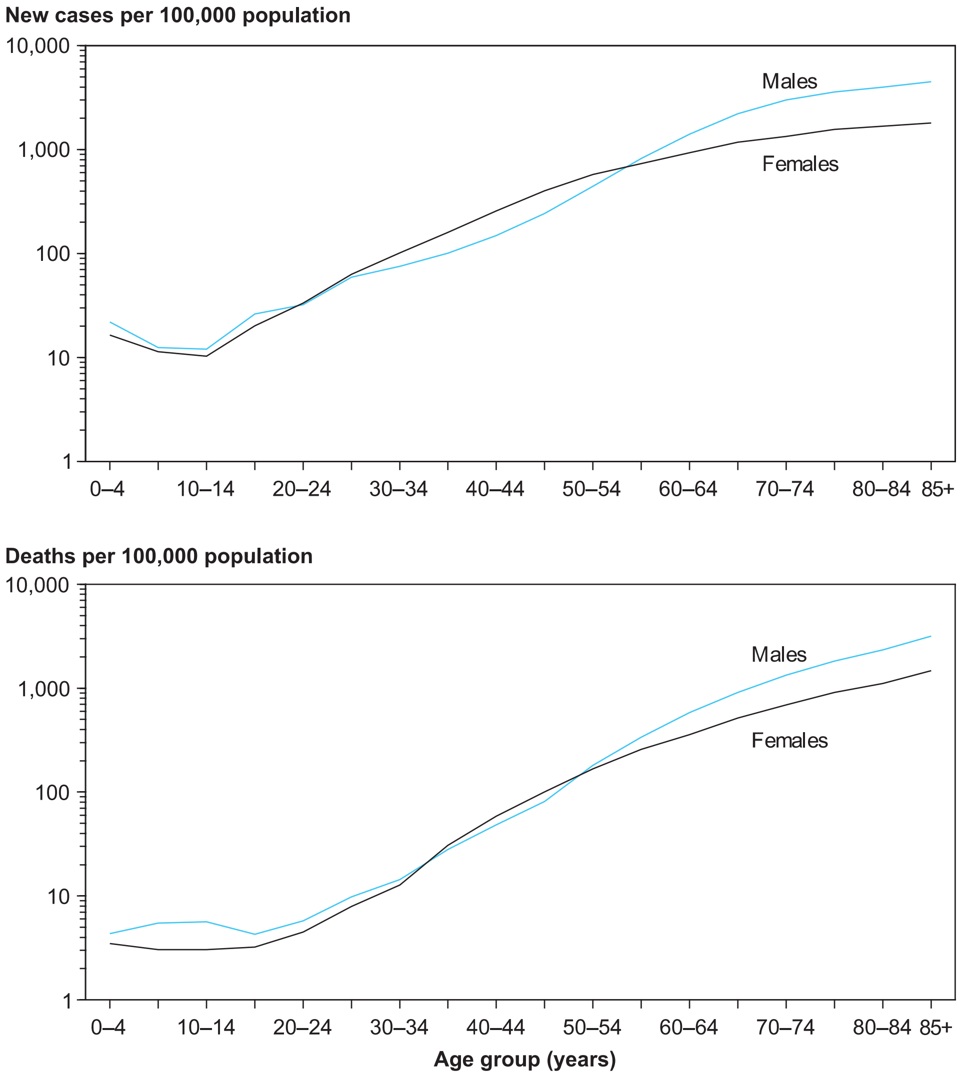


(a) Non-Hodgkin's lymphoma.

Source: AIHW 1998.

Figure 4.4: Leading cancers (excluding non-melanocytic skin cancer), incidence and mortality, by sex, 1994

factors such as UV radiation exposure, smoking, alcohol and other dietary components which may have been modified over time. Improvements in detection of these cancers through the introduction and more widespread use of medical technologies has also increased the number of cancers reported, and improved the accuracy of determining their site of origin.



Source: AIHW 1998.

Figure 4.5: Malignant neoplasms (excluding non-melanocytic skin cancer), age-specific incidence and mortality rates, by sex, 1994

Projection of these trends from 1994 to 1999, allowing for ageing of the population, suggests that the number of new cases of cancer will increase among females by 1.6% per annum but will decrease among males by 3.2% per annum. The projected decrease in cancer incidence in males is a result of the expected fall in prostate cancer incidence based on data from four States for 1995 and 1996.

The biggest increases in the number of new cases between 1994 and 1999 in males are projected to be for melanoma (approximately 1,000 additional cases) and colorectal cancer (900 cases), and in females the largest increases are projected for breast cancer (2,300 additional cases) and melanoma (700 cases). The largest annual increases in the age-standardised incidence rates in males are projected for melanoma (2.8%), non-Hodgkin's lymphoma (1.7%), multiple myeloma (1.7%) and cancer of the bladder (1.4%). In females, the largest annual increases are expected for non-Hodgkin's lymphoma (2.4%), cancer of the pancreas (2.2%), cancer of the uterus (2.2%), melanoma (2.1%), and breast cancer (2.1%).

The largest projected declines in age-standardised incidence rates in males are for prostate cancer (–7.6%), cancer of unknown primary site (–1.9%), lymphatic leukemia (–1.8%) and cancers of the larynx and lung (both –1.5%). Among females declines are projected for multiple myeloma (–5.8%), and cancers of unknown primary site (–3.7%), the larynx (–3.6%), stomach (–3.0%) and cervix (–2.8%).

Mortality from cancer

In 1996, lung cancer accounted for 25% of cancer deaths among men, and prostate and colorectal cancer accounted for 14% and 13%, respectively. The major causes of cancer death in women were breast cancer (18% of all cancer deaths), colorectal cancer (14%) and lung cancer (14%).

Since the early 1980s, death rates from lung cancer among men have been falling steadily by an average of 1% per annum. However, over the same period, lung cancer death rates among women have risen by 2% per year.

From the age of 15 years, death rates from cancer increase with age (Figure 4.5, page 88). Further, the ageing population has meant that older people constitute a higher proportion of those dying from cancer. For example, in 1983, approximately 30% of all cancer deaths occurred in people aged 75 years and over, but by 1996 this proportion had increased to around 40%.

Males have higher death rates than females before age 35 and from age 50 onwards. The higher death rates among females aged 35–49 years reflect the impact of the female-only cancers on the rates. However, the differential between the male and female rates in this age group is not as large as that observed for incidence.

Survival following cancer

Survival from cancer depends on several factors—the type of cancer, its behaviour (i.e. slow- or fast-growing) and its metastasising characteristics; the stage at diagnosis; the availability of appropriate treatment; and the general health of the person, and their capacity to handle treatment.

The 5-year relative survival ratio for cancer is the ratio of the proportion of cancer patients surviving 5 years and of the proportion of an age- and sex-matched population surviving 5 years. The South Australian Cancer Registry (1996) is the only Australian cancer registry to publish survival estimates on a regular basis. Its data show the 5-year relative survival ratio for all cancers for males is 46%, and for females 57%. For males, lung cancer has a 10% relative survival ratio, and for females, breast cancer has a 76% relative survival ratio.

Survival ratios decline with age at diagnosis for most cancers. For all cancers in South Australia in 1986–94, the relative survival ratios were 72% at under 55 years, 54% at 55–64 years, 48% at 65–74 years and 43% at 75 years and over.

The South Australian Cancer Registry has recorded significant improvements in survival from some cancers. For example, the 5-year survival ratio for cancer of the cervix improved from 68% in 1977–85 to 74% in 1986–94; for prostate cancer, the improvement was from 61% to 68%; and for cancer of the oesophagus, the improvement was from 9% to 16%.

Improved results of treatment for cancers of the cervix, uterus and testis and for Hodgkin's disease have also been observed over the last 10 years.

Specific cancers

The following sections provide information about three specific cancers—prostate cancer, colorectal cancer and melanoma. These cancers are among the most commonly diagnosed cancers in Australia and have a significant impact on morbidity, mortality and health service use. Other common cancers, such as breast and lung cancers, have been the focus of discussion in previous editions of *Australia's Health* and so are not covered here.

Prostate cancer

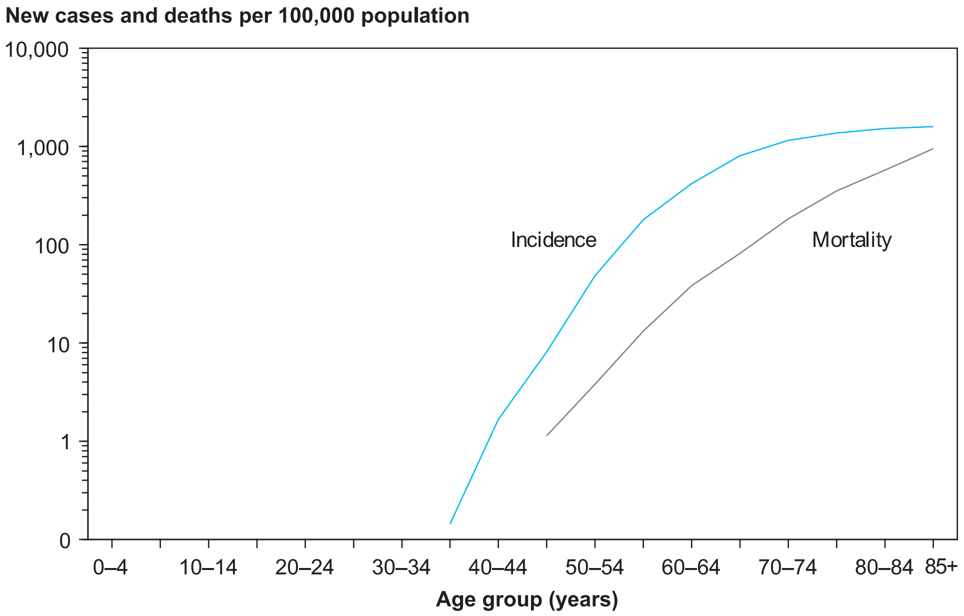
Prostate cancer is the most common cancer in males (excluding NMSC) and has been the focus of much debate in the last few years. The debate has raised the issues of screening, treatment, research and funding. Screening has been proposed as a way of reducing the death rate of prostate cancer. Opponents of screening argue that the tests (digital rectal examination and a blood test of the level of prostate-specific antigen (PSA) secreted by the prostate) are not developed sufficiently to predict whether the prostate is affected by cancer. There is also doubt as to how effective the treatments currently in use are in increasing survival, compared with the morbidity they cause.

In 1994, there were 12,787 new cases of prostate cancer diagnosed at an age-standardised rate of 158.7 per 100,000 population, and 2,613 deaths at a rate of 34.9 per 100,000. Prostate cancer currently accounts for 30.0% of all new cancer cases and 13.7% of cancer deaths, indicating that this cancer has a moderate case fatality rate. The majority of prostate cancer deaths (92%) occur in males aged 65 years and over. Estimates of survival rates at a national level are as yet unavailable, although estimates from South Australia indicate that approximately 66% of males survive at least 5 years (South Australian Cancer Registry 1996). Prostate cancer risk increases with age, with 98% of cases being diagnosed after the age of 55 (Figure 4.6). Mortality from prostate cancer results in approximately 6,450 years of life lost before the age of 74.

There has been a strong upward trend in prostate cancer incidence since the early 1990s, due mainly to the introduction of PSA testing. This testing is able to indicate the presence of tumours in the prostate that would previously have been undiagnosed in many cases. This has had the effect of more than doubling the incidence rate between 1985 and 1994. However, projections of incidence data indicate that the rate of prostate cancer in males will begin to fall from 1995, and by 1999 the number of new cases diagnosed will be approximately 10,000 at a rate of 107.0 per 100,000 (Figure 4.7, page 92). This fall reflects a change in the use of PSA testing following a recommendation by NHMRC (1996) for less widespread use of the PSA test, resulting in a reduced rate of cancer diagnosis among men. This recommendation was based on a lack of evidence that screening by PSA resulted in long-term benefit to men, although evidence to test this proposal is currently being gathered and analysed.

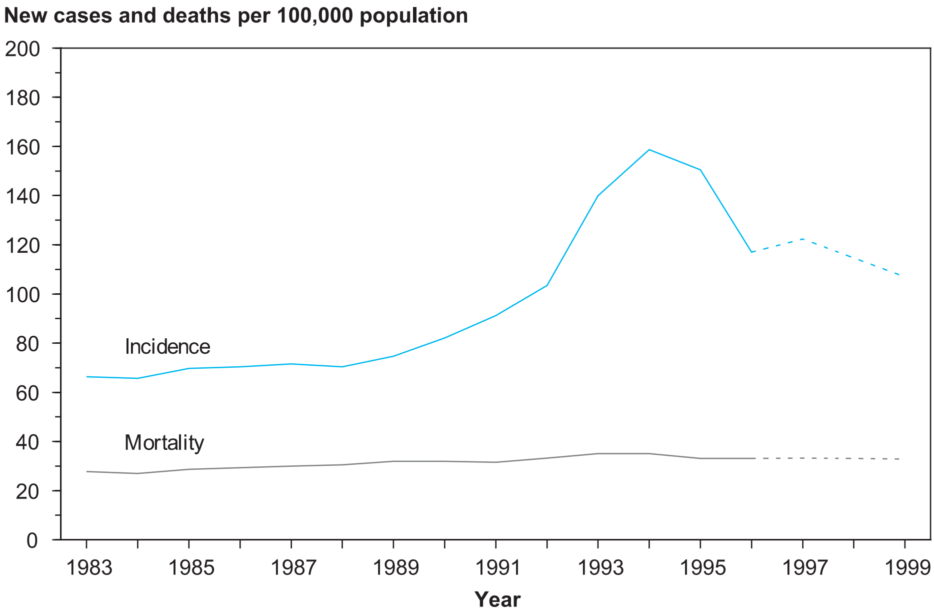
Mortality rates rose steadily from the early 1920s to the 1950s, when they levelled off until the 1990s when they began to rise again. The introduction of PSA testing in combination with ultrasound diagnostic techniques has increased the likelihood of prostate cancer being mentioned on death certificates, thereby increasing the probability of prostate cancer being allocated as the underlying cause of death. However, since 1994 the death rate from prostate cancer has fallen slightly and this trend is expected to continue to the end of the century (Figure 4.7).

Knowledge about risk factors for prostate cancer is very incomplete. Currently the only factor for which evidence is strong is age. There is currently no epidemiological data that define risk groups sufficiently for targeted screening activities.



Source: AIHW 1998.

Figure 4.6: Prostate cancer, age-specific incidence and mortality rates, 1994



Source: AIHW 1998.

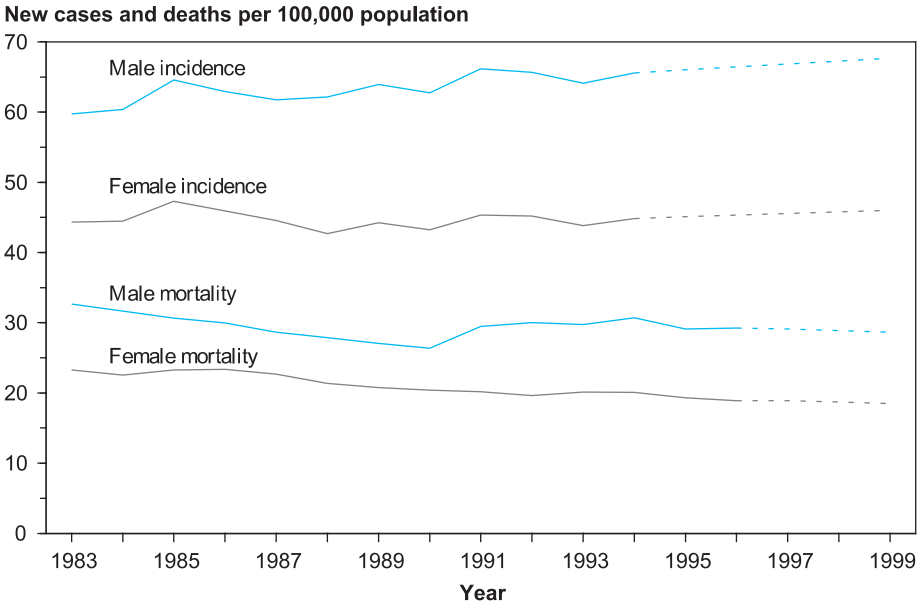
Figure 4.7: Prostate cancer, age-standardised incidence and mortality rates, with projections, 1983 to 1999

Colorectal cancer

Colorectal cancer is the second most common cancer in males and females. There was a steady upward trend in colorectal cancer mortality from the 1920s in males and females through to the 1940s when it declined for both sexes until the 1960s. Since then, rates for males increased until the early 1980s, then declined slightly before levelling off in recent years. Female rates have continued to decline. Males currently have about a 50% higher risk of colorectal cancer than females, although this differential (at least in mortality) was far less in the early part of the century. From the early 1980s until 1994, incidence rates for colorectal cancer increased slightly among males but remained fairly stable among females (Figure 4.8). Projections indicate that the rate of colorectal cancer in males is likely to continue to rise slowly to 67.4 per 100,000 (approximately 6,300 new cases) in 1999. Incidence rates for females are projected to increase slowly to a rate of 45.8 per 100,000 resulting in approximately 5,300 new cases.

Colorectal cancer is known to be related to a previous history of polyps in the bowel and in particular to a family history of colorectal cancer or familial adenomatous polyposis (FAP) (DeCosse et al. 1994). It may also be associated with a diet high in fat consumption and low in fruits and vegetables, reduced levels of physical activity, and increased alcohol consumption (Ireland & Giles 1993). Colorectal cancer has recently been linked to the impaired operation of particular genes (Trichopoulos et al. 1996).

The most recent national incidence data (1994) indicate that there were 5,433 new cases diagnosed in males (65.6 new cases per 100,000 population) and 4,583 new cases diagnosed in females (44.9 new cases per 100,000). Deaths in the same year were 2,501 (30.7 per 100,000) for males and 2,126 (20.1 per 100,000) for females. More recent mortality data (1996) indicate almost no change in the number of male deaths (2,506) but a slight fall to 2,112 deaths in females. Colorectal cancer currently accounts for 12.7% of all new cancer registrations in males and 13.9% in females, with similar proportions for cancer deaths. South Australian estimates of survival rates indicate that approximately 52% of males and 54% of females survive at least 5 years (South Australian Cancer Registry 1996). This cancer is most likely to affect people after the age of 50. Mortality from colorectal cancer results in approximately 33,000 years of life lost before the age of 74, and is one of the most significant cancers in Australia based on this measure.



Source: AIHW 1998.

Figure 4.8: Colorectal cancer, age-standardised incidence and mortality rates, with projections, by sex, 1983 to 1999

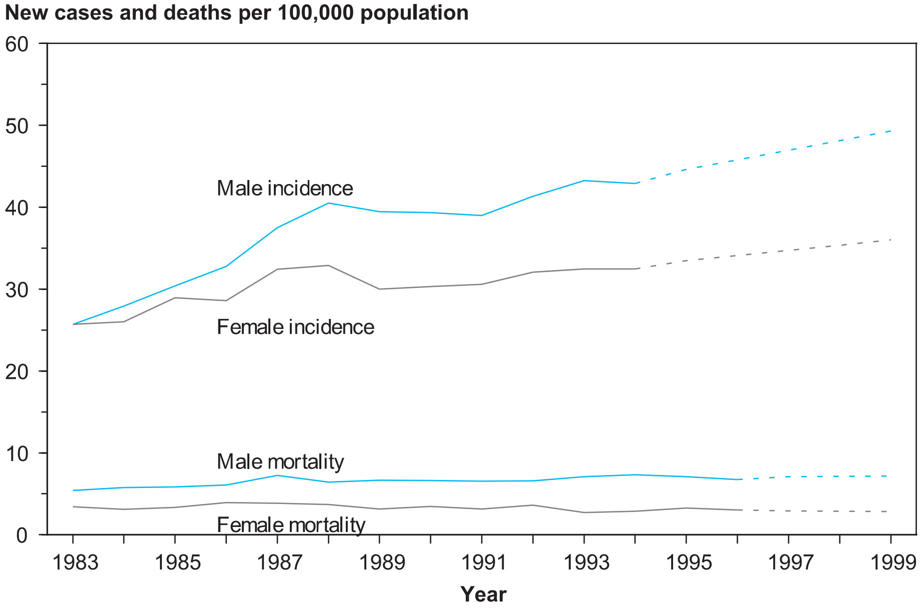
Melanoma

Melanoma is the fourth most common cancer in males and the third most common cancer in females. There has been a strong upward trend in melanoma mortality since the early 1950s, increasing fourfold between the 1950s and the 1990s in males and twofold in females. Since 1990, the mortality rates for both sexes have been relatively stable (Figure 4.9, page 94). However, the differential between male and female mortality has increased steadily over this period and the male mortality rate is now 2.5 times that of females.

Male melanoma incidence has increased since the early 1980s by approximately 67%, compared with a 26% increase in female melanoma incidence rates. Projections indicate that the rate of melanoma in males will continue to rise to 49.1 per 100,000 (approximately 4,700 new cases) in 1999. The incidence rates in females will also continue to increase to a projected rate of 35.9 per 100,000 resulting in approximately 3,800 new cases.

Melanoma is related to exposure to ultraviolet (UV) radiation. The incidence of melanoma is higher in people with fair, sun-sensitive skin, those with many pigmented naevi (or moles) on their skin, and those whose pattern of sun exposure has been intermittent as indicated by high recreational exposure or frequent sunburns. Exposure in childhood may be particularly important.

In 1994, there were 3,695 new cases diagnosed in males (42.9 new cases per 100,000 population) and 3,081 new cases diagnosed in females (32.4 new cases per 100,000 population). Deaths in the same year were 609 (7.3 per 100,000) for males and 288 (2.9 per 100,000) for females. More recent mortality data show a decline to 586 deaths in males and a rise to 326 deaths in females in 1996. Melanoma currently accounts for 8.7% of all new cancer registrations in males and 9.4% in females. It has a low case fatality rate, accounting for 3.2% of all cancer deaths in males and 2.0% in females. South Australian estimates of survival rates indicate that approximately 86% of males and 92% of females survive at least 5 years (South Australian Cancer Registry 1996). This cancer is more likely to affect people after the age of 25. Mortality from this cancer results in approximately 11,000 years of life lost before the age of 74.



Source: AIHW 1998.

Figure 4.9: Melanoma, age-standardised incidence and mortality rates, with projections, by sex, 1983 to 1999

Breast and cervical cancer patterns and screening

Apart from non-melanocytic skin cancers, breast cancer is the most common cancer detected in Australian women, where the lifetime risk of a woman developing this disease before age 75 is 1 in 11. The incidence of breast cancer has been on the rise since the early 1980s, reaching an age-standardised incidence rate of 100.9 per 100,000 women in 1994. This rate is projected to rise to 112.2 cases per 100,000 women in 1999 (AIHW 1998).

Mortality rates due to breast cancer have remained more stable than incidence rates over the same period, with a death rate of 26.6 per 100,000 women in 1994, which is projected to fall slightly to a rate of 25 per 100,000 women in 1999.

Cervical cancer is the ninth most common cancer diagnosed in Australian women. The lifetime risk of a woman developing cervical cancer before the age of 75 is 1 in 101. In 1993, the incidence and mortality rates (12.0 and 3.3 per 100,000, respectively) were the lowest recorded. Both rates are expected to decrease slightly, to 10.4 new cases and 2.8 deaths per 100,000 women in 1999.

The patterns of mortality from breast cancer are not well understood, as they combine the elements of changing risk factors, screening and treatment. Cervical cancer mortality rates, on the other hand, have declined in recent years, primarily due to improved detection and management of precursor lesions and early disease. At present there are few modifiable risk factors to prevent the onset of breast cancer, although the use of mammographic screening in the early detection of cancers can help reduce the morbidity and mortality from this disease. For cervical cancer, the detection of pre-invasive lesions through the use of the Pap smear is currently the screening intervention of choice on a population basis. As more women participate in screening programs, the incidence and mortality rates for these two cancers are expected to improve (Smith et al. 1998; Straton 1994).

In July 1997, the AIHW was contracted to set up a National Screening Information Project to monitor the performance of the breast and cervical cancer screening programs in terms of participation by the targeted groups, their impact on cancer incidence and mortality, and their effectiveness in detecting the early cancers. This work is being conducted in conjunction with the Commonwealth Department of Health and Family Services and State and Territory screening programs.

The information collected by the screening programs is managed and reported on separately by each State and Territory for performance monitoring and accreditation purposes. However, there are some inconsistencies between jurisdictions in data, definitions, collection methodology and policies affecting eligibility for screening.

One of the first tasks of the AIHW's project, therefore, is to develop a set of monitoring indicators and a consistent set of supporting data definitions for use in all jurisdictions. A National Screening Information Advisory Group has been established to guide the development of the indicators. Indicators currently under development include participation rates, detection rates, screening sensitivity, incidence and mortality. It is expected that these indicators will eventually form part of the National Health Priority Areas monitoring system and national accreditation standards, and will be the subject of a report in late 1998.

Although there are presently no national data specific to the indicators under development, relevant information is available from other data sources. The 1995 National Health Survey, for example, collected information about breast and cervical cancer screening, although it is subject to the limitations of a self-reported survey. Almost 64% of the women aged 50–69 years selected in the Women's Health component of the survey reported that they had had a mammogram. Of these women, 83.3% had their last mammogram within the previous 2 years. For Pap smear tests, 73% of the women in the target age range of 20–69 years reported having had a test in the last 3 years.

Data from Medicare claims have been used to estimate participation rates for cervical cancer screening, although it is recognised that these data significantly underestimate screening rates as they do not include Pap smears reported in public laboratories. Nevertheless, they do give some indication of the level of participation of women aged 20–69 years. Over the period 1992–93, 54% of women aged 20–29 years, 60% aged 40–49 years, and 50% aged 50–59 years were screened for early signs of cervical cancer (Dankiw 1994).

Information on breast cancer screening is also available from the 1996 National Breast Health Survey. Barrett et al. (1997) estimated that 55.0% of women aged 30–69 years had had a mammogram (either screening or diagnostic), while 36.6% of the same group had specifically had a screening mammogram. For women in the target age group (50–69 years), the percentage having ever had a mammogram was estimated at 70.6% and 60.9% for women aged 50–59 and 60–69 years respectively.

4.4 Injury prevention and control

Injury is a significant cause of mortality and morbidity in Australia. There were 7,557 deaths (6% of all deaths) in 1996, and over half a million hospital admissions in 1995–96 due to injury and poisoning.

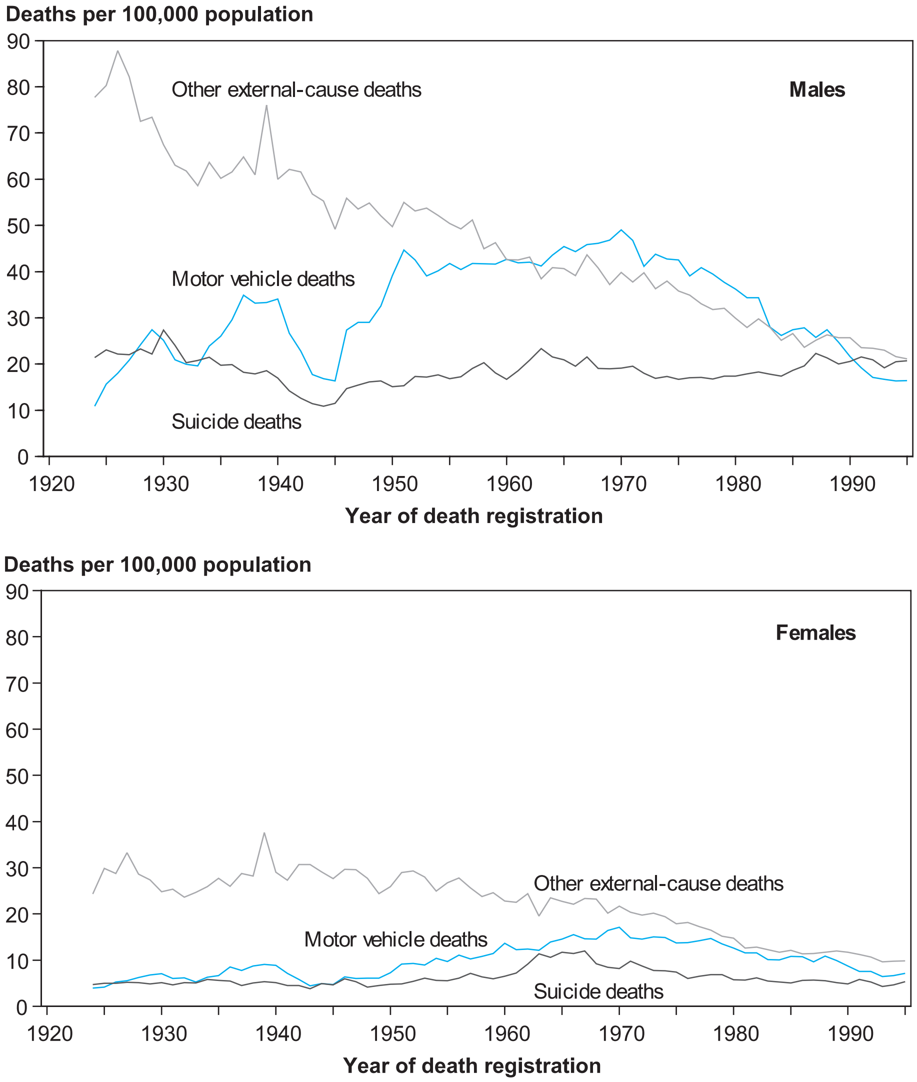
Injury is the main cause of death for children and young adults (47% of all deaths between the ages of 1 and 44 years in 1996 had an 'external cause') and a major cause of hospital admission (11% of those admitted aged between 1 and 44 years in 1995–96 had a primary diagnosis of injury or poisoning). The injury mortality rate is about half what it was at its recent high point in 1970. However, the decline in injury mortality is similar to the decline in mortality from other causes, so that injury still accounts for about 5–6% of deaths.

Injury mortality can be divided into three main groups: road deaths, suicides and other types of injury. Figure 4.10 shows long-term trends in death rates in these groups for males and females.

After rising in the early part of the century, the road injury death rate declined rapidly after 1970. This can largely be attributed to road safety initiatives, including the introduction of compulsory seatbelts, electronic speed measuring, breath testing and educational programs, together with safer roads and vehicles. In 1996, there were 2,197 road deaths, 29% of all injury deaths.

Suicide rates overall have remained fairly constant during the twentieth century, apart from the apparent decline for males during the Second World War. The peak in the

1960s is generally considered to reflect the wide availability of toxic sedatives, mainly barbiturates. There has been an upswing in suicide by young adult men over the past 30 years or so. This issue is the focus of recently introduced suicide prevention initiatives. In 1996, there were 2,393 suicide deaths, 32% of all injury deaths.



Source: AIHW National Injury Surveillance Unit unpublished data.

Figure 4.10: Injury mortality by sex and external cause, 1924 to 1995

‘Other injury’ now accounts for the largest proportion of injury deaths—39% (2,897 deaths) in 1996. This group is diverse, and includes falls (15% of injury deaths), fires, machinery and other unintentional (11%), poisoning (5%), homicide (4%) and drowning (3%).

There has been a substantial long-term decline in the rate of deaths due to ‘other injury’, for reasons that are complex and not well understood. For example, factors contributing to the declining rate of drowning may be an increase in changes in patterns of exposure to water and the proportion of people able to swim. Mechanisation in the workplace and the rise of the service economy have tended to reduce the proportion of people (mainly men) engaged in occupations that place them at special risk of fatal injury. Evolutionary change in design and practice, such as methods of household heating, together with specific injury prevention efforts account for some improvements, such as the virtual disappearance of deaths due to flammable nightwear for children.

Technological change and new designs account for both protection from injury (e.g. automatic cut-off devices on machinery such as chainsaws, tractors and lawn-mowers) and the appearance of new hazards (e.g. in-line skating). Improved treatment contributes to reduced mortality from hip fractures, poisoning and motor vehicle crashes.

Overall rates hide substantial differences in the injury experience of segments of the population. For nearly all categories of injury death, rates for males are higher than those for females, particularly for young adult males. Injury mortality rates for Indigenous Australians are several times higher than for the population overall. People who reside in remote areas and (to a lesser degree) rural areas have higher rates than urban residents.

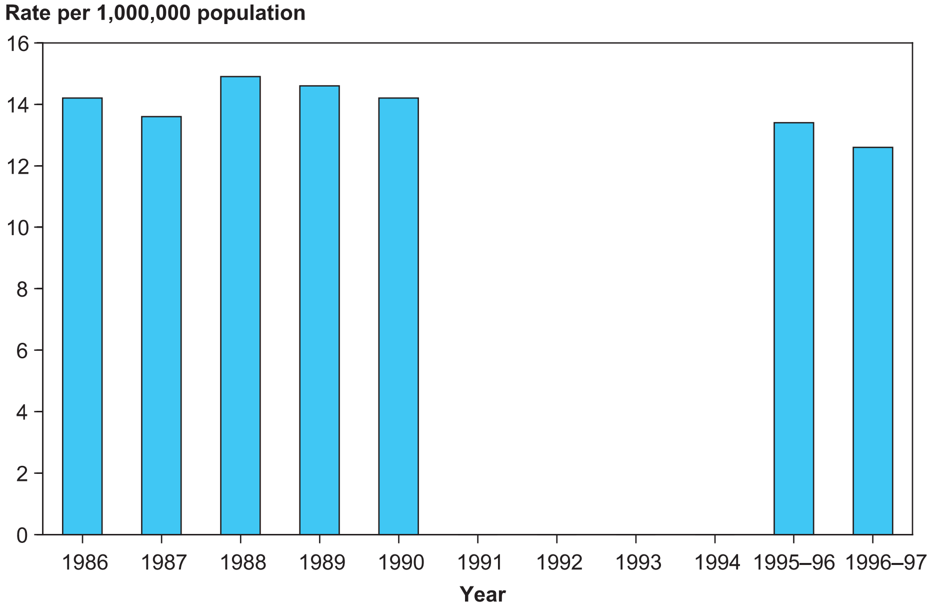
Spinal cord injury

Spinal cord injury (SCI) is a significant public health problem in Australia. To facilitate national and international comparisons, traumatic cases of SCI are defined ‘…as the occurrence of an acute, traumatic lesion of neural elements in the spinal canal (spinal cord and cauda equina), resulting in temporary or permanent sensory deficit, motor deficit, or bladder/bowel dysfunction’ (Thurman et al. 1995). Although SCI is relatively rare, it is important due to the severity of its impact on the individual concerned and in its social and economic costs. It is estimated that there are over 6,000 people with SCI in Australia. The ongoing cost of the long-term care of this group has been estimated to be about $200 million per year (Blumer 1995). The lifetime cost per SCI has been estimated at $600,000 for paraplegia, $1.2 million for quadriplegia and $4.2 million for ventilator-dependent (Walsh & De Ravin 1995).

The National Injury Surveillance Unit (NISU) of AIHW commissioned a review of the needs and opportunities for SCI surveillance. The resulting report (Blumer 1995) recommended that a register of SCI cases be established. The Australian Spinal Cord Injury Register (ASCIR) became operational on 1 July 1995. Australia is the only country with a truly national register of SCI.

In 1995–96, there were 240 new cases of SCI from trauma who were discharged from a spinal unit with a neurological deficit. Given the rarity, at present, of neurological recovery from SCI at this time, these cases can be regarded as ‘persisting cases’. The persisting cases are an important group to monitor because of their likely needs for health and welfare services, and financial support.

Based on the limited data available, it appears that there has been little change in the rate of SCI in recent years (Figure 4.11). This is perhaps surprising given the downward trend in injury from road crashes, which is the major cause of SCI. It is estimated that there has been a 30% decline in fatalities between 1986 and 1995 and a 25% decline in hospitalisations reported to police between 1988 and 1994 as a consequence of road accidents (FORS 1996a, b). Further analysis is needed to determine why there has not been a decline in persisting SCI. If the incidence of all SCI (including early deaths and deaths in hospital, persisting cases, and cases with only temporary neurological deficit) is, in fact, declining in parallel with the road injury trends, then one plausible explanation for a static rate of persisting cases is that improved retrieval, early management and rehabilitation of SCI has increased the number of cases that survive to discharge from a spinal unit.



Source: AIHW National Injury Surveillance Unit unpublished data.

Figure 4.11: Incidence of spinal cord injury, 1986 to 1996–97

Childhood injuries

Injuries to children are of particular concern because they represent the major cause of death during the preschool and school-age years.

Child injury deaths are all deaths to people aged under 15 years due to an external cause, including all accidents, poisoning and violence. In the period between 1990 and 1996, 2,797 children died as a result of an injury, with 50% of those deaths occurring to children under the age of 5 years. Despite the large number of childhood deaths, there has been a significant reduction in the overall death rate attributable to injury and poisoning with the age-standardised rate for children aged under 15 years falling by 24% in the period from 1990 to 1996.

Reductions in the overall child injury death rates have occurred in two major areas. Child deaths from motor vehicle traffic accidents (including motor vehicle occupants, pedal cyclists and pedestrians) declined by 39% in the period 1990 to 1996. Child drownings dropped 17% in the same period. Despite these reductions, those two causes were still the most common causes of death for children in Australia in 1996. Of the 387 injury-related deaths to children aged less than 15 years in 1996, transport-related accidents accounted for 43% of deaths and drowning for 19% (Table 4.5).

Table 4.5: Injury deaths in children aged less than 15 years, by sex, age and external cause, 1996

	Males					
	0–4 years		**5–9 years**		**10–14 years**	
Cause	**Deaths**	**Rate**	**Deaths**	**Rate**	**Deaths**	**Rate**
Transportation	41	6.16	23	3.44	45	6.71
Drowning	34	5.11	9	1.34	3	0.45
Poisoning	1	0.15	1	0.15	3	0.45
Falls	2	0.30	1	0.15	4	0.60
Fires/flame/scalds	13	1.95	3	0.45	—	—
Suicide	—	—	—	—	7	1.04
Other	40	6.01	9	1.34	12	1.79
	Females					
	0–4 years		**5–9 years**		**10–14 years**	
	Deaths	**Rate**	**Deaths**	**Rate**	**Deaths**	**Rate**
Transportation	19	3.01	18	2.83	21	3.29
Drowning	25	3.96	2	0.31	2	0.31
Poisoning	1	0.16	—	—	—	—
Falls	—	—	1	0.16	—	—
Fires/flame/scalds	6	0.95	1	0.16	—	—
Suicide	—	—	—	—	7	1.1
Other	18	2.85	6	0.94	8	1.25

Note: Rates are deaths per 100,000 age- and sex-specific populations.

Source: AIHW National Injury Surveillance Unit unpublished data.

Child injury hospitalisations

Although fatal child accidents are a major concern to the community, they represent only a small proportion of serious child trauma. In 1995–96 there were 67,276 hospital admissions (1,816 per 100,000 population) for children aged 0–14 years due to injury and poisoning, excluding medical misadventure.

The significance of particular causes of injury resulting in hospitalisation varies depending on the age of the child. Falls are the leading cause of hospitalisation for all age groups, although for the 0–4 age group, the fall is more likely to occur in the home, whereas falls from playground equipment are more common for the 5–9 age group.

Poisoning and burns are particularly high for the 0–4 age group, and injuries sustained from pedal cycling or as motor vehicle passengers are more pronounced in the 5–14 age group. Sports and recreational injuries are more common in the 10–14 age group.

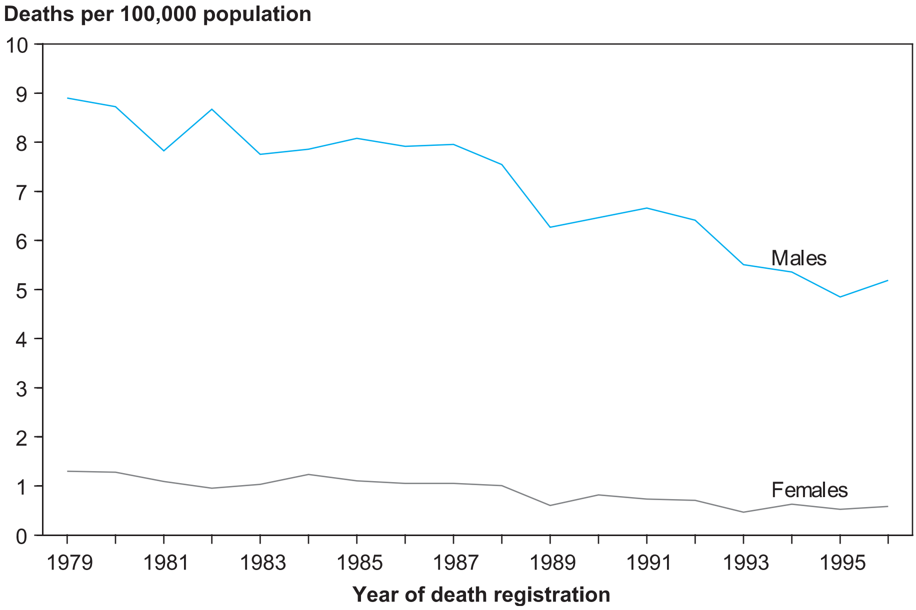
Fractures were the most common reason for admission to hospital, accounting for 43% of all injuries. A fall was the reason for 63% of all fractures. Open wounds (13%) and head injuries (12%) were the other main types of injury resulting in hospitalisation. Number of bed-days in hospital and average length of stay are other indicators of the seriousness of the injury sustained. Injuries caused by fire, flames or scalds result in the longest stay in hospital, with an average length of stay of around 5 days. Transport injuries require an average length of stay of 3 days and fall injuries an average of 2 days.

Injuries from firearms

There were 521 firearm deaths in 1996, which accounted for about 6% of all deaths from external causes. Of these, 82% were suicides, 14% were homicides and the remaining 4% were either unintentional or of undetermined intent. The number of homicides in 1996 involving firearms increased by 55% over 1995 due almost entirely to the Port Arthur shootings.

The majority of firearm deaths were to males (90%), with males aged 15–35 years being the group most at risk. Firearm deaths have declined in recent years (Figure 4.12), especially for young males. This decline is largely due to a drop in the rate of firearm suicide (although male suicide rates have remained about the same due to a rise in the use of other means).

Females are less likely than males to use firearms as a means of suicide. Of the 46 female firearm deaths in 1996, 23 were suicides and 21 were homicides.



Source: AIHW National Injury Surveillance Unit unpublished data.

Figure 4.12: Age-adjusted rates of firearm deaths, 1979 to 1996

Hospitalisation due to firearm injuries

Whereas the majority of fatal firearm injuries are the result of suicide, only 15% of the 581 firearm-related hospitalisations in 1995–96 were recorded as intentional self-harm. Almost 50% of these hospitalisations were classified as unintentional and 21% were the result of some form of violence or assault.

The majority (74%) of all firearm-related hospitalisations were males aged 15–54 years. Of the 267 unintentional firearm-related episodes for males, 15% occurred to boys aged 0–14 years.

Information on type of firearm involved indicates that shotguns (22%) and hunting rifles (21%) were the most commonly used. Hand guns (10%) and military-style firearms (3%) were also implicated, with 35% of firearms being of an unspecified type.

Open wounds and injuries to both the upper and lower extremities were the most common diagnoses resulting in hospitalisation, especially where the injury was recorded as being unintentional. For those admissions where the intent was self-harm, the head and face were most often involved. The average length of stay in hospital for all types of firearm injuries was 7 days. For unintentional injuries, the average length of stay in hospital was around 5 days, and for intentional self-harm and assault the average length of stay was around 9–10 days.

In 1996–97, the Commonwealth Government and State and Territory Governments cooperated in a national firearm buyback program resulting in more than 450,000 firearms being removed from the public arena.

4.5 Mental health

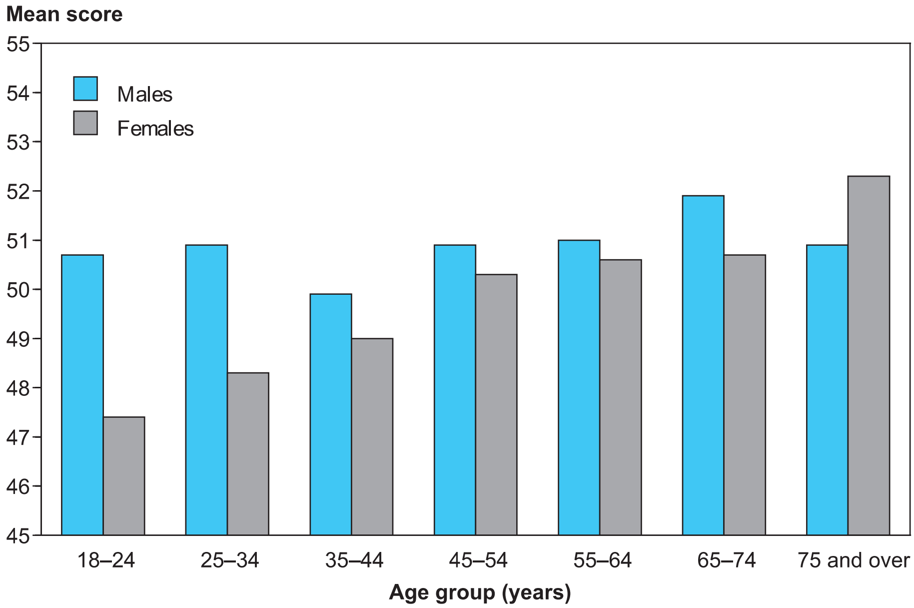
Individuals differ in their sense of wellbeing and their behavioural functioning. However, in some people there are symptoms and behaviours which are distressing to them or others and which impair their social functioning. These can be classified into different types of mental disorders. Mental disorders may require treatment to alleviate symptoms and to provide rehabilitation of impairment. In some instances, the severity of a disorder warrants hospitalisation.

Until very recently, data on the mental health status of Australians have been minimal. During the period 1993 to 1998, initiatives by the Commonwealth, States and Territories under the National Mental Health Strategy have led to a number of improvements in the development and collection of data on a range of mental health issues. These include the development of data collections to monitor the reforms in mental health service delivery introduced under the National Strategy, the establishment of ongoing national data collections drawn from records kept by hospitals and mental health services in the community, and a major survey of the general population to establish the prevalence of mental disorders and associated disabilities.

General wellbeing

The 1995 National Health Survey (ABS 1997b) collected information on general health and wellbeing using the SF-36 instrument (Ware et al. 1993). The Mental Component Summary (MCS) of the SF-36 is derived from a subset of items that ask respondents about their general mental health (e.g. the amount of time spent feeling nervous or happy) as well as any role limitations due to emotional problems (e.g. lack of care in performing activities), their vitality (e.g. the amount of time spent feeling 'full of pep'), and their social functioning (e.g. the impact that emotional problems might have in curbing social activities).

Figure 4.13 shows some of the results of the MCS; the range of scores on this scale is zero to 100, representing the lowest and highest possible levels of reported mental wellbeing. There is a marked difference in mental wellbeing reported by young men compared with young women, most notably in the age group 18–24 years. This difference between the sexes narrows with age, and for those respondents aged 75 years and older there is a 'crossover' effect in the data, whereby older women reported a greater sense of perceived wellbeing than men of the same age. Overall, the scores increased by age group, indicating that the older respondents experienced better mental wellbeing than the younger respondents.



Source: ABS 1997b.

Figure 4.13: Mean scores on the SF-36 Mental Component Summary, by age and sex, 1995

Prevalence of mental health disorders in the community

In the past, there has been no reliable information about the number of people in Australia who have a mental disorder or the types of disorders that are prevalent in the community. During 1997, the Australian Bureau of Statistics conducted the National Survey of Mental Health and Wellbeing as part of the National Mental Health Strategy. The main objective of the survey was to inform governments about the need for improvements in mental health service delivery in the Australian community, but the collection also provided a range of broad-based epidemiological data on the mental health status of the population.

The survey interviewed 10,000 Australians aged 18 years and over, selected from a random sample of households. Questions were designed to obtain information on the prevalence of different types of mental disorders in Australia. The survey also collected data on the extent of disability associated with mental disorders, and service use by and the unmet need for treatment of those with a mental disorder or associated disability. The Composite International Diagnostic Interview (CIDI) was used to measure mental disorders using criteria that enabled coding to ICD-10 diagnostic categories. The CIDI allows a non-clinician interviewer to collect information about symptoms of mental disorders, and the data are scored by a computer program which makes the diagnoses (WHO 1994).

It is estimated that 17.7% of Australian adults had experienced the symptoms of a mental disorder at some time during the 12 months before the survey (Table 4.6). Women were more likely than men to have had symptoms of anxiety disorders (12.1% of women compared with 7.1% of men), and men were more than twice as likely to have had symptoms of substance use disorders (11.1% of men compared with 4.5% of women). Young adults aged 18–24 had the highest prevalence of mental disorder (26.6%). The prevalence of mental disorder generally decreased with age. Note,

Table 4.6: Prevalence of mental disorders[(a)] in Australia, 1997

	Males		Females		Persons	
Mental disorders[(b)]	**’000**	**Per cent**	**’000**	**Per cent**	**’000**	**Per cent**
Anxiety disorders						
Panic disorder	36.7	0.6	133.8	2.0	170.5	1.3
Agoraphobia	49.2	0.7	101.9	1.5	151.1	1.1
Social phobia	161.4	2.4	207.3	3.0	368.7	2.7
Generalised anxiety disorder	156.8	2.4	256.0	3.7	412.8	3.1
Obsessive-compulsive disorder	19.3	0.3	29.2	0.4	48.6	0.4
Post-traumatic stress disorder	153.3	2.3	285.8	4.2	439.2	3.3
Total anxiety disorders	*470.4*	*7.1*	*829.6*	*12.1*	*1,299.9*	*9.7*
Affective disorders						
Depression	227.6	3.4	465.3	6.8	692.9	5.1
Dysthymia	63.4	1.0	88.3	1.3	151.7	1.1
Total affective disorders[(c)]	*275.3*	*4.2*	*503.3*	*7.4*	*778.6*	*5.8*
Substance use disorders						
Alcohol harmful use	285.4	4.3	123.8	1.8	409.2	3.0
Alcohol dependence	339.8	5.1	126.9	1.9	466.7	3.5
Drug use disorders[(d)]	206.9	3.1	89.2	1.3	296.0	2.2
Total substance use disorders	*734.3*	*11.1*	*307.5*	*4.5*	*1,041.8*	*7.7*
Total mental disorders	**1,151.6**	**17.4**	**1,231.5**	**18.0**	**2,383.1**	**17.7**
Total persons	**6,627.1**	**100.0**	**6,837.7**	**100.0**	**13,464.8**	**100.0**

(a) During the last 12 months before interview.
(b) A person may have more than one mental disorder. The components when added may therefore be larger than the subtotals or total.
(c) Includes other affective disorders such as mania, hypomania and bipolar affective disorder.
(d) Includes harmful use and dependence.

Source: ABS 1998.

however, that mental disorders such as dementia and Alzheimer's disease, which have a high prevalence in older age groups, were not included in the survey results because of the difficulty of identifying these conditions in an interviewer-based household survey. Young men aged 18–24 had the highest rate of substance use disorder (21.5%). Women were more likely to have had mood disorders such as depression (7.4% of women compared with 4.2% of men), with women aged 18–24 having the highest rates (10.7%) (ABS 1998).

Over a quarter of adults (26.2%) reported co-morbidity of mental disorders (that is, more than one disorder at the same time). Of these, 66% used a health service for their mental health problems. Those with a single disorder were less likely to have used health services for the problem; for example, of those with an anxiety disorder only, 28% used health services for the problem, and in the case of substance use disorder, only 14% used health services (ABS 1998).

Hospital care of people with a mental disorder

The National Mental Health Strategy emphasised the need for improved standards in the delivery of mental health services and the need to collect more information about consumers of mental health services. At present, there are data available about people who have been admitted to hospital with a mental disorder or associated disability, but there are no data that provide information about the consumers of mental health services in community settings (e.g. treatment received in health centres or from community psychiatric nursing services).

Data from hospital morbidity records provide information on the extent of treatment and care provided in hospitals for Australians who have been diagnosed with a mental disorder or associated disability. Information on the principal diagnosis of each admitted patient is coded using ICD-9-CM (AIHW 1997), and therefore differs from the ICD-10 diagnostic categories used in the National Survey of Mental Health and Wellbeing described above.

Arriving at a diagnosis of a mental disorder relies on the clinician's recognition of particular patterns of symptoms through a consideration of different aspects of the patient's behaviour, thought processes, mood state and level of arousal. In most cases, there are no key identifying symptoms or specific laboratory tests that can be used to confirm the diagnosis of a mental disorder, and for some conditions there is a continued reliance on clinical judgements on the extent to which a behaviour or pattern of behaviour deviates from an accepted norm. However, recent development of the ICD-10 Classification of Mental and Behavioural Disorders has set out explicit diagnostic criteria for clinical practice and research that will provide refinements in reporting diagnoses of mental disorders in future Australian hospital and community mental health service collections (WHO 1992, 1993).

Table 4.7 (page 106) shows hospital separations (public and private combined) related to mental disorders, attempted and completed suicide, and self-harm for 1995–96. The data represent the number of separations that occurred and are not a count of individuals. That is, the figures represent the number of times any person was treated in hospital (whether that was once or many times for a particular individual), rather than the number of people who received treatment during the period.

Of all mental disorders that resulted in hospitalisation during 1995–96, the largest number of separations were for those patients diagnosed with major depressive disorder and schizophrenic disorders (16% and 15% respectively of all mental disorders treated in hospitals). Neurotic disorders, which include anxiety states and obsessive–compulsive disorders, account for almost 10% of patients hospitalised with a mental disorder.

The data include those patients who die in hospital as a result of suicide or self-inflicted harm. The incidence of suicide is a key issue in the development of programs under the National Mental Health Strategy that aim to improve mental health in the community. However, there is a lack of data on attempted suicide or other forms of self-harm. Suicide cases who are dead on arrival at hospital are not included in the separation statistics as they are not counted as having been admitted to hospital. When compared with other mental disorders, suicide and self-harm represent approximately 1 out of every 11 'mental health' separations, but these figures cannot be taken as an accurate indicator of the prevalence of attempted or completed suicide or of self-inflicted injury in the community.

Table 4.7: Hospital separations for ICD-9-CM coded mental disorders and self-harm, all hospitals, 1995–96

ICD-9-CM codes and principal diagnosis		Number of separations	Per cent of all mental disorders	Separations per 1,000 population[(a)]
Mental disorders				
290, 294.1, 331.0	Dementia	11,417	5.93	0.63
291–294	Other organic psychotic conditions[(b)]	11,136	5.78	0.61
295	Schizophrenic disorders	29,772	15.46	1.64
296.2–296.3	Major depressive disorder	30,931	16.06	1.70
296	Other affective psychoses[(c)]	13,059	6.78	0.72
297	Paranoid states	1,745	0.91	0.10
298–299	Other psychoses	4,309	2.24	0.24
300	Neurotic disorders	19,122	9.93	1.05
301	Personality disorders	7,810	4.06	0.43
302	Sexual deviations and disorders	238	0.12	0.01
303	Alcohol dependence syndrome	13,284	6.90	0.73
304	Drug dependence	5,899	3.06	0.32
305	Non-dependent drug use disorder	5,953	3.09	0.33
311	Depressive disorder, nec	8,746	4.54	0.48
306–310, 312–316	Other non-psychotic mental disorders	29,180	15.15	1.60
Total mental disorders		*192,601*	*100.00*	
Self-harm				
E950–E959	Suicide and self-inflicted injury	21,637	. .	1.19
All stated conditions		**214,238**	. .	**11.77**

(a) Mid-year population, December 1995.
(b) Excludes dementia in conditions classified elsewhere (294.1).
(c) Excludes major depressive disorder (296.2–296.3).

Source: AIHW National Hospital Morbidity Database.

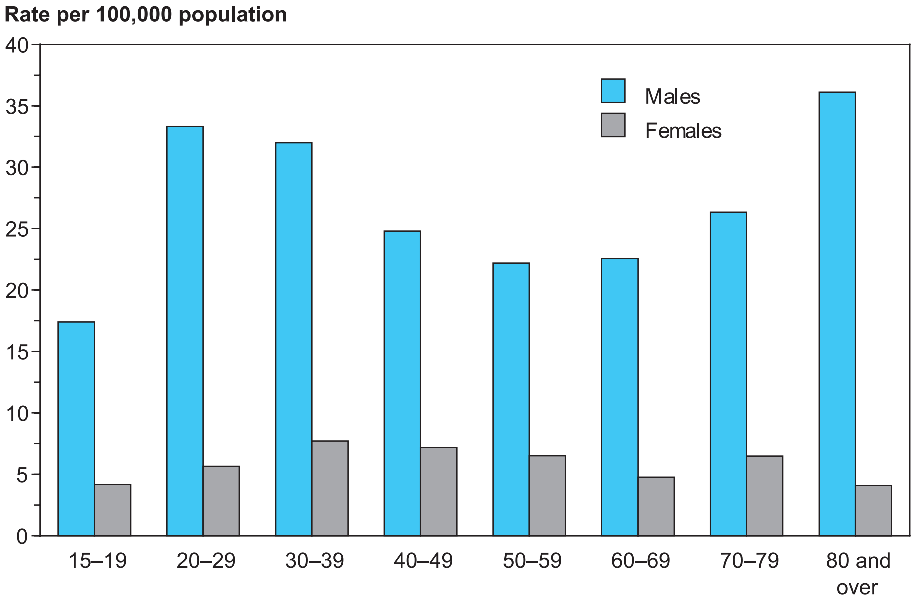
At present, the data describing admitted patients with mental disorders or associated disabilities are based on diagnosis alone. However, in future hospital morbidity collections it will be possible to identify those admitted patients who have received specialised psychiatric treatment in general hospitals; this will improve the quality of data on mental disorders through more reliable diagnoses. The collection of data from service providers will also be extended to people who are treated in community settings, including residential facilities, outpatient clinics, community mental health services and care that is provided in the home by teams of professionals. These developments will improve the information available in the management of mental health care and will provide more reliable data on patients receiving treatment in institutions and in the community.

Suicide

Data on deaths from self-inflicted injury have limitations, and there is little information on the link between mental disorder and suicide. Mortality data for suicide are obtained from State and Territory Registrars of Births, Deaths and Marriages and are usually based on records provided by the Coroner's Court. Identification of suicide cases by these methods may be undercounted, as some cases cannot be clearly identified through coronial procedures (CDC 1988). However, for those cases which are able to be identified, the data indicate age and sex differentials for death by self-inflicted injury and provide information on changes in the methods of suicide over time.

In 1996, the rate of suicide for men of all ages was substantially greater than for women (Figure 4.14, page 108). The incidence of suicide in men aged between 20 and 29 years was six times as great as for women of the same age; for men aged 80 years and over the incidence was nine times greater than for women of the same age. Previous studies of suicide indicate that the sex difference shown in suicide data is likely to be associated with the generally more violent methods used by men (e.g. hanging and shooting), compared with the passive methods generally used by women (e.g. poisoning) for which there is greater opportunity for medical intervention (DHFS 1997). Between 1979 and 1994, the incidence of male suicide by hanging increased by 143%, although male suicides involving firearms decreased in this period by 35% (Bordeaux & Harrison 1996).

National data collections are being set up to provide better information for developing public health policy in relation to suicide prevention. Coroners in all jurisdictions are working towards developing procedures for a suicide module of the National Coronial Information System (NCIS). The NCIS collection will provide a national data set that will permit more detailed analysis of suicide and help in the development of preventive program initiatives. Efforts are also being made to link mental health case registers with death registers in most jurisdictions. A 3-year study is being conducted by the Centre for Health Services Research at the University of Western Australia, in collaboration with the Health Department of Western Australia, on preventable co-morbidity in people with mental illness. The study will link data from the State's Register of Deaths with the Mental Health Information System case register. Results will be available late in 1998.



Source: AIHW Mortality Database.

Figure 4.14: Suicide death rates, 1996

Developments in data on mental health

The range of data on mental health status has improved in recent years. Nevertheless, there are gaps in the available data and shortfalls in the quality of some information. For policy and planning purposes, the following are the key areas requiring action:

- the development and collection of relevant and culturally appropriate data on service delivery and mental health status of Indigenous Australians;
- data collections that specifically target the mental health status of young Australians, and in particular data on background factors associated with depression, eating disorders, alcohol and other drug dependencies, self-harm and suicide;
- the establishment of a national collection strategy that targets the treatment needs and management of the care of older Australians; this includes identification of dementia patients across a wide range of service settings;
- the coordination of efforts to improve and report nationally on data collected through State and Territory mental health case registers; and
- the finalisation of a national collection and reporting process for suicide data from the National Coronial Information System.

4.6 Diabetes

Diabetes mellitus, the most recently nominated National Health Priority Area, is an often serious disease in which the body makes too little of the hormone insulin or cannot use it properly. This disturbs the body's main energy processes, especially those involving the sugar glucose. The two most common forms of diabetes are insulin-dependent diabetes mellitus (IDDM or type 1 diabetes) and non-insulin-dependent diabetes mellitus (NIDDM or type 2 diabetes).

In type 1 diabetes, the pancreas makes little or no insulin. To sustain life and maintain a normal blood sugar level, people with type 1 diabetes require insulin injections and need to follow a careful diet. Type 1 diabetes may begin at any age, but it most often starts in childhood or early adulthood and is believed to be caused by an auto-immune process.

Type 2 diabetes is marked by insulin resistance; that is, the body's cells do not respond to insulin in the normal way by taking up enough glucose. Type 2 diabetes usually first appears when a person is adult and may present no symptoms or remain undiagnosed for many years. This form of diabetes is often associated with overweight and high blood pressure. Many people with type 2 diabetes go on to need insulin injections to control their blood sugar levels.

The onset of diabetes during pregnancy is known as gestational diabetes mellitus (GDM). Blood sugar levels in pregnant women must be carefully controlled during pregnancy to avoid damage to the foetus. In most instances, glucose levels become normal after the birth, but the risk of developing diabetes in later life is increased.

Diabetes has a major impact on quality of life and its long-term effects include a greater risk of heart attack, stroke, impotence, blindness, kidney problems, lower limb amputations and reduced life expectancy. Older people, Indigenous people and some sections of the overseas-born population are at particular risk of type 2 diabetes.

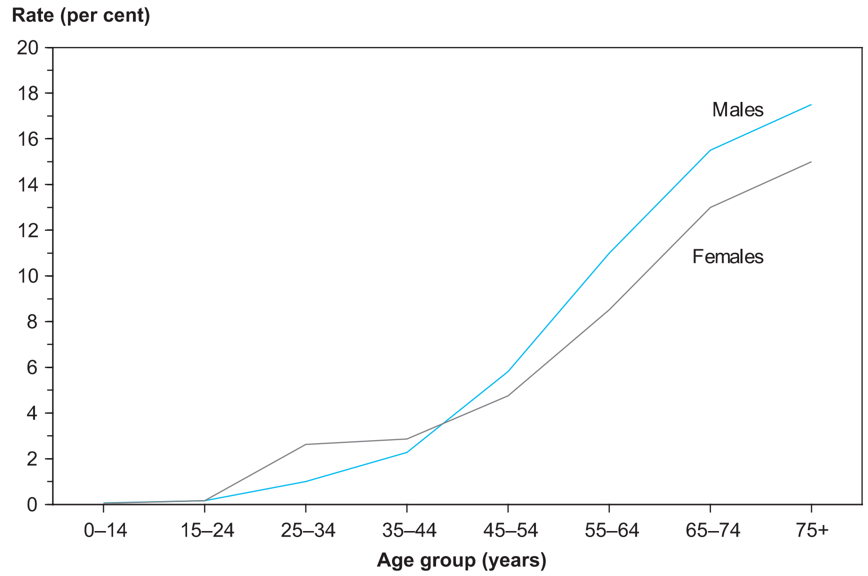
Prevalence

In the 1995 National Health Survey (NHS), nearly 431,000 people (23.8 per 1,000 population) reported having diabetes mellitus some time during their lives, four-fifths as a condition they currently have (ABS 1997d). This represents a 26% increase in prevalence since the 1989–90 NHS, not arising from change in the age–sex structure of the population. A further 225,000 (12.4 per 1,000 population) reported high blood sugar levels. Note that data from the National Health Survey are self-reported and may underestimate the true prevalence. The apparent increase in prevalence between the two surveys may be due in part to differences in survey methods.

There is no good estimate of the prevalence of undiagnosed diabetes in Australia. In 1990, the true prevalence of diabetes was estimated as 36.7 and 38.8 per 1,000 for males and females respectively, much higher than self-reported levels (McCarty et al. 1996; Welborn et al. 1995).

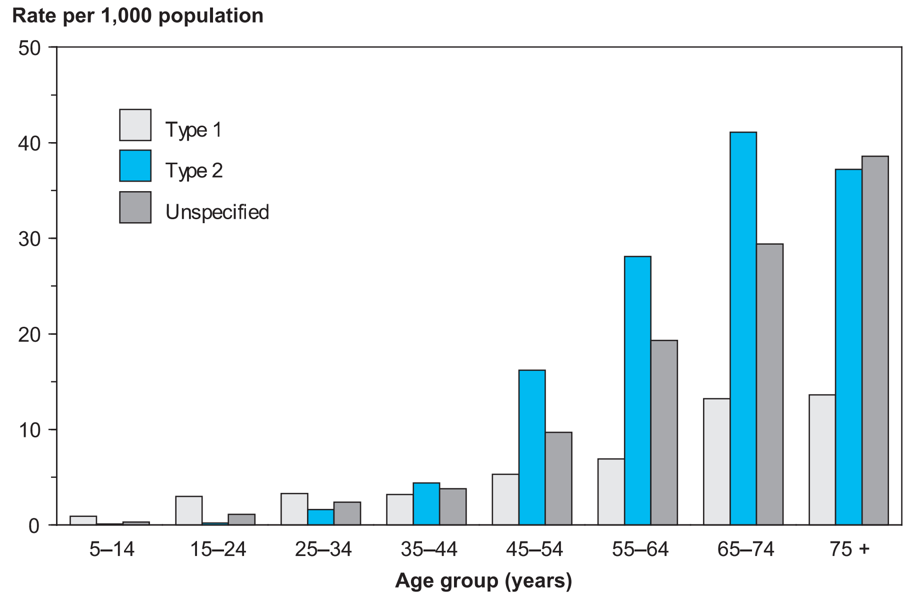
Of all people who reported ever having diabetes in 1995, 19%, 42% and 6% identified their condition as type 1, type 2 and gestational diabetes respectively. A further 33% did not specify the type of diabetes, and most of them are likely to have type 2. The pattern was similar for males and females once gestational diabetes was excluded.

The prevalence of diabetes increases with age, especially from the middle-age years, due to the onset of type 2 diabetes as people grow older (Figures 4.15 and 4.16, page 110).



Source: McCarty et al.1996.

Figure 4.15: Estimated age-specific prevalence rates for diabetes by sex, 1990



Source: ABS 1997d.

Figure 4.16: Self-reported prevalence of diabetes as a long-term condition by type and age group, 1995

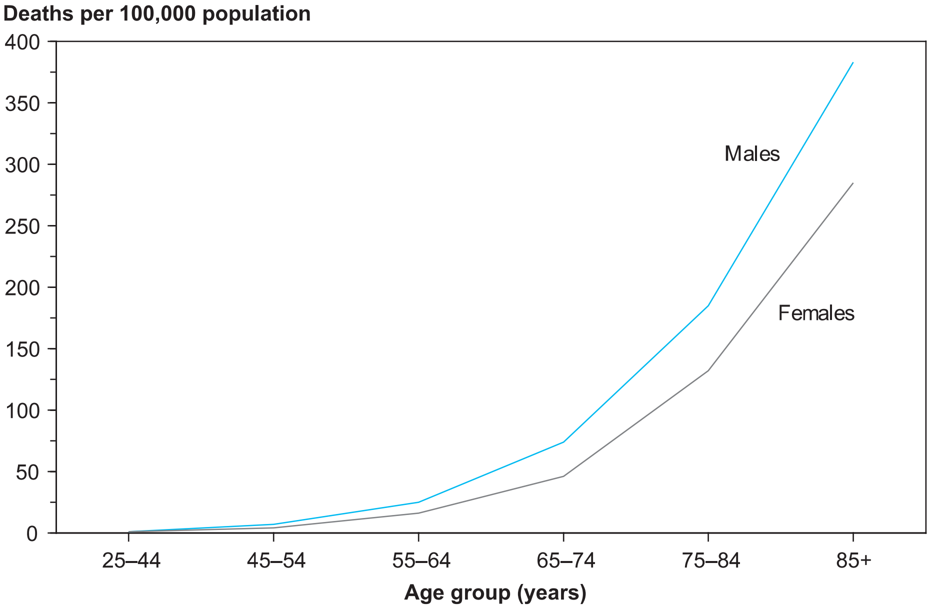
There are no national estimates for diabetes incidence. However, regional data suggest that type 1 incidence has increased moderately in recent years (Kelly et al. 1994; Craig et al. 1997). From a global perspective, Australia's diabetes prevalence is very high and ranks ninth highest in a comparison of 35 countries (Karvonen et al. 1993).

Mortality

In Australia, as elsewhere, there is evidence that people with diabetes have a reduced life expectancy compared with non-diabetic people, and have a large excess mortality from heart disease, renal disease and stroke.

Mortality from diabetes is under-reported, because many deaths are attributed to complications associated with diabetes rather than to diabetes as such. The ABS reported that in 1995 there were 8,839 deaths where diabetes had been mentioned on the death certificate, but was not reported as the underlying cause. Death records provide the only available source of data for estimating national trends in mortality from diabetes. However, changes in diabetes complications and reporting may influence trend estimates.

In 1996, diabetes mellitus was cited as the underlying cause of 2,991 deaths, 2.3% of deaths from all causes. The mortality rate was 16 per 100,000 population (ABS 1997a). Between 1984 and 1995, mortality from diabetes increased at 1.3% per annum among males, but changed little among females. It increased sharply after age 50, and was higher among males than females in each age group (Figure 4.17).



Source: ABS 1997c.

Figure 4.17: Age-specific death rates for diabetes by sex, 1996

Diabetes in the Indigenous population

The Indigenous population has one of the highest prevalence rates of type 2 diabetes in the world. Recent estimates suggest prevalence rates between 70 and 88 per 1,000 for males, and between 72 and 116 per 1,000 for females (McCarty et al. 1996).

In the 3-year period 1992–1994, average diabetes death rates among Indigenous Australians, standardised for age, were 146 per 100,000 for males, and 153 per 100,000 for females. Between 1985 and 1994, diabetes mortality rose sharply, at the rate of 9.6% per year among males and 5.4% per year among females (Anderson et al. 1996).

References

Anderson P, Bhatia K & Cunningham J 1996. Mortality of Indigenous Australians. Occasional Paper. ABS Cat. No. 3315.0, AIHW Cat. No. IHW 1. Canberra: AGPS.

Australian Bureau of Statistics (ABS) 1997a. Causes of death Australia, 1996. Cat. No. 3303.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1997b. 1995 National Health Survey: summary of results, Australia. Cat. No. 4364.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1997c. SF-36: population norms. Cat. No. 4399.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1997d. 1995 National Health Survey: diabetes, Australia. Cat. No. 4371.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1998. Mental health and wellbeing, profile of adults, Australia, 1997. Cat. No. 4326.0. Canberra: ABS.

Australian Institute of Health and Welfare (AIHW) 1997. Australian hospital statistics 1995–96. Health Services Series No. 10. AIHW Cat. No. HSE 3. Canberra: AIHW.

Australian Institute of Health and Welfare (AIHW) & (Commonwealth) Department of Health and Family Services (DHFS) 1997. First report on national health priority areas 1996. AIHW Cat. No. PHE 1. Canberra: AIHW & DHFS.

Australian Institute of Health and Welfare (AIHW) 1998. Cancer in Australia 1991–1994 (with projections to 1999). Canberra: AIHW (in press).

Barrett AL, Cockburn J, Redman S, Paul C & Perkins J 1997. Mammographic screening: results from the 1996 National Breast Health Survey. Med J Aust 167:521–24.

Beaglehole R, Stewart AW, Jackson R, Dobson AJ, McElduff P, D'Este K, Heller RF, Jamrozik KD, Hobbs MS, Parsons R & Broadhurst R 1997. Declining rates of coronary heart disease in New Zealand and Australia, 1983–1993. Am J Epidemiol 145(8):707–13.

Bennett SA 1996. Socioeconomic trends in death from coronary heart disease and stroke among Australian men, 1970–1993. Int J Epidemiol 25:266–75.

Blumer C 1995. A review of the needs and opportunities for the surveillance of spinal cord injury. Adelaide: AIHW National Injury Surveillance Unit.

Bordeaux S & Harrison J 1996. Injury mortality 1994. Australian Injury Prevention Bulletin, Issue 13 (October 1996). Adelaide: AIHW National Injury Surveillance Unit.

Centers for Disease Control (CDC) 1988. Operational criteria for determining suicide. MMWR CDC Surveill Summ Vol. 37(50). Atlanta, GA: CDC.

Craig ME, Howard NJ, Yu T & Lloyd M 1997. Proceedings of the Australian Diabetes Society, Australian Diabetes Educators Association Annual Scientific Meetings, Canberra, 1–3 October 1997.

Dankiw W 1994. Pap smear examinations under Medicare 1984–85 to 1992–93. Canberra: AIHW.

DeCosse JJ, Tsioulias GJ & Jacobson JS 1994. Colorectal cancer: detection, treatment and rehabilitation. Cancer J Clin 44(1):27–42.

(Commonwealth) Department of Human Services and Health (DHFS) 1994. Better health outcomes for Australians: national goals, targets and strategies for better health outcomes in the next century. Canberra: AGPS.

(Commonwealth) Department of Human Services and Health (DHFS) 1997. Youth suicide in Australia: a background monograph. 2nd ed. Canberra: AGPS.

Federal Office of Road Safety (FORS) 1996a. Road fatalities, Australia: 1995 statistical summary. Canberra: FORS.

Federal Office of Road Safety (FORS) 1996b. Road crashes resulting in hospitalisation, Australia: 1994 statistical summary. Canberra: FORS.

Gajanayake I & Bennett S 1997. Surveillance of cardiovascular mortality in Australia 1983–1994. Cardiovascular Disease Series No. 5. AIHW Cat. No. CVD 2. Canberra: AIHW.

Health Targets and Implementation Committee 1988. Health for all Australians. Canberra: AGPS.

Ireland P & Giles G 1993. A review of diet and cancer: what are the prospects for prevention in Australia? Cancer Forum 17(2):132–55.

Karvonen M, Tuomilehto J, Libman I & LaPorte R (WHO DIAMOND Project Group) 1993. A review of the recent epidemiological data on the worldwide incidence of Type 1 (insulin dependent) diabetes mellitus. Diabetologia 36:883–92.

Kelly HA, Russell MT, Jones TW & Byrne GC 1994. Dramatic increase in incidence of insulin dependent diabetes mellitus in Western Australia. Med J Aust 161:426–29.

Marks R, Staples M & Giles GG 1993. Trends in non-melanocytic skin cancer treated in Australia: the second national survey. Int J Cancer 53:585–90.

Mathers C 1994. Health differentials among adult Australians aged 25–64 years. Health Monitoring Series No. 1. Canberra: AGPS.

McCarty DJ, Zimmet P, Dalton A, Segal L & Welborn TA 1996. The rise and rise of diabetes in Australia, 1996: a review of statistics, trends and costs. Canberra: Diabetes Australia.

National Health and Medical Research Council (NHMRC)—Australian Health Technology Advisory Committee 1996. Prostate cancer screening. Canberra: AGPS.

Nutbeam D, Wise M, Bauman A, Harris E & Leeder S 1993. Goals and targets for Australia's health in the year 2000 and beyond. Canberra: AGPS.

Smith CL, Kricker A & Armstrong B 1998. Breast cancer mortality trends in Australia: 1921 to 1994. Med J Aust 168:11–14.

South Australian Cancer Registry 1996. Epidemiology of cancer in South Australia, 1977–1995. Cancer Series No. 18. Adelaide: South Australian Cancer Registry.

Straton JAY 1994. Recruitment for cervical screening, a review of the literature. Department of Public Health, University of Western Australia. Canberra: AGPS.

Thurman DJ, Sniezek JE, Johnson D, Greenspan A & Smith SM 1995. Guidelines for surveillance of central nervous system injury. Atlanta: US Department of Health and Human Services, Centers for Disease Control and Prevention.

Trichopoulos D, Frederick PL & Hunter DJ 1996. What causes cancer? Sci Am (September):50–57.

Walsh J 1992. Spinal cord injury statistics in Australia 1991. AIHW National Injury Surveillance Unit. Canberra: AIHW.

Walsh J & De Ravin JW 1995. Long term care—disability and ageing. Sydney: The Institute of Actuaries of Australia.

Ware JE, Snow KK, Kosinski MA & Gandek B 1993. SF-36 Health Survey: manual and interpretation guide. Boston: Nimrod Press.

Welborn TA, Knuiman MW, Bartholomew HC & Whittall DE 1995. 1989–90 National Health Survey: prevalence of self-reported diabetes in Australia. Med J Aust 163:129–32.

World Health Organization (WHO) 1992. The ICD-10 classification of mental and behavioural disorders: clinical descriptions and diagnostic guidelines. Geneva: WHO.

World Health Organization (WHO) 1993. The ICD-10 classification of mental and behavioural disorders: diagnostic criteria for research. Geneva: WHO.

World Health Organization (WHO) 1994. Composite international diagnostic interview (CIDI) researcher's manual. Geneva: WHO.

World Health Organization (WHO) 1996. World health statistics annual, 1995. Geneva: WHO.

5

Developments in public health

Public health programs have been credited with making significant improvements in the health of populations over a long time (McKeown 1976). Improvements in sewerage, waste management, water supply, housing and nutrition have controlled the spread of infectious diseases and provided healthier physical environments. Current patterns of morbidity and mortality bring a different mixture of health problems requiring action, but the objectives of public health action have remained focused on protection of populations from hazards to health, prevention of disease and ill-health, and promotion of 'healthy' practices by individuals and communities.

A new National Public Health Partnership between the Commonwealth Government and State Governments is bringing together jurisdictions to:

- improve collaboration in the national public health effort;
- provide better coordination and sustainability of public health strategies; and
- strengthen public health infrastructure and capacity.

The partnership, formalised by a multilateral Memorandum of Understanding between the governments of Australia, has adopted the following definition of public health:

> Public health is the organised response by society to protect and promote health, and to prevent illness, injury and disability. The starting point for identifying public health issues, problems and priorities, and for designing and implementing interventions, is the population as a whole, or population subgroups. (NPHP 1997)

Public health activities and processes include:

- public health intelligence, including surveillance and monitoring information and epidemiological information identifying determinants of health and causes of ill-health and describing the patterns and trends of health and ill-health in populations;
- public health programs, including developing policy and planning strategies and activities aimed at prevention, protection and promotion of the health of the community; and
- public health infrastructure, including administrative, legislative, information, research and program delivery systems, and the workforce required to implement them.

Information plays a central role in public health strategies, particularly in surveillance, epidemiological research and monitoring. Because health outcomes from current public health programs are represented in future health patterns and may be observable only in the long term, there is less immediate focus on outcomes in public health analysis than in acute health care.

The following sections of this chapter present information about major established fields of public health action. Information of relevance to a wider view of public health action is available in Chapters 3 and 4.

5.1 Communicable diseases

Communicable or infectious diseases are illnesses due to specific infectious agents or their toxic products (Benenson 1995). Bacteria cause diseases such as pertussis (whooping cough) and tuberculosis; viruses cause diseases such as measles, influenza and Ross River virus infection; fungi are responsible for conditions such as tinea; protozoan parasites cause diseases including malaria; and bacterial toxins are responsible for conditions such as some forms of food poisoning. Infestations of larger parasites such as head lice are also regarded as communicable diseases.

Communicable diseases were responsible for considerable morbidity and mortality in Australia in the early part of this century. However, the incidence and impact of communicable diseases have been much reduced, with improvements in hygiene (building on advances begun in the nineteenth century), the introduction of antibiotics and mass immunisations making major contributions. In 1921, for example, communicable diseases (those now categorised in the Ninth Revision of the International Classification of Diseases (ICD-9), as infectious and parasitic diseases, together with meningitis, influenza and pneumonia) accounted for about 18% of all deaths but, by 1946 they accounted for only about 11% of all deaths, and by 1971, for about 3.4% of deaths. In 1996, by which time AIDS had been added to the list of communicable diseases, only about 2.8% of deaths were attributed to these diseases (Table 5.1).

Despite the major reductions in mortality and the overall success of vaccination, communicable diseases are still responsible for considerable morbidity. Over the last few years, there has been a re-emergence of some diseases previously thought to have been conquered and the emergence of new diseases. These have possibly been associated with lower vaccination coverage, the development of resistance to antimicrobials, and changes in the environment and the way in which the population interacts with it. In addition, better understanding of disease epidemiology and better diagnostic methods have led to recognition of 'new' communicable diseases.

Table 5.1: Deaths due to infectious and parasitic diseases, meningitis, influenza and pneumonia, and proportion (per cent) of total deaths, selected years

Cause	ICD-9 codes	1921	1946	1971	1996
Infectious and parasitic diseases	001–139	6,487	3,969	914	1,638
Meningitis	320–322	495	127	77	45
Pneumonia and influenza	480–487	2,720	4,011	2,821	1,836
Total		**9,702**	**8,107**	**3,812**	[(a)]**3,578**
Per cent of total deaths		*17.9*	*10.9*	*3.4*	*2.8*

(a) The total for 1996 includes 59 deaths where AIDS was mentioned on the death certificate but for which the underlying cause of death was other than infectious and parasitic diseases, meningitis, pneumonia or influenza.

Source: ABS unpublished mortality data.

Since 1990, Australia has experienced epidemics of the vaccine-preventable diseases measles, rubella and pertussis, the emergence of hepatitis C as an important bloodborne infection (Curran et al. 1997), its first outbreak of Japanese encephalitis (Hanna et al. 1995) and the first reported outbreak of disease caused by enterohaemorrhagic *E. coli* O111 (haemolytic uraemic syndrome associated with mettwurst) (Cameron et al. 1995). New agents discovered have been the bat paramyxovirus which caused an outbreak of respiratory disease in humans and horses in Queensland (Selvey & Sheridan 1994), and the lyssavirus which has caused disease with neurological symptoms in bats and humans (Allworth et al. 1996).

Communicable disease morbidity and mortality also continue from the winter epidemics of influenza and other respiratory infections, the summer epidemics of Ross River virus disease, gastrointestinal infections such as campylobacteriosis and salmonellosis (both probably mainly transmitted by food), HIV and other sexually transmissible infections and a wide range of other conditions.

Disease notification

A disease may be made notifiable to State and Territory health authorities if there is potential for its control. Factors considered include the overall impact of the disease on morbidity and mortality and the availability of control measures. Notification allows authorities to detect outbreaks early and take rapid public health action, if necessary, and to plan and monitor these efforts. It also provides information on patterns of occurrence of disease.

Information on 41 notifiable communicable diseases is available from the National Notifiable Diseases Surveillance System (NNDSS) maintained by the Commonwealth Department of Health and Family Services (see Table S20, page 267, for the number of notifications for each disease) using information supplied by States and Territories. In addition, the National Centre in HIV Epidemiology and Clinical Research (NCHECR) maintains the National AIDS Registry and the National HIV Database.

HIV/AIDS

There has been a continuing decline in the annual number of HIV diagnoses in Australia, from a peak of over 2,500 in 1985 to around 800 each year since 1993 (Figure 5.1, page 118). It is estimated that at the end of 1996 the cumulative number of HIV infections was 16,700 and there were 11,080 people living with HIV infection. Sexual contact between men has been the most common mode of transmission of HIV, with 85% of infections estimated to have been via this route.

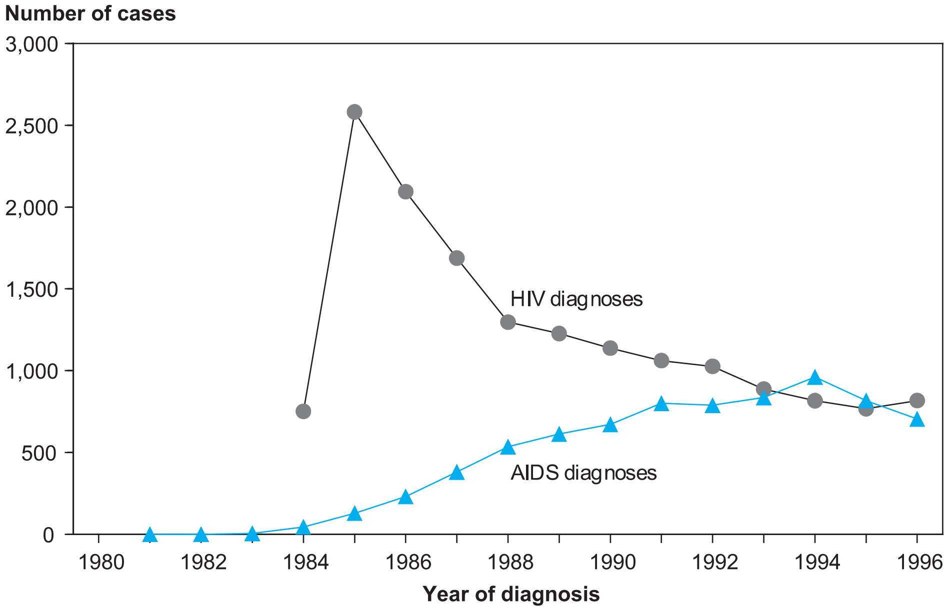
The annual number of AIDS diagnoses in Australia, after adjustment for reporting delay, appears to have reached a peak in 1994 with an estimated 962 diagnoses, and is estimated to have declined to 706 diagnoses in 1996 (Figure 5.1). AIDS incidence is projected to continue to decrease to 630 cases in 1998 and to 600 cases in 2000 (NCHECR 1997).

Bloodborne diseases

Blood is an important vehicle for the spread of hepatitis B, hepatitis C, hepatitis D and HIV infection, although each of these diseases also has other modes of transmission, including sexual contact. Many other diseases can be transmitted via blood, blood products and body fluids.

Although notification data for new hepatitis B infections have been received from all States and Territories only since 1994, the available data suggest that the incidence has been falling for several years. This may reflect growing awareness of how the disease is spread, and the prevention of infection through education and immunisation. The implementation of recent national recommendations for routine hepatitis B immunisation for infants and pre-adolescents should further reduce the rate of new infections. There were 225 cases of hepatitis B reported in 1996, a notification rate of 1.2 per 100,000 population.

There were 72 reports of new cases of hepatitis C in 1996. However, NNDSS reporting greatly underestimates new infections with this virus. A 1995 study conducted in most States and Territories estimated there were about 1,400 new symptomatic infections annually, an incidence of 7.8 cases per 100,000 population (Andrews & Curran 1996).



Note: HIV diagnoses adjusted for multiple reporting. AIDS diagnoses adjusted for reporting delay.

Source: NCHECR 1997.

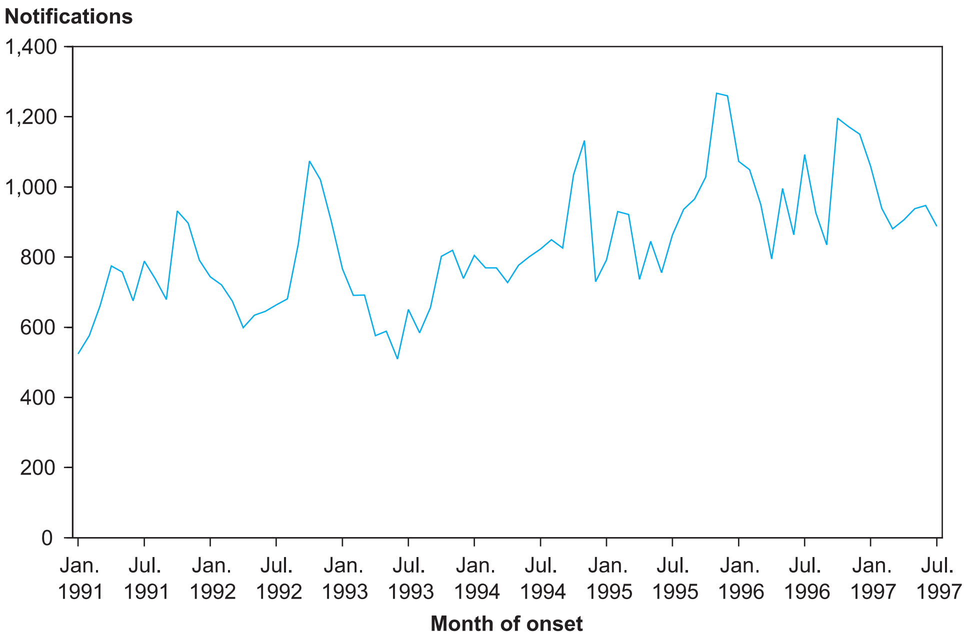
Figure 5.1: Diagnoses of HIV infection and AIDS, 1980 to 1996

Gastrointestinal diseases

Gastrointestinal infections are an important cause of illness in Australia but data from the NNDSS underestimate their incidence. Whereas hepatitis A and the bacterial diseases salmonellosis, campylobacteriosis, yersiniosis, listeriosis and shigellosis are all notifiable to the NNDSS, a number of other gastrointestinal diseases, such as enterohaemorrhagic *E. coli* infection and cryptosporidiosis, are not. Also, most cases do not come to the attention of doctors, and tests to prove the cause are used in only a few cases. Many laboratories do not routinely test for all major gastrointestinal infections (for example, some laboratories do not routinely test for *Yersinia* species bacteria, which can cause yersiniosis) or the tests may not be sensitive enough.

In recent years, there has been a continued rise in notifications of campylobacteriosis (Figure 5.2), a disease usually causing diarrhoea, abdominal pain, malaise, fever, nausea and vomiting for a few days. There were 12,158 cases reported in 1996, an 11.8% increase over 1995. This disease is thought to be transmitted mainly by food, but transmission from drinking untreated or poorly treated water may also be significant.

For salmonellosis (caused by *Salmonella* species bacteria), listeriosis and yersiniosis, transmission is thought to be mainly via food. However, hepatitis A and shigellosis are thought to be spread mostly from person to person. With the exception of hepatitis A, notifications have either remained steady (salmonellosis and listeriosis) or have decreased (yersiniosis and shigellosis) in recent years. Outbreaks of hepatitis A frequently occur in homosexual men due to person-to-person transmission (Curran et al. 1997). In 1996 there were 2,150 notifications of hepatitis A, made at a rate of 11.7 per



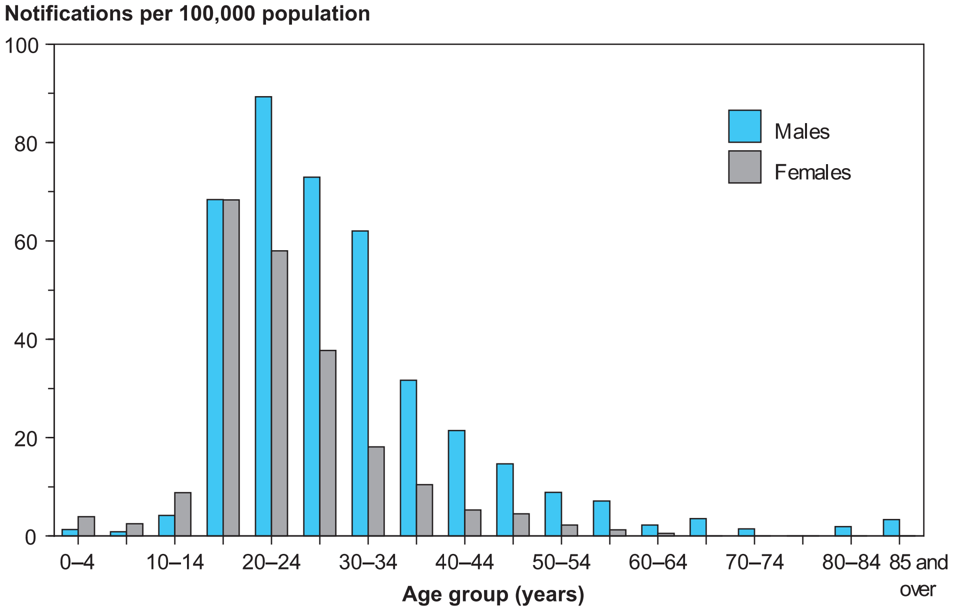
Source: National Notifiable Diseases Surveillance System.

Figure 5.2: Notifications of campylobacteriosis, by month of onset, 1991 to 1997

100,000 population, the highest rate recorded since 1992. The oyster-associated outbreak of hepatitis A in the Wallis Lake region of New South Wales in 1997 is a reminder that large disease outbreaks can occur if food safety measures are inadequate.

Sexually transmissible diseases

Notifications of syphilis have continued to decline in recent years. In 1996 there were 1,523 notifications made at a rate of 8.3 per 100,000 population, the lowest rate observed in Australia for over 20 years. However, there were considerably more notifications for chlamydial (8,420) and gonococcal (4,173) infection in 1996 than in recent years. For gonococcal infection (mainly gonorrhoea), notification rates were highest for those in the 15–34 years age range, and were higher in males than in females in all adult age groups (Figure 5.3).



Source: Curran et al. 1997.

Figure 5.3: Notification rate of gonococcal infection, by age group and sex, 1996

Vaccine-preventable diseases

In Australia, vaccination against measles, diphtheria, tetanus, pertussis (whooping cough), rubella, poliomyelitis, mumps and invasive *Haemophilus influenzae* type b (Hib) disease is recommended for children. Hib and pertussis are further discussed in Section 5.2.

Notifications of measles have been at low levels since an epidemic period in 1993 and 1994. There were 498 cases notified in 1996 (2.7 per 100,000 population), with the highest notification rate for children aged 0–4 years (19.3 per 100,000 population). Although the 1996 notification rate was low, it is likely that this represented an interepidemic period. There was a substantial epidemic in New Zealand beginning in late February 1997, and an increase in notifications in Australia towards the end of the year.

Rubella was reported for 2,845 people in 1996, including 425 females of child-bearing age (15–44 years), and 4 cases of congenital rubella syndrome. Notification rates for this disease have been fairly similar each year in recent years.

There have been no cases of community-acquired polio reported since 1978, and the disease is now considered to be eliminated in Australia. It is anticipated that Australia will soon be formally declared polio-free.

Tetanus and diphtheria have been rare in Australia in recent years. Tetanus was reported for only two people in 1996, both aged over 54 years. Diphtheria has not been reported since 1993.

Vectorborne diseases

The nationally notifiable vectorborne diseases include several mosquito-borne viral diseases and malaria. The viral diseases include infections caused by Barmah Forest virus and Ross River virus, which cause epidemic polyarthritis. Also included are Australian encephalitis (caused by Murray Valley encephalitis and Kunjin viruses), Japanese encephalitis, and dengue fever; the last can occur in those who have recently returned from overseas travel (imported cases) or have been infected by transmission from an imported case.

Australia has been certified malaria-free since 1981. Usually, all cases are imported, occurring in travellers returning from endemic areas. However, in 1996, the first Australian case of ‘airport malaria’ (malaria acquired, usually in the vicinity of an airport, from an infected mosquito imported in an aircraft) was reported.

Ross River virus infection was the most commonly notified vectorborne disease in 1996. This reflects the wide distribution of the virus and the availability of diagnostic tests. There were 7,823 notifications of Ross River virus infection in 1996. This was a notification rate of 42.7 per 100,000, the highest ever recorded (Figure 5.4, page 122). There were 837 notifications of Barmah Forest virus infection in 1996.

The last large outbreak of Murray Valley encephalitis was in 1974. Surveillance is vital to detect outbreaks early and to implement control measures in a timely fashion. As well as data collected by the NNDSS, this surveillance includes mosquito monitoring and monitoring of encephalitis virus infections in flocks of chickens maintained in areas of Australia where transmission is likely.

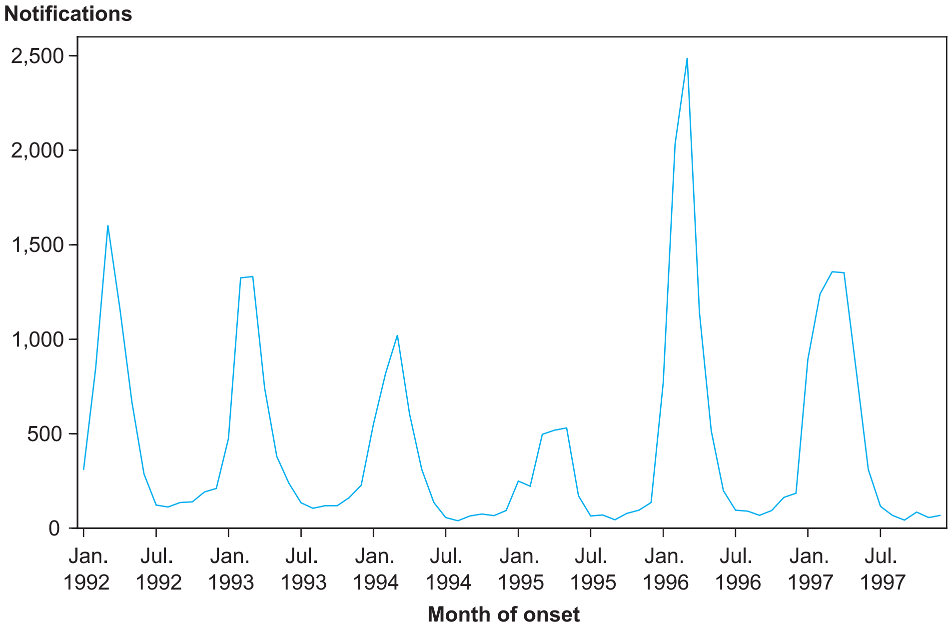
Australia’s first recorded cases of Japanese encephalitis were reported in 1995, when there was an outbreak in the Torres Strait (Hanna et al. 1995). No cases were recorded in 1996 or 1997, but 2 cases were reported in March 1998 from far north Queensland. Dengue activity has been low in Australia since a dengue type 2 outbreak in Queensland in 1992–93, although there was a smaller outbreak in northern Queensland during the 1997–98 wet season.

Tuberculosis

The annual tuberculosis notification rate in Australia has remained stable for the last few years and is similar to the lowest rates reported for other countries. However, the presence of population subgroups with comparatively high rates of infection, migration from high-incidence countries and the potential for high rates of HIV co-infections and multi-drug resistance, as experienced in other countries, means that the need for tuberculosis surveillance and control remains.

There were between 863 and 996 new cases of tuberculosis notified each year from 1986 to 1995, corresponding to rates of between 5.34 and 5.74 cases per 100,000 population per year. Mortality has also been low; 71 deaths were recorded with tuberculosis as the underlying cause of death in 1995 (0.39 deaths per 100,000 population) and similar numbers were reported for the preceding few years.

In 1995, 988 new cases were notified, a rate of 5.47 per 100,000 population. Rates were highest in older age groups and slightly higher for males (5.66 per 100,000) than for females (5.19 per 100,000). For people born in Australia, there was a notification rate of 1.47 per 100,000, similar to the rates for the previous 5 years. The notification rate for overseas-born people was 17.34 per 100,000, with the highest rates recorded for people from Vietnam (113.9 per 100,000) and Indonesia (107.1 per 100,000). There were also high notification rates for Indigenous people, among whom 22% of cases in Australian-born people were reported. This was a rate of 15.5 per 100,000, three times the rate for Australia as a whole and 12 times the rate for other Australian-born persons (1.33 per 100,000) (Oliver & Harvey 1997).



Source: National Notifiable Diseases Surveillance System.

Figure 5.4: Notifications of Ross River virus infection, by month of onset, 1992 to 1997

The susceptibility of the tuberculosis bacteria to anti-tuberculosis drugs remains high in Australia. In 1994 and 1995 combined, bacterial isolates from only 7 tuberculosis patients were found to be multi-drug resistant (resistant to the anti-tuberculosis drugs isoniazid and rifampicin), a number similar to those reported for the previous few years (Dawson 1997).

5.2 Childhood immunisation

Since the first experiments of Edward Jenner just over 200 years ago, immunisation (vaccination) has been very successful in reducing suffering and death caused by infectious diseases (Henderson 1997). Smallpox was eliminated from the world in 1977, and another goal of the World Health Organization is to eradicate poliomyelitis by the year 2000 (McDonnell & Askari 1997).

The *Australian Immunisation Handbook* (NHMRC 1997a) gives details of recommended immunisations for children, adults and people travelling overseas. The NHMRC's recommended standard immunisations protect children from diphtheria, tetanus, pertussis (whooping cough), poliomyelitis, invasive *Haemophilus influenzae* type b (Hib) disease, measles, mumps and rubella.

Immunisation coverage

An aid to management of the childhood immunisation program, the Australian Childhood Immunisation Register (ACIR) came into operation in January 1996. ACIR uses enrolments information from the Medicare database to register children under the age of 7 years. Details of immunisations given to these children are recorded on the ACIR using information from those giving the immunisations, usually general practitioners in private practice or nurses in local government clinics.

The main purpose of the ACIR is to provide a recall and reminder system so that parents are told when their children's immunisations are due or overdue. The ACIR also produces reports for managers of immunisation programs. These reports provide information such as the number of children in an area who are overdue for immunisation and the number of vaccines of each type used in a given area.

The ACIR can also generate 'coverage' reports, which give the proportion of children who are fully immunised in various areas (local government areas, States, Territories and nationally). These coverage reports examine cohorts of children as they pass key ages for immunisation. The first reports available have been for children born in the first quarter of 1996 (date of birth between 1 January 1996 and 31 March 1996) and for children born in the second quarter of 1996. Table 5.2 (page 124) shows the proportions of children who were fully immunised at their first birthday (having received all primary vaccinations against diphtheria, tetanus, pertussis, poliomyelitis and Hib, due at 2, 4 and 6 months of age). The figures are probably an underestimate, as they are calculated from data relating to the very early period of the ACIR's operation when data flow problems were being experienced. Estimates should improve in accuracy for later cohorts.

Over time, the ACIR will provide reports for these children at later milestones and for cohorts of children born more recently.

Table 5.2: Proportion (per cent) of children fully immunised at 1 year of age, by State or Territory

State	First cohort (born 1 January 1996 to 31 March 1996)	Second cohort (born 1 April 1996 to 30 June 1996)
NSW	71.9	73.2
Vic	80.8	80.1
Qld	78.2	80.6
WA	63.9	66.9
SA	77.3	77.0
Tas	75.1	76.0
ACT	75.8	77.4
NT	61.4	61.7
Australia	**74.9**	**75.9**

Source: Australian Childhood Immunisation Register.

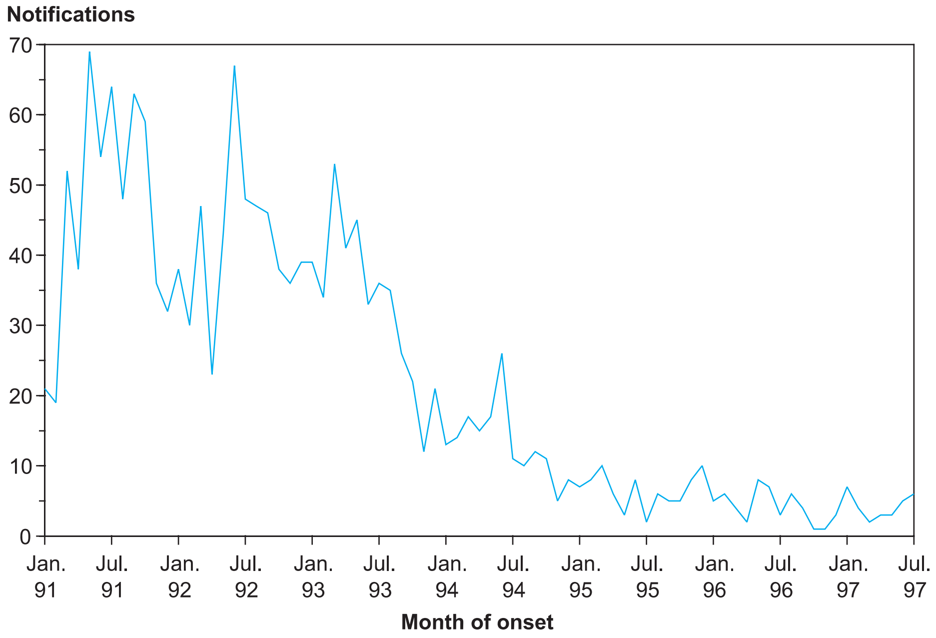
The effects of immunisation on vaccine-preventable diseases

To completely stop transmission of highly infectious diseases such as measles and pertussis, the percentage of the population who are immune needs to be about 92–95% (Anderson & May 1990). Because vaccines are less than 100% effective, to achieve this level of population immunity it is necessary to vaccinate higher proportions of children. However, very worthwhile results can be achieved even with lower coverage levels.

Vaccination against Hib is a good example of the effectiveness of immunisation in reducing morbidity and mortality (Herceg 1997). Before an effective Hib vaccine became available, invasive Hib disease occurred at a rate of between 39 and 63 cases per year per 100,000 Australian children under the age of 5 years. There were about 500 cases and between 10 and 15 deaths each year (NHMRC 1997a). Hib vaccines became free to all children under the age of 5 years from April 1993. Following this, the incidence of Hib disease dropped. There was a 94% reduction in cases in children under the age of 5 years between 1992 and 1996; the total number of cases declined from 501 in 1992 to 51 in 1996 (Figure 5.5). Deaths due to Hib (meningitis, pneumonia and unspecified) in children under the age of 5 years declined from 30 in the 3 years 1990 to 1992 to 6 in the 3 years 1994 to 1996 (ABS unpublished mortality data).

In contrast, there has been mixed success with pertussis. Whole-cell pertussis vaccine was first produced in Australia in 1920 and has been used in combination with diphtheria and tetanus vaccines since 1953 (Boughton 1996). There was noticeable success with the Triple Antigen (DTP) vaccine. However, pertussis has returned and has been epidemic in Australia since 1993 (Andrews et al. 1997). Notification rates increased from 2.0 per 100,000 population in 1991 to 30.5 per 100,000 population in 1994. Nine infants were reported to have died from pertussis in Australia in the 15 months to December 1997. This resurgence has been despite coverage of nearly 90% for the three-dose primary course. Notification rates were highest in infants aged less than 1 year and school-aged children (5–14 years of age). Although there was a second resurgence of pertussis in 1996, notification rates decreased for children aged 1–7 years; the DTP booster now given as a fifth dose at 4–5 years may be having an effect. It is also possible that the current vaccine may be providing only short-term immunity, or that there is low or inadequate vaccine coverage.

The introduction of the acellular pertussis vaccines, which appear to be as effective as whole-cell vaccines but have a significantly lower incidence of adverse reactions, may encourage more parents to have their children immunised. An increase in the proportion of children immunised as recommended in the NHMRC's standard immunisation schedule would do much towards halting the present epidemic.



Source: National Notifiable Diseases Surveillance System.

Figure 5.5: Notifications of invasive Hib disease, by month of onset, 1991 to 1997

5.3 Asthma

Asthma is a common and growing problem in Australia and worldwide which affects both children and adults. The disease occurs more in affluent societies than in poor ones, and Australia's levels are high along with those of a range of other countries (Woolcock 1986). There are signs that asthma is becoming increasingly common in Australia and more severe as well.

Asthma is an inflammatory disease of the air passages that makes them prone to narrow too much and too easily in response to many 'triggers' (Woolcock 1996). The triggers include exercise, pollens, the house dust mite, cold weather, throat and chest infections, tobacco smoke and other factors. The airway narrowing causes attacks of shortness of breath because it is difficult to move air in and out of the lungs. Other symptoms include wheezing, cough and chest tightness.

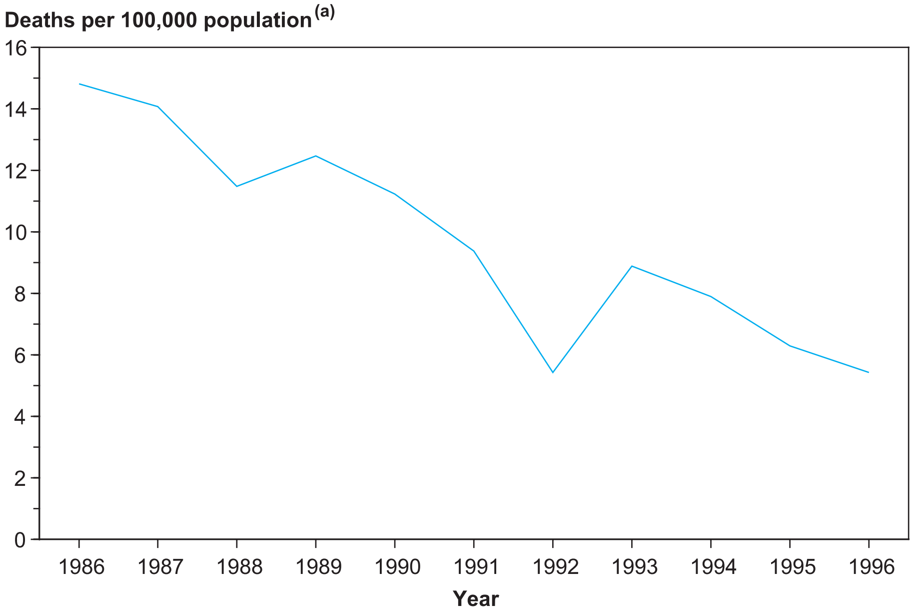
The disease is more common among those with 'allergic' features at an early age (e.g. hay fever, eczema); those with an asthmatic parent; those who have had a severe chest illness in infancy; and those infants whose mothers smoked during pregnancy.

Asthma is a major cause of disability and a leading cause of hospitalisation among Australians, especially children. Attacks are occasionally fatal. The total health system costs of asthma in 1993–94 have been estimated at $477 million (AIHW unpublished data).

Mortality and morbidity

In 1996, 730 Australians were reported to have died from asthma. Over the 10 years from 1987 to 1996, male and female death rates from asthma were similar. The peak year during this period was 1989 (977 deaths), when the rate per 100,000 population was 64% higher than for 1996.

In line with these figures for the total population, asthma death rates for those aged 5–34 years fell by half over the period 1989–96, as shown in Figure 5.6. This is important supporting evidence of a large fall overall, because the accuracy of death certificates for asthma outside this age range is often questioned.



(a) Age-standardised to the Australian population at 30 June 1991.

Source: AIHW Mortality Database.

Figure 5.6: Death rate for asthma, persons aged 5–34 years, 1986 to 1996

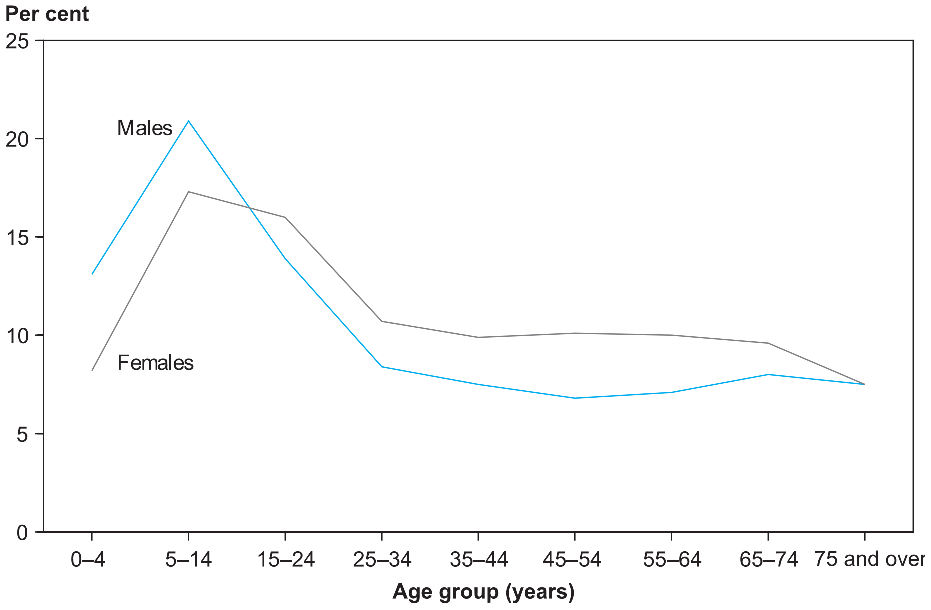
Australian trends in asthma deaths have been difficult to understand, with apparent epidemics in the 1950s, 1960s and 1980s. The 1950s epidemic has been attributed to changes in the classification system for coding deaths.

Although asthma is not a major cause of death, its great importance as a public health problem is shown by statistics from the National Hospital Morbidity Database. In 1995–96, asthma was the most common reason for hospital admission among those of school age and younger. Across all ages it ranked seventh with 61,480 admissions, ahead of many other serious causes of illness.

Prevalence

From the 1995 National Health Survey, an estimated 11.3% of Australians reported asthma as a recent or long-term condition. The highest levels were 19.2% for those aged 5–14 years and 14.9% for those aged 15–24 years, with rates for other ages varying between about 8% and 11% (Figure 5.7).

Asthma also seems to be becoming progressively more common in recent decades, with a great increase in the reported rate of wheeze among children surveyed over long periods in two Australian States (Robertson et al. 1991; Peat et al. 1994). There may also have been a rise in asthma among young Australian adults (Peat et al. 1992). A survey that compared asthma levels in children from Australia, New Zealand, England and Germany found that symptoms were more severe in Australasia, although the prevalence was not markedly higher than for the European centres (Pearce et al. 1993).



Source: 1995 National Health Survey.

Figure 5.7: Prevalence of asthma, by age and sex, 1995 (per cent)

There have been questions about whether the apparent rise in prevalence is real. This is because prevalence is based mainly on reported diagnosis and symptoms rather than on physical tests, so the figures may simply reflect greater community awareness and changes in diagnostic preference. However, a study of New South Wales children in 1982 and 1992 gave evidence for a real increase. In tests of airway reactivity, it showed a greater response among the 1992 children (Peat et al. 1994).

The National Asthma Campaign

Australia's National Asthma Campaign began in 1990 through a coalition of health organisations and professional groups. Using a range of public and professional education methods, including the mass media, the campaign aimed to improve the clinical management of asthma and to increase community awareness of the problem. The Thoracic Society of Australia and New Zealand developed a six-step Asthma Management Plan and its use was strongly promoted to general practitioners around Australia.

A review of the campaign's effect between 1990 and 1993 focused on primary school children and their parents in eastern Australia, using a large survey in each of those 2 years (Comino et al. 1996). Asthma appeared no less common in 1993 than in 1990, and reporting of troublesome cough and wheezing had risen significantly over the period. However, the study found more use of preventive medication in 1993, less use of regular inhaled bronchodilator medication, greater monitoring of lung function by doctors and patients, and more use of written action plans by both children and adults. This suggests that the campaign was succeeding in its aims and may have contributed to the fall in asthma deaths, even though the underlying high level of asthma has yet to be reduced and its causes ascertained.

5.4 Oral health

Child dental health

Data on the dental health of Australian school children from 1977 to 1993 were reported in *Australia's Health 1996* (see also Table S26 on page 272 of this volume). There was a substantial reduction in the average level of dental decay over this period, as defined by the number of decayed, missing and filled teeth in the permanent dentition (DMFT) index.

By the end of 1995, the average DMFT score for 12-year-old children was 1.01, which is just above the target of 1.0 for the year 2000 set by the Health for All Committee (Health Targets and Implementation Committee 1998). This level of disease experience represents a great improvement from the average DMFT of 4.79 for 12-year-old children observed in 1977. A score of 1.01 is also well below the international target for the year 2000 of 3.0 set by the World Health Organization (FDI 1982).

The Child Dental Health Survey, which is managed by the AIHW, enables these changes to be monitored over time within successively sampled groups of children as they age and move through the school dental services, in what are referred to as synthetic age cohorts.

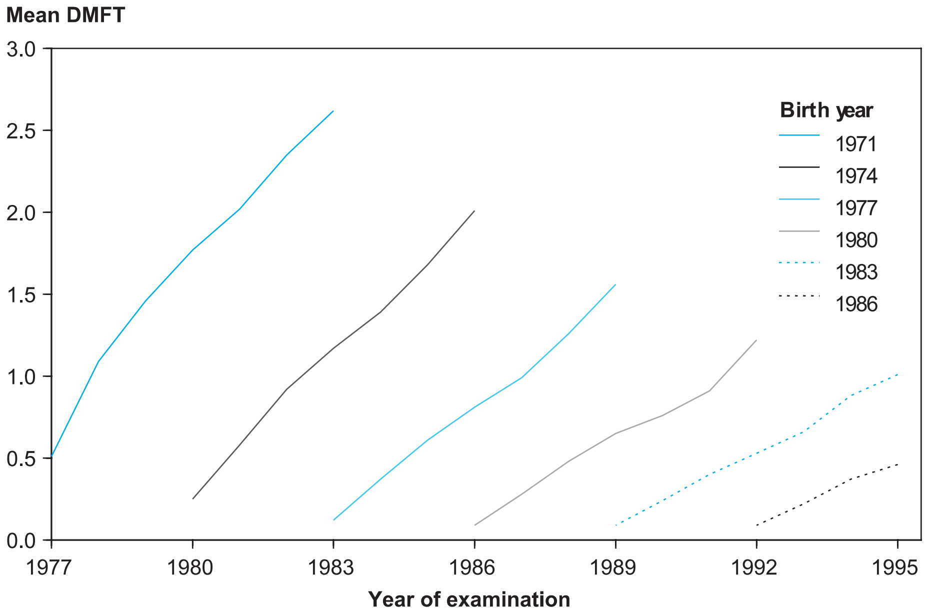
The presentation of caries experience for successive birth cohorts permits changes over time due to the accumulation of disease experience with age to be separated from variations in disease which may have occurred due to changes over time in prevention and treatment.

Figure 5.8 shows data for six birth cohorts born between 1971 and 1986. Each line represents successive samples of children from 6 to 12 years as they age. The series is incomplete for the 1986 birth cohort, as the series finished in 1995 before this cohort had reached 12 years of age.

The effect of increasing age on caries experience ('ageing' effect) is observed by comparing the same birth cohort across sequential points in time. For example, the left-most line is for the 1971 birth cohort, where the first point represents the DMFT score during an examination conducted in 1977 when the children were 6 years old. The second point in the line represents the DMFT score for the cohort in 1978 when the children were aged 7 years, and so on, to the last point when the children were 12 years old in 1983.

Changes in caries experience in the population with time ('period effect') can be seen by comparing different birth cohorts at sequential times by, for example, comparing DMFT scores for children aged 12 years in 1983 with the scores for children aged 12 years in 1989 and the scores for children aged 12 years in 1995.

The period effect is apparent in the reduction in the slope of the lines plotted for age cohorts when viewed from left to right. The gradual flattening of the slopes indicates that the rate of new disease experience is decreasing for successive cohorts. Moreover, continuing the line for the last and incomplete cohort suggests that the DMFT for 12-year-olds in Australia may be as low as 0.84 by the end of 1998.



Source: AIHW Dental Statistics and Research Unit unpublished data.

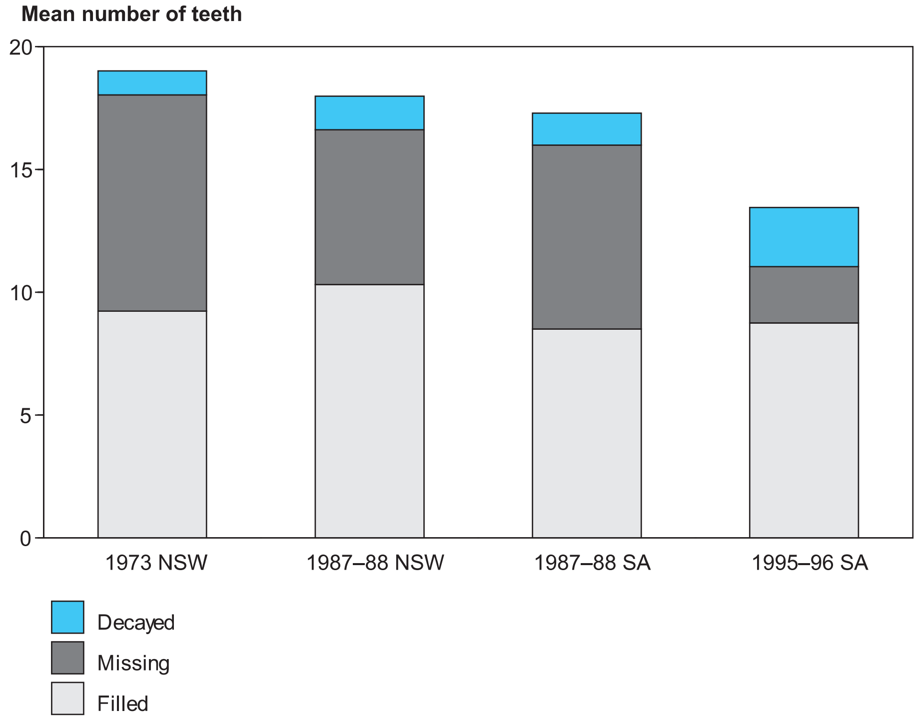
Figure 5.8: Caries experience (DMFT) in 6- to 12-year-old children for birth cohorts

Oral health of Australian adults

These improvements in children are obviously the starting point for future improvements in oral health among adults. The improvements in oral health among adults will lag behind in time, awaiting cohorts of children to reach their adult years. However, there are indications that the gains may not be as substantial as those achieved among children. Based on findings from specific State studies, the DMFT score for people aged 35–44 years showed little change for nearly two decades, but has improved more recently (Figure 5.9).

There was no decrease in the DMFT score between 1973 and 1987–88, with DMFT scores of approximately 18.0, but there has been a substantial decline to the 1995–96 score of 13.5. Whereas the DMFT score was slow to change, the number of missing teeth has declined during the whole period from 8.3 to 3.6. The number of teeth extracted has decreased as both the community and the dental profession have sought to alter the management of caries experienced.

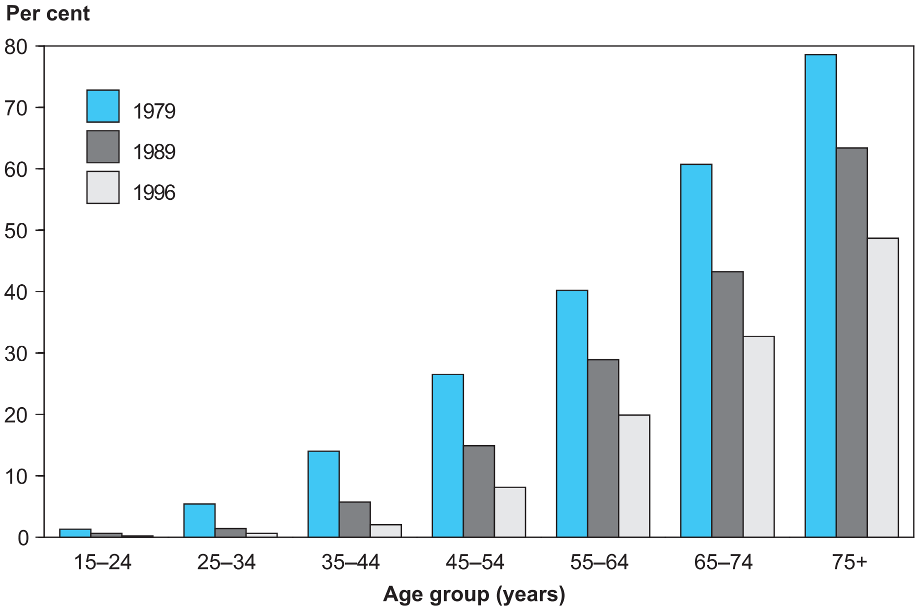
This change in the management of caries experienced is also seen in the prevalence of edentulism (total tooth loss). In 1979, nearly a quarter of Australian adults were without



Source: Arnljot et al. 1985; Barnard 1993; Brennan et al. 1997.

Figure 5.9: Caries experience in people aged 35–44 years

any natural teeth, but in 1996 this applied to only a small minority of adults (Figure 5.10). This is especially important among middle-aged and older adults. Middle-aged and older adults who were dentate may have been those who enjoyed better oral health in the past, but many more less advantaged adults are now retaining their natural teeth, albeit with widespread past disease experience and extensive accumulated damage to their retained dentition. The increased retention of diseased and treated teeth among the increasing number of middle-aged and older age groups in the community is a dramatic challenge to dentistry (NHMRC 1994).



Source: AIHW Dental Statistics and Research Unit unpublished data.

Figure 5.10: Prevalence of edentulism by age group

Water fluoridation in the prevention and control of dental caries in Australia

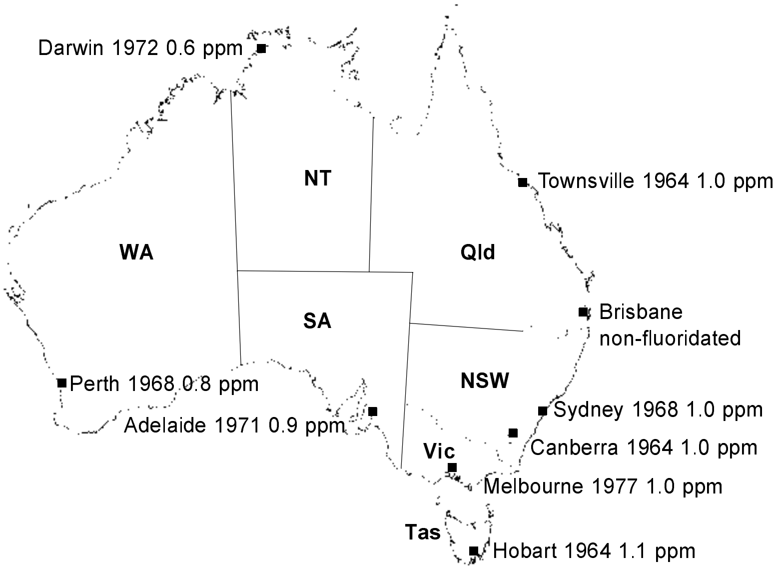
Australian children and adolescents have enjoyed considerable oral health gains from the prevention and control of caries (Spencer et al. 1994) associated with a substantial reliance on exposure to fluoride, through both water fluoridation and toothpaste with fluoride (Spencer 1986a, b). These caries prevention and control approaches reflect Australia's organisation and delivery of health and dental care and wider public health policies and activities.

In the 1940s, Australia recognised that its level and distribution of caries experience was unacceptable. A catalyst for this assessment was the high rate of dentally unfit recruits to the services in the Second World War. Australia also recognised that, among the industrialised countries, it had one of the highest levels of caries experience among 12-year-old children. A study of caries experience among children in New South Wales in 1954 showed that 12-year-olds had 9.3 teeth with caries experience, of which 4.8 were decayed teeth, 1.3 were teeth missing and 3.2 were filled teeth. Less than 1% of 12-year-old children had no clinical caries experience (Barnard 1956).

Capital cities in Australia began to fluoridate their water supplies in 1964 and water fluoridation became the most prominent public dental health policy for Australia. Between 1964 and 1971, six of the capital cities introduced water fluoridation. Melbourne was not fluoridated until 1977. In most Australian States and Territories, some three-quarters of the resident population now has access to fluoridated water supplies. Brisbane is the only non-fluoridated capital city (Figure 5.11).

The different climatic conditions across Australia means there is considerable variation in the concentration of fluoride in public water supplies, from 0.6 ppm in Darwin to 1.1 ppm in Hobart (Spencer et al. 1996).

National monitoring surveys of child dental health have documented substantial and continuing reductions in caries experience since the 1970s (Spencer et al. 1994). Caries experience of 12-year-old children declined from approximately 8 teeth in 1965 to 5 teeth by 1977. The decrease has been continuing and is substantial, with caries experience being 1.01 in 1995 (Davies & Spencer 1997).

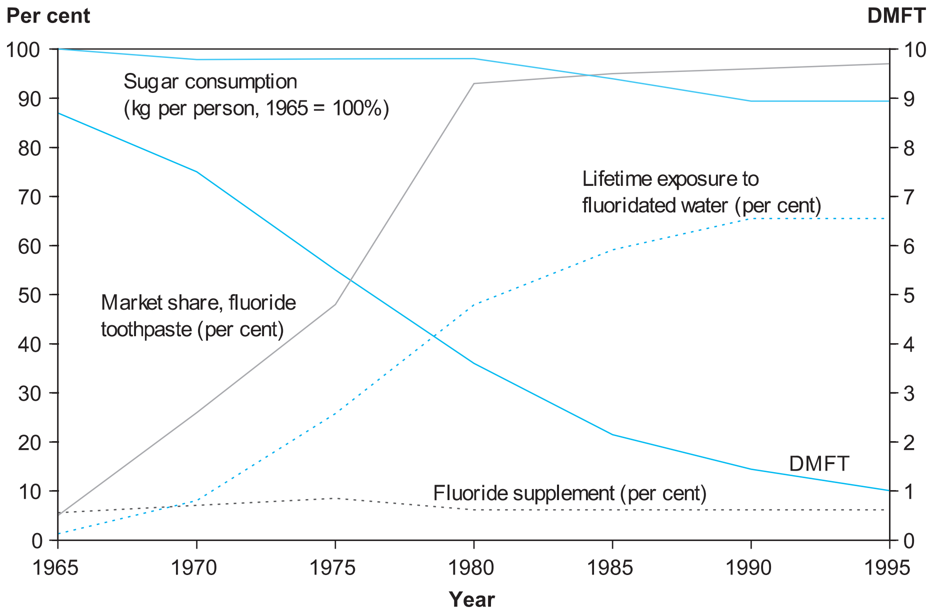


Source: AIHW Dental Statistics and Research Unit.

Figure 5.11: Introduction and concentration of water fluoridation

Figure 5.12 presents the reduction in caries experience of 12-year-old children in Australia between 1965 and 1995, and also includes information on exposure to fluorides and total sugar consumption. Exposure to three fluoride vehicles is expressed in per cent, where 0% reflects non-exposure and 100% maximum exposure. Maximum exposure to water fluoridation would be every Australian 12-year-old living all their life in a fluoridated area (Spencer 1984). Maximum exposure to toothpastes with fluoride would be all toothpastes on the market containing fluoride (Spencer 1984). Maximum exposure to fluoride supplements would be every Australian 12-year-old taking fluoride supplements at the then recommended dose and frequency (Spencer 1986a, b). Consumption of sugar is also represented as a per cent, using the kilograms per person per year consumed in 1965 as a benchmark of 100% and relating subsequent data to that 1965 consumption level (ABS 1994).

The decline in caries experience is presented against the data on exposure to fluorides and sugars. Neither fluoride supplements, which are used regularly by only a small percentage of Australian children, nor total sugar consumption show strong concomitant variation with caries experience. It would seem unlikely that either has played a substantial role in the reduction in caries experience. On the other hand, both toothpaste with fluoride and lifetime exposure to fluoridated water do show strong concomitant variation (Spencer 1986a, b; Spencer et al. 1994). Both are plausible contributors to the reduction in caries experience.



Source: AIHW Dental Statistics and Research Unit unpublished data.

Figure 5.12: Caries experience (DMFT) in 12-year-old children, fluoridated toothpaste, sugar consumption and lifetime exposure to fluoridated water, 1965 to 1995

There have been a number of significant reviews of water fluoridation in Australia. The most recent review, that by the National Health and Medical Research Council in 1991 concluded: '... the aggregate evidence establishes that fluoridation of water to around 1 ppm has, in the past, conferred a substantial protective effect against dental caries. In recent decades, the magnitude of the beneficial effect of water fluoridation appears to have decreased as the pattern of dental disease has changed, and as fluoride has become widely available from a number of discretionary sources. Nevertheless, water fluoridation continues to contribute to the prevention of dental caries, and therefore to provide an important community-wide and readily achievable foundation to dental public health' (NHMRC 1994).

Despite this conclusion, questions are still raised in Australia about the effectiveness and consequences of water fluoridation in an environment where caries experience is at a historically low level and when other fluoride vehicles, particularly toothpaste with fluoride, are widely available (Diesendorf et al. 1997; Spencer 1998). Three Australian studies in the 1990s reaffirmed the effectiveness of water fluoridation among contemporary Australian children. All three studies move beyond aggregated data to individual data with some control of both residential and fluoride history when exploring the relationship between exposure to fluoridation and caries experience.

Riordan (1991) examined the correlation of the magnitude and timing of fluoride exposure with caries experience among children in Perth (fluoridated) and the Bunbury region (non-fluoridated) in Western Australia. In the simple regional comparison, 12-year-old children resident in Perth (fluoridated) had a caries experience (DMFT) of 0.89, whereas their counterparts in Bunbury (non-fluoridated) had a DMFT of 1.57. Fluoride exposures assessed included water fluoridation, fluoride tablets and toothpaste with fluoride. Multivariate analyses indicated that water fluoridation had an important anti-caries effect and increased total fluoride exposure was associated with decreased DMFT scores. Children aged between 4 and 12 years with an extensive period of residence in a fluoridated region were approximately one-third less likely to have any caries experience (DMFT > 0) compared with children of the same age who had spent no time in a fluoridated area. Fluoride exposure across the first 4 years of life had a smaller effect, but was still associated with a lower likelihood of having any caries experience.

The Dental Health Unit of the NSW Health Department examined caries experience in primary dentition among children in the Hawkesbury area (fluoridated) and the Upper Blue Mountains area (non-fluoridated) (Patterson & Weidenhofer 1993). This analysis placed an emphasis on continuous residence in each area, use of mains water supply and no fluoride supplement use (except fluoride toothpaste). There was a threefold difference in the caries experience between the two groups studied, as defined by the number of decayed, missing and filled teeth in the deciduous teeth surfaces (dmfs) index. Children who were continuous residents in the Hawkesbury (fluoridated) had a deciduous caries experience (dmfs) of 1.59, whereas their counterparts in the Upper Blue Mountains (non-fluoridated) had a dmfs of 4.78. Non-continuous residence was associated with reduced differences in caries experience. Further data were provided on the use of tank, spring or bore water as the major source of drinking water. These data indicate the importance of classification of individual exposure levels when examining the relationship between water fluoridation and caries experience.

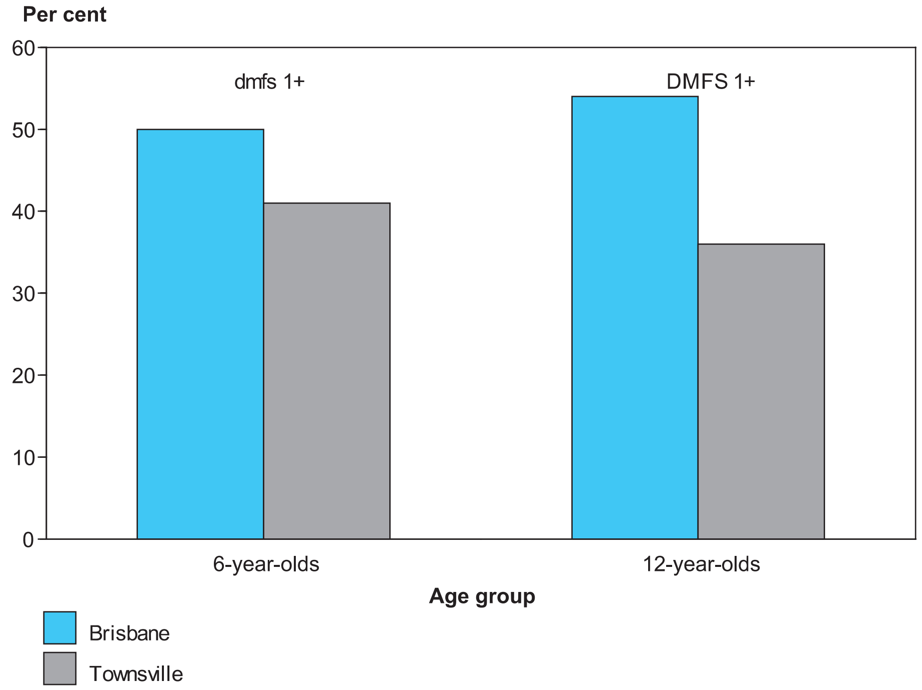
Residential and fluoride history, exposure to other fluoride vehicles (supplements, toothpastes and professional care) as well as possible confounding effects by socioeconomic characteristics of households were features of the third study, the Child Fluoride Study (Slade et al. 1995, 1996a, b). It was replicated in South Australia and Queensland in 1991–92. This provided an opportunity to test the effectiveness of water fluoridation under varying conditions, most importantly high and low percentages of population coverage by water fluoridation. Analyses conducted with the baseline data have indicated that:

- greater lifetime exposure to fluoride in water was associated with lower deciduous caries experience (dmfs) and permanent caries experience (DMFS) in both States;
- caries–fluoridation associations were stronger for dmfs compared with DMFS and within States with a lower population coverage by water fluoridation; and
- social inequalities in caries experience were reduced among children with exposure to water fluoridation.

These results can be illustrated by comparisons of children with a continuous lifelong residence in fluoridated Townsville, which was fluoridated in 1964, with children with lifelong residence in non-fluoridated Brisbane. Fewer Townsville children had experienced clinical caries than had Brisbane children. Among 6-year-olds, the difference was 41% versus 50%. Among 12-year-old children, the difference was wider, 36% versus 54% (Figure 5.13, page 136).

The mean number of tooth surfaces affected by caries was considerably less among Townsville children than among Brisbane children. Among 6-year-olds, the mean number of decayed, missing and filled surfaces (dmfs) in the primary dentition was 2.23 versus 3.48 surfaces. Among 12-year-olds, the mean number of decayed, missing and filled surfaces (DMFS) in the permanent dentition was 0.94 versus 1.80 surfaces. The differences in caries experience in fluoridated Townsville and non-fluoridated Brisbane persist after accounting for variation in toothbrushing frequency, the age at which toothbrushing started, and family income.

This raises the particularly important issue of the effectiveness of water fluoridation in the Australian community where use of toothpaste with fluoride is widespread. Data from the same Child Fluoride Study show an additive interaction between exposure to water fluoridation and brushing frequency with a toothpaste with fluoride (Davies 1993). Even among children brushing frequently, eight or more times per week, there was a 24% advantage for lifetime exposure over those with no exposure. This advantage increases to 36% across levels of exposure to fluoridated water among those who brush once per day or less. However, for each level of exposure to fluoridated water, those who brush frequently with a toothpaste with fluoride enjoy an advantage over those who brush infrequently. This additive benefit of water fluoridation and toothpaste with fluoride is crucial, given the assertion that toothpaste with fluoride can substitute for water fluoridation.



Source: AIHW Dental Statistics and Research Unit unpublished data.

Figure 5.13: Percentage of children with caries experience (dmfs and DMFS), Brisbane and Townsville, 1991–92

5.5 Nutrition

Nutrition and health

Nutrition has long been recognised as an important contributor to health. Because nutrition cuts across so many spheres of public health and influences the health status of many Australians, a national policy on food and nutrition was developed (DHCS 1992). The policy's goal is to improve health and reduce the preventable burden of diet-related early death, illness and disability among Australians.

The evidence suggests that diet contributes to conditions such as coronary heart disease, stroke, hypertension, some forms of cancer, non-insulin-dependent diabetes mellitus, osteoporosis, dental caries, gall bladder disease, diverticular disease, constipation, haemorrhoids and iron deficiency anaemia.

Diet can also be linked to a number of risk factors for diseases such as coronary heart disease. These risk factors include raised blood lipids (cholesterol and triglycerides), overweight and obesity, and physical inactivity.

In Australia, as with most developed countries, diet-related diseases and their risk factors are due more to overconsumption than underconsumption, and to a sedentary lifestyle. For example, the proportion of overweight and obese people is rising in the Australian population (ABS & DHFS 1997). However, some populations such as the Indigenous, still suffer from undernutrition (ABS & AIHW 1997).

1995 National Nutrition Survey

The 1995 National Nutrition Survey (NNS) is a significant addition to the data available for monitoring and assessing current food and nutrition issues in Australia (Box 5.1). It is the first national survey of food intake and other dietary behaviour of Australians since the early 1980s. It was conducted as part of the implementation of Australia's food and nutrition policy. The primary purpose of the Survey is to provide detailed food and nutrient data for the Australian population, and major subgroups within it, but it also enables some comparisons with other surveys in the 1980s, as well as establishing baseline data for future studies. First results of the survey were released in December 1997.

Food intake

It is estimated that more than 90% of Australians consume something from the cereal and cereal products and the milk and milk products food groups on any day. However,

Box 5.1: National Nutrition Survey

The 1995 National Nutrition Survey (NNS), a joint project between the Australian Bureau of Statistics and the Commonwealth Department of Health and Family Services, is the largest and most comprehensive survey of the food intake of the Australian population ever undertaken. The survey provides information on food and nutrient intakes, dietary habits and body measurements. Approximately 13,800 people aged 2 years and over from urban and rural areas in all States and Territories participated in the survey. The NNS was conducted between February 1995 and March 1996 on a sub-sample of respondents included in the 1995 National Health Survey (NHS). The 1995 NNS data can be linked to information on socioeconomic status, health status and health service use collected in the 1995 NHS. The type of information collected and the collection instruments are described below.

Type of information	***Category***
Demographic and socio-economic characteristics	*Age, sex, marital status and pregnancy (over 15 years), country of birth, year of arrival in Australia, Indigenous status, language (over 6 years), educational level, occupation.*
Individual Food Intake Questionnaire *(Respondents 2 years and over)*	*Interviewer-administered 24-hour recall of all food and drink consumed, including source of food and beverage, eating occasion, time and location.*
Food Frequency Questionnaire *(Respondents 12 years and over)*	*Pattern of intake over last 12 months of dairy foods, bread, cereal foods, meat, fish, eggs, fruits, vegetables, sweets, baked goods and snacks, non-dairy beverages, fats and oils.*
Additional Questions Form *(Respondents 2 years and over)*	*Breakfast behaviour, snacks, salt use, weight change and reasons for this, vitamin and mineral supplements use.*
Physical measurements *(Respondents 2 years and over)*	*Measurement of height, weight, waist, hip, blood pressure (16 years and over).*

on any day, over half of males aged 12–44 years and approximately a third of children aged 4–11 years do not eat fruit or fruit products, and more than 20% of children under 12 years do not eat any vegetables or vegetable products. Beverages, non-alcoholic and alcoholic, accounted for between 40% and 60% of total food and beverage intake by weight, across age groups. Australian males on average consume a higher quantity of food and beverages than do females in all age groups. Daily food and beverage consumption is highest among males aged 19–24 years at 4,240 g, and among females aged 25–44 years at 3,320 g (Table 5.3).

Table 5.3: Mean daily food intake and total energy intake, 1995

	Age group (years)									
	2–3	4–7	8–11	12–15	16–18	19–24	25–44	45–64	65 and over	19 and over
	Mean daily food and beverage intake (g)									
Males	1,980	2,150	2,580	3,100	3,960	4,240	4,190	3,990	3,340	4,010
Females	1,800	1,980	2,270	2,620	2,870	3,130	3,320	3,300	2,930	3,220
	Total energy intake (kJ)									
Males	6,610	7,850	9,660	11,590	13,530	13,250	11,730	10,300	8,510	11,050
Females	6,080	7,010	8,310	8,530	8,690	8,370	7,880	7,220	6,370	7,480

Source: ABS & DHFS 1997.

Nutrient intake

Average daily energy intake is 11,050 kJ for men and 7,480 kJ for women (Table 5.3). Energy intake effectively doubles for boys between the age group 2–3 years (6,610 kJ) and the age group 16–18 years (13,530 kJ), but increases by less than 50% over the same age range for girls.

There is little difference between males and females in the contribution of macronutrients such as protein, fat and carbohydrate to total energy intake except for the proportion of energy coming from alcohol for adults, which for males was almost double that for females. Carbohydrate contributes about 52% of daily energy intake for children aged from 2 to 11 years, reducing to approximately 46% for adults aged 19 years and over (Table 5.4). Fat contributes around 32–33% of energy in all age groups. The proportion of energy from saturated fat is highest for children aged 2–3 years (17%), steadily decreasing to 12% for adults aged 45 years or more. The contribution of protein to energy intake steadily increases from 14% at age 2–3 years to 18% for adults aged 45 years and over.

Recommended Dietary Intakes (RDIs) are the levels of intake of essential nutrients that are regarded as meeting the nutritional needs of most healthy individuals (NHMRC 1992a). The recommendations are based on estimated requirements for different age and sex groups. Since they incorporate generous factors to allow for variations in metabolism, absorption and individual needs, RDIs surpass the actual requirements for most healthy persons. As a result, RDIs are not synonymous with requirements. Australia's mean nutrient intake from food and beverages is very close to or exceeds the RDIs for most vitamins and minerals in all age groups. The exceptions are calcium for adolescent boys aged 12–15 years and females in most age groups except those aged 2–3 years and 16–18 years, zinc for females aged 12 years or more, and magnesium for adolescent girls (ABS & DHFS 1997).

Table 5.4: Contribution of protein, fat, carbohydrate and alcohol to energy intake, 1995 (per cent)

	Age group (years)									
Type of nutrients	2–3	4–7	8–11	12–15	16–18	19–24	25–44	45–64	65 and over	19 and over
Protein	14.2	13.9	14.3	15.0	15.7	16.3	16.8	17.8	17.3	17.1
Total fat	33.1	32.6	33.4	33.3	32.5	32.8	32.9	32.0	31.8	32.5
Saturated fat	16.6	14.5	14.3	14.3	13.6	13.2	13.1	12.2	12.2	12.7
Mono-unsaturated fat	11.0	11.3	11.8	11.8	11.7	11.9	11.9	11.7	11.4	11.8
Poly-unsaturated fat	4.0	4.3	4.7	4.6	4.5	4.9	4.9	5.0	5.0	5.0
Carbohydrate	51.9	52.8	51.7	51.0	49.9	47.7	45.9	45.1	46.7	46.0
Total sugar	29.4	27.8	25.2	25.1	24.3	22.1	19.7	19.6	21.2	20.2
Total starch	22.5	25.0	26.5	25.9	25.6	25.6	26.2	25.5	25.5	25.8
Alcohol	—	—	—	0.1	1.3	2.6	3.7	4.3	3.2	3.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean energy (kJ)	**6,350**	**7,440**	**9,000**	**10,100**	**11,170**	**10,870**	**9,800**	**8,780**	**7,300**	**9,240**

Source: ABS & DHFS 1997.

Trends in foods available for consumption

For countries such as Australia without regular food consumption surveys, or where the available dietary intake data are not national, food supply data are particularly important (Sizaret 1992). They do not measure actual intake and can be expressed only as quantities of foods and related nutrients available for consumption per capita, per year or per day. Data on the food available for consumption help in assessing the nutritional adequacy of the national food supply and, from this, nutritional problems and priorities can be identified.

Figure 5.14 (page 140) shows trends over recent decades in the contribution of the major food groups to total energy available in the food supply. Care needs to be taken in interpreting trends because of changes that may have occurred in the collection process or in external factors (e.g. the rationing of sugar and meat during and after the Second World War). The data primarily reflect relative changes in the amounts consumed of each food group. The term 'consumption' used in this context refers to foods available for consumption by the population.

Grains

Consumption of cereal (grain) foods (e.g. bread, flour-based products, breakfast cereals, rice) declined steadily from the 1940s until the end of the 1970s but in the past 15 years has returned to the levels of the 1940s. Within this group, there has been a shift towards more breakfast cereals (about 1.7 times) and rice (nearly 13 times) compared with the 1940s.

Vegetables and fruits

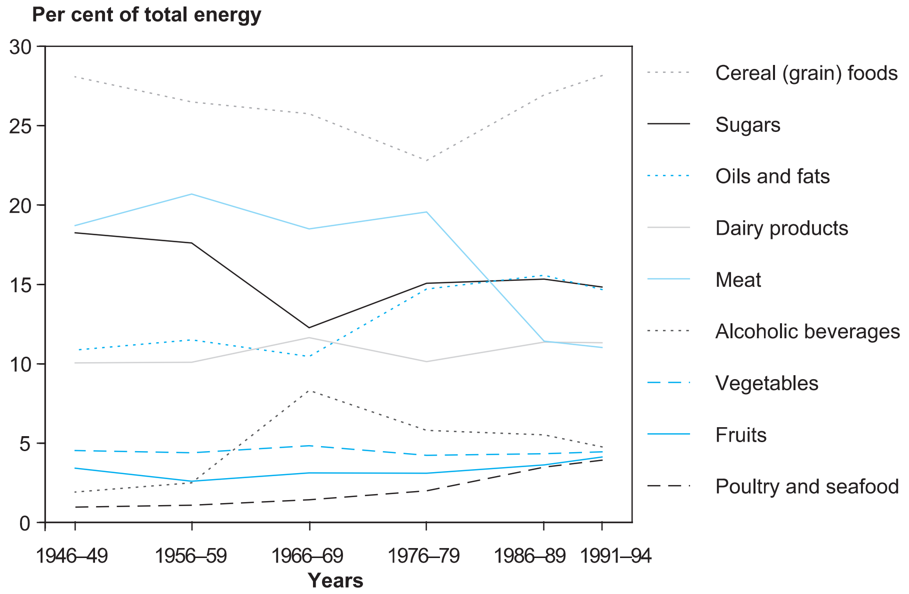
The contribution of vegetables to the total energy in the national food supply has been steady over the period, although the per capita amount available for consumption (by weight) has increased by 50%. The increase in energy-dense foods such as alcohol and added fats has reduced the relative contribution of vegetables to total energy. Consumption of tomatoes, potatoes and vegetables such as brassicas, corn and marrows have increased somewhat, but leafy green and root vegetables have remained the same as in the 1940s. The quantity of fruits consumed has also increased by 50% since the late 1950s and there have been shifts in the types of fruits eaten.

Dairy products

Over the period, milk and other dairy products (excluding butter) have shown a slight increase. However, there has been a shift away from liquid milk towards cheese and other milk products.

Meat, poultry and seafood

Meat (beef, lamb, pigmeat) maintained a relatively steady contribution to the total energy in the diet until falling markedly during the 1980s. There have been marked changes in the amount of each type of meat consumed. Beef/veal and mutton/lamb have fallen (by about a quarter and a third respectively of the quantities consumed in the 1940s), whereas pigmeat has increased nearly sixfold. Further, as red meats decreased, poultry and to a lesser extent seafood have become more important in the diet. The increased levels of poultry when added to the red meats suggest that total consumption (by weight) has changed little. Seafood has increased by 250% since the 1940s, with most of the increase being in fresh or frozen rather than processed fish, crustacea and molluscs.



Source: ABS 1994.

Figure 5.14: Contribution of major food groups to total energy available in the food supply, 1946–49 to 1991–94

Sugars

The contribution of refined sugars (cane sugar, honey, syrups and glucose) to the food supply decreased until the 1970s, then rose again, but has changed little over the past 15 years. Currently, the quantity of all refined sugars consumed is 20% less than the immediate post-war peak of consumption. Although cane sugar consumption has fallen, other sugars have increased more than twofold since the 1940s.

Oils and fats

The contribution of oils and fats to total energy available declined slightly in the 1960s, but increased in the 1970s and 1980s before falling again at the beginning of the 1990s. Currently, oils (e.g. olive oil) and cooking fats (e.g. dripping) represent a little over half of the energy contributed by this group, and spreads (margarine, butter) the other half. Within the spreads component, there has been a significant decline in butter (by three-quarters), largely replaced by margarines, particularly table margarines. The increase in the 1970s was largely due to a reassessment of the basis of the oils and cooking fats component of the oils and fats group.

Alcoholic beverages

Alcoholic beverage consumption as a proportion of total energy in the national food supply peaked in the 1960s, although total quantity available for consumption peaked in the 1970s. Since then, there has been a steady decline in both measures. This is mainly due to a fall in the quantity of beer consumed, now 30% less than in the 1970s, and the greater contribution of low-alcohol beer. Although beer is the dominant alcoholic beverage, wine has steadily increased and is now at levels three times higher than in the 1940s.

Box 5.2: Dietary guidelines

Dietary guidelines are the basis for public health nutrition action. First announced in 1981, they were revised in 1992 in recognition of the different requirements of some groups.

Revised guidelines for adults (NHMRC 1992b)

1. *Enjoy a wide variety of nutritious foods.*
2. *Eat plenty of breads and cereals (preferably wholegrain), vegetables (including legumes) and fruits.*
3. *Eat a diet low in fat and, in particular, low in saturated fat.*
4. *Maintain a healthy body weight by balancing physical activity and food intake.*
5. *If you drink alcohol, limit your intake.*
6. *Eat only a moderate amount of sugars and foods containing added sugars.*
7. *Choose low-salt foods and use salt sparingly.*
8. *Encourage and support breastfeeding.*

Guidelines in specific nutrients

9. *Eat foods containing calcium. This is particularly important for girls and women.*
10. *Eat foods containing iron. This applies particularly to girls, women, vegetarians and athletes.*

The NHMRC released separate guidelines for children and adolescents in 1995, which better suit the needs of these groups (NHMRC 1995).

Moving towards dietary guidelines

Overall, the data on the foods available for consumption suggest that the national food supply has been changing in the direction suggested by the dietary guidelines for Australians (Box 5.2, page 141), particularly since the 1980s. Grains and fruits are making a larger contribution to energy, and vegetables have remained steady. Since the 1970s, the contribution of total fat to energy has fallen substantially due to the decrease in meat fat in the national food supply, and refined sugars and alcoholic beverages have decreased relative to other types of foods.

5.6 Risk factors for disease

Risk factors are features or exposures associated with a greater risk of ill-health in an individual. Risk factors can be categorised as:

- background risk factors (e.g. genetic predisposition, sex, age)
- behavioural risk factors (e.g. smoking, physical inactivity, high fat diet)
- physiological risk factors (e.g. high blood pressure, raised blood cholesterol levels).

Background and behavioural risk factors exert their effects through a number of physiological risk factors. Box 5.3 outlines some of the common behavioural and

Box 5.3: Some behavioural and physiological risk factors associated with major causes of morbidity, disability and mortality

Risk factors	***Cause of ill-health, disability and mortality***
Behavioural	
Smoking	*Coronary heart disease, several cancers including lung, mouth and cervical cancers, stroke, chronic lung disease*
Excess alcohol consumption	*Coronary heart disease, liver and pancreatic disease, stroke, high blood pressure, cancers of the digestive system, accidents, mental illness, violence*
Other drug abuse	*AIDS, hepatitis, renal failure, mental illness, suicide, violence, accidents*
Poor diet and nutrition	*Coronary heart disease, stroke, breast and digestive system cancers, non-insulin-dependent diabetes mellitus, gallstones, osteoporosis, malnutrition, dental conditions*
Inadequate physical activity	*Coronary heart disease, stroke, non-insulin-dependent diabetes mellitus, colon cancer, osteoporosis, bone fractures, falls, mental illness, obesity*
Unprotected sexual activity	*AIDS, hepatitis, cervical cancer, infertility, pelvic infection, venereal disease*
Excessive sun exposure	*Melanoma and other skin cancers, premature ageing of the skin*
Physiological	
Overweight and obesity	*Coronary heart disease, non-insulin-dependent diabetes mellitus, breast cancer, gallstones, degenerative joint disease, obstructive sleep apnoea*
High blood pressure	*Coronary heart disease, stroke*
Raised blood cholesterol level	*Coronary heart disease, stroke*

physiological risk factors for selected health conditions. Some of these risk factors are discussed below.

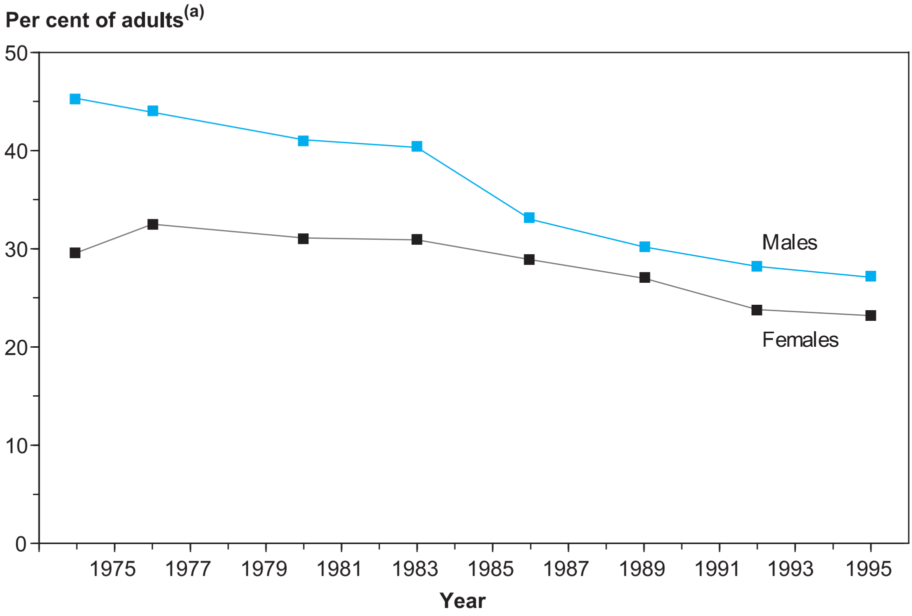
Smoking

Cigarette smoking is a leading cause of mortality and morbidity in Australia. It plays a main or large role in many serious and common diseases, including heart attack, stroke, lung cancer, a range of other cancers, and chronic lung disease. English et al. (1995) estimated that approximately 15% of all deaths and 3% of all hospital episodes were attributable to smoking tobacco. Applying these proportions to total deaths in 1995 and hospital separations in 1995–96, it is estimated that 18,000 deaths and 140,000 hospital admissions can be attributed to smoking.

The prevalence of smoking has declined between 1983 and 1995 (Figure 5.15). Over this period, the proportion of males aged 16 years and over who are current smokers declined from 40.3% to 27.1%, and the proportion of females aged 16 years and over who are current smokers declined from 30.9% to 23.2%. However, it appears that the rate of decline has slowed in recent years.

Tobacco smoking varies by age (Figure 5.16, page 144). In 1995, the highest use was in the age group 25–29 years for both males (34.7%) and females (35.0%), after which age smoking generally decreased among both males and females. In 1995, 32.1% of males and 21.7% of females aged 16 years and over were ex-smokers.

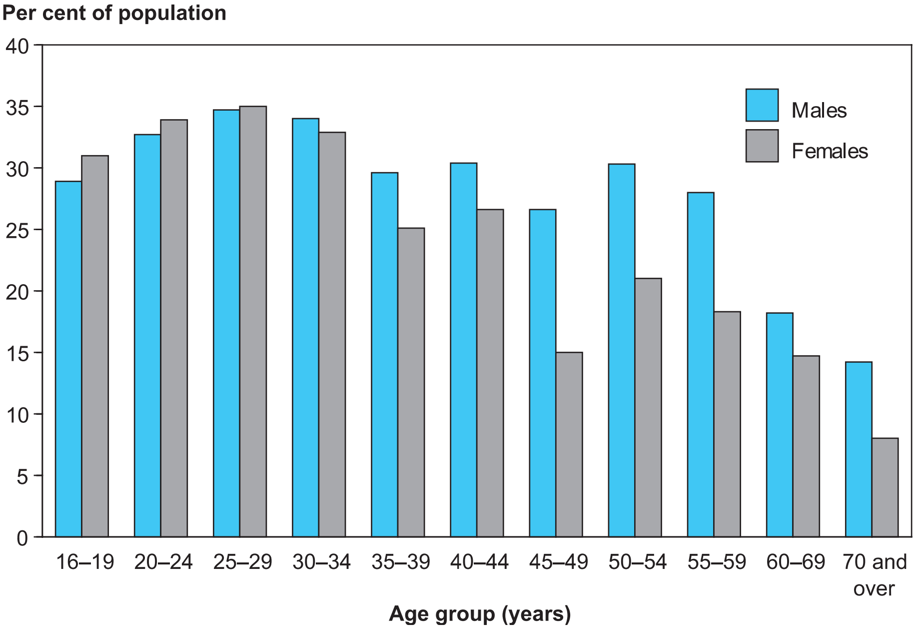
Smoking is much more common among the Indigenous population than in the Australian population generally (Figure 5.17, page 144). Comparing the results of a survey of Indigenous peoples in 1994 with a similar survey of the whole population in



(a) People aged 16 years and over.

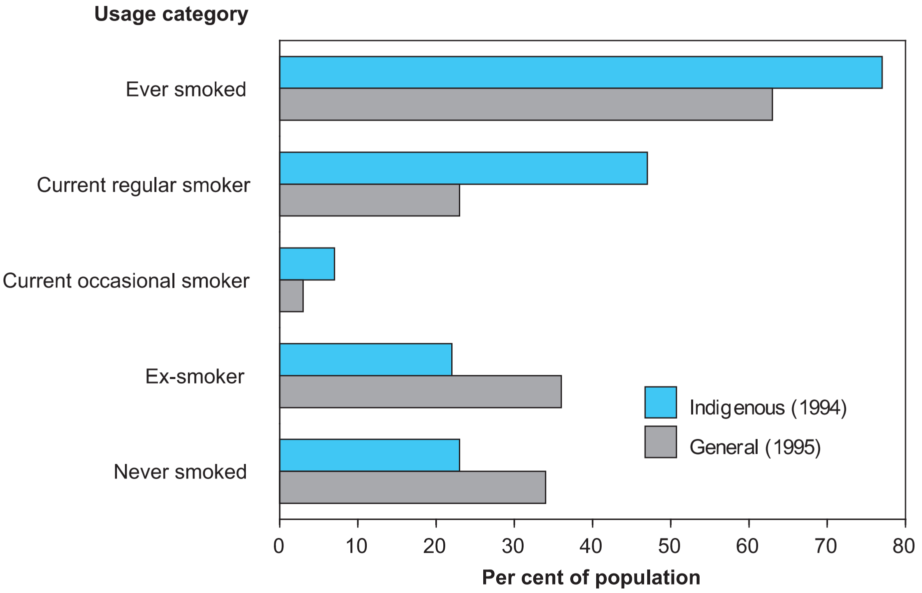
Sources: Hill et al. 1988, 1991; Hill & White 1995; Hill et al. 1998.

Figure 5.15: Proportion of adults who are current smokers, 1974 to 1995



Source: Hill et al. 1998.

Figure 5.16: Current smokers by age and sex, 1995



Note: Persons aged 14 years and over.

Sources: DHFS 1995, 1996.

Figure 5.17: Tobacco usage, Indigenous and general population, 1994 and 1995

1995, a greater proportion of the Indigenous population had smoked at some time in their life (77% compared with 63%), and they were almost twice as likely to be current regular smokers (47% compared with 23%).

Passive exposure to tobacco smoke is also a cause of morbidity in the community. The National Health and Medical Research Council has estimated that passive smoking in the home contributes to the symptoms of asthma in 46,500 Australian children each year and causes lower respiratory illness in 16,300 Australian children, and is responsible for about 12 new cases of lung cancer each year in adult Australians (NHMRC 1997b).

Excess alcohol consumption

Like tobacco, alcohol is associated with considerable mortality and morbidity in the Australian community, accounting for an estimated 3,600 deaths and 86,000 hospital admissions in 1995 (Williams 1997).

Alcohol abuse also results in lost productivity, with 5% of regular drinkers (those who drink at least once a week) reporting missing days from work or study during the previous three months due to use of alcohol, at an average of 1.5 days per person (DHFS 1996).

Alcohol-related crime and social problems are a further burden on the community. As a result of alcohol consumption, in 1995 an estimated 34% of the population were subjected to verbal abuse, 9% were physically abused, and 15% were the victim of property theft or damage (DHFS 1996).

Unlike tobacco, regular use of alcohol is not necessarily harmful. Light to moderate intake of alcohol is known to reduce the risk of coronary heart disease. However, intake above moderate levels becomes hazardous or harmful to health. Short-term effects include poor coordination and judgement leading to traffic accidents and other accidents; vomiting; and unconsciousness. Long-term effects include liver, brain and pancreas damage, heart and blood disorders, gastrointestinal ulcers and loss of memory. The National Health and Medical Research Council have produced guidelines for safe alcohol consumption (see Box 5.4).

Box 5.4: NHMRC guidelines for responsible drinking (abridged)

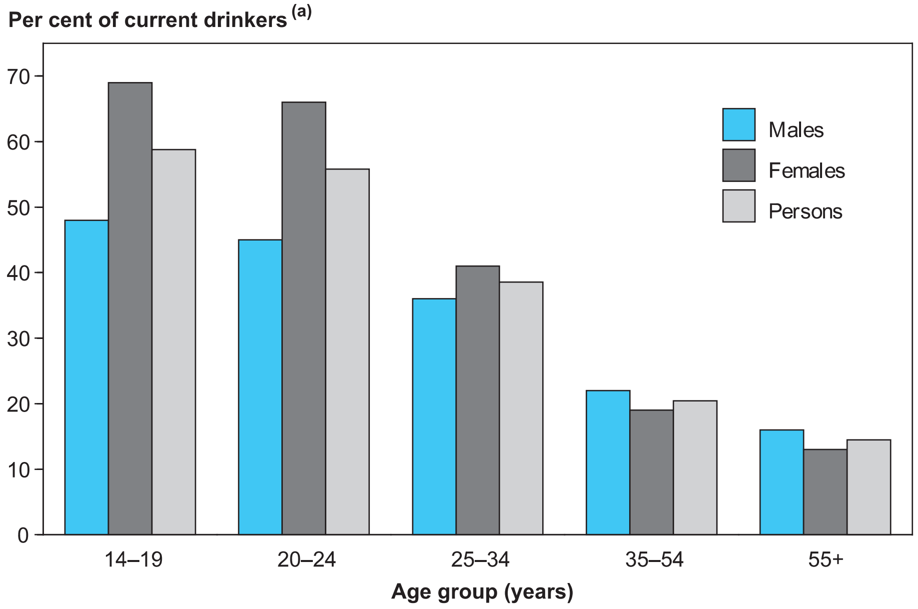
- *Men should not exceed 4 standard drinks (40 grams of absolute alcohol) per day on a regular basis, or 28 units per week; 4–6 units per day is considered hazardous, and more than 6 drinks per day is regarded as harmful.*
- *Women should not exceed 2 standard drinks (20 grams of alcohol) per day on a regular basis, or 14 units per week; 2–4 units per day is considered hazardous, and more than 4 units per day is regarded as harmful.*
- *'Binge' drinking is potentially hazardous.*
- *All Australians should have at least 2 alcohol-free days each week.*
- *Abstinence should be promoted as desirable in pregnancy.*

Source: NHMRC 1992c.

An estimated 43% of the population are current regular drinkers, i.e. they drink at least once a week, and a further 33% are occasional drinkers, i.e. they had drunk in the last 12 months (DHFS 1996).

Alcohol use at hazardous or harmful levels among adult Australians declined slightly between 1991 and 1995, with approximately 27% of current drinkers (those who drank in the last 12 months) in 1995 reporting that they had consumed at these levels in the last week. Among current drinkers, males consumed alcohol at these levels more so than females (35% compared with 20%). However, in the younger age groups, females tended to drink at hazardous or harmful levels more than males. Of current drinkers, 69% of females and 48% of males aged 14–19 years, and 66% of females and 45% of males aged 20–24 years usually drank at hazardous or harmful levels (Figure 5.18). In older age groups, the pattern was reversed and the differences between males and females diminished, as did the overall levels of at-risk drinking.

Although a smaller proportion of Indigenous people drink alcohol when compared with the Australian population as a whole (ABS & AIHW 1997), those Indigenous people who do drink are more likely to drink at higher levels. Comparing the results of a survey of Indigenous peoples in 1994 with a similar survey of the whole population in 1995, a higher proportion of the Indigenous population drank at hazardous or harmful levels on a daily or weekly basis than the Australian population as a whole. This was the case for both males and females (Table 5.5).



(a) Those who consumed alcohol in the last 12 months.

Source: DHFS 1996.

Figure 5.18: Hazardous or harmful alcohol consumption, by sex and age group, 1995

Table 5.5: Frequency of hazardous or harmful drinking: Indigenous and whole population, 1994 and 1995 (per cent)

	Males		Females	
Frequency	Indigenous (1994)	All Australians (1995)	Indigenous (1994)	All Australians (1995)
Daily	10	2	3	1
Weekly	48	31	35	18
Less often	34	40	53	49
Never	7	26	9	30

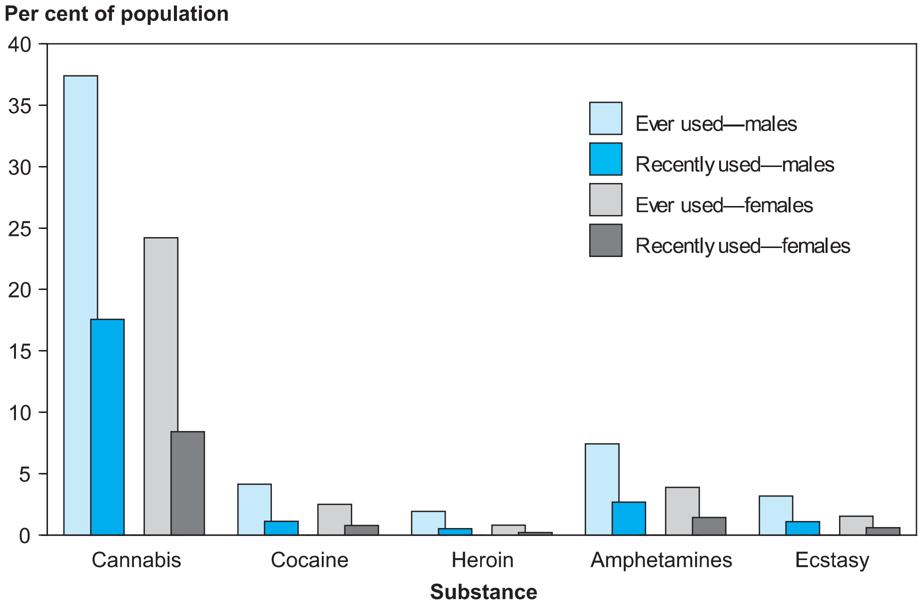
Sources: DHFS 1995, 1996.

Use of illicit drugs

Illicit drug use refers to the non-prescribed use of cannabis (marijuana), heroin, cocaine, amphetamines, hallucinogens, inhalants, anabolic steroids, ecstasy and other designer drugs, and various derivatives of these substances. Also included is the use of prescription drugs for non-medical purposes. Due to the illegal nature of using such substances, patterns of use are difficult to monitor.

By far the most common illicit drug used in Australia is cannabis. In 1995, approximately 32% of the population aged 14 years and over reported having tried the drug at some time in their life (DHFS 1996). Lifetime prevalence was highest in the age groups 20–24 years (63%) and 25–34 years (54%).

For all types of illicit drugs, lifetime and recent use is greater among males than females (Figure 5.19).



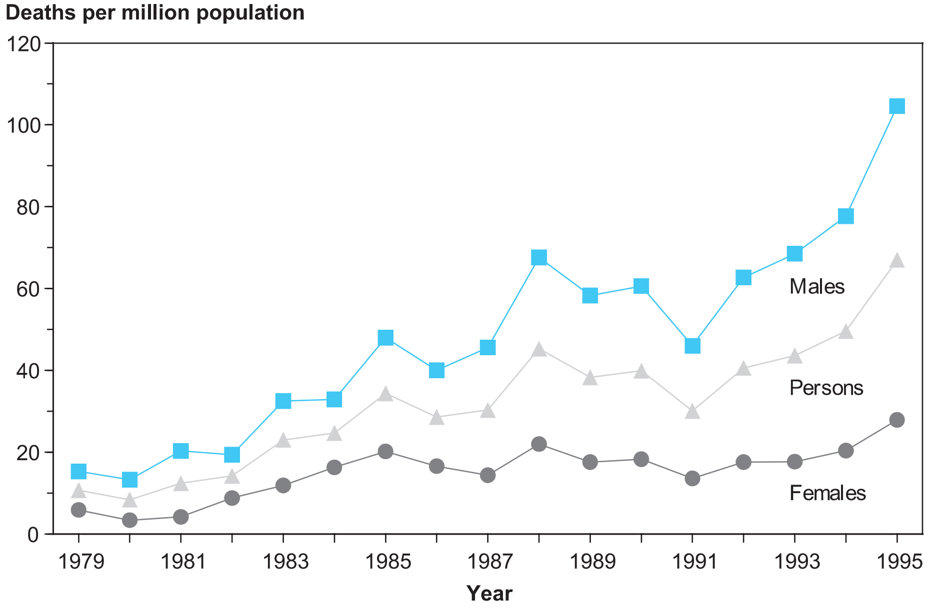
Source: DHFS 1996.

Figure 5.19: Lifetime and recent use of selected illicit drugs, 1995

The use of illicit drugs is associated with considerable social problems, morbidity and mortality. Applying the methodology of English et al. (1995) for attributing mortality and morbidity to use of illicit drugs, there were an estimated 780 deaths in 1995 and 8,500 hospital admissions in 1995–96 due to illicit drug use.

In a detailed study of trends in deaths from opioid overdoses Hall & Darke (1997) found that death rates had increased almost sevenfold from 1979 to 1995. The increase was greater for males than females, and for older heroin users (Figure 5.20).

Possible explanations for this trend are increased heroin purity, changes in the patterns of multiple drug use (particularly alcohol and benzodiazepines in conjunction with opiates) and changes in patterns of injecting behaviour. Further research is required to measure the role of these different factors.



Notes

1. Age-standardised to the total Australian population at 30 June 1979.
2. Opioids include heroin, morphine, codeine and synthetics such as methadone and pethidine.

Source: National Drug and Alcohol Research Centre Technical Report No. 49.

Figure 5.20: Death rates from opioid overdoses, 1979 to 1995

Inadequate physical activity

Reported participation in exercise undertaken for sport, recreation or fitness increased slightly between 1989–90 and 1995 from 64.5% to 66.7% in men, and from 64.0% to 65.8% in women, due mainly to an increased participation by people aged 35–54 years (Table 5.6). Walking for recreation or exercise continued to increase in popularity during the 1990s, with 44.9% of men and 53.3% of women reporting walking in 1995 compared with 41% and 49% respectively in 1989–90. This may reflect an increased public awareness of walking as an activity suitable for health benefit.

The proportions of people undertaking physical activity at low, moderate and high levels (see Box 5.5) remained fairly constant between 1989–90 and 1995 (Table 5.7, page 150).

It has been estimated that a person needs to expend more than 800 kilocalories per week (kcal/wk) in physical activity to obtain some of the health benefits attributed to physical activity (i.e. 'adequate' physical activity) (Pate et al. 1995). If this is applied to data from the National Physical Activity Survey of November–December 1997, 62.1% of men and 50.3% of women could be classified as 'adequately' active. The proportions of men and women undertaking 'adequate' physical activity declined with increasing age.

Table 5.6: Proportion[a] of people undertaking physical activity by sex and age, 1989–90 and 1995 (per cent)

	Exercise for sport, recreation or fitness		Walking for sport, recreation or fitness	
Sex/age group (years)	**1989–90**	**1995**	**1989–90**	**1995**
Males				
18–34	71.6	72.6	36.1	42.5
35–54	59.9	63.7	39.8	43.4
55+	60.6	61.9	49.7	50.8
All ages	*64.5*	*66.7*	*41.1*	*44.9*
Females				
18–34	70.2	71.6	49.6	56.0
35–54	61.9	66.7	48.4	54.3
55+	57.8	57.2	49.4	48.6
All ages	*64.0*	*65.8*	*49.2*	*53.3*

(a) Age-standardised to the total Australian population at 30 June 1991.

Source: ABS National Health Surveys.

Box 5.5: Physical activity level

To obtain trend estimates from the National Health Surveys, levels of physical activity undertaken for sport, recreation or fitness were derived using the 1989–90 methodology as follows:

Number of times activity taken × Average time per session × Intensity

where intensity is a measure of the energy expenditure required to carry out the activity expressed as a multiple of the resting metabolic rate (MET). An intensity value was estimated for each of the three categories of physical activity (low, moderate and vigorous) used in the survey. MET values of 3.2 for walking, 5.7 for moderate physical activity and 8.5 for vigorous physical activity were used with physical activity level ranges as follows:

Physical activity level	***Range (MET-minutes/fortnight)***
High	*> 3,250*
Medium	*1,500–3,250*
Low	*< 1,500*
Nil	*0*

Table 5.7: Proportion[(a)] of people aged 18 years and over undertaking physical activity at low, medium and high levels, 1989–90 and 1995 (per cent)

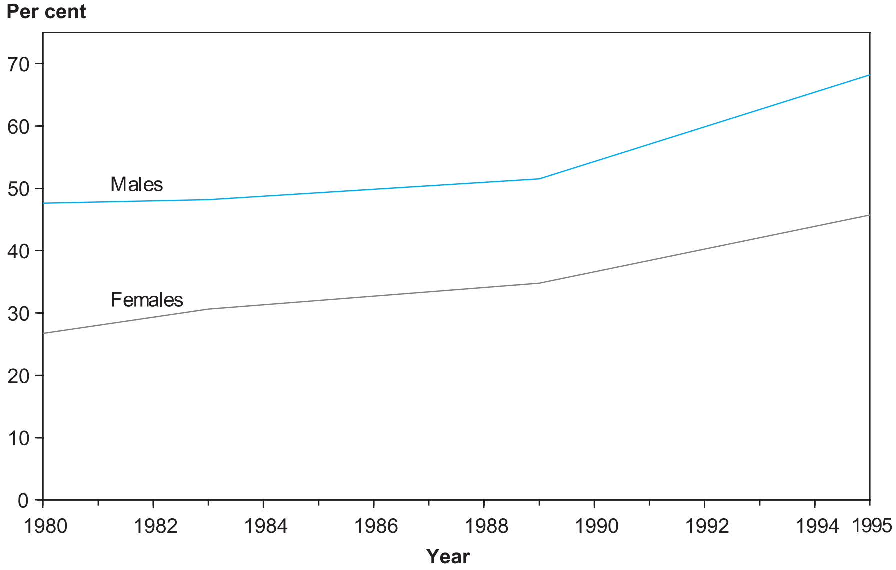
Sex/activity level	1989–90	1995
Males		
No or low[(b)]	63.4	63.3
Medium[(c)]	17.0	17.8
High[(d)]	19.7	18.9
Females		
No or low[(b)]	72.6	72.4
Medium[(c)]	16.2	16.6
High[(d)]	11.1	11.0

(a) Age-standardised to the total Australian population at 30 June 1991.
(b) < 1,500 MET-minutes/fortnight.
(c) 1,500–3,250 MET-minutes/fortnight.
(d) > 3,250 MET-minutes/fortnight.

Source: ABS National Health Surveys.

Overweight and obesity

Through the 1980s and at least the first half of the 1990s, there has been an increase in the proportion of men and women who are overweight or obese (Figure 5.21). Data from the Risk Factor Prevalence Surveys and the National Nutrition Survey show that the proportion of overweight or obese women aged between 25 and 64 years has increased from 26.7% in 1980 to 45.7% in 1995. The proportion of overweight or obese men aged between 25 and 64 years is greater than for women in that age group, and has



Notes
1. Age-standardised to the total Australian population at 30 June 1991. All estimates are for State capital cities.
2. People were classified as overweight if they had a body mass index (BMI) exceeding 25.0, or obese if they had a BMI greater than 30, where BMI was calculated as weight ÷ height^2, and expressed as kg per square metre.

Sources: NHF Risk Factor Prevalence Surveys; ABS National Nutrition Survey.

Figure 5.21: Proportion of overweight or obese people, 25–64 years, 1980 to 1995

increased from 47.6% to 66.3% over the same period. The proportion of obese men has increased dramatically from 7.8% in 1980 to 17.6% in 1995 and, for women, from 6.9% in 1980 to 16.1% in 1995.

On average, men in 1995 weighed 3.6 kg more than their counterparts in 1980, and women 4.8 kg more. The greatest increases in weight have occurred among men aged 50–54 years (7.5 kg) and women aged 55–59 years (7.5 kg) and 30–34 years (6.9 kg).

High blood pressure

There has been a marked improvement in blood pressure levels among both men and women in Australia. Data from the National Heart Foundation's Risk Factor Prevalence Studies and the National Nutrition Survey show that, during the period from 1980 to 1995, average systolic blood pressures declined from 133 mmHg to 126 mmHg in men and from 127 mmHg to 123 mmHg in women. Diastolic blood pressures declined from 86 mmHg to 79 mmHg in men and from 80 mmHg to 76 mmHg in women.

The prevalence of high blood pressure fell in men from 24.6% to 19.3%, and in women from 16.7% to 11.3% between 1980 and 1989. Data from the 1995 National Nutrition Survey reveal a further decline to 16.7% in males and 9.5% in females (Table 5.8).

Table 5.8: Prevalence[(a)] of high blood pressure[(b)], 25–64 years, 1980 to 1995

	NHF Risk Factor Prevalence Surveys			National Nutrition Survey
	1980	**1983**	**1989**	**1995**
Males	24.6	22.0	19.3	16.7
Females	16.7	13.7	11.3	9.5

(a) Age-standardised to the total Australian population at 30 June 1991. All estimates are for State capital cities.

(b) High blood pressure defined as systolic blood pressure ≥ 160 mmHg and/or diastolic blood pressure ≥ 95 mmHg and/or receiving treatment for blood pressure.

Sources: AIHW analysis of data from the NHF Risk Factor Prevalence Study and the ABS National Nutrition Survey.

Raised cholesterol

The 1989 National Heart Foundation's Risk Factor Prevalence Study still provides the most recent data on average levels of blood cholesterol in the Australian population. At that time, average levels of blood cholesterol were considered too high and represented a major health problem. Over 47% of men and 39% of women aged 20–69 years had plasma cholesterol levels above the National Heart Foundation's 'desirable level' of 5.5 mmol/L. There were no clear time trends in the blood cholesterol levels of Australian men and women during the 1980s (Bennett & Magnus 1994) and there are no later data on trends during the 1990s.

In the Australian Bureau of Statistics' National Health Surveys, 4.7% of Australians reported high blood cholesterol in 1989–90 and 7.8% in 1995. This apparent increase in the number of people reporting high cholesterol may be due to several reasons, including wider cholesterol testing, an actual increase in levels of blood cholesterol, greater awareness of the issue, or a combination of these. In 1995, 14% of people who reported a cardiovascular condition also reported having high cholesterol compared with 5% of people without a cardiovascular condition (ABS 1997).

References

Allworth A, Murray K & Morgan J 1996. A human case of encephalitis due to a lyssavirus recently identified in fruit bats. Comm Dis Intell 20:504.

Anderson RM & May RM 1990. Immunisation and herd immunity. Lancet 335:641–45.

Andrews R & Curran M 1996. Enhanced surveillance for incident cases of hepatitis C in Australia 1995. Comm Dis Intell 20:384–88.

Andrews R, Herceg A & Roberts C 1997. Pertussis notifications in Australia 1991 to 1997. Comm Dis Intell 21:45–48.

Arnljot HA, Barmes DE, Cohen LK, et al. 1985. Oral health care systems; an international collaborative study. Geneva: WHO.

Australian Bureau of Statistics (ABS) 1994. Apparent consumption of foodstuffs and nutrients 1992–93. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1997. 1995 National Health Survey: cardiovascular and related conditions. ABS Cat. No. 4372.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) and Australian Institute of Health and Welfare (AIHW) 1997. The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples. ABS Cat. No. 4704.0, AIHW Cat. No. IHW 2. Canberra: AGPS.

Australian Bureau of Statistics (ABS) & Department of Health and Family Services (DHFS) 1997. National Nutrition Survey: selected highlights 1995. Cat. No. 4802.0. Canberra: ABS.

Australian Institute of Health and Welfare (AIHW) 1994. Foods commonly consumed in the 1983 national dietary survey of adults: amounts per eating occasion. Canberra: AIHW.

Barnard PD 1956. Dental survey of State school children in New South Wales, January 1954 – June 1955. Special Report Series No. 8. Canberra: National Health and Medical Research Council.

Barnard PD 1993. National Oral Health Survey of Australia 1987–88. Canberra: AGPS.

Benenson AS, ed 1995. Control of communicable diseases manual, 16th ed. Washington: American Public Health Association.

Bennett SA & Magnus P 1994. Trends in cardiovascular risk factors in Australia: results from the National Heart Foundation's Risk Factor Prevalence Study, 1980–1989. Med J Aust 161:519–27.

Boughton CR 1996. Pertussis notifications: acellular versus whole-cell. Med J Aust 164:564–66.

Brennan DS, Carter KD, Stewart JF & Spencer AJ 1997. Commonwealth Dental Health Program, evaluation report, 1994–1996. Adelaide: AIHW DSRU, University of Adelaide.

Cameron S, Walker C, Beers M, Rose N & Anear E 1995. Enterohaemorrhagic *Escherichia coli* outbreak in South Australia associated with the consumption of mettwurst. Comm Dis Intell 19:70–71.

Comino J, Mitchell CA, Bauman A et al. 1996. Asthma management in eastern Australia, 1990 and 1993. Med J Aust 164:403–6.

(Commonwealth) Department of Health and Community Services (DHCS) 1992. National Food and Nutrition Policy. Canberra: AGPS.

(Commonwealth) Department of Health and Family Services (DHFS) 1995. National Drug Strategy Household Survey: urban Aboriginal and Torres Strait Islander peoples supplement 1994. Canberra: DHFS.

(Commonwealth) Department of Health and Family Services (DHFS) 1996. National Drug Strategy Household Survey: survey report 1995. Canberra: DHFS.

Curran M, Harvey B, Crerar S, Oliver G, D'Souza R, Myint H, Rann C & Andrews R 1997. Australia's notifiable diseases status 1996. Comm Dis Intell 21:281–307.

Davies MJ 1993. The Child Fluoride Study: patterns of fluoride exposure. Paper presented at the Consensus Conference on Appropriate Fluoride Exposure for Infants and Children, Perth, 2–3 December 1993 (unpublished).

Davies MJ & Spencer AJ 1997. The Child Dental Health Survey Australia 1995. Dental Statistics and Research Series No. 10. Adelaide: AIHW DSRU, University of Adelaide.

Dawson D 1997. Tuberculosis in Australia: bacteriologically confirmed cases and drug resistance, 1994 and 1995. Comm Dis Intell 21:245–49.

Diesendorf M, Colquhoun J, Spittle BJ, Everingham DN & Clutterbuck FW 1997. New evidence on fluoridation. Aust NZ J Public Health 21:187–90.

English DR, Holman CDJ, Milne E, Winter MG, Hulse GK, Codde JP, Bower CI et al. 1995. The quantification of drug-caused morbidity and mortality in Australia, 1995 ed. Canberra: DHFS.

English R, Cashel K, Lewis J, Bennett S, Berzins J & Penm R 1988. National dietary survey of schoolchildren (aged 10–15 years): 1985, No. 1, Foods consumed. Canberra: AGPS.

Federation Dentaire Internationale (FDI) 1982. Global goals for oral health in the year 2000. Int Dent J 32:74–77.

Hall W & Darke S 1997. Trends in opiate overdose deaths in Australia 1979–1995. NDARC Technical Report No. 47. Sydney: National Drug and Alcohol Research Centre.

Hanna J, Ritchie S & Lowenthal M 1995. Probable Japanese encephalitis acquired in the Torres Strait. Comm Dis Intell 19:206–8.

Health Targets and Implementation (Health for All) Committee 1988. Health for all Australians. Canberra: AGPS.

Henderson DA 1997. Edward Jenner's vaccine. Public Health Rep 112:116–21.

Herceg A 1997. The decline of *Haemophilus influenzae* type b disease in Australia. Comm Dis Intell 21:173–76.

Hill DJ & White VM 1995. Australian adult smoking prevalence in 1992. Aust J Public Health 19:305–8.

Hill DJ, White VM & Gray NJ 1988. Measures of tobacco smoking in Australia 1974–1986 by means of a standard method. Med J Aust 149:10–12.

Hill DJ, White VM & Gray NJ 1992. Australian patterns of tobacco smoking in 1989. Med J Aust 154:797–801.

Hill DJ, White VM & Scollo MM 1998. Smoking behaviours of Australian adults in 1995: trends and concerns. Med J Aust 168:209–13.

McDonnell WM & Askari FK 1997. Immunization. JAMA 278:2000–7.

McKeown T 1976. The role of medicine: dream, mirage or nemesis. London: Nuffield Provincial Hospital Trust.

National Centre in HIV Epidemiology and Clinical Research (NCHECR) 1997. HIV/AIDS and related diseases in Australia: annual surveillance report 1997. Sydney: NCHECR.

National Health and Medical Research Council (NHMRC) 1992a. Recommended dietary intakes for use in Australia. Canberra: AGPS.

National Health and Medical Research Council (NHMRC) 1992b. Dietary guidelines for Australians. Canberra: AGPS.

National Health and Medical Research Council (NHMRC) 1992c. Is there a safe level of daily consumption of alcohol for men and women? Canberra: NHMRC.

National Health and Medical Research Council (NHMRC) 1994. Oral health care for older adults. Canberra: NHMRC.

National Health and Medical Research Council (NHMRC) 1995. Recommended dietary intakes for use in Australia for children and adolescents. Canberra: AGPS.

National Health and Medical Research Council (NHMRC) 1997a. The Australian immunisation handbook, 6th ed. Canberra: NHMRC.

National Health and Medical Research Council (NHMRC) 1997b. The health effects of passive smoking: a scientific information paper. Canberra: NHMRC.

National Public Health Partnership (NPHP) 1997. Public health in Australia: the public health landscape. Melbourne: NPHP.

Oliver G & Harvey B 1997. Tuberculosis notifications in Australia, 1995. Comm Dis Intell 21:261–69.

Pate RR, Pratt M, Blair SN, Haskell WL, Macena CA, Bouchard C et al. 1995. Physical activity and public health. A recommendation from the Centres for Disease Control and Prevention and the American College of Sports Medicine. JAMA 273:402–7.

Patterson AF & Weidenhofer RNG 1993. A study of the dental health of primary school children in the local government areas of the Blue Mountains and Hawkesbury, NSW. Sydney: Dental Health Unit, NSW Health Department.

Pearce N, Weiland S, Keil U, Langridge P, Anderson HR, Strachan D, Bauman A, Young L, Gluyas P, Ruffin D, Crane J & Beasley R 1993. Self-reported prevalence of asthma symptoms in children in Australia, England, Germany and New Zealand: an inter-national comparison using the ISAAC protocol. Eur Respir J 6:1455–61.

Peat JK, Haby M, Spijker J, Berry G & Woolcock AJ 1992. Prevalence of asthma in adults in Western Australia. BMJ 305:1326–29.

Peat JK, van den Berg R, Green WF, Mellis CM, Leeder SR & Woolcock AJ 1994. Changing prevalence of asthma in Australian children. BMJ 308:1591–96.

Riordan PJ 1991. Dental caries and fluoride exposure in Western Australia 1991. J Dent Res 70:1029–34.

Risk Factor Prevalence Study Management Committee 1990. Risk factor prevalence study. Survey No. 3, 1989. Canberra: National Heart Foundation & AIHW.

Robertson CF, Heycock, Bishop J, Nolan T, Olinsky A & Phelan P 1991. Prevalence of asthma in Melbourne schoolchildren: changes over 26 years. BMJ 302:1116–18.

Selvey L & Sheridan J 1994. Outbreak of severe respiratory disease in humans and horses due to a previously unrecognised paramyxovirus. Comm Dis Intell 18:499.

Sizaret F 1992. Food balance sheets and food consumption surveys. Second FLAIR Eurofoods Enfant Project Meeting. Improvement of the quality and comparability of food consumption and food composition data in Europe. Dublin.

Slade GD, Davies MJ, Spencer AJ & Stewart JF 1995. Associations between exposure to fluoridated drinking water and dental caries experience among children in two Australian States. J Public Health Dent 55:218–28.

Slade GD, Spencer AJ, Davies MJ & Stewart JF 1996a. Influence of exposure to fluoridated water on socioeconomic inequalities in children's caries experience. Community Dent Oral Epidemiol 24:89–100.

Slade GD, Spencer AJ, Davies MJ & Stewart JF 1996b. Caries experience among children in fluoridated Townsville and unfluoridated Brisbane. Aust NZ J Public Health 20:623–29.

Spencer AJ 1984. Time trends in exposure to optimally fluoridated water supplies among Australian adolescents. Community Dent Oral Epidemiol 12:1–4.

Spencer AJ 1986a. Contribution of fluoride vehicles to changes in caries severity in Australian adolescents. Community Dent Oral Epidemiol 14:238–41.

Spencer AJ 1986b. Past association of fluoride vehicles with caries severity in Australian adolescents. Community Dent Oral Epidemiol 14:233–37.

Spencer AJ, Davies M, Slade G & Brennan D 1994. Caries prevalence in Australasia. Int Dent J 44:415–23.

Spencer AJ, Slade GD & Davies MJ 1996. Water fluoridation in Australia. Community Dent Health 13 (Suppl. No. 2):27–37.

Spencer AJ 1998. New, or biased, evidence on water fluoridation? Aust NZ J Public Health 22:149–54.

Williams P 1997. Progress of the national drug strategy: key national indicators; evaluation of the national drug strategy 1993–1997, statistical supplement. Canberra: DHFS.

Woolcock AJ 1986. Worldwide differences in asthma prevalence and mortality. Chest 90:405–55.

Woolcock AJ 1996. Asthma—disease of a modern lifestyle. Med J Aust 165:358–59.

6 Health services delivery, costs and performance

This chapter focuses on the resources or inputs (money, personnel, facilities) used in the delivery of health services. But as Figure 1.1 (page 3) shows, these inputs are not an end in themselves. They provide the means by which health strategies are carried out, and these strategies then contribute to health and wellbeing. Measuring inputs such as expenditure and personnel becomes relevant only when these inputs are related to the outcomes they produce in terms of changes to health and wellbeing. Thus the measurement of inputs should be done in such a way that inputs and outputs/ outcomes can be linked.

To facilitate this linkage, the categories of health expenditure have recently been changed with the introduction of a new Government Purpose Classification in government finance statistics. The old classification of health expenditure looked at the institution that spent the money, and examined the purpose of the expenditure. The new classification goes beyond this and enables, for example, mental health expenditure as a whole to be examined, whether that mental health expenditure is in acute public hospitals, designated psychiatric hospitals or community health. This approach enables outputs and inputs to be more closely aligned. Similarly, work is being undertaken to ensure that the resources that a hospital uses in treating acute admitted patients are more accurately measured.

To evaluate whether the resources spent on health services provide value for money, further information and research is needed. It is possible to obtain separate measures of input, output and outcome, but it is more difficult to link cause and effect; that requires special studies to establish the relationships. When the relationships have been established, it is then possible to use input (resource) data in conjunction with output and performance indicator data to evaluate the effectiveness of Australia's health programs.

6.1 Structure and administration of health services in Australia

The health care system in Australia is pluralistic and complex, involving many providers. A distinguishing feature is the extent to which responsibilities are split between different levels of government, and between the public and private sectors. The system involves Commonwealth, State and local governments, although most medical and dental care and some other professional services are provided by private practitioners.

Although the relative responsibilities have changed greatly since Federation in 1901, State and Territory Governments retain the major responsibility for the public provision of health services, including public and psychiatric hospital systems, and for public health. 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.

A Commonwealth Department of Health was not established until 1921, and for many years its main responsibility was quarantine. The Commonwealth Government also exercised responsibility for the health needs of veterans. An amendment of the Constitution in 1946 gave the Commonwealth powers to make laws about pharmaceutical, sickness and hospital benefits, and medical and dental services. These powers, and the provision of specific-purpose grants to States under Section 96 of the Constitution, have enabled the Commonwealth to expand its role in the health system. The Commonwealth now operates universal benefits schemes for private medical services (Medicare, see Box 7.4, page 215) and for pharmaceuticals (see Box 7.6, page 223).

More recently, governments have been taking an increasing interest in promoting health, and additional resources have been provided for the measurement of health, the evaluation of health services, the promotion of wellbeing and the prevention of illness and disability. Important recent programs in the last category are directed towards health promotion, the control of alcohol and drug abuse, dental health, and controlling the spread of AIDS.

Commonwealth and State and Territory health authorities

The structures of the various Commonwealth and State and Territory health authorities have undergone frequent change, involving internal reorganisation, the transfer of functions to and from other departments, or the amalgamation of entire departments. Peripheral health units have had to make rapid adjustments to these changes in central agencies.

The speed of these changes is illustrated by the changes at the Commonwealth level. In 1993 the former Department of Health, Housing and Community Services had local government added to its responsibilities, so that it became the Department of Health, Housing, Local Government and Community Services. In 1994, responsibility for housing and for local government passed to a new department, leaving the former retitled as the Department of Human Services and Health (DHSH). Until 1995, specific assistance for the health of Indigenous peoples was provided through the Aboriginal and Torres Strait Islander Commission; since then, this has been provided by the DHSH. Following the change in government in March 1996, the DHSH became the Department of Health and Family Services.

State and Territory health administrations also have been reorganised or renamed many times, usually as departments or commissions. Some jurisdictions have combined health and community services functions, whereas others have kept them separate. The momentum has been towards the creation of central agencies with varying degrees of delegation of responsibility to regional or area authorities. The principal functions of State and Territory health authorities include:

- hospital services
- mental health programs
- dental health services

- home and community care
- child, adolescent and family health services
- women's health programs
- health promotion
- rehabilitation systems
- regulation, inspection, licensing and monitoring of premises, institutions and personnel.

The central authorities at State level are concerned mainly with the determination of policy, budgeting and financial control, planning, standards of performance and their measurement, program and budget reviews, industrial and personnel matters, and major capital works.

Other Commonwealth government agencies

Health authorities administer most health programs in the public sector, but other government departments and agencies have important roles. The armed services provide for the health care of serving personnel. The Commonwealth Department of Veterans' Affairs arranges medical care for ex-service personnel and some others; it no longer manages any of the large repatriation general hospitals.

Worksafe Australia is responsible for occupational health policy and standards development, and State and Territory agencies (in some States and Territories not the health authorities) administer occupational health legislation.

Environmental health and hygiene

Health surveyors, usually employed by local governments, undertake surveillance of environmental hygiene and sanitation practices to ensure compliance with State and Territory public health law. Statutory water supply authorities are responsible for the quality of piped water and in some areas for sewage disposal and drainage. Another set of authorities is responsible for monitoring and regulating air quality. Central agencies have been established in most States to control the disposal of wastes, and these agencies administer the disposal sites in metropolitan areas, leaving local government to be responsible for the collection and transport of waste material.

Institutional health services

Hospital boards constituted as corporate entities administer public acute hospitals in most States. Religious or charitable bodies administer some. Where area health boards have been established, as in New South Wales, executive personnel responsible to the area or district board manage public health services including hospitals.

The role and scale of public psychiatric hospitals have declined significantly. Boards similar to those for public general hospitals now administer some, but most continue to be run as State institutions. Psychiatric admission and treatment centres have been established in selected public hospitals. Increasingly, patients live in the community, sometimes in dedicated small-scale accommodation with support services provided through community mental health services.

Private hospitals may be run by proprietors operating for profit, or as not-for-profit enterprises, usually by religious or charitable organisations.

Until November 1997, the Commonwealth provided financial assistance to aged people accommodated and cared for in two types of residential care facilities for the aged. These were:

- nursing homes, which provided accommodation and long-term nursing care for chronically ill, disabled or demented patients who needed full-time nursing care; and
- aged persons hostels, which provided accommodation and other support facilities for many aged people who were unable to continue to live in the community.

Over time, the care required by many of the residents in both types of facility had become quite similar and involved very similar costs. Therefore, the reference in funding to different types of facilities became less relevant. From November 1997, the Commonwealth changed the arrangements to remove the references to nursing homes and hostels and to direct its support to assisting residents in 'residential aged care facilities'.

To ensure that only those who are highly dependent are placed in residential care, aged care assessment teams have been established nationally. Based on their assessments, large proportions of people are cared for outside institutions and, where necessary, others are referred to appropriate services. Community care packages provide aged persons and their carers with community-based alternatives to the types of care provided in residential aged care facilities.

Community health services

In 1985, the Home and Community Care program was established to provide services for frail aged and younger disabled people who are not in residential care. The program offers a wide array of services, including domiciliary nursing, delivered meals, personal care, home help, paramedical services and home modifications, all aimed at maintaining people in the community and preventing inappropriate admissions to institutional care.

Medical care outside hospitals is based on general practitioners, mainly in private practice, who constitute the principal gateway to specialised services.

Community mental health services and community services for older people expanded quite rapidly after the early 1970s and are provided through a variety of government and non-government agencies. The services have grown in a relatively uncoordinated manner, and interaction with private clinical services has been variable. Under the National Mental Health Strategy, the closure of psychiatric hospital beds has led to the reallocation of resources to provide increased care of people with severe mental disorders in community settings, including day programs and community-based residential care.

Measures have been taken to ensure that people with disabilities are able to gain access to services in all parts of the various systems of health care, and special services and facilities have been provided. Emphasis is given to facilitating access to services that enable participation in integrated community activities.

In addition, State and local government health authorities are active in the fields of health promotion and disease prevention. Advisory services are provided at infant health centres, antenatal clinics and community health centres. Immunisation clinics are offered.

Information, coordination and research

Government agencies routinely collect and analyse data produced in the course of managing their programs. Selected information is transmitted to the Australian Institute of Health and Welfare, where it is incorporated into national data sets and used to prepare reports on the health of Australians and their health services. The Australian Bureau of Statistics conducts large-scale population surveys of health and health services every 5 years, and many of its other surveys provide health data.

The Australian Health Ministers' Advisory Council (AHMAC) is a committee of the heads of the Commonwealth and State and Territory health authorities and the Commonwealth Department of Veterans' Affairs. It is the major decision-making body on national health issues. AHMAC advises the Australian Health Ministers' Conference (AHMC) on policy, resource and financial issues. AHMC also considers recommendations from the National Health and Medical Research Council (NHMRC). Specific national bodies have been established to coordinate information and advice on major problems such as drug and alcohol abuse and AIDS.

The NHMRC was established in 1936, but was created as a separate statutory body in 1993. It is an independent advisory body on public and individual health. Its principal concerns today are with medical research, professional aspects of health care, public health, public health research and development, and health ethics. Some States provide substantial infrastructure support for medical research institutes established in association with their universities and teaching hospitals.

Health promotion and disease prevention

The promotion of health and the prevention of disease have been receiving increasing emphasis in recent years. Specifically designed preventive services include infant health centres, school medical and dental services, the fluoridation of water supplies, immunisation programs, anti-smoking campaigns, the national AIDS program and the National Campaign Against Drug Abuse. State and Territory health authorities have branches concerned with health education services and health promotion.

There is increasing awareness, as described in Section 1.1 (page 1), that the health of the nation depends not on its health services alone, but on levels of nutrition, education, employment, income and housing, general standards of hygiene, environmental safety and the availability of cultural and recreational amenities. These social factors, in turn, are influenced by the market, and by financing and regulatory arrangements at different levels of government, and are outside the immediate responsibility of health departments. Australian governments have begun to show a commitment to ensuring that all areas of public policy recognise impacts on health.

6.2 Health services funding and expenditure

The health services expenditure statistics examined here relate largely to expenditure on health services provided to people who are ill and services provided within the health sector aimed at health promotion and illness prevention. They do not include expenditures that have a 'health' outcome but are undertaken outside the health sector. For example, expenditure on building safer transport systems and providing better police services have led to improvements in health but they are not included in the classes of health expenditure examined here.

Box 6.1: Health services expenditure statistics

Health services expenditure data enable the measurement of changes in volumes and proportions of resources allocated to the production and consumption of health services. In addition, they show how resources are used, both at a point in time and over time. The most interesting questions about health services expenditure relate to its share of total economic resources, its growth over time, and how a country's performance in these respects compares with that of other countries.

Measures of total health services expenditure, in current values, are useful for analysing expenditure in the very short term. However, they have limited application in comparing expenditure over time or for comparing different countries. For example, inflation erodes the value of currency over time so that similar amounts spent on a service in different years may have very different real values. When comparing total health services expenditures of different countries, the expenditures have to be converted to a single currency unit. This involves the use of a device, such as exchange rates or purchasing power parities (PPPs). In addition, adjustment needs to be made for differences in the sizes of the populations of countries being compared. Alternatively, comparisons may be undertaken using the proportions of gross domestic product (GDP) that the countries devote to health services expenditure. This device is particularly useful for comparing different countries over time.

However, even a measure such as the health-to-GDP ratio can mislead because fluctuations in the ratio may be as much an indication of the way GDP is growing as of changes in health services expenditure. Also, both the use of health services and the level of GDP are influenced by the age structures of countries being compared.

For medium-term comparisons, change in real health services expenditure (i.e. adjusted for inflation) per person is the most useful indicator of expenditure effort. However, as the period of comparison grows, there are technical and conceptual difficulties with the choice and calculation of appropriate inflators and deflators.[1] *For planning purposes, the sources from which health services expenditures are funded and the way the expenditure is allocated between the different services are of particular interest. The classification of services in Australia is undertaken in accordance with WHO conventions (Abel-Smith 1969) which, although clear in theory, are difficult to apply consistently in practice. This leads to difficulties when making international comparisons.*

[1] Statistical techniques used to adjust expenditure to 'real' values.

(continued)

Box 6.1 (continued): Health services expenditure statistics

The major division of funding source used is between the government and non-government sectors. This distinction is blurred (in some countries more than in others) by non-government organisations that perform quasi-government functions, and by the accounting procedures for health services expenditures for which tax deductions or rebates can be claimed.

In Australia, almost all public funding of health services is shared between the Commonwealth Government and the State and Territory Governments. This makes their relative contributions of considerable policy interest. However, public accounting conventions do not always reflect the underlying reality. A third level of government – local government authorities – is also involved in funding health services in Australia. However, its contribution is very small and is amalgamated with that of State and Territory Governments.

When making international comparisons, account needs to be taken of the specific institutional arrangements for funding health services expenditure within each country.

Health services expenditure is looked at in terms of total health expenditure, expenditures on the different areas of the health care system, and in terms of the sources of funding for health services. Some factors contributing to changes in health services expenditure are examined and a comparison is made of health services expenditure by the State and Territory Governments. Australia's expenditure on health services is also compared with that of other Organisation for Economic Co-operation and Development (OECD) member countries.

Funding of health services in Australia

Since the first full year of Medicare (1984–85), health services expenditure in Australia has risen as a proportion of gross domestic product (GDP) from 7.6% to 8.5% (Table 6.1, page 164). It has remained stable at between 8.5% and 8.6% since 1991–92. In 1995–96, total health services expenditure, including expenditure by both the government and the non-government sectors, was $41,308 million and the preliminary estimate for 1996–97 is $43,204 million. Estimates for recent years are subject to revisions over time as data are progressively refined by the various agencies involved.

More than two-thirds (68.7%) of the funding for health expenditure in 1996–97 was provided by governments — the Commonwealth Government provided 45.5% and State and local governments 23.2%. The non-government sector provided the remaining 31.3% of the total funding (Table 6.2, page 164).

Between 1984–85 and 1996–97, the proportion of total expenditure funded by governments fell from 71.9% to 68.7%, whereas the non-government sector's proportion rose from 28.1% to 31.3%. There were three periods of significance to the changes in funding proportions between 1984–85 and 1996–97. These coincided, generally, with the terms of each of the Commonwealth–State hospital funding agreements under Medicare. The first covered the years up to 1987–88, the second from 1988–89 to 1992–93, and the third from 1993–94 to 1996–97.

Between 1984–85 and 1987–88, the proportion of total health expenditure met by Commonwealth Government funding fell each year, from 46.1% to 44.0% and the non-government sector's funding rose correspondingly. The State/Territory and local governments' share of expenditure was essentially constant at around 26.0%.

Table 6.1: Total health services expenditure and GDP (current prices), 1984–85 to 1996–97

Year	Total health services expenditure	GDP	Total health expenditure as percentage of GDP
	($ million)		
1984–85	16,546	217,129	7.6
1985–86	18,586	240,475	7.7
1986–87	21,115	264,007	8.0
1987–88	23,333	299,342	7.8
1988–89	26,127	339,185	7.7
1989–90	28,800	370,043	7.8
1990–91	31,270	379,280	8.2
1991–92	33,084	387,526	8.5
1992–93	34,892	405,372	8.6
1993–94	36,587	429,679	8.5
1994–95	38,701	457,296	8.5
1995–96	41,308	487,679	8.5
1996–97(a)	43,204	510,329	8.5

(a) Preliminary estimates.

Sources: AIHW Health Expenditure Database; ABS *Australian National Accounts—National Income, Expenditure and Product,* various years (Cat. No. 5206.0).

Table 6.2: Government and non-government sector expenditure as a proportion of total health services expenditure, 1984–85 to 1996–97 (current prices) (per cent)

	Government sector			
Year	Commonwealth(a)	State and local	Total	Non-government sector(a)
1984–85	46.1	25.8	71.9	28.1
1985–86	46.0	25.9	71.9	28.1
1986–87	44.3	26.4	70.8	29.2
1987–88	44.0	26.0	70.1	29.9
1988–89	42.6	26.0	68.6	31.4
1989–90	42.2	26.1	68.3	31.7
1990–91	42.2	25.5	67.7	32.3
1991–92	42.8	24.6	67.4	32.6
1992–93	43.8	23.7	67.5	32.5
1993–94	45.3	21.9	67.2	32.8
1994–95	45.0	22.2	67.2	32.8
1995–96	45.6	22.5	68.1	31.9
1996–97(b)	45.5	23.2	68.7	31.3

(a) Proportions for Commonwealth Government and non-government sector expenditure are calculated after adjusting for tax expenditure.

(b) Preliminary estimates.

Source: AIHW Health Expenditure Database.

Overall, there was little change in the Commonwealth Government's share of total health services expenditure after 1987–88. However, the proportion funded by State/Territory and local governments decreased from 26.0% to 23.2% and that funded by the non-government sector rose from 29.9% to 31.3%.

Much of the change in State/Territory and local government and non-government funding shares occurred between 1987–88 and 1992–93. The proportion funded by the State/Territory and local governments decreased sharply, from 26.0% in 1987–88 to 23.7% in 1992–93. At the same time, the non-government sector's share rose from 29.9% to 32.5%.

Between 1992–93 and 1996–97, the Commonwealth Government's share of expenditure funding grew slightly, from 43.8% to 45.5%. There was little change in the contribution of State/Territory and local governments, but the non-government sector's contribution fell from 32.5% to 31.3%. However, in 1993–94, the first year of that period, there was a large shift in spending responsibility—the Commonwealth's share of funding rose from 43.8% to 45.3%, and the share borne by State/Territory and local governments fell from 23.7% to 21.9%. This resulted from the combined effects of increased growth in expenditure by the Commonwealth and a real reduction of 4.0% in expenditure by State/Territory and local governments (Table 6.3). The year 1993–94 was both the first year of the new Medicare agreements under which Commonwealth funding of public hospitals

Table 6.3: Total health services expenditure, constant (average 1989–90) prices(a), and annual growth rates (per cent), by source of funds, 1984–85 to 1996–97

	Government sector				Non-government sector(b)		All sectors total	
	Commonwealth(b)		State and local					
Year	($m)	(%)	($m)	(%)	($m)	(%)	($m)	(%)
1984–85	10,491	n.a.	5,797	n.a.	6,574	n.a.	22,862	n.a.
1985–86	11,067	5.5	6,147	6.0	6,966	6.0	24,180	5.8
1986–87	11,294	2.1	6,557	6.7	7,490	7.5	25,341	4.8
1987–88	11,582	2.6	6,788	3.5	7,917	5.7	26,287	3.7
1988–89	11,848	2.3	7,160	5.5	8,710	10.0	27,719	5.4
1989–90	12,165	2.7	7,513	4.9	9,122	4.7	28,800	3.9
1990–91	12,381	1.8	7,560	0.6	9,481	3.9	29,422	2.2
1991–92	12,916	4.3	7,540	–0.3	9,747	2.8	30,203	2.7
1992–93	13,741	6.4	7,563	0.3	10,089	3.5	31,393	3.9
1993–94	14,768	7.5	7,258	–4.0	10,562	4.7	32,589	3.8
1994–95	15,272	3.4	7,704	6.1	10,980	4.0	33,957	4.2
1995–96	16,266	6.5	8,218	6.7	11,232	2.3	35,716	5.2
1996–97(c)	16,714	2.8	8,700	5.9	11,354	1.1	36,768	2.9
Average annual growth rates								
1984–95 to 1987–88		3.4		5.4		6.4		4.8
1987–88 to 1992–93		3.5		2.2		5.0		3.6
1992–93 to 1996–97		5.0		3.6		3.0		4.0
1984–85 to 1996–97		*4.0*		*3.4*		*4.7*		*4.0*

(a) Health services expenditure for 1984–85 to 1996–97 is deflated to constant (average 1989–90) prices using specific health deflators.

(b) Commonwealth Government and non-government sector expenditure adjusted for tax expenditure.

(c) Preliminary estimates.

Source: AIHW Health Expenditure Database.

rose by 7.6% in real terms and a year of fiscal constraint in several States under new governments. However, the fall in State/Territory and local governments' share of funding that happened in 1993–94 had largely reversed itself by 1996–97.

The State and Territory Governments have primary responsibility for funding areas of expenditure which have undergone low rates of growth during the 1990s. These include public acute care hospitals and public psychiatric hospitals. Between 1989–90 and 1995–96 expenditure on public acute care hospitals grew at 2.0% per year, in real terms, compared with a real growth rate of 3.7% per year for total recurrent health services expenditure (Table S42, page 286). Real expenditure on public psychiatric hospitals fell by an average 6.5% per year over the same period. In contrast, growth in expenditure was relatively high in areas where the Commonwealth Government's share of funding responsibility is high. In particular, expenditure on medical and pharmaceutical services grew at 5.5% and 8.2% respectively, over that same period.

Health services expenditure per person

The average rate of per person expenditure in 1996–97 was $2,345 (Table 6.4). The average annual rate of growth in real per person health expenditure from 1984–85 to 1996–97 was 2.7%.

Table 6.4: Health services expenditure per person, current and constant (average 1989–90) prices[(a)], and annual growth rates, 1984–85 to 1996–97

	Amount ($)		Growth over previous year (%)	
Year	**Current**	**Constant**	**Current**	**Constant**
1984–85	1,055	1,458	n.a.	n.a.
1985–86	1,169	1,521	10.8	4.3
1986–87	1,309	1,571	12.0	3.3
1987–88	1,423	1,603	8.7	2.1
1988–89	1,566	1,661	10.1	3.6
1989–90	1,700	1,700	8.6	2.3
1990–91	1,820	1,713	7.1	0.7
1991–92	1,902	1,736	4.5	1.4
1992–93	1,984	1,785	4.3	2.8
1993–94	2,060	1,835	3.8	2.8
1994–95	2,155	1,891	4.6	3.1
1995–96	2,271	1,963	5.4	3.8
1996–97	2,345	1,996	3.3	1.7
1984–85 to 1987–88			10.5	3.2
1987–88 to 1992–93			6.9	2.2
1992–93 to 1996–97			4.3	2.8
1984–85 to 1996–97			*6.9*	*2.7*

(a) Health services expenditure for 1984–85 to 1996–97 is deflated to constant (average 1989–90) prices using specific health deflators.

Source: AIHW Health Expenditure Database.

Recurrent expenditure on health services

Recurrent health services expenditure in 1995–96 (the latest year for which detailed data are available) was $38,951 million. This represented 94.3% of the total expenditure on health services in that year ($41,308 million).

The major area of expenditure was acute care hospitals with expenditure of $14,448 million (37.1% of recurrent expenditure). This was made up of $11,265 million expenditure on public acute care hospitals and $3,183 million on private hospitals. Other large areas of expenditure were medical services, $7,872 million (20.2%) and pharmaceuticals $4,657 million (12.0%) (Table 6.5).

The relative importance of the different sources of funding for health services varies according to the type of service. The Commonwealth Government is the major provider of funds for nursing homes, medical services and pharmaceuticals. Public acute care hospitals and community and public health services are funded by both the Commonwealth Government and State Governments, and private hospitals are mostly funded from the non-government sector.

Between 1984–85 and 1995–96, the proportion of recurrent expenditure that was devoted to acute care hospitals fell marginally from 40.0% to 37.1% (Table S47, page 291). However, there was a move from public acute care hospitals to private acute care hospitals over the period. Expenditure on recognised public hospitals fell from 32.8% of recurrent expenditure in 1984–85 to 28.9% in 1995–96, and expenditure on repatriation hospitals fell from 1.6% to less than 0.1% of recurrent expenditure as repatriation hospitals were transferred to State Governments or sold to the private sector. Expenditure on private hospitals, on the other hand, grew from 5.6% of recurrent expenditure in 1984–85 to 8.2% in 1995–96.

There were increases in the proportions of most major types of non-institutional services. Medical services, which accounted for 17.4% of recurrent expenditure in 1984–85, rose to 20.2% by 1995–96. The relative contribution of expenditure on services provided by 'other health professionals' also increased, from 2.0% to 3.5%. Expenditure on pharmaceuticals was another major area of expenditure that increased as a proportion of recurrent health expenditure between 1984–85 and 1995–96 (from 8.6% to 12.0%), as was expenditure on other non-institutional services—community and public health, dental services and administration—which rose from 12.1% to 13.3%.

Table 6.5: Recurrent health expenditure, current prices, 1995–96 ($ million)

	Government sector			
Major area of expenditure	**Commonwealth**	**State and local**	**Non-government sector**	**Total expenditure**
Public acute care hospitals	5,197	5,043	1,025	11,265
Private hospitals	295	—	2,888	3,183
Nursing homes	2,055	223	677	2,954
Medical	6,497	—	1,375	7,872
Other professional	195	—	1,155	1,350
Pharmaceuticals	2,504	11	2,142	4,657
Other non-institutional[(a)]	1,156	1,775	2,230	5,162
Research	395	187	125	707
Other expenditure	336	614	851	1,801
Total recurrent expenditure	**18,630**	**7,853**	**12,468**	**38,951**

(a) Includes dental, community and public health, and administration.

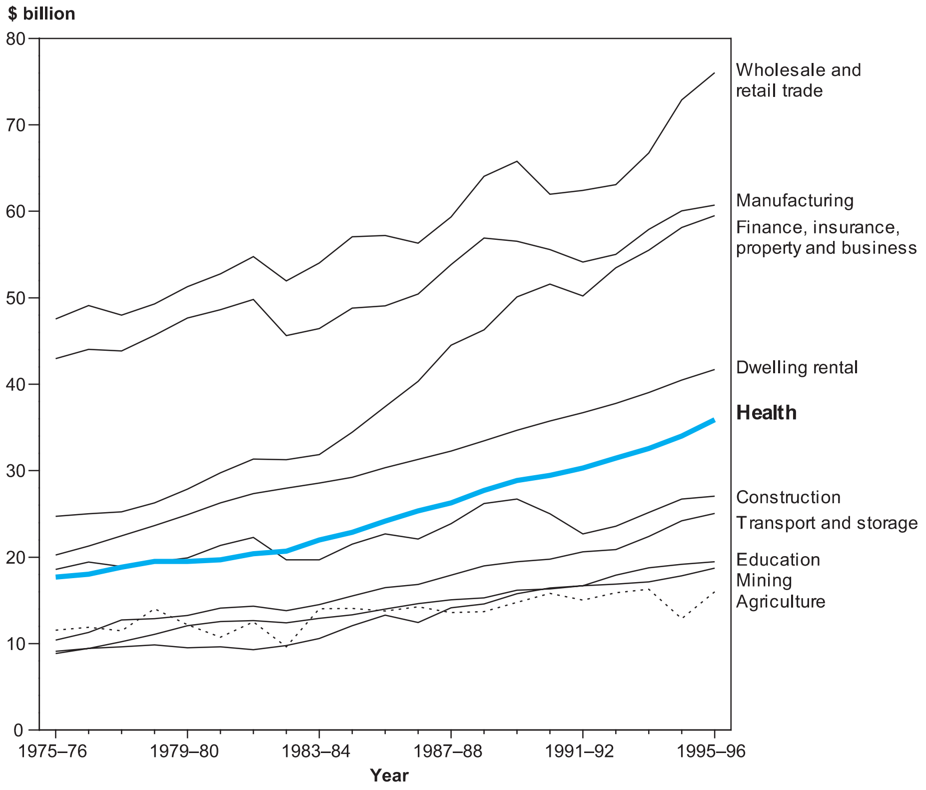
Source: AIHW Health Expenditure Database.

Health services expenditure 1975–76 to 1996–97

Between 1975–76 and 1996–97, real health services expenditure more than doubled. Measured in constant (average 1989–90) price terms, health services expenditure grew from $17,679 million in 1975–76 to $36,768 million in 1996–97. This represented a real average annual increase of 3.5%. Population growth over this period was 31.9% (average of 1.3% per year). Consequently, real per person health services expenditure increased at an average rate of 2.2% per year. This reflected the combined effects of change in the intensity of provision of health services to individuals and the quality of the services provided.

Part of the increase in real health services expenditure per person was due to the ageing of the population, and part reflected greater use of health services by people of all ages. It is estimated that 22% of the total increase in health services expenditure between 1975–76 and 1996–97 could be attributed to the increasing proportion of older people in the population.

Typically, health services expenditure grows at a relatively steady rate and is much less dependent on business cycle fluctuations than are other industries. For example, the manufacturing, construction, and wholesale and retail trade industries showed wide variations in growth, which were not experienced by the health industry (Figure 6.1).



Note: Industries are classified using the ABS Australian and New Zealand Standard Industrial Classification (ANZSIC), except for health. The health data is calculated by AIHW using a purpose classification.

Sources: ABS unpublished data; AIHW Health Expenditure Database.

Figure 6.1: GDP by industry, 1975–76 to 1995–96 at constant (average 1989–90) prices

Between 1994–95 and 1996–97 expenditure on health services grew, in real terms, by an average of 4.1%. This was above the average of the previous 5 years (3.3%) and the long-term (1975–76 to 1994–95) average growth rate of 3.5%.

In 1975–76, health services expenditure accounted for 7.5% of GDP. By 1989–90 it had increased to 7.8%. However, it then rose sharply to 8.2% in 1990–91 and to 8.5% in 1991–92. It peaked at 8.6% in 1992–93 and, in the 4 years from 1993–94 to 1996–97 it has remained steady at 8.5%.

The increases that occurred in the health services expenditure to GDP ratio during the early 1990s were largely due to the recession in this period. Because there was no real growth in GDP, the ratio itself rose rapidly despite real health services expenditure growth being lower than normal (average 2.4% per year between 1989–90 and 1991–92 compared with 4.7% in the previous 5 years and 4.0% in the subsequent 5 years to 1996–97).

Health services expenditure internationally

As noted in Box 6.1 (page 162), health services expenditure of different countries is best compared in terms of the percentage of GDP. This gives an indication of resources used in the delivery of health services relative to each country's ability to provide them. However, it can confuse the issue when consideration is given to comparing changes in efforts by countries to meet their needs for health services. The change in the share of GDP expended on health can be as much an indication of growth in GDP as growth in health services expenditure.

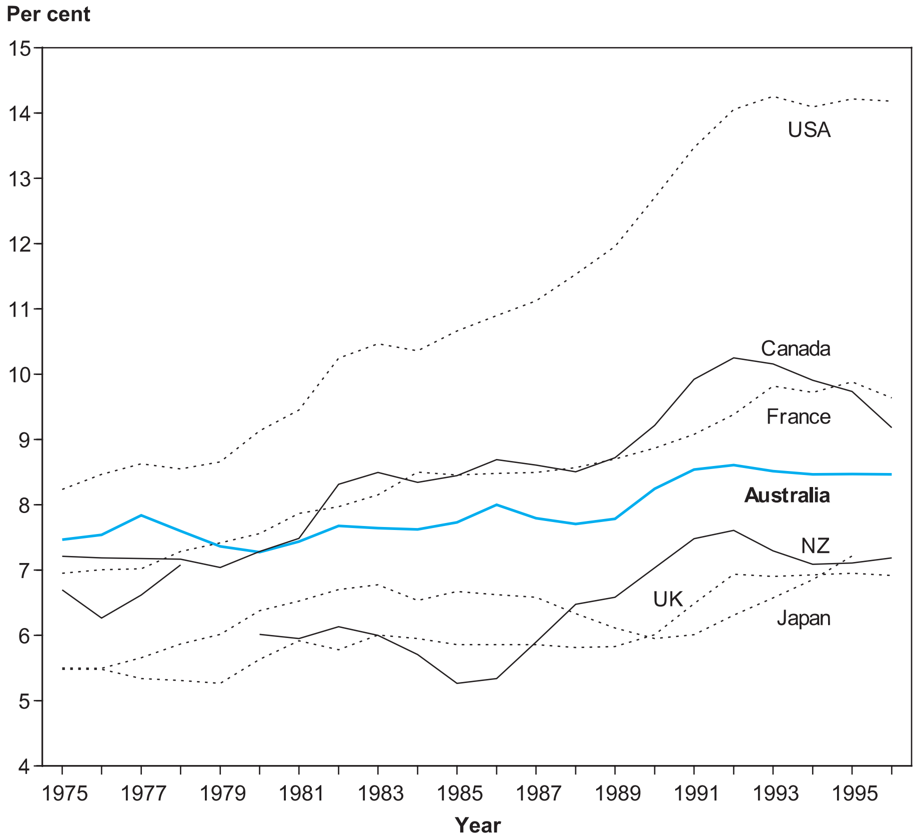
In the mid-1980s, most OECD countries showed a levelling off in health services expenditure as a percentage of GDP. The exception was the United States (Figure 6.2, page 170). From 1993 to 1995 there has been stability in the average percentage of GDP spent on health by those countries that had reported to OECD, including the United States. From 1989 to 1995 (the latest year for which data from all countries are available) there was an increase from 9.6% to 11.4% in the average percentage of GDP spent on health for the seven selected OECD countries, or from 6.9% to 8.0% when the influence of the United States is removed (Table S45, page 289). Most of this increase was due to a general slowdown in economic activity throughout the OECD, and did not necessarily indicate high rates of growth in expenditure on health services.

Although most OECD countries have kept their ratios of health services expenditure to GDP relatively stable and simultaneously experienced improvements in population health over the period, there is no clear indication of any minimum ratio required in order to maintain population health. Nor is there any indication of the relationship between the absolute level of health services expenditure and a nation's health status.

A number of factors contribute to the growth of health services expenditure. Broadly, these fall into two categories—inflation (both general inflation and excess health inflation); and change in the level of use of services, either from population growth or more intensive per person use of services.

A comparison of Australia's health services expenditure growth with those of a number of other countries reveals some interesting differences. Since the general inflation rate is a characteristic over which the health system has no substantial control, it is useful to compare rates of 'excess health inflation' in order to appreciate differences in the direct health inflationary pressures faced by countries. Even in countries with fairly similar approaches to health services provision, rates can vary greatly. For example, among

OECD member countries there is a wide spectrum of health inflation rates. At one end is the United States with a very high excess health inflation rate—averaging 2.1% between 1975 and 1995. At the other extreme is France, which had a negative excess health inflation rate, averaging –0.9%. Australia had an excess health inflation rate between 1975–76 and 1995–96 of 0.1% (Table 6.6). Had Australia experienced the same excess health care inflation rate over the period as the United States but no change in its general inflation rate, its health services expenditure in 1995–96 would have been $A19,202 million (46.5%) higher than it was. This would have lifted Australia's health services expenditure to GDP ratio in 1995–96 from 8.5% to 12.4% of GDP. On the other hand, had Australia maintained its general inflation rate and achieved an excess health inflation rate the same as that of France, its ratio of health services expenditure to GDP in 1995–96 would have been 6.9%. It is clear that 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.



Source: Unpublished OECD data.

Figure 6.2: Health expenditure as a proportion of GDP, selected OECD countries, 1975 to 1996

Countries in the OECD comparison have experienced markedly different rates of population growth. It is therefore interesting to examine per person real expenditure growth. Between 1975–76 and 1995–96, real per person expenditure on health in Australia grew at an average rate of 2.2% per year. That was around the median for the seven OECD countries included in the comparison.

Table 6.6: International comparison of health services expenditure growth, Australia and selected OECD member countries, 1975 to 1995 (per cent)

	Australia[a]	Canada	France	Japan	NZ	UK	USA	Weighted averages
Ratio of health services expenditure to GDP								
1975	7.6	7.2	7.0	5.5	6.7	5.5	8.2	7.3
1983	7.6	8.5	8.2	6.8	6.0	6.0	10.5	8.9
1989	7.8	8.7	8.7	6.1	6.6	5.8	12.0	9.6
1995	8.5	9.7	9.9	7.2	7.1	6.9	14.2	11.4
Components of growth in health expenditure 1975 to 1995								
Nominal growth in health services expenditure	10.4	9.5	10.5	[b]5.5	[c]11.1	11.2	[d]10.9	n.a.
Health services inflation	6.6	6.2	5.4	[b]2.3	[c]10.5	8.9	[d]7.1	n.a.
General inflation	6.4	4.9	6.4	[b]1.9	[c]9.0	7.7	[d]4.9	n.a.
Excess health inflation[e]	0.1	1.3	–0.9	[b]0.4	[c]1.4	1.2	[d]2.1	n.a.
Real growth in health services expenditure	3.6	3.0	4.8	[b]3.1	[c]0.6	2.1	[d]3.6	n.a.
Population	1.3	1.2	0.5	[b]0.5	[c]0.6	0.2	[d]1.0	n.a.
Per person real growth	2.2	1.8	4.3	[b]2.6	[c]–0.1	1.9	[d]2.6	n.a.

(a) Australian data relate to expenditure in the financial year which starts in the year indicated, e.g. 1975 data is the financial year 1975–76.
(b) Japan from 1980 to 1993 only.
(c) New Zealand from 1978 to 1993 only.
(d) United States of America from 1975 to 1994 only.
(e) 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.

Source: Unpublished OECD data.

Hospital and health services expenditure by States and Territories

The largest single area of health services expenditure by State and Territory Governments is public acute care hospitals. In 1995–96, State and Territory Governments spent $5,043 million (54.2% of their total health expenditure) in meeting the operating costs of public hospitals. In addition, a large proportion of the State and Territory Governments' $903 million capital expenditure and $553 million capital consumption related to public acute care hospitals (Table S44, page 288).

Commonwealth Grants Commission (CGC) data

Gross recurrent expenditure on health services by State and Territory Governments, in constant (average 1989–90) prices, increased by 10.7% from $11.5 billion in 1992–93 to $12.7 billion in 1996–97 (CGC 1998). Health services expenditure as a proportion of State and Territory Governments' total net expenditure recorded by the CGC increased from 28.0% in 1992–93 to 28.8% in 1996–97.

Between 1992–93 and 1996–97, there was a 5.7% increase in real terms in total recurrent health services expenditure by State and Territory Governments, from $655 to $692 per person. However, there were considerable differences in growth rates between the States and Territories. Victoria, South Australia and the Australian Capital Territory experienced declines in expenditure with falls of 4.2%, 1.6% and 11.1%, respectively. Queensland recorded the largest increase in real health services expenditure per person over the period (12.8%), followed by New South Wales (12.0%) and Western Australia (9.8%) (Table 6.7).

The Northern Territory was the highest spender in terms of real expenditure per person throughout the period. Queensland was the lowest spender over most of the period, except in 1996–97 when Victoria spent less than all the other States and Territories.

Box 6.2: State and Territory expenditure data sources

Statistics of health services expenditure by State and Territory Governments are available from a variety of sources, including the ABS public finance database, State and Territory health authorities' annual reports, State and Territory Budget papers, and the Commonwealth Grants Commission (CGC).

These bodies have adopted different practices for defining and measuring State health services expenditure, resulting in differences in statistics reported at the State level. For example, the CGC database, one of the better databases on State health services expenditure for recent years, includes Commonwealth grants to States, and reports recurrent expenditure but excludes capital expenditure and capital consumption (depreciation), as capital expenditure is not within its terms of reference.

At the State/Territory level there are some quite marked annual differences between the ABS and CGC data.

One difference is the way in which interstate payments are treated. The aim of the CGC is to give each State 'the capacity to provide the average standard of State-type public services, assuming it does so at an average level of operational efficiency and makes an average effort to raise revenue from its own sources' (CGC 1998). Its statistical collations are, therefore, geared to determining the level of expenditure required by States to provide for the needs of their populations. The needs of States' populations are assessed in terms of the expenditure involved in providing services to them, irrespective of whether or not those services are provided within the State concerned. The ABS, on the other hand, is responsible for recording expenditure incurred by each State and Territory Government. For example, services provided in Victoria to a person who is a resident of New South Wales would be counted by the CGC as New South Wales expenditure and by the ABS as Victorian expenditure. In addition, CGC and ABS treat revenues differently, with the CGC including only revenues for patient and other health services.

CGC data are used here in comparing health services expenditure by State and Territory Governments. However, because the CGC includes only patient-related revenue, it is not possible to use these data to identify States' own source expenditure on hospital services. Also, the CGC data exclude revenue from the Department of Veterans' Affairs for the treatment of veterans in State public hospitals, and exclude associated expenditure.

Table 6.7: State and Territory Government acute hospital services[(a)] and total recurrent health services expenditure per person, 1992–93 to 1996–97, constant (average 1989–90) prices ($ per capita)

State/Territory	1992–93	1993–94	1994–95	1995–96	1996–97	Change 1992–93 to 1996–97 (%)
Hospital services						
NSW	496	492	543	561	572	15.1
Vic	468	449	433	439	441	–5.8
Qld	436	423	431	471	487	11.7
WA	528	534	531	548	574	8.8
SA	547	533	511	523	521	–4.6
Tas	560	539	546	546	575	2.8
ACT	616	542	575	600	530	–13.9
NT	821	840	822	884	872	6.3
Australia	493	482	495	513	522	6.0
Total health services						
NSW	620	618	669	693	695	12.0
Vic	671	635	614	640	643	–4.2
Qld	577	565	579	626	651	12.8
WA	716	715	708	734	786	9.8
SA	720	709	691	701	709	–1.6
Tas	727	685	673	684	758	4.3
ACT	752	677	700	734	668	–11.1
NT	1,303	1,310	1,361	1,481	1,390	6.6
Australia	655	639	652	681	692	5.7

(a) Under the CGC definition, 'hospital services' expenditure includes acute hospital, patient transport, blood transfusion services and central administration expenses.

Note: This table is derived from CGC data by the AIHW. It includes only recurrent health expenditure by State and Territory Governments that is funded by Commonwealth grants, from States' own funds, or revenue related to the use of health services.

Sources: Population data and deflators from AIHW Health Expenditure Database; expenditure data from CGC 1998.

Medicare levy

Almost all Commonwealth Government funding for health services comes from general revenue sources. However, when Medicare was introduced in 1984 it replaced some existing Commonwealth Government programs and expanded eligibility to others. Its introduction was also associated with the abolition of an existing tax rebate on contributions to basic health insurance. Under the Medicare arrangements, the additional cost to the Commonwealth associated with its introduction (i.e. the net cost of Medicare over and above the costs that had been associated with the schemes that it replaced) was to be funded by a 1.0% levy on taxable incomes. In 1984–85, the first full year of operation of Medicare, the levy raised $1,223 million or 2.3% of total taxation revenue. The levy has been increased several times since 1984 and is currently set at 1.5% of taxable income.

Total revenue collected by the Commonwealth through the Medicare levy in 1996–97 was $4,130 million. This included an estimated $486 million by way of a special surcharge related to the buyback of certain firearms. When that surcharge is removed, the amount of revenue raised by the Medicare levy was $3,644 million or 2.9% of the Commonwealth Government's total taxation revenue (Table 6.8).

In October 1997, an additional surcharge of 1.0% of taxable income was introduced in respect of high-income earners who do not have private health insurance cover (see Box 6.3 for details of the surcharge).

Table 6.8: Commonwealth Government receipts from the Medicare levy and total taxation revenue, current prices, 1984–85 to 1996–97 ($ million)

Revenue type	1984–85	1989–90	1990–91	1991–92	1992–93	1993–94	1994–95	1995–96	1996–97
Medicare levy	1,223	2,545	2,480	2,385	2,415	2,870	3,030	3,350	(a)3,644
Total taxation revenue	53,208	91,343	93,225	87,970	89,435	94,024	105,687	116,386	(b)124,363
Medicare levy as a proportion of total taxation	2.3%	2.8%	2.7%	2.7%	2.7%	3.1%	2.9%	2.9%	2.9%

(a) Does not include an estimated $486 million in special surcharge levied for the purpose of buying back certain firearms from the public.

(b) Includes an estimated $486 million in special surcharge levied for the purpose of buying back certain firearms from the public.

Source: Commonwealth of Australia 1997.

6.3 Private health insurance

Box 6.3: Private health insurance arrangements

Since the introduction of Medicare in 1984, health insurance funds operated by Registered Health Benefits Organisations[1] have not been permitted to offer benefits to cover any part of the cost of services provided by medical practitioners outside hospitals. Benefits are available for approved services provided to private patients in both public and private hospitals. Up to 1 October 1996 there were two forms of health insurance cover available – basic and supplementary – and two categories of membership – single and family. Under these arrangements, premiums charged for family membership were required to be double that charged for single membership in the same table.[2]

Basic hospital tables provided benefits that fully covered the fees charged for standard facilities provided to private inpatients in recognised public hospitals. They also provided partial cover against the fees charged by private hospitals and day hospital facilities. In addition, basic hospital tables covered the 'gap' between the Medicare benefits payable and the Schedule fees for medical services provided to private patients in hospital.

Supplementary hospital tables provided additional hospital accommodation benefits to cover some or all of the gap between the benefits payable under the basic hospital table and the fees charged by private hospitals or by public hospitals for non-standard private facilities.

1. A Registered Health Benefits Organisation is an organisation registered under the *National Health Act 1953* for the purpose of conducting a health benefits fund.
2. An insurance table defines the services covered and benefits payable for a particular health insurance product.

(continued)

Box 6.3 (continued): Private health insurance arrangements

On 1 October 1996 new membership categories were introduced – singles, couples without children, sole parents, and couples with dependent children – to replace the previous two categories.

Under the new arrangements there were no set relativities between the premiums for different family types.

Other changes were made to the private health insurance arrangements in July 1997. These were aimed at arresting falling coverage by private health insurers. The measures introduced as part of these changes were the Private Health Insurance Incentives Scheme and the Medicare Levy Surcharge arrangements.

The first provides a private health insurance rebate for low- and middle-income families. That rebate is available to:

- *single people with taxable incomes of up to $35,000 per year;*
- *couples and families with one child, who have a combined taxable income of up to $70,000 per year;*
- *families with more than one dependent child with a combined taxable income of up to $70,000 plus $3,000 for the second and each subsequent child.*

The value of the rebate varies across different family and insurance types.

The second measure imposed a surcharge of one percentage point to the Medicare Levy (Commonwealth of Australia 1996) payable by:

- *uninsured singles with taxable incomes of more than $50,000 per year; and*
- *uninsured couples with taxable incomes of more than $100,000 per year.*

The threshold at which the surcharge becomes effective is increased by $1,500 for each dependent child.

Funding of health services by health insurance funds

Total recurrent health expenditure in 1995–96 was $38,951 million. Of this, private health insurance accounted for 11.4% or $4,426 million. By 1996–97, expenditure by private health insurers on health services had increased to $4,700 million (Table 6.9, page 176).

Expenditure on acute care hospitals, both public and private, during 1995–96 was $14,448 million, of which, $2,611 million was funded through benefits paid by health insurance funds. The hospital expenditure funded from health insurance funds was largely concentrated in the private hospital sector. In 1996–97, they paid benefits totalling $2,437 million in respect of private hospital care and $360 million in benefits paid for insured patients in public hospitals (Table 6.9).

Administration of health insurance funds accounted for $530 million in 1996–97. This represented 12.7 cents for each dollar of benefit paid from the funds and accounted for 12.0% of contributions income receivable by the funds in that year.

Table 6.9: Expenditure from private health insurance funds, by area of expenditure and income, by type of income, current prices, 1993–94 to 1996–97 ($ million)

	1993–94	1994–95	1995–96	1996–97
Institutional	*2,447*	*2,527*	*2,702*	*2,890*
Public acute care hospitals[(a)]	499	436	384	360
Private hospitals	1,866	2,004	2,227	2,437
Ambulance[(b)]	82	87	91	93
Non-institutional[(c)]	*1,146*	*1,179*	*1,220*	*1,280*
Medical	208	216	223	229
Dental	539	546	564	596
Other professional	188	205	215	225
Community and public health	1	1	1	1
Pharmaceuticals—other items	42	42	44	44
Aids and appliances	168	169	172	184
Total benefits	3,593	3,706	3,922	4,170
Administration	482	495	504	530
Total benefits plus administration	**4,075**	**4,201**	**4,426**	**4,700**
Total contributions receivable	4,154	4,137	4,226	4,404
Total non-contributions income	131	161	193	240
Total income, all sources	**4,285**	**4,299**	**4,419**	**4,645**

(a) Public acute care hospitals include both recognised public hospitals and repatriation hospitals.
(b) Ambulance includes levies imposed by some State and Territory Governments in respect of ambulance transport.
(c) Non-institutional excludes administration.

Source: PHIAC unpublished data.

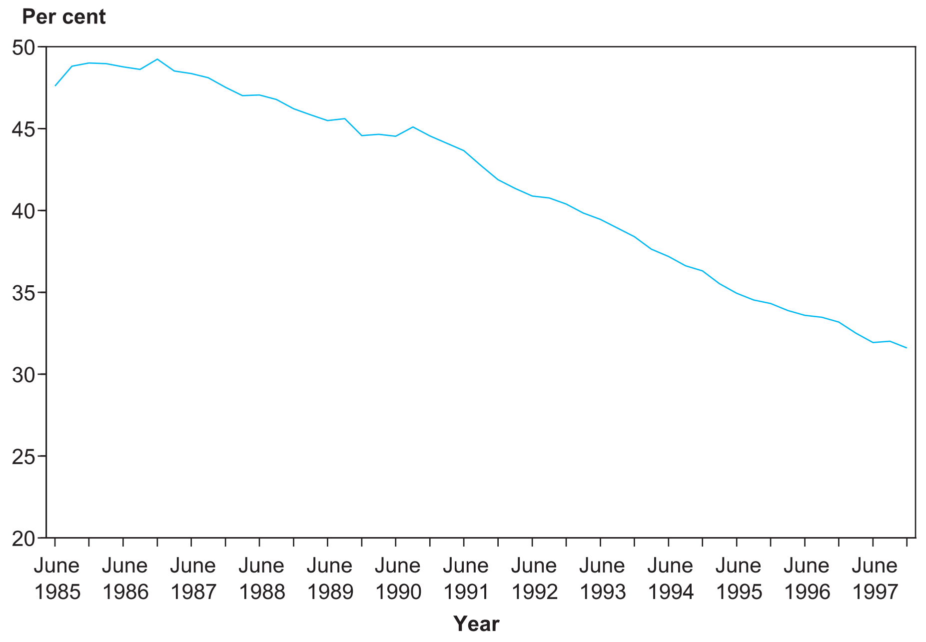
Trends in private health insurance coverage, membership and premiums

The proportion of the population with private health insurance has continued to fall each year since just before the introduction of Medicare in 1984. At the end of June 1984, about 50.0% of the Australian resident population were covered by private health insurance. By the end of 1992, coverage had fallen to 40.2% and by December 1997 had reached 31.6% (Figure 6.3). However, the decline in coverage was by no means uniform across all States and Territories—in South Australia, coverage fell from 56% to 33% between June 1984 and December 1997, whereas in Queensland the fall was from 36% to 30% over this period.

Box 6.4: Community rating of private health insurance

Community rating has been important in determining the way in which private health insurance policies can be marketed. The principles of community rating were established in the National Health Act 1953*, which requires that funds accept all applicants, and that policies be offered at the same rate to all members within membership categories irrespective of age, race, sex, sexuality, health status, benefits claimed or family size. The effect of this is that, if the use of health services varies within or between any of these sociodemographic groups, there will be some cross-subsidisation from those groups that use health services infrequently to those groups that use them frequently.*

Health insurance premiums are set in accordance with the community rating principle (Box 6.4). Consequently, changes in both the number of members and coverage levels can have quite significant impacts on the financial status of individual funds, and on the private health insurance industry as a whole.



Source: PHIAC 1997 and unpublished data.

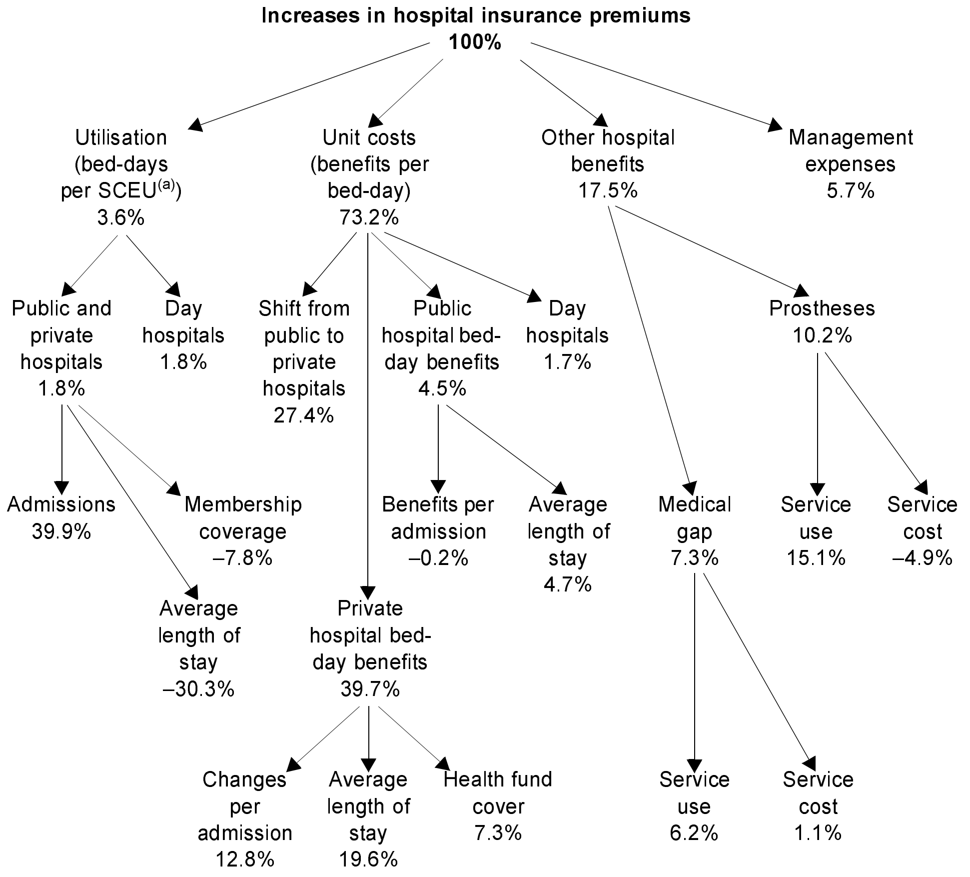
Figure 6.3: Proportion of population covered by basic health insurance, 1985 to 1997

Basic hospital tables

The average number of single membership units with basic hospital insurance cover decreased between 1984–85 and 1996–97 from 1,303,733 to 1,287,000. However, there was a much more substantial fall in the average number of family membership units, from 1,989,206 to 1,547,500. As a family membership unit had the same value as two single membership units (i.e. the contribution paid by a family was set at double the single rate for all tables), the net effect of the fall in membership numbers was equal to a reduction of 900,145 single membership units. This represents a decrease in membership of 15.7% over the whole period, at an average of 1.2% per year.

Another feature of the changing pattern in membership over the period was the fall in the average number of people covered per family membership unit. In June 1984, coverage per family membership unit was 3.23 people on average. By December 1997, that had fallen to 3.07 people. One possible explanation is that it partly reflects the ageing of the population and the fall in the dependency ratio with respect to children. A second possibility is that a high proportion of the families that allowed their memberships to lapse had larger numbers of dependent children. Another factor that could have contributed, also associated with the ageing population, is an increase over time in the number of widowed aged people and couples where one partner has been admitted to a nursing home who no longer need family health insurance cover.

The decline in private health insurance coverage coincided with a rapid rise in private health insurance premiums. Premiums of health insurers with the largest memberships in each State increased, in real terms, between 58% and 173% from 1984 to 1996, leading to a decline in affordability, particularly among the lowest income groups (Schofield et al. 1997).



(a) SCEU = single contributor equivalent unit.

Source: Industry Commission 1997.

Figure 6.4: Key contributors to real increases in hospital insurance premiums, 1989–90 to 1995–96 (per cent)

Industry Commission inquiry

The increase in premiums and the fall in private health insurance membership were the subject of an inquiry into private health insurance undertaken by the Industry Commission in 1996. One of the major tasks of this inquiry was to identify the factors that contributed to the increase in private health insurance premiums which, at an average of 9.8% per year, had been well above the consumer price index (2.9% per year) between 1989–90 and 1995–96. The Industry Commission reported its findings in February 1997 (Industry Commission 1997).

The many factors that the Commission identified as having contributed to the increase in premiums are outlined in Figure 6.4. The more important of these relate to increased benefit payments for hospital inpatient services, resulting from the increase in admissions to all types of hospital care, and the shift from public to private hospitals. These accounted for 39.9% and 27.4% of the increase in premiums, respectively.

Ancillary benefits tables

In addition to their basic hospital tables, the funds offer tables providing ancillary cover. These provide benefits in respect of services such as dental, optical, therapeutic and other (generally non-accommodation) non-medical services.

About 5,865,000 people (31.7% of the total resident population) had some form of ancillary cover at 30 June 1997 (Table 6.10). Of these, 4,541,000 were covered for both hospital and ancillary cover with the same Registered Health Benefits Organisation. A further 1,324,000 either had ancillary cover only or had ancillary cover with one organisation and hospital insurance with another organisation.

Table 6.10: Membership and persons covered by ancillary tables, by type of membership and State, 30 June 1997 ('000s)

Membership type	NSW	Vic	Qld	WA	SA	Tas	NT	Australia
Combined with hospital insurance[(a)]								
Single members	351	183	134	104	88	30	6	897
Family members	427	217	205	163	107	36	10	1,167
Total members	778	400	339	267	196	67	17	2,063
Persons covered	1,690	881	765	603	418	144	40	4,541
Without hospital insurance cover[(b)]								
Single members	122	31	36	35	34	9	1	269
Family members	137	45	34	46	46	8	1	317
Total members	259	76	70	81	80	16	3	586
Persons covered	576	187	149	189	184	34	6	1,324
All ancillaries								
Single members	473	214	170	139	122	39	7	1,166
Family members	564	262	239	209	153	44	11	1,484
Total members	1,037	476	409	348	276	83	20	2,649
Persons covered	2,266	1,068	914	792	602	178	46	5,865

(a) Members and persons covered where both hospital insurance and ancillary cover are with the same fund.

(b) Members and persons covered by ancillary tables only (may include members who have hospital insurance cover with a fund other than the fund providing ancillary cover).

Source: PHIAC 1997.

Changes in the characteristics of the insured

The proportion of people covered by private health insurance varies between different population groups, and has altered considerably among these groups over the period of the decline in coverage.

Coverage for single members fell from 35% to 26% between 1986 and 1995 (Schofield et al. 1997). There was also a large decline in coverage among couples with children, from 64% to 47% (Table 6.11).

There has also been a sharp fall in the level of coverage among those in the middle and upper income groups. By contrast, the level of coverage among the lowest income group remained relatively constant between 1986 and 1995.

The decline in coverage was more marked among the younger age groups, with coverage for those aged between 25 to 34 years falling from 50% to 27% between 1986 and 1995.

Table 6.11: Proportion of the population with private health insurance, contributor units, 1983 to 1995

	1983	1986	1988	1990	1992	1995[(a)]
Contributor unit type[(b)]						
Single person	52	35	36	36	35	26
Sole parent with dependants	31	23	22	25	22	18
Couple without dependants	67	55	53	53	50	42
Couple with dependants	83	64	62	61	55	47
Gross family income quintile						
First	23	20	22	23	23	22
Second	40	29	30	30	26	22
Third	75	47	44	45	39	25
Fourth	90	61	61	59	54	41
Fifth	88	75	73	73	71	63
Age of head (years)						
15–24	55	33	33	33	32	21
25–34	72	50	46	44	39	27
35–54	77	59	58	58	51	44
55–74	50	44	44	46	44	40
75 and over	36	32	33	34	35	29

(a) 1995 figures based on projections from NATSEM's private health insurance data set.

(b) A contributor unit includes all persons coverable by a health insurance policy. For example, a 'couple with dependants' unit type would include both parents and all dependent children.

Source: Schofield et al. 1997.

6.4 Health workforce

The health workforce both delivers health services to the Australian population and represents the largest single cost of delivering those services. During the last 20 years, changes in health service management, driven by cost containment, consumer demand and new models of health care, have affected the demand for and supply of the health workforce, and contributed to the restructuring of health employment. These changes have included transfer of institutional care functions to community care, the introduction of casemix funding to public hospitals in some States, advances in medical diagnosis and treatment technology, and increasing medical and nursing specialisation. Consumer demand for niche and high-technology medical services, allied health services and natural therapy treatments has been fuelled by a large increase in popular media interest in health issues. The workforce providing these services has expanded relatively rapidly to meet this demand.

The health workforce, in economic terms, is now more efficient and productive. Fewer hospital staff in 1996 than a decade earlier were treating significantly more patients at much higher patient turnover achieved through declining average length of stay. In the community sector, growth in the numbers of private and public community health and medical centres have increased both access to health services and the economic efficiency of the delivery of those services.

The health workforce has grown more quickly in metropolitan areas than in rural areas. For example, between 1984–85 and 1996–97 the number of full-time equivalent general practitioners in metropolitan areas increased by 61.2% in absolute numbers, and by 37.1% per 100,000 population. In rural and remote areas the increase was 39.4% in absolute numbers and 19.7% per 100,000 population (AIHW from unpublished DHFS data). In 1996, the Australian Medical Workforce Advisory Committee estimated that such a large increase in the metropolitan general practitioner workforce had led to an oversupply of 2,500 full-time equivalents in capital cities, but shortages of 500 remained in rural areas (AMWAC & AIHW 1996). In rural areas, shortages of health practitioners and consumer demand for local provision of services mean that there is greater demand for full-time employment, extended after-hours on-call duty, greater professional isolation and reduced economic efficiency for one- and two-person health practices. As a consequence, rural areas are less attractive than cities and large towns for a health professional, particularly when issues of spouse employment, children's education, access to relatives and other personal factors are also taken into account.

Employment in the health industry

The health industry in Australia has undergone significant restructuring in the decade from 1986 to 1996. There are two principal sources of ABS data which illustrate the major changes: the 5-yearly national population census and the labour force survey which collects occupation and industry data on a quarterly basis. Because of the different methods of enumeration used, there are differences in the magnitudes of structural changes shown by the two data sources. The census tends to produce lower health workforce estimates than the survey.

Increase in demand for health services over time is driven in large part by population growth and ageing of the population. Between 31 December 1991 and 31 December 1996, the population of Australia increased by 6.0% to 18.4 million, a slowdown on the 7.7% growth achieved between 1986 and 1991. However the population aged 70 and over, who are the highest consumers of health services, increased by 18.1%.

By comparison, from 1991 to 1996 the numbers of persons employed in the health industry increased by 11.3%, and in health occupations other than nursing by 15.7%, with total nurse numbers almost unchanged (Table 6.12, page 182). Other findings from the population census included:

- continuing contraction in hospital employment, particularly in psychiatric hospitals. In non-psychiatric hospitals, increased patient throughput arising from population growth was absorbed by a stable salaried workforce, accompanied by workforce growth in excess of population growth in the numbers of specialist medical practitioners, the great majority of whom have contracts to provide services in hospitals;

- a slowdown in the growth in nursing home employment, from 12.5% between 1986 and 1991, to 6.0% between 1991 and 1996, associated with increased use of other aged care accommodation and health support services;
- strong growth in employment in community health services. In contrast to hospital and nursing home employment declining by 1.1% from 1986 to 1991 and by a further 0.9% from 1991 to 1996, the balance of health industry employment increased by 25.6% from 1986 to 1991 and by 34.2% over the following 5 years;
- total nursing employment was very stable over the decade from 1986 to 1996 but underwent significant restructuring with a 38.1% decline in the number of enrolled nurses between 1991 and 1996 and an 11.5% increase in the number of registered nurses (Table 6.13);

Table 6.12: Persons employed in the health industry, Australia, 1986, 1991 and 1996 censuses

Health industry	1986	1991	1996	Per cent change 1986–91	Per cent change 1991–96
		(Number)			
Hospitals (excluding psychiatric)[a]	231,570	224,320	222,423	–3.1	–0.8
Psychiatric hospitals	18,730	14,000	8,424	–25.3	–39.8
Nursing homes	67,570	76,000	80,564	12.5	6.0
Medicine	64,960	73,420	78,143	13.0	6.4
Dentistry and dental laboratories	22,350	23,720	24,891	6.1	4.9
Optometry	5,250	7,060	8,244	34.5	16.8
Ambulance services	6,200	6,470	7,085	4.4	9.5
Community health centres	13,650	17,340	31,928	27.0	84.1
Other[b]	21,590	40,280	75,511	86.6	87.5
Total	**451,870**	**482,610**	**537,213**	**6.8**	**11.3**
		(Number per 100,000 population)		(Per cent change)	
Hospitals (excluding psychiatric)[a]	1,445.7	1,297.8	1,214.7	–10.2	–6.4
Psychiatric hospitals	116.9	81.0	46.0	–30.7	–43.2
Nursing homes	421.8	439.7	440.0	4.2	0.1
Medicine	405.5	424.8	426.7	4.7	0.5
Dentistry and dental laboratories	139.5	137.2	135.9	–1.6	–1.0
Optometry	32.8	40.8	45.0	24.6	10.2
Ambulance services	38.7	37.4	38.7	–3.3	3.4
Community health centres	85.2	100.3	174.4	17.7	73.8
Other[b]	134.8	233.0	412.4	72.9	76.9
Total	**2,821.0**	**2,792.2**	**2,933.7**	**–1.0**	**5.1**

(a) Includes hospitals, nursing homes undefined.

(b) In 1996, 'other' included 10,875 persons employed in pathology services, 6,718 in physiotherapy services, 4,393 in chiropractic services, and 53,525 in other health services.

Sources: ABS 1993, 1997b.

- with reductions in permanent additions to the workforce of overseas-trained doctors, medical workforce growth slowed from 18.3% between 1986 and 1991 to 13.8% between 1991 and 1996. In contrast, numbers of practitioners in the allied health professions increased by around 20% or more between 1991 and 1996, with the exception of pharmacists and dentists where numbers increased by 13.1%.

Labour force survey data (Table 6.14, page 184) further illustrate the dynamics of structural change in the health industry between 1991 and 1996:

- the health industry workforce increased by 6.5% compared with 8.6% for the Australian civilian workforce;
- highest employment growth was for part-time jobs. In the health industry, there was a 49.2% increase in part-time jobs for males, and a 14.6% increase for females. This was similar to a 31.9% increase for males and 16.1% increase for females in the civilian workforce;
- this growth in part-time employment increased the proportion of part-time jobs in the health industry from 34.7% to 38.0%. This means that the increase in full-time equivalent (FTE) employment was significantly less than the 6.5% growth in total jobs. This

Table 6.13: Health personnel by occupation, 1986, 1991 and 1996 censuses

Occupation	1986	1991	1996	Per cent increase 1986–91	Per cent increase 1991–96
Health diagnosis and treatment practitioners					
Medical practitioners					
Specialist practitioners	9,000	13,350	14,950	48.3	12.0
Other practising doctors	23,790	25,450	29,206	7.0	14.8
Total medical practitioners	*32,790*	*38,800*	*44,156*	*18.3*	*13.8*
Dental practitioners	6,310	6,720	7,601	6.5	13.1
Pharmacists	10,640	10,880	12,310	2.3	13.1
Physiotherapists	5,930	7,120	8,896	20.1	24.9
Medical imaging professionals[(a)]	4,270	4,760	6,747	11.5	41.7
Occupational therapists	2,770	3,660	4,363	32.1	19.2
Speech pathologists	1,320	1,750	2,337	32.6	33.5
Optometrists	1,470	1,820	2,255	23.8	23.9
Chiropractors and osteopaths	1,370	1,540	1,988	12.4	29.1
Podiatrists	980	1,140	1,462	16.3	28.2
Other practitioners[(a)]	3,880	5,540	4,777	42.8	–13.8
Total	*71,730*	*83,730*	*96,892*	*16.7*	*15.7*
Nurses					
Registered	138,220	139,380	155,423	0.8	11.5
Enrolled	35,220	39,670	24,567	12.6	–38.1
Total nurses	*173,440*	*179,050*	*179,990*	*3.2*	*0.5*
Total	**245,170**	**262,780**	**276,882**	**7.2**	**5.4**

(a) Numbers may not be directly comparable because of changes in the occupation classification.

Note: Veterinarians and directors of nursing have not been included in order to provide comparability with 1986 and 1991 published statistics.

Sources: ABS 1993, 1997a.

suggests an increase in training requirements to meet future FTE workforce needs and the need to create part-time employment opportunities in rural and remote areas as one of the strategies to rectify rural workforce shortages;

- full-time jobs in the health industry increased by 6.6% for males and declined by 1.5% for females, in contrast to a 4.1% increase for males and 8.0% increase for females in the civilian workforce;
- the rise in male employment increased the male share of the health industry workforce from 23.5% to 24.3%.

Table 6.14: Composition of the health industry and civilian population workforces, 1991 and 1996[(a)]

	Full-time		Part-time		Total			Per cent	
	Males	Females	Males	Females	Males	Females	Persons	Part-time	Female
Hospitals and nursing homes									
1991	73,015	179,950	5,859	127,302	78,873	307,252	386,125	34.5	79.6
1996	73,054	164,199	8,565	128,228	81,618	292,427	374,045	36.6	78.2
Increase	0.1%	–8.8%	46.2%	0.7%	3.5%	–4.8%	–3.1%		
Other health industry									
1991	47,435	66,220	5,568	56,299	53,002	122,519	175,521	35.2	69.8
1996	55,330	78,191	8,484	82,144	63,814	160,335	224,149	40.4	71.5
Increase	16.6%	18.1%	52.4%	45.9%	20.4%	30.9%	27.7%		
Total health industry									
1991	120,450	246,170	11,426	183,601	131,876	429,771	561,647	34.7	76.5
1996	128,384	242,390	17,048	210,372	145,432	452,762	598,194	38.0	75.7
Increase	6.6%	–1.5%	49.2%	14.6%	10.3%	5.3%	6.5%		
Registered nurses									
1991	10,816	83,306	1,494	63,857	12,310	152,162	164,472	39.7	92.5
1996	12,053	82,070	1,424	67,433	13,476	149,503	162,979	42.2	91.7
Increase	11.4%	–7.1%	–4.7%	5.6%	9.5%	–1.7%	–0.9%		
Other health diagnosis and treatment professionals									
1991	51,848	25,713	4,486	14,464	56,334	40,177	96,511	19.6	41.6
1996	58,372	32,224	6,253	21,098	64,625	53,322	117,947	23.2	45.2
Increase	12.6%	25.3%	39.4%	45.9%	14.7%	32.7%	22.2%		
Total civilian workforce ('000s)									
1991	4,039	1,903	406	1,318	4,445	3,222	7,667	22.5	42.0
1996	4,204	2,056	535	1,531	4,740	3,588	8,328	24.8	43.1
Increase	4.1%	8.0%	31.9%	16.1%	6.6%	11.4%	8.6%		

(a) Quarterly survey statistics have been averaged for 1991 and 1996 to minimise volatility in estimates due to sampling.

Source: ABS Labour Force Survey Microfiche.

Medical workforce

The medical workforce in Australia has been undergoing significant demographic change during the last decade as increasing numbers of female medical graduates have commenced employment.

Female doctors as a proportion of the medical workforce have risen from 19.0% to 30.3% between the 1981 and 1996 censuses. The female proportion of the workforce will continue to rise as nearly nine in ten doctors approaching retirement age are males, whereas among younger doctors, 57.6% of those training for general practice, 31.6% of specialist trainees and 42.0% of hospital non-specialists are females.

The ethnic composition of the medical workforce is also changing. At the 1986 census, 64.5% of medical practitioners were born in Australia, 17.1% in Europe and 12.1% in Asia. In 1996, the proportion of Australian-born permanent resident medical students was 61.6%. The second largest group were Asian-born students, constituting 2,074 or 23.3% of the total of 8,907, followed by 430 students born in the United Kingdom and Ireland, representing 4.8% of the total.

Further longer-term change should flow from policies being implemented by several medical schools to increase opportunities for medical training for students from rural areas and for those of Aboriginal or Torres Strait Islander origin. Currently, the medical school with the highest proportion of Indigenous students and those from rural areas is at the University of Newcastle in New South Wales. In 1995, of its 61 graduates completing medical degrees, 5 were Indigenous and 40 were females, and 11 of the 65 students who started their medical course in 1989 were from rural areas.

Other changes will occur as some universities change basic medical training from a 6-year undergraduate to a 4-year postgraduate degree. The Flinders University of South Australia started its 4-year postgraduate basic medical degree course in 1996, and Sydney University and the University of Queensland did so in 1997. By 1998, all seven undergraduate entry medical schools, although primarily selecting students on the basis of academic merit, had varying schemes in place to select a proportion of students on the basis of additional factors including oral assessment, psychometric tests, Indigenous status, and rural home residence (AMWAC & AIHW 1997).

Nursing workforce

Nursing is the largest health profession. Since the mid-1980s the total number of employed nurses has been relatively stable. In December 1995 there were 220,666 registered and enrolled nurses employed in both clinical and non-clinical nursing activities (Table 6.15, page 186). However, during the previous decade there was significant change in the nursing workforce:

- The transition from hospital-based to tertiary-based training for registered nurses was completed in 1993. This has resulted in a more highly trained workforce to meet the needs of increasing specialisation in nursing care. In 1996, basic nursing undergraduate degrees were completed by 5,841 nursing students, and post-basic courses by 2,290 nurses (Table 6.16, page 187).
- A major demographic effect of the transition in training was that the proportion of nurses aged less than 25 years declined from 33.3% in 1981 to 5.9% in 1995.
- Increasing numbers of males are working in nursing with males constituting 8.1% of nurses aged under 45 years compared with between 5% and 6% of nurses in older age groups.
- The proportion working part time has been steadily rising, with a consequential fall in the average number of hours worked. In 1995, 49.0% of female nurses and 15.4% of male nurses were working part time. Average hours worked per week were 33.5 for female nurses and 40.1 for male nurses.

- From 1991 to 1996, the numbers of registered nurses increased by 11.5% and numbers of enrolled nurses declined by 38.1%. A registered nurse has a minimum education requirement of a 3-year degree from a tertiary education institution or the equivalent from a recognised hospital-based program. An enrolled nurse has a minimum education requirement of a 1-year diploma from a tertiary education institution or the equivalent from a recognised hospital-based program.
- In 1995, almost two-thirds of registered nurses were employed in hospitals or day procedure centres, with 13.0% employed in nursing homes, 5.1% in community health centres and 2.9% in private medical rooms. In contrast, 44.6% of enrolled nurses were employed in hospitals or day procedure centres, 33.9% in nursing homes, 1.6% in community health centres and 2.6% in private medical rooms.

Table 6.15: Medical practitioners and nurses, by type and age group, December 1995

Type	Age group					Total	Per cent female
	< 35	35–44	45–54	55–64	> 64		
Medical practitioners							
General/primary care	2,903	7,063	5,040	2,417	2,242	19,666	29.8
GP-in-training	1,117	213	37	4	—	1,371	57.6
Hospital non-specialist	4,316	600	232	101	38	5,288	42.0
Specialist	853	5,048	5,020	2,851	1,547	15,318	14.0
Specialist-in-training	3,697	684	87	—	—	4,468	31.6
Non-clinician	506	758	607	491	468	2,831	31.4
Total	**13,392**	**14,266**	**11,024**	**5,865**	**4,295**	**48,941**	**27.2**
Per cent female	*40.9*	*31.3*	*19.2*	*13.2*	*10.6*	*27.2*	
Nurses							
Registered	55,614	62,165	40,223	12,863	909	171,774	92.4
Enrolled	17,943	19,810	8,970	2,041	127	48,892	93.9
Total	**73,557**	**81,976**	**49,193**	**14,904**	**1,036**	**220,666**	**92.7**
Per cent female	*91.9*	*91.9*	*94.4*	*95.0*	*94.1*	*92.7*	
Dentists(a)							
General	1,885	2,008	1,359	774	463	6,489	19.1
Specialist	60	296	237	142	58	793	8.3
Non-clinician(b)	106	121	73	49	36	385	26.0
Total	**2,051**	**2,425**	**1,669**	**965**	**557**	**7,667**	**18.4**
Per cent female	*33.8*	*19.4*	*10.0*	*5.3*	*4.7*	*18.4*	

(a) Dentist statistics for 1994.
(b) Area of main practice is administration, teaching, education or research, but includes some who also do clinical work.

Sources: AIHW 1997a and unpublished data; Szuster & Spencer 1997.

Dental workforce

From 1991 to 1996 the number of practising dentists counted at the national population census increased by 13.1% to 7,601, a doubling of the growth experienced between 1986 and 1991 (Table 6.13, page 183). During the same period, employment in dental practices and dental laboratories increased by 4.9% to 24,891 (Table 6.12, page 182).

The dental workforce is undergoing demographic change similar to that in medicine. In 1994, female dentists represented 18.4% of the dental workforce. However, in the under

35 years age group, they represented 33.8% of the workforce (Table 6.15). Among dentists aged 65 or more, 4.7% were female, and among those aged 55 to 64 years, 5.3% were female. As these retire, the proportion of female dentists will continue to rise.

In 1994, in a similar pattern to medicine, the percentage of females in dental general practice, 19.1%, was much higher than the 8.3% in specialist practice. In 1994 there were 877 dentists in specialist practice. Of these, 418 were practising orthodontics, 147 oral surgery, 107 prosthodontics, 82 periodontics, 62 endodontics, 43 paedodontics and 18 in other fields of specialist practice (Szuster & Spencer 1997).

In 1994 there were 51.2 practising dentists per 100,000 population in capital cities, and 28.7 per 100,000 population in the rest of Australia. This disparity in geographic distribution exists for all health professions except nursing.

Tertiary education entrants to the health workforce

The number of Australian citizens and permanent residents who completed undergraduate degrees in health fields at universities peaked at 14,871 in 1994 (Table 6.16), the final year of the transition from hospital-based to tertiary-based nurse training. After 1994, a reduction in the number of completions to 13,661 in 1996 was mainly due to a decline of 1,446 in the numbers of nurses completing basic and post-basic courses.

Table 6.16: Undergraduate course completions in health fields, 1991 to 1996

Field of study	1991	1992	1993	1994	1995	1996
Medicine	1,144	1,084	1,234	1,235	1,241	1,327
Dentistry	214	187	227	241	243	236
Pharmacy	363	352	368	354	392	441
Physiotherapy	523	549	548	557	542	529
Medical radiography	262	283	287	441	408	458
Occupational therapy	401	442	443	481	501	392
Speech pathology	174	181	220	235	209	206
Optometry	136	155	162	155	161	164
Podiatry	85	98	101	102	97	92
Nursing						
Basic	4,459	5,207	6,626	6,781	6,137	5,841
Post-basic	1,885	3,071	2,984	2,796	2,915	2,290
Dental therapy	27	33	18	19	18	35
Rehabilitation	91	134	110	171	85	81
Nutrition and dietetics	26	19	26	38	59	62
Health administration	241	229	272	224	248	198
Medical science	148	165	251	352	346	305
Medical technology	249	234	228	208	187	185
Science and technology	65	57	145	158	247	250
Health surveying and environmental health	81	97	176	117	113	98
Health counselling	22	21	18	31	37	58
Other health[(a)]	48	64	76	175	273	413
Total	**10,644**	**12,662**	**14,520**	**14,871**	**14,459**	**13,661**

(a) Mainly public health and Aboriginal health courses.

Note: Australian citizen or permanent resident students only.

Source: AIHW analysis of DEETYA data.

6.5 Institutional health services

Institutional health services include public and private acute and pyschiatric hospitals. Information is also provided in this section on full-time residential mental health services, aged care nursing homes and hostels. Although beds available in nursing homes and hostels exceed those in hospitals, it is the acute care hospital sector which uses a much greater share of health sector resources.

Acute care hospitals

In 1995–96 there were 1,027 acute care hospitals in Australia; 704 of these were public hospitals and 323 were private hospitals. The acute care hospital sector provides medical, surgical and obstetric services on a 24-hour basis and is staffed by qualified medical, nursing and allied health professionals. Due to advances in health care, drug treatments and medical technology, lengths of stay in hospital care are decreasing. Although some categories of patient are not admitted for acute care services, such as those requiring rehabilitation, specialised mental health services or palliative care, most patients require a relatively short stay in acute care. Alongside the increasing trend towards day surgery procedures, treatments that have previously required admission are frequently being provided in outpatient clinics, day care facilities or by community health services. Thus, the role of the acute hospital is increasingly to provide services to those patients with conditions which require a high level of care and technology that can be provided only within hospitals.

Hospitals vary in size from small community facilities that may have as few as 10 beds to large metropolitan hospital campuses that can have up to 1,000 beds. Thus, the overall number of available beds provided by acute care hospitals is a more useful measure of the supply of hospital care than is a count of the number of facilities (Box 6.5). Between 1989–90 and 1995–96, there was an 11% reduction in available public acute care beds, resulting in a decrease in the rate of available beds from 3.7 to 3.0 beds per 1,000 population. This reflects the trend towards patients spending less time in public hospital care and also the shift towards health service delivery by same-day treatment facilities. In contrast, the number of available private acute care beds has increased by 5%, although the increase in the rate per 1,000 population is marginal.

Box 6.5: Available beds

The National Health Data Dictionary *defines available beds as those which are immediately available for use by admitted patients when required (NHDC 1996). The beds are considered to be immediately available for use if located in a suitable place of care and where nursing or other auxiliary staff are available, either immediately or within a reasonable period of time. The count of beds is taken from those beds available at 30 June. Beds in wards which were temporarily closed due to factors such as renovations or strikes, but which would normally be open and therefore available for admission, would normally be included in the end of financial year figures. In many cases, the number of available beds will be less than the number of approved beds, with the former controlled by utilisation factors and resourcing levels, whereas the latter refers to the maximum capacity allowed for the hospital, given sufficient resources and community demand.*

Specialised mental health services

Reforms in recent years in the provision of mental health services have led to a change in the way people with a severe mental disorder are treated. This is particularly evident in the move away from segregated and custodial institutional care to a more balanced system that integrates hospital services with continuing care in community settings (Richmond 1983; Australian Health Ministers 1992). Only a small proportion of people with mental disorders need to spend extended periods in psychiatric hospitals; most

Table 6.17: Institutions and available beds, 1989–90 to 1995–96

Institution type	1989–90	1991–92	1992–93	1993–94	1994–95	1995–96
Institutions						
Hospitals						
Public acute[(a)]	690	713	699	702	727	704
Private acute[(b)]	329	319	323	329	328	323
Free-standing day hospitals	n.a.	72	94	111	125	140
Mental Health Services						
Public psychiatric hospitals[(c)]	59	45	36	37	35	34
Residential care[(d)]	n.a.	n.a.	n.a.	40	48	56
Aged care nursing homes[(e)]	1,437	1,444	1,457	1,457	1,455	1,472
Hostels	1,021	1,198	1,307	1,365	1,448	1,510
Available beds[(f)]						
Hospitals						
Public acute[(a)]	61,066	57,053	54,116	56,140	54,211	54,579
Private acute[(b)]	21,733	20,745	20,860	21,241	22,370	22,757
Mental Health Services						
Public psychiatric hospitals[(c)]	8,513	7,266	5,814	5,360	4,685	3,992
Residential care[(d)]	n.a.	n.a.	n.a.	824	975	1,157
Aged care nursing homes[(e)]	72,615	74,039	74,913	74,236	74,690	75,004
Hostels	44,470	49,194	52,754	55,092	56,950	62,634
Nursing home:hostel ratio (%)	62:38	60:40	59:41	57:43	57:43	54:46
Available beds (per 1,000 population)[(f)(g)]						
Hospitals						
Public acute[(a)]	3.7	3.3	3.1	3.2	3.0	3.0
Private acute[(b)]	1.3	1.2	1.2	1.2	1.2	1.3
Mental Health Services						
Public psychiatric hospitals[(c)]	0.5	0.4	0.4	0.3	0.2	0.2
Residential care[(d)]	..	..	..	..	..	..
Aged care nursing homes[(e)]	58.5	56.3	55.6	53.2	51.9	50.5
Hostels	35.8	37.4	39.1	39.5	39.5	42.1

(a) Includes Department of Veterans' Affairs General and Auxiliary hospitals.
(b) Private hospitals include private psychiatric hospitals.
(c) These data come from two separate sources: Hospital Utilisation and Costs Study data for 1989–90 and 1990–91; National Survey of Mental Health Services data from 1992–93.
(d) National Survey of Mental Health Services. Residential services unit data unavailable before 1993–94.
(e) Figures do not include approximately 70 nursing homes for the young disabled.
(f) Average available beds where possible, otherwise available beds at 30 June.
(g) Rates per 1,000 population calculated using total population for hospitals and population aged 70 and over for nursing homes and hostels.

Sources: AIHW National Public Hospital Establishments Database; AIHW National Survey of Mental Health Services; AIHW analysis of the DHFS Aged and Community Care Strategic Information System (ACCSIS); ABS 1997b.

can be cared for in the community, and of those who do require a hospital admission, many are short-stay patients who can be cared for more appropriately in specialised psychiatric units of acute care hospitals.

There was a substantial reduction in the number of public psychiatric hospitals between 1989–90 and 1992–93, from 59 to 36 facilities (Table 6.17, page 189). Since then, the number of psychiatric hospitals has decreased slightly, although in some cases old facilities have been replaced with new ones, and the number of available beds in these institutions has been reduced by 31% nationally. There has been a corresponding increase in the number of beds provided in community-based residential services which increased by 40% between June 1994 and June 1996.

Aged care nursing homes and hostels

There are two levels of care provided for the aged. Nursing homes provide care for higher dependency residents who require help with basic daily activities such as washing and dressing, and hostels provide care for lower dependency residents. There was a 41% increase in available hostel beds between 1989–90 and 1995–96, but nursing home accommodation increased by only 3% in the same period. However, the number of available nursing home places remains higher than the number of places available in hostel accommodation.

The ratio of hostel beds to the population aged 70 and over has increased from 36 beds per 1,000 in 1989–90 to 42 beds per 1,000 in 1995–96. There has also been an increase in the number of hostel residents who require assistance with personal care activities, from 54% in 1992 to 73% in 1996. Despite the changes in the needs of those in hostel care, and the increased availability of hostel accommodation, the average length of stay and turnover of permanent residents has remained relatively stable (AIHW 1997b). The pattern of use of nursing homes has also changed in the period 1991–92 to 1995–96, with admissions for respite care increasing substantially during the period from 8% to 27% (Liu & Choi 1996).

Aged care services are also provided through specialised psychogeriatric residential care facilities. In 1995–96, 660 of the 1,157 mental health services beds were used to provide long-term psychogeriatric care on a 24-hour basis in community-based residences. This has been a 62% increase in available beds since 1993–94, when there were 407 beds for psychogeriatric residential care.

Regional variation in bed supply

The number of beds per 1,000 population in health care institutions is a useful indicator of the comparative supply of health care services across States and Territories (Table 6.18). In 1995–96, the Australian Capital Territory had a lower bed ratio for acute public hospitals (2.6 beds per 1,000 population) and for aged care beds in nursing homes (36.0 beds per 1,000 population) than other jurisdictions. The lowest rate of hostel beds was in Tasmania (36.2 beds per 1,000 population). The Northern Territory and Queensland have high overall rates of aged care nursing home and hostel beds (66.5 and 49.1 nursing home beds and 44.7 and 50.3 hostel beds respectively per 1,000 population).

Table 6.18: Available beds[(a)] per 1,000 population[(b)], States and Territories, 1995–96

Institution type	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Hospitals									
Public acute[(c)]	3.2	2.7	3.0	2.8	3.3	2.7	2.6	3.2	3.0
Private acute[(d)]	1.0	1.4	1.5	1.2	1.6	1.6	(e)	(f)	1.3
Public psychiatric	0.2	0.2	0.3	0.3	0.4	0.4	—	—	0.2
Aged care nursing homes	55.9	45.3	49.1	47.3	50.2	51.7	36.0	66.5	50.5
Hostels	37.9	40.6	50.3	46.3	44.6	36.2	53.0	44.7	42.1

(a) Average available beds where possible, otherwise available beds at 30 June.

(b) Rates per 1,000 population calculated using total population for hospitals and population aged 70 and over for nursing homes and hostels.

(c) Includes Department of Veterans' Affairs General and Auxiliary hospitals.

(d) Private hospitals include private psychiatric hospitals and exclude freestanding day hospital facilities.

(e) Included with NSW.

(f) Included with SA.

Sources: AIHW National Public Hospital Establishments Database; AIHW National Survey of Mental Health Services; AIHW analysis of the DHFS Aged and Community Care Strategic Information System (ACCSIS); ABS 1997b.

6.6 Cost performance in the hospital sector

Despite cost pressures and developments in medical technology that have led to substantial changes in the operation of hospitals, there is little information available at the national level about their cost performance. One indicator, which has been developed by the National Health Ministers' Benchmarking Working Group (NHMBWG 1996), used also in reports of the Council of Australian Governments (COAG) Steering Committee for the Review of Commonwealth/State Service Provision (SCRCSSP 1998), is the cost per casemix-adjusted separation. This indicator measures the average cost of providing care for an admitted patient (whether an overnight-stay patient or a same-day patient) adjusted for the relative complexity of the patient condition and of the hospital services performed.

Cost per casemix-adjusted separation

Casemix refers to the relative case load for each type of patient category treated in acute care hospitals, classified according to each patient's diagnosis and any procedures received during the hospital stay. Patient episodes of similar clinical condition and resource use are grouped into approximately 500 Australian National Diagnosis Related Groups. These groups are used to calculate a representative cost of each patient episode of care that can then be aggregated to an average hospital 'case weight'. In turn, an average for each State and Territory can be calculated.

As an indicator, the cost per casemix-adjusted separation can be used to compare the average cost of treating an admitted patient after adjusting for the differences in case types (that is, the overall casemix) treated by different hospitals. Table 6.19 (page 192) shows the cost per casemix-adjusted separation for each jurisdiction. In 1995–96, the cost per casemix-adjusted separation for acute hospital care for States and Territories ranged from $2,261 in Victoria to $3,466 in the Australian Capital Territory. A major portion of these costs can be attributed to nursing and medical staff costs, which nationally account for 46% (27% in nursing salaries and 18% in medical salaries) of the cost per casemix-adjusted separation.

Table 6.19: Cost per casemix-adjusted separation ($), public acute hospitals, States and Territories, 1995–96

Cost component	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Medical labour[(a)]	570	419	362	377	433	431	816	568	464
Non-medical labour[(b)]	1,627	1,279	1,354	1,405	1,223	1,696	1,670	1,900	1,430
Indirect costs[(c)]	680	563	592	662	610	763	979	983	635
Total	**2,877**	**2,261**	**2,309**	**2,443**	**2,266**	**2,890**	**3,466**	**3,451**	**2,529**

(a) Salaried/sessional staff, payments to Visiting Medical Officers and private patient costs.

(b) Salary costs for nursing, diagnostic/allied health staff, administrative staff, other personal care and domestic staff and superannuation payments.

(c) Non-salary costs for domestic services, repairs/maintenance, medical supplies, drug supplies, food supplies, administration, transport and insurance.

Sources: AIHW National Public Hospital Database; AIHW National Hospital Morbidity Database.

6.7 Cost of diseases

This section provides an overview of the way total direct health care expenditure is distributed among specific disease and injury groups, and by age groups and sex. The Australian Institute of Health and Welfare analysed direct health system costs of disease and injury in Australia for 1993–94, using disease and injury groups defined according to the chapters of the International Classification of Diseases (Version 9). Detailed results are available in Institute reports (Mathers et al. 1998a, 1998b, 1998c).

The estimates were derived using a methodology that ensures that they add across disease, age and sex groups to the total Australian health system expenditure by health sector for 1993–94. Such estimates are not elsewhere available in a consistent format for all disease groups. They provide a useful description of the usage and costs of health services in Australia, as well as a reference source for planners and researchers interested in the costs and patterns of use for a particular disease group.

The disease cost estimates include over 90% of the total recurrent health expenditure in 1993–94, or just over $31 billion in total. The main components of health expenditure not yet included in the disease cost estimates are capital expenditure, community health services and public health programs (apart from four cancer public health programs). Also not included in the costs reported here are other economic costs of disease and injury (so-called indirect costs), such as the costs of lost production, travel costs of patients and costs incurred by family members and friends in caring for patients.

The total health system costs of disease and injury in Australia in 1993–94, summarised at the broad disease group level according to ICD-9 chapters, are shown in Table 6.20, ranked in descending order of total costs. Also included in Table 6.20 are total numbers of deaths in 1994. The six disease groups that account for the most health expenditure in Australia, in descending order, are:

• digestive system diseases	$3.7 billion (11.8% of total health system costs)
• circulatory disorders	$3.7 billion (11.7%)
• musculoskeletal problems	$3.0 billion (9.5%)
• mental disorders	$2.6 billion (8.4%)
• injury	$2.6 billion (8.3%)
• respiratory diseases	$2.5 billion (8.0%).

Digestive system diseases are the most expensive group in part because of the large expenditure on dental services ($1.8 billion), although they account for relatively few deaths compared with disease groups such as circulatory disorders, injury and neoplasms (cancers) (in eighth position at $1.9 billion). Musculoskeletal problems and mental disorders, which include many long-term chronic disorders with relatively low fatality rates, rank third and fourth in terms of total health system costs.

Total health system costs for females are 32% higher than those for males: $17.9 billion compared with $13.5 billion. Costs are higher for females than males for all disease groups apart from injury, perinatal problems and congenital anomalies (Figure 6.5, page 194). After complications of pregnancy, the female to male cost ratio is highest for genitourinary problems, followed by the 'other' category (which includes non-disease reasons for contact with health services such as normal childbirth and fertility control).

Table 6.20: Health system costs for diseases and injury, by ICD-9 chapter and health sector, 1993–94 ($ million)

ICD-9 chapter	Total costs	Hospitals[a]	Medical[b]	Pharma-ceuticals	Dental and allied health services	Nursing home	Other[c]	No. of deaths
Digestive[d]	3,712	1,070	284	275	1,849	32	202	3,859
Circulatory	3,672	1,657	503	715	40	541	216	54,888
Musculoskeletal	2,971	1,207	518	276	416	401	153	775
Mental	2,634	1,007	432	198	83	764	149	2,985
Injury	2,607	1,663	393	127	160	118	147	7,189
Respiratory	2,510	833	624	784	37	97	135	9,958
Nervous system	2,333	766	431	248	227	501	159	2,944
Neoplasms	1,905	1,327	261	53	12	32	220	34,206
Genitourinary	1,659	997	383	143	17	28	90	2,110
Symptoms[e]	1,336	478	426	302	57	7	66	547
Complications of pregnancy	1,051	941	32	11	6	0	60	16
Endocrine[f]	966	235	222	309	54	47	98	4,112
Skin	955	336	247	259	56	5	53	211
Infectious	849	246	316	193	15	13	65	1,042
Perinatal	247	221	1	0	0	11	14	695
Blood	192	101	42	24	1	5	18	401
Congenital	191	116	18	2	0	45	9	754
Other[g]	1,607	859	505	122	44	0	77	—
Total	**31,397**	**14,062**	**5,640**	**4,042**	**3,075**	**2,647**	**1,932**	**126,692**

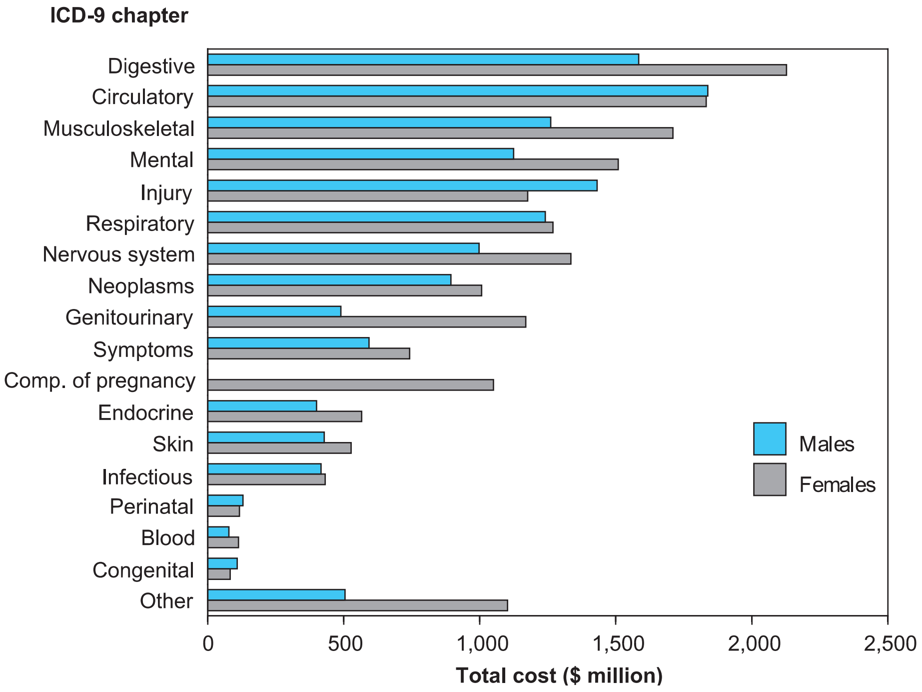
(a) Public and private acute hospitals, repatriation hospitals and psychiatric hospitals.
(b) Medical services for private patients in hospitals are included under 'Hospitals'.
(c) Includes breast, cervix, lung and skin cancer public health programs, research and other institutional, non-institutional and administration expenditure. Does not include other public health services, community health services, ambulances, or medical aids and appliances.
(d) Dental costs are classified to Diseases of the Digestive System and included under the allied health services sector.
(e) Symptoms, signs and ill-defined conditions.
(f) Endocrine, metabolic, nutritional and immune disorders.
(g) Other contact with health services: fertility control, reproduction (including normal delivery) and child development, cosmetic surgery, general health examination, and treatment for unspecified disease.

Source: Mathers et al. 1998a.

Total health system costs for males increase with age peaking in the age group 65–74 years, whereas those for females peak in the age group 25–34 years, reflecting child-bearing and health costs related to the genitourinary system. They then decline to age group 55–64 years, rising again at older ages (Figure 6.6). Total health system costs per person in 1993–94 ranged from a minimum of around $800 for boys aged 5–14 years to $7,500 for women aged 75 years and over (Figure 6.7). The male–female difference in per person costs is greatest in the peak reproductive years, where average annual costs for women aged 25–34 years were $1,716, almost double the average cost of $888 for men of the same age.

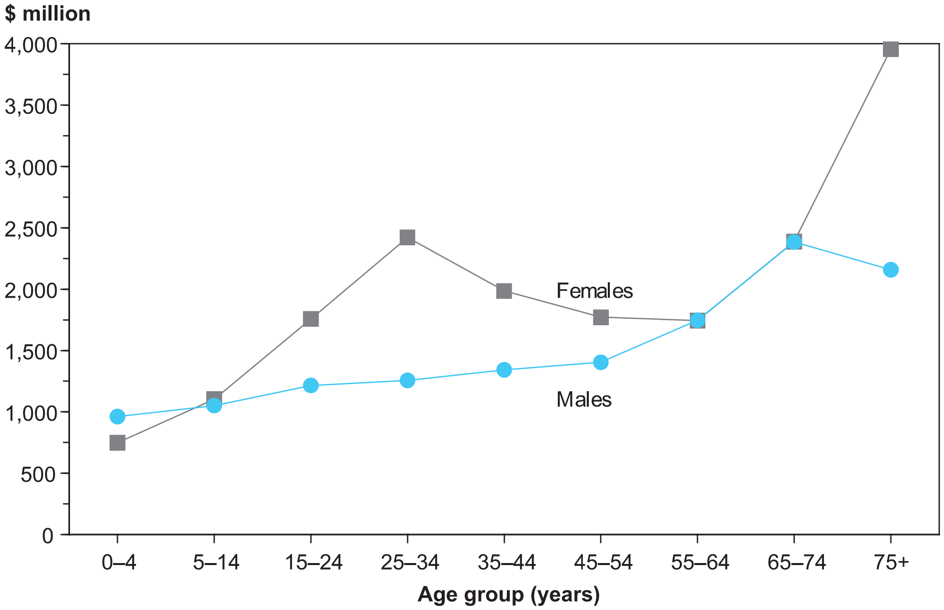
The Institute's disease costing work aims to provide the best possible estimates of the health system resources directed at the prevention and treatment of diseases and injuries, and to help understand the allocation of resources among the population, across different health sectors, and different diseases. Such information is important in considering a variety of equity and access issues in relation to the use of health care resources. For example, the health system cost information presented here could be used to develop broad order estimates of the potential health care cost offsets to the cost of health promotion and illness prevention activities.

It should be emphasised that this analysis does not attempt to estimate the total economic impact of diseases in the Australian community and that, as well as the health



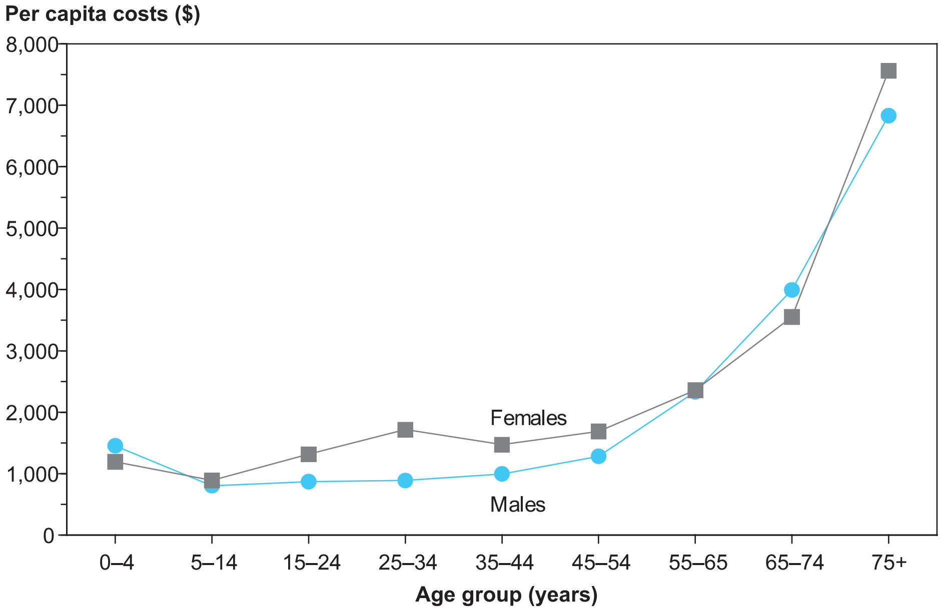
Source: Mathers et al. 1998a.

Figure 6.5: Total health system costs of disease, by ICD-9 chapter and sex, 1993–94



Source: Mathers et al. 1998a.

Figure 6.6: Total health system costs by age group and sex, 1993–94



Source: Mathers et al. 1998a.

Figure 6.7: Health system costs per capita by age group and sex, 1993–94

system costs described here, there are substantial costs relating to absenteeism, lost productivity, the burden on carers and family, and lost quality and quantity of life. As the pressure on health care funding continues to rise, there will be increasing interest in understanding the costs associated with specific diseases and in trying to evaluate the overall cost-effectiveness of health policies and programs.

References

Abel-Smith B 1969. An international study of health expenditure. Public Health Papers, No. 32. Geneva: WHO.

Australian Bureau of Statistics (ABS) 1993. Characteristics of persons employed in health occupations, Australia. Cat. No. 4346.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1997a. 1996 census of population and housing: classification counts, occupation and industry. Cat. No. 2022.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1997b. Private hospitals, Australia, 1995–96. Cat. No. 4390.0. Canberra: ABS.

Australian Health Ministers 1992. National mental health policy. Canberra: AGPS.

Australian Institute of Health and Welfare (AIHW) 1996. Health expenditure bulletin No. 12. Canberra: AIHW.

Australian Institute of Health and Welfare (AIHW) 1997a. Medical labour force 1995. Canberra: AIHW.

Australian Institute of Health and Welfare (AIHW) 1997b. Older Australia at a glance. Canberra: AIHW.

Commonwealth Grants Commission (CGC) 1998. Report on general revenue grant relativities, 1997 update. Canberra: AGPS.

Australian Medical Workforce Advisory Committee (AMWAC) and Australian Institute of Health and Welfare (AIHW) 1996. Australian medical workforce benchmarks. AMWAC 1996.1. Sydney: AMWAC.

Australian Medical Workforce Advisory Committee (AMWAC) and Australian Institute of Health and Welfare (AIHW) 1997. Characteristics of students entering Australian medical schools. AMWAC 1997.7. Sydney: AMWAC.

(Commonwealth) Department of Health and Family Services (DHFS) 1996. HBF Circular 463. Canberra: DHFS.

Commonwealth of Australia 1996. Budget Statements 1996–97, Budget Paper No. 1. Canberra: AGPS.

Commonwealth of Australia 1997. Budget Statements 1997–98, Budget Paper No. 1. Canberra: AGPS.

Industry Commission 1997. Private health insurance. Report No. 57. Canberra: AGPS.

Liu Z & Choi C 1996. The use of respite care in Australian nursing homes and hostels. Welfare Division Working Paper No. 12. Canberra: AIHW.

Mathers C, Penm R, Carter R & Stevenson C 1998a. Health system costs of diseases and injury in Australia, 1993–94. Health and Welfare Expenditure Series No. 2. Canberra: AIHW.

Mathers C, Penm R, Sanson-Fisher R, Carter R & Campbell L 1998b. Health system costs of cancer in Australia, 1993–94. Health and Welfare Expenditure Series No. 4. Canberra: AIHW (in press).

Mathers C, Stevenson C, Carter R & Penm R 1998c. Disease costing methodology used in the Disease Costs and Impact Study 1993–94. Health and Welfare Expenditure Series No. 3. Canberra: AIHW (in press).

Moylan J 1996. Strengthening families. Canberra: AGPS.

National Health Data Committee (NHDC) 1996. National health data dictionary. Version 5.0. Canberra: AIHW.

National Health Ministers Benchmarking Working Group (NHMBWG) 1996. First national report on health sector performance indicators: public hospitals—the state of play. Canberra: AIHW.

Private Health Insurance Administration Council (PHIAC) 1997. Operations of the registered health benefits organisations, annual report 1996–97. Canberra: AGPS.

Richmond D 1983. Inquiry into health services for the psychiatrically ill and developmentally disabled. Sydney: NSW Department of Health.

Schofield D, Fisher S & Percival R 1997. Behind the decline: the changing composition of private health insurance in Australia, 1983–1995. NATSEM Discussion Paper No. 18. Canberra: National Centre for Social and Economic Modelling, University of Canberra.

Steering Committee for the Review of Commonwealth/State Service Provision (SCRCSSP) 1998. Report on government services, Vols 1–2. Melbourne: Industry Commission.

Szuster FSP & Spencer AJ 1997. Dental practitioner statistics, Australia, 1994. AIHW Dental Statistics and Research Series No. 11. Adelaide: AIHW Dental Statistics and Research Unit, University of Adelaide.

7 Health services use and access

7.1 Use of hospitals

Admitted patients, patient days and length of stay

There were 5,151,100 separations from public acute and private hospitals reported to the National Hospital Morbidity Database for 1995–96 (AIHW 1997a), representing 284 separations per 1,000 population (Table 7.1, page 201). Of these, 3,573,100 (69%) were from public acute hospitals and 1,577,900 (31%) were from private hospitals. These separations accounted for 22,337,800 patient days, 74% in public hospitals and 26% in private hospitals. In addition, there were 24,800 separations and 948,400 patient days reported for public psychiatric hospitals.

Box 7.1: Statistics and data sources relating to the use of hospitals

Admitted patients

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 length of stay and the procedures carried out are then known, and the diagnostic information is more accurate. Statistics on admitted patients, although sometimes referred to as admission statistics, are therefore more correctly referred to as separation statistics.

***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 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. It is recorded using the ICD-9-CM classification (see Box 7.2, page 202).*

(continued)

Box 7.1 (continued): Statistics and data sources relating to the use of hospitals

If applicable, a ***principal procedure*** *is also identified; this is the most significant procedure that was performed for treatment of the principal diagnosis or, if no procedure was performed for that, another therapeutic or diagnostic procedure. Procedures are also recorded using ICD-9-CM.*

The State and Territory health authorities compile information on separations and supply it to the Australian Institute of Health and Welfare for collation into the National Hospital Morbidity Database. This database comprises an electronic record for each separation from almost all hospitals in Australia. In this section, the term 'private hospitals' includes private freestanding day hospital facilities.

As indicators of community morbidity, hospital separation data have limitations. Sick people who are not admitted are not counted and those who are admitted more than once, or to more than one institution, 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 Australian Institute of Health and Welfare and for private hospitals by the Australian Bureau of Statistics.

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.*

As regards quality of data, use of the national definition and categorisation is not completely uniform among the States and Territories and has varied over time. Various other systems for counting and classifying non-admitted patient services are in use or being developed in some jurisdictions.

Availability of statistics

For 1995–96, data on hospital activity were available within 12 months of the end of the year. All jurisdictions and AIHW are committed to this level of timeliness for future years.

There has been a trend over recent years for a higher proportion of admitted patients to be treated on a same-day basis, reflecting changing medical practice, efforts to increase hospital productivity and changes in the availability of health insurance benefits for same-day patients. In 1995–96, there were 2,191,000 same-day separations, 771,800 from private hospitals, 1,419,200 from public acute hospitals, and 1,400 from public psychiatric hospitals.

With public psychiatric hospitals excluded, average length of stay in 1995–96 was 4.3 days overall, 4.6 days in public acute hospitals and 3.7 days in private hospitals. The difference between these two hospital groups 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 (8.0% of separations) (Table S30, page 274) compared with private hospitals (3.2% of separations) (Table S31, page 275) and operations (or procedures) were more commonly reported for patients of private hospitals (84%) than for patients of public acute hospitals (64%).

If same-day separations are excluded (as is the practice in most OECD countries), the average length of stay was 7.0 days in public acute hospitals and 6.4 days in private hospitals. These figures are within the range of those reported for other OECD countries (OECD 1997).

Between 1991–92 and 1995–96, there was a 22% increase in separations from public acute hospitals and a 30% increase in separations from private hospitals. The increase in total patient days over the period was less marked; 8% in public acute hospitals and 22% in private hospitals. This was reflected in an overall fall in the average length of stay from 4.8 days to 4.3 days.

Part of the rise in the separation rate (Table 7.1) may be attributable to changes in the age structure of the population. Between 1993–94 and 1995–96, the crude separation rate per 1,000 population increased by 9% and, after adjusting for changes in the age structure, there was still an 8% increase in separations over the period. Age-adjusted patient days per 1,000 population fell by 2% over the 3-year period. Thus, despite an increase in the number of separations, total patient days have remained relatively stable.

The increase in separations may be accounted for, at least in part, by the introduction of episodes of care as the unit of reporting, rather than hospital stays (see Box 7.1, page 198). This reporting change may also account for part of the decline in average length of stay over the last few years. The increased numbers of separations may also reflect improved reporting by hospitals.

There appears to have been a slight shift from the use of public acute to private sector hospitals during the 5-year period. In 1991–92, 71% of separations and 76% of patient days were in public acute hospitals, whereas in 1995–96, these percentages had fallen to 69% and 74% respectively. Within public acute hospitals, the proportion of patients admitted as public patients increased from 73% in 1991–92 to 83% in 1995–96.

There has been a marked upward trend over the period 1991–92 to 1995–96 in the proportion of separations that were day-only separations. In 1991–92, 31% of separations were same-day separations, but by 1995–96 this had increased to 43% of all separations. The increase was particularly evident in the private sector, where 34% of reported separations were day-only in 1991–92, and 49% in 1995–96. This reflects the substantial increase in the number of freestanding day hospital facilities now operating in the private sector (ABS 1997a) as well as an increase in the proportion of them included in the national database.

Table 7.1: Hospital use by admitted patients, 1991–92 to 1995–96

	1991–92	1992–93	1993–94[a]	1994–95[a]	1995–96
Separations per 1,000 population[b]					
Public acute hospitals[c]	167.7	176.9	186.0	192.0	196.7
Public patients	121.8	n.a.	144.4	151.9	163.3
Private patients	n.a.	n.a.	30.7	27.3	24.1
Private hospitals[d]	69.1	70.5	74.7	82.2	87.7
Total	**236.8**	**247.3**	**260.0**	**273.5**	**283.6**
Age-standardised rate[b]	*n.a.*	*n.a.*	*257.8*	*269.1*	*278.8*
Patient days per 1,000 population[b]					
Public acute hospitals[c]	868.2	912.5	951.2	915.6	905.2
Public patients	620.8	n.a.	730.5	712.0	733.1
Private patients	247.4	n.a.	143.4	122.8	104.9
Private hospitals[d]	276.6	282.0	291.2	304.5	327.7
Total	**1,144.8**	**1,194.5**	**1,239.6**	**1,217.2**	**1,229.7**
Age-standardised rate[b]	*n.a.*	*n.a.*	*1,217.5*	*1,187.0*	*1,189.1*
Same-day separations as a percentage of total					
Public acute hospitals[c]	29.3	n.a.	34.2	37.5	39.7
Public patients	n.a.	n.a.	34.9	38.1	40.3
Private patients	n.a.	n.a.	33.2	36.4	38.4
Private hospitals[d]	33.9	n.a.	43.3	46.1	48.9
Total	**30.6**	**n.a.**	**36.8**	**40.1**	**42.4**
Average length of stay (days)					
Public acute hospitals[c]	5.2	5.2	5.1	4.8	4.6
Public patients	5.1	n.a.	5.1	4.7	4.5
Private patients	n.a.	n.a.	4.7	4.5	4.3
Private hospitals[d]	4.0	4.0	3.9	3.7	3.7
Total	**4.8**	**4.8**	**4.8**	**4.5**	**4.3**
Average length of stay, excluding same-day cases (days)					
Public acute hospitals[c]	6.9	n.a.	7.3	7.0	7.0
Public patients	n.a.	n.a.	7.2	7.0	6.8
Private patients	n.a.	n.a.	6.5	6.5	6.4
Private hospitals[d]	5.5	n.a.	6.1	6.0	6.4
Total	**6.5**	**n.a.**	**7.0**	**6.8**	**7.1**

(a) For 1993–94 and 1994–95 Victorian private hospital data incomplete. About 81% of 1993–94 and 98% of 1994–95 separations are included.

(b) Figures are crude rates per 1,000 population at 31 December of the relevant year or, if indicated as such, directly age-standardised to the Australian population at 30 June 1991.

(c) Although public and private patients account for the bulk of separations from public hospitals, there are also separations for other categories of patients.

(d) Includes private acute and psychiatric hospitals and private freestanding day hospital facilities.

Source: AIHW 1997a.

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 7.2.

For patients with a disease, injury or poisoning recorded as a principal diagnosis, the broad diagnosis groups (ICD-9-CM chapters) with the highest number of separations in Australian hospitals (public acute, public psychiatric and private hospitals) in 1995–96 were diseases of the digestive system, followed by diagnoses within the obstetric category (complications of pregnancy, childbirth and the puerperium) and diseases of the circulatory system (Tables S34, page 278, and S35, page 279).

At a more detailed level (3-digit ICD-9-CM), the most common disease or injury principal diagnoses (excluding diagnoses described as symptoms) in public hospitals were asthma (56,300 separations) and selected forms of acute and sub-acute ischaemic heart disease, not including acute myocardial infarction (43,800 separations). In private hospitals, the most common diagnoses were cataract (57,200 separations) and diseases of the oesophagus (39,300 separations).

Box 7.2: Classification of diseases, procedures and episodes for admitted patients

Hospital patient records contain a great deal of information about the patient's diagnosis and about any 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 system used in Australia is the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM), an adaptation of the World Health Organization (WHO) classification to suit the Australian setting (NCC 1995). The diagnosis and procedure classifications in ICD-9-CM are hierarchical and allow the data to be grouped for analysis and reporting.

Australian National Diagnosis Related Groups (AN-DRGs) is another classification system used 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 (that is, 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 the diagnoses, procedures and age and sex of the patients.

ICD-9-CM-coded diagnosis and procedure information in the hospital morbidity records can be a source of information on the diseases which are treated in hospitals and the operations which are performed, at very detailed levels or aggregated into broad groupings. Each AN-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.

ICD-10-AM will progressively replace ICD-9-CM from 1 July 1998. ICD-10-AM includes a disease classification, which is an Australian adaptation of the WHO's ICD-10, and a new procedure classification, based on the Medicare Benefits Schedule categorisation of procedures. ICD-10-AM is considered to be superior to ICD-9-CM in its ability to provide information for planning, monitoring and developing health care services. (See Introduction of ICD-10 on page 237.)

Principal diagnoses within the five National Health Priority Areas (see Section 4.1, page 75) accounted for 24% of hospital separations (1,261,600) and 49% of patient days (8,461,300) in Australian hospitals. Cardiovascular disease accounted for the largest number of these (412,800), followed by injury or poisoning (394,000). Cardiovascular disease also accounted for the highest number of patient days (2,722,400), followed by mental disorders (2,179,700). Of the five priority areas, patients admitted with a principal diagnosis of a mental disorder had the longest lengths of stay on average, followed by patients admitted with a principal diagnosis of diabetes (Table 7.2).

Table 7.2: Separations for National Health Priority Areas[(a)], all hospitals[(b)], 1995–96

National Health Priority Area	ICD-9-CM diagnosis codes	Separations per 1,000 population[(c)]	Patient days per 1,000 population[(c)]	Per cent same-day separations	Average length of stay (days)
Cancer	140–208	13.2	84.7	32.7	6.4
Cardiovascular disease	390–459	22.7	149.9	16.1	6.6
Mental disorders	290–316, 331.0	10.6	120.0	29.9	11.3
Diabetes	250	1.2	9.6	11.7	8.1
Injury or poisoning	800–999	21.7	101.6	25.4	4.7
Total for National Health Priority Areas		**69.4**	**465.8**	**24.2**	**6.7**

(a) Only separations for which the principal diagnosis corresponded 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.

(b) Includes public psychiatric hospitals, except for Queensland.

(c) Crude rates.

Source: AIHW 1997a.

A principal procedure was reported for 67% of separations in Australian hospitals in 1995–96, 62% in public hospitals and 81% in private hospitals. At the broad group (ICD-9-CM chapter) level, miscellaneous diagnostic and therapeutic procedures accounted for the largest proportion of public hospital separations for which a principal procedure was reported (Table S36, page 280), with injection or infusion of therapeutic or prophylactic substances (such as for cancer chemotherapy) reported for 36.1% of the 470,900 separations within that group. The most commonly reported procedure group for the private sector was operations on the digestive system (296,300 separations) (Table S37, page 281). Within that grouping, endoscopies and other diagnostic procedures on the small and large intestines were reported for 54.5% of the separations.

Principal procedures were reported for varying proportions of separations within the broad groups of principal diagnoses. High proportions of separations for neoplasms (86%), diseases of the blood and blood-forming organs (83%) and diseases of the genitourinary system (83%) had principal procedures reported. In contrast, there were fewer reported for separations for mental disorders (23%), infectious and parasitic diseases (34%) and diseases of the respiratory system (35%).

The Australian National Diagnosis Related Groups (AN-DRGs) with the highest numbers of separations in 1995–96 featured several for which same-day separations dominated (Table 7.3, page 204). Among these were the top two groups in public hospitals, renal dialysis (309,600 public sector separations) and chemotherapy (121,600 public sector separations) and the top two groups in the private sector, gastroscopy (90,200 private sector separations) and colonoscopy (83,300 private sector separations).

Vaginal delivery without complicating diagnosis was the most common AN-DRG that was not usually a same-day hospitalisation. This group was the third most common in public hospitals (112,600 separations) and the ninth most common in private hospitals (30,500 separations). This category does not include deliveries by caesarean section or complicated deliveries.

Table 7.3: Separations for the top 12 AN-DRGs (version 3.0), all hospitals, 1995–96[(a)]

AN-DRG		Separations	Per cent same-day separations	Patient days	Average length of stay (days)
572	Admit for renal dialysis	340,821	99.8	343,762	1.0
332	Other gastroscopy for non-major digestive disease[(b)]	158,724	93.4	190,484	1.2
780	Chemotherapy	157,683	98.4	160,885	1.0
674	Vaginal delivery without complicating diagnosis	143,102	2.2	563,196	3.9
335	Other colonoscopy[(b)]	131,146	91.7	158,825	1.2
099	Lens procedures without vitrectomy[(b)]	81,523	58.5	102,641	1.3
128	Dental extractions and restorations	69,247	75.3	75,658	1.1
683	Abortion[(c)]	67,263	78.3	76,370	1.1
421	Knee procedures	63,117	53.7	98,496	1.6
484	Other skin, subcutaneous tissue and breast procedures	61,741	82.2	84,872	1.4
659	Conisation, vagina, cervix and vulva procedures	50,027	81.5	63,024	1.3
455	Medical back problems age<75[(b)]	48,657	34.9	181,340	3.7

(a) Includes separations with acute or unspecified type of episode of care only. Includes public psychiatric hospitals, except for Queensland.
(b) Without complications and co-morbidities.
(c) With dilatation and curettage, aspiration curettage or hysterotomy.

Source: AIHW 1997a.

The 1995 National Health Survey collected information reported by respondents on hospitalisations in the 2 weeks before interview. Nationally, 138,500 persons (0.8% of the total population) were estimated to have been hospitalised, 75,000 females and 63,500 males (ABS 1997b). The proportions of persons who had been hospitalised varied with age. A total of 1.8% of persons over the age of 65 years had been hospitalised, compared with only 0.4% of persons in the 5–14 years age group.

The reasons reported for hospitalisation in the National Health Survey were commonly diseases of the digestive system (13.8%), the musculoskeletal system and connective tissue (11.8%), the circulatory system (10.6%) and the respiratory system (10.5%). Pregnancy and childbirth were the reasons for hospitalisation for an estimated 11.9% and injuries and poisoning for a further 10.0%.

Non-admitted patients

There were 34,543,900 non-admitted patient occasions of service reported for public acute and psychiatric hospitals in 1995–96, or about 1,900 per 1,000 population (AIHW 1997a). Western Australian data were not available for 1994–95 but the remainder of the

States and Territories reported a slightly higher rate in that year (1,950 per 1,000 population) (AIHW 1997b).

In 1995–96, 5,529,600 or 16.0% of these occasions of service were provided in accident and emergency departments and 6,371,500 or 18.4% were provided as community health, district nursing or other outreach services. Other categories for which large numbers of services were reported were dental (6.5%), radiology and organ imaging (5.0%) and pathology (4.9%).

Private hospitals also contribute to the provision of non-admitted patient services, with a different mixture of types compared with the public hospitals. In 1995–96, private hospitals reported 1,334,700 occasions of service (73 per 1,000 population) (ABS 1997a), with the largest numbers reported for allied health services (451,100 or 33.8%), radiology and organ imaging (289,900 or 21.7%) and accident and emergency (249,600 or 18.7%). The number of non-admitted patient services reported for private hospitals in 1995–96 was markedly more than the 1,084,400 reported for 1994–95 (ABS 1996), indicating an increased role for these hospitals in this area of health service delivery. In particular, there were increases in reported use of accident and emergency and allied health services.

According to the 1995 National Health Survey, 497,000 people made a visit to a casualty, emergency or outpatients department in the 2 weeks before interview. More males (254,300) than females (242,700) had attended hospital as a non-admitted patient (ABS 1997b) as had a greater proportion of people over the age of 65 years (4.3%) than overall (2.8%).

Non-admitted patient visits reported in the National Health Survey were most commonly for injuries and poisoning (21.3%), diseases of the skin and subcutaneous tissue (11.0%) and check-ups or examinations (10.5%).

7.2 Access to hospital services

Access relates to the capability of the health system to provide appropriate, affordable and timely care according to need. In the public acute hospital sector, measures of access include waiting times for emergency and outpatient services and for elective surgery. Only waiting times for elective surgery are reported here.

Waiting times for elective surgery

Hospitals maintain waiting lists for patients for elective (non-urgent) surgery because admission dates for elective surgery cannot usually be allocated when the surgery is first requested. This is because elective surgery is undertaken as emergency workloads allow, and patients with more urgent clinical needs are generally given priority over patients whose need for elective surgery is not so urgent.

The National Waiting Times Data Collection is a compilation of data collected on public hospital waiting times by the health authorities of the States and Territories. Two types of data are collected:

- data on patients added to and deleted from waiting lists during a data collection period (throughput data); and
- data about patients waiting to be admitted for elective surgery on a census date (census data).

Throughput data on the length of time waited and whether the patient experienced an extended wait (see below) are included for all patients who were admitted for their awaited procedure. Patients are deleted from waiting lists most commonly when they are admitted for their awaited procedure. However, 10% to 20% are deleted for reasons other than admission for the awaited procedure (including admission as an emergency patient for the awaited procedure; the patient could not be contacted, had died or was treated elsewhere; or the surgery was not required or was declined). For this reason, census data are also collected because all waiting patients are included, not just those who actually receive elective surgery at the end of their wait. Census data are not reported here but are used in the calculation of the clearance times presented below.

Throughput data also include the urgency category of the patient (based on clinical need) and the specialty of the surgeon. Category 1 patients are defined as those for whom admission within 30 days is desirable and for whom extended waits are defined as over 30 days. Admission within 90 days is desirable for Category 2 patients and extended waits are defined as over 90 days. All other elective surgery patients are defined as Category 3. Although there is no upper limit on the time Category 3 patients should wait for admission, those who wait over 12 months for admission are also referred to as having an extended wait.

The National Waiting Times Data Collection has been in operation since 1993 but is not yet a comprehensive national data set based on uniformly applied data definitions. The 1995–96 data collection is the most comprehensive data set to date, with the most detail yet provided on waiting times, but there are still major gaps and care needs to be taken in interpreting the data.

The main problems with the 1995–96 collection were missing and incompatible data. Only three jurisdictions were able to supply patient-level data on waiting times to admission, and Queensland was unable to supply throughput data for the year. New South Wales could not supply data for urgency categories 2 and 3 separately, instead reporting these categories combined. The Australian Capital Territory did not supply census data on extended waits, and Victoria excluded from their data patients with allocated admission dates, so that their extended wait data could not be included in the national figures. Some States and Territories, notably Queensland and Western Australia, did not include all their hospitals which undertake elective surgery. There was also some evidence of lack of consistency in the application of definitions across the States and Territories, for example for urgency categories.

Most of these problems are expected to be rectified for the 1996–97 or 1997–98 reference years, enabling better national statistics to be compiled. In addition, it is expected that, in the future, most States and Territories will be able to supply patient-level waiting times data linked to the patient's hospital morbidity record, as South Australia was able to do for 1995–96. These data will allow age, sex, diagnosis related group (AN-DRG) and other variables to be examined in conjunction with the data on urgency category, surgical specialty and length of time waited at a national level.

The latest available throughput data are for 1995–96. Aggregate hospital-level data are included for hospitals representing 64% of all Australian public acute hospital separations. In addition, data on actual times waited by individual admitted patients were supplied by New South Wales, South Australia and the Northern Territory for hospitals accounting for about 40% of all Australian public acute hospital separations.

Median waiting times for patients admitted from waiting lists

The patient-level data supplied by the three jurisdictions were used to calculate median waiting times for patients admitted from waiting lists in 1995–96. The median waiting time provides the information that, before admission from the waiting list, half the patients waited for the median waiting time or less, and half waited more. Overall, the median waiting time for Category 1 patients was 8 days and for Category 2 and 3 patients combined the median waiting time was 36 days (Table 7.4). All specialties except ophthalmology and urology had median waiting times of less than 10 days for Category 1 patients. For Category 2 and 3 patients, the shortest median waiting times were for neurosurgery, cardiothoracic and vascular surgery, and the longest median waiting times were for ophthalmology, ear, nose and throat, and orthopaedic surgery.

Although there was no marked variation in median waiting times by hospital size for Category 1 patients, there were some differences for Category 2 and 3 patients. The smallest hospitals (0–50 beds) had the lowest median waiting time (18 days), and both the largest hospitals (more than 500 beds) and hospitals with 51–100 beds had the second lowest median of 30 days. Hospitals with between 101 and 500 beds had median waiting times of 40 days or more. These patterns are likely to reflect the different proportions of Category 1 patients treated in hospitals of different sizes.

Table 7.4: Median waiting time (days) prior to admission, by urgency category and specialty of surgeon, 1995–96

	Urgency category				
Specialty of surgeon	**Category 1[(a)]**	**Category 2[(b)]**	**Category 3[(b)]**	**Categories 2 and 3[(a)]**	**All patients[(a)]**
Cardiothoracic	7	40	19	27	13
Ear, nose and throat	8	44	70	57	36
General	8	34	46	29	17
Gynaecology	8	33	36	31	19
Neurosurgery	6	34	21	18	11
Ophthalmology	10	47	58	60	46
Orthopaedic	7	63	75	55	34
Plastic	9	46	57	37	24
Urology	12	32	41	32	22
Vascular	6	23	14	25	11
Other	1	19	40	8	3
All patients	**8**	**39**	**50**	**36**	**21**

(a) For patients admitted in New South Wales, South Australia and the Northern Territory.
(b) For patients admitted in South Australia and the Northern Territory.

Source: Foedinger & Moon 1998.

Waiting times and proportion of patients admitted from the waiting lists with extended waits

Table 7.5 (page 208) shows the proportion of patients admitted within particular time periods, by urgency category, with the shading indicating patients who had extended waits before admission for elective surgery. Almost half of Category 1 patients waited 7 days or less for admission and 12% had extended waits (over 30 days). Of patients classified in Categories 2 or 3, 16% were admitted within 7 days, with another 29%

admitted within 30 days. Although 5.5% of Category 3 patients waited more than 12 months for admission, overall, only 1.3% of patients waited that long.

Table 7.5: Waiting times by urgency category, 1995–96 (per cent)

	Urgency category				
Waiting time	Category 1[(a)]	Category 2[(b)]	Category 3[(b)]	Categories 2 and 3[(a)]	All patients[(a)]
1–7 days	49.7	11.6	11.5	15.9	28.1
8–14 days	18.0	9.3	8.2	10.3	13.1
15–21 days	11.3	8.6	7.1	8.6	9.6
22–30 days	9.1	10.8	9.7	9.9	9.6
31–60 days	8.4	28.6	18.9	22.3	17.3
61–90 days	1.8	14.6	10.8	11.2	7.8
4–6 months	1.3	11.5	17.4	13.5	9.1
6–12 months	0.4	3.8	11.0	6.3	4.2
>12 months	0.1	1.2	5.5	1.9	1.3
All patients	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) For patients admitted in New South Wales, South Australia and the Northern Territory.
(b) For patients admitted in South Australia and the Northern Territory.

Source: Foedinger & Moon 1998.

The specialty with the highest proportions of extended waits for Category 1 patients was plastic surgery (18.6%) (Table 7.6). In contrast, small proportions of Category 1 patients undergoing neurosurgery (6.2%) and vascular surgery (9.0%) had extended waits. For Category 2 and Category 3, respectively, the highest proportions of extended waits were for orthopaedic patients and ear, nose and throat patients.

Table 7.6: Proportion of patients admitted from the waiting list with extended waits, by specialty of surgeon and urgency category, 1995–96 (per cent)

	Urgency category			
Specialty of surgeon	Category 1[(a)]	Category 2[(b)]	Category 3[(b)]	Categories 2 and 3[(a)] [(c)]
Cardiothoracic	12.8	28.0	0.9	0.2
Ear, nose and throat	15.7	19.4	11.6	4.9
General	9.9	14.7	4.2	1.1
Gynaecology	10.1	9.9	3.6	0.6
Neurosurgery	6.2	4.5	0.0	0.5
Ophthalmology	15.8	5.7	1.6	2.1
Orthopaedic	17.0	36.8	6.2	3.5
Plastic	18.6	20.7	5.0	1.9
Urology	16.9	6.4	6.2	2.0
Vascular	9.0	10.6	2.5	2.8
Other	2.6	0.0	3.7	0.3
Total	**11.9**	**16.5**	**5.5**	**1.9**

(a) For patients admitted in New South Wales, South Australia and the Northern Territory.
(b) For patients admitted in South Australia and the Northern Territory.
(c) Waits over 12 months.

Source: Foedinger & Moon 1998.

Clearance times

Clearance time is the theoretical time it would take to clear all patients on a waiting list at the census date, and represents the maximum time a patient on a list could expect to wait. It is expressed in months and derived by dividing the number of patients on the waiting list at the census date by the number of patients cleared per month. It is assumed that the rate of clearance (deletions) remains constant, that no patients are added to the list and that waiting lists are pooled so that patients can be treated at any hospital (which is not usually the case). Although they are only a theoretical measure, clearance times statistics are reported here to enable comparison with data published for earlier years.

For 1995–96, the clearance time for Category 1 patients was less than 1 month for all specialties (Table 7.7). For Categories 2 and 3 patients, clearance times varied by specialty of the surgeon. The longest clearance times were for the ear, nose and throat, orthopaedic and plastic surgery specialties. Clearance times changed little between the previous data collection period (January to June 1995) and 1995–96. Overall, clearance time fell from 2.7 months to 2.5 months.

Table 7.7: Clearance time (months) by specialty of surgeon and urgency category, 1995–96 and 1995

	1995–96					1995[a]		
	Urgency category					Urgency category		
Specialty of surgeon	**Category 1[b]**	**Category 2[c]**	**Category 3[c]**	**Categories 2 and 3[b]**	**All patients[b]**	**Category 1**	**Categories 2 and 3**	**All patients**
Cardiothoracic	0.4	1.8	1.8	1.7	1.1	0.5	1.5	1.1
Ear, nose and throat	0.9	2.3	6.5	5.0	4.1	0.7	4.7	4.0
General	0.6	3.0	4.6	2.7	1.9	0.5	3.0	2.2
Gynaecology	0.5	2.2	2.5	2.1	1.6	0.6	2.2	1.8
Neurosurgery	0.5	2.8	1.9	1.4	1.0	0.4	1.9	1.3
Ophthalmology	0.5	3.1	4.7	3.6	3.1	0.5	4.2	3.6
Orthopaedic	0.8	7.6	8.5	5.6	4.4	0.8	5.2	4.2
Plastic	0.9	3.6	6.1	4.3	3.0	0.8	5.0	3.8
Urology	0.8	3.6	3.7	3.1	2.4	0.8	3.7	2.9
Vascular	0.5	2.3	4.4	2.9	1.7	0.5	3.9	2.5
Other	0.2	3.5	2.8	1.7	1.0	0.2	1.4	1.0
All patients	**0.6**	**3.4**	**5.0**	**3.4**	**2.5**	**0.6**	**3.5**	**2.7**

(a) January to June 1995. All States and Territories except Queensland.

(b) All States and Territories except Victoria and Queensland.

(c) All States and Territories except New South Wales, Victoria and Queensland.

Sources: Foedinger & Moon 1998; Moon 1996.

7.3 Quality and effectiveness of hospital services

Information about the quality of hospital care remains limited by the difficulties encountered in specifying valid indicators and in generating reliable and consistent data. At the broadest level, one indicator is the proportion of hospitals accredited by the Australian Council on Healthcare Standards (ACHS). ACHS conducts surveys of hospitals and awards accreditation for 1, 3 or 5 years, reflecting the demonstrated ability of the hospital to maintain the quality of care over a given period of time. Participation in the accreditation process is voluntary and larger hospitals are more likely to seek accreditation. This can be seen by comparing the proportion of accredited beds and accredited hospitals. In 1995–96, the 69% of accredited public hospital beds were provided by 40% of public acute care hospitals (Table 7.8).

Table 7.8: Accreditation of public acute care hospitals(a) and average available beds, 1995–96

Public hospitals	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Accredited hospitals	100	55	25	26	38	3	2	—	249
Non-accredited hospitals	73	60	119	61	37	12	—	5	367
Total hospitals	173	115	144	87	75	15	2	5	616
Proportion hospitals accredited	58%	48%	17%	30%	51%	20%	100%	—	40%
'Accredited' beds	13,861	9,410	4,401	3,432	3,098	1,061	769	—	36,032
'Non-accredited' beds	4,300	2,787	5,567	1,439	1,653	174	—	570	16,489
Total beds	18,161	12,197	9,968	4,870	4,751	1,235	769	570	52,521
Proportion beds 'accredited'	76%	77%	44%	70%	65%	86%	100%	—	69%

(a) All acute care hospitals are included in this table whether or not accreditation was sought. Hospitals are included in this table for performance indicator purposes and for some jurisdictions excludes multipurpose facilities, mothers and babies facilities and dental hospitals.

Sources: AIHW National Public Hospital Database; AIHW National Hospital Morbidity Database; Australian Council on Healthcare Standards unpublished data.

7.4 Use of private medical services

Consulting a doctor is the second most common health-related action taken by Australians, after use of medications (ABS 1997b). But why do Australians visit doctors? Some answers to this question come from the 1995 National Health Survey, the 1995 Morbidity and Treatment Survey, and Medicare claims information. Each of these sources is considered below.

Information on the supply and distribution of medical practitioners is contained in Section 6.4 ('Health workforce' on page 180). For further information on this and other issues relating to the use of medical services, such as the organisation of general practice and the services provided, refer to the report *General Practice in Australia: 1996* (DHFS 1996). Further information about the operation of Medicare is contained in the quarterly *Medicare Statistics* (DHFS 1998).

Doctor consultations

In the 1995 National Health Survey, just under one in four people (23%) had consulted a doctor in the previous 2 weeks, and 55% had consulted a doctor within the last 3 months (50% of males and 60% of females). Of those who had consulted a doctor in the last 2 weeks, 77% had one consultation, 17% two consultations and 6% had three or more consultations in that period. Just under 10% had consulted a specialist at their most recent consultation.

Overall, respiratory conditions were the most common reason for consulting a doctor (20%). However, reasons differed by age and sex (Table 7.9). For males, the most common reasons for the most recent consultation were diseases of the respiratory system (21%), check-up (20%), diseases of the musculoskeletal system and connective tissue (10%) and injuries (8%). For females, the most common reasons for consultation were respiratory conditions (20%), check-up (20%), and tests and other reasons not associated with a specific condition (14%).

Table 7.9: Selected reasons for consulting a doctor, selected ages, 1995 (per cent)

	Age (years)			
Reason for consultation	0–14	25–34	45–54	65–74
Males				
Diseases of nervous system and sense organs	14	6	3	6
Diseases of circulatory system	1	3	9	18
Diseases of respiratory system	35	23	17	9
Diseases of digestive system	5	5	5	5
Diseases of genitourinary system	2	1	2	2
Diseases of skin and subcutaneous tissue	6	5	6	4
Diseases of musculoskeletal system	3	13	16	8
Symptoms, signs, ill-defined conditions	8	7	8	5
Injuries	8	14	6	3
Examination/check-up	11	17	21	34
Tests, other reasons not associated with a specific illness	9	5	6	11
Females				
Diseases of nervous system and sense organs	14	4	5	6
Diseases of circulatory system	—	2	10	13
Diseases of respiratory system	42	17	13	12
Diseases of digestive system	5	4	5	4
Diseases of genitourinary system	2	7	7	4
Diseases of skin and subcutaneous tissue	10	4	5	4
Diseases of musculoskeletal system	2	5	11	12
Symptoms, signs, ill-defined conditions	9	7	7	4
Injuries	5	4	4	3
Examination/check-up	8	20	19	28
Tests, other reasons not associated with a specific illness	7	22	13	12

Source: 1995 National Health Survey.

Morbidity and its management in general practice

Information on consultations with general practitioners (GPs) from the 1990–91 Australian Morbidity and Treatment Survey (Bridges-Webb et al. 1992) were reported in the 1996 edition of *Australia's Health.* The Morbidity and Treatment Survey 1995 (MTS95) analyses data collected during 1995 as part of the Morbidity and Therapeutic Index (MTI) (see Box 7.3, page 212).

The MTS95 found that 58% of patients were female. Patients aged 65 years and over represented 22.1% of the consultations, and 7.8% of patients were aged less than 5 years (Table 7.10).

Box 7.3: Morbidity and Treatment Survey 1995

The Australian Morbidity and Treatment Survey (AMTS) conducted in 1990–91 is the most recent national data collection on general practice. A random sample of 495 general practitioners (GPs) recorded details of all surgery consultations and home visits for two periods of 1 week, 6 months apart.

The methods used for the AMTS were adapted for the Morbidity and Therapeutic Index (MTI), which has been conducted since 1991 as a quality assurance activity for GPs. Participating GPs in the MTI record details of 100 consecutive surgery encounters and home visits. Data from the 1995 MTI, for those doctors who agreed to participate, were analysed by the Family Medicine Research Unit, in a study known as the Morbidity and Treatment Survey 1995 (MTS95). The MTS95 database contains information for 66,376 encounters.

Of the 830 doctors who had undertaken the MTI during 1995, 641 (77.2%) agreed to the use of their data. As this is not a true random sample of all GPs in Australia, adjustments were made during post-stratification. This involved calculating the total distribution of consultations in Australia using the age–sex distribution of the average GP consultations per person for items 1 to 98 on the Medical Benefits Schedule in conjunction with ABS population estimates for 1995. This distribution was used to calculate relative weights for each encounter, which were then applied to all analyses.

The data recorded at each encounter included the patient's reasons for the encounter (RFEs), age and sex, problems managed, drugs prescribed and treatment provided, and tests and investigations ordered or undertaken.

RFEs and problems managed were classified according to the International Classification of Primary Care (Lamberts & Woods 1987). Drugs prescribed or provided were classified according to an in-house classification, the structure of which is based upon generic composition broadly related to body system and/or therapeutic use.

Table 7.10: GP consultations: age and sex of patient

	Sex		
Age	Male (%)	Female (%)	Persons
< 1	1.0	1.0	2.0
1–4	3.0	2.8	5.8
5–14	4.0	3.9	7.9
15–24	4.4	7.7	12.1
25–44	10.6	16.8	27.4
45–64	9.8	12.9	22.7
65–74	5.4	6.6	12.0
75+	3.7	6.4	10.1
Total	**41.9**	**58.1**	**100.0**

Source: Morbidity and Treatment Survey 1995.

Patients described an average of 162.2 reasons for encounter (RFEs) per 100 encounters. The twenty most common RFEs are presented in Table 7.11. These accounted for more than half (51.8%) of all RFEs. A request for a check-up, whether general or body system specific, was the most frequent RFE, occurring at a rate of 13.0 per 100 encounters. This was followed by cough (9.7 per 100 encounters) and requests for a prescription (8.9 per 100).

GPs reported managing an average 151.2 problems per 100 encounters. The twenty most commonly managed problems accounted for 40.3% of all problems managed (Table 7.12, page 214). Hypertension ranked first, being managed at a rate of 9.3 per 100 encounters, followed by upper respiratory tract infection (8.7 per 100 encounters), acute bronchitis (4.0 per 100), immunisation (3.5 per 100) and asthma (3.5 per 100).

Drugs were prescribed at an overall rate of 103.4 per 100 encounters. The twenty most common drugs accounted for over a third (37.9%) of total prescriptions (Table 7.13, page 214). The most frequently prescribed drug was amoxycillin (5.1 per 100 encounters), followed by paracetamol (4.7 per 100), and amoxycillin with clavulanic acid (3.0 per 100).

Treatments other than a drug prescription (e.g. therapeutic procedures and counselling) were provided at a rate of 57.7 per 100 encounters. Referrals to specialists were made at a rate of 8.3 per 100 encounters, but a patient was referred to an allied health professional far less frequently (2.5 per 100 encounters).

Table 7.11: GP consultations: 20 most frequent patient reasons for encounter

Reason for encounter	Percentage of all reasons	Rate per 100 encounters
Check-up	8.3	13.0
Cough	6.2	9.7
Prescription	5.7	8.9
Throat symptoms	4.2	6.6
Back complaint	2.6	4.1
Fever	2.3	3.6
Rash	2.3	3.6
Headache	2.2	3.4
Abdominal pain	2.2	3.4
Immunisation	2.1	3.4
Sneezing/congestion	1.9	3.0
General weakness	1.8	2.8
Ear ache/pain	1.7	2.7
Swelling	1.4	2.3
Diarrhoea	1.3	2.1
Chest pain	1.2	1.9
Anxiety	1.1	1.7
Leg/thigh symptom	1.1	1.7
Insomnia	1.1	1.7
Vomiting	1.1	1.7

Note: Based on 103,499 reasons for encounter.

Source: Morbidity and Treatment Survey 1995.

Table 7.12: GP consultations: 20 most frequently managed problems

Problem managed	Percentage of all problems	Rate per 100 encounters
Hypertension	6.2	9.3
Upper respiratory tract infection	5.7	8.7
Bronchitis (acute)	2.6	4.0
Immunisation	2.3	3.5
Asthma	2.3	3.5
Osteoarthritis	1.9	2.9
Anxiety	1.8	2.8
Depression	1.7	2.5
Sprain/strain	1.7	2.5
Back complaint	1.6	2.4
Acute otitis media	1.5	2.3
Tonsilitis	1.5	2.2
Diabetes	1.5	2.2
Contact dermatitis	1.3	2.0
Urinary tract infection	1.2	1.9
Female genital check-up	1.2	1.8
Arthritis	1.2	1.8
Sinusitis	1.1	1.7
Insomnia	1.0	1.6
Infection of gastrointestinal tract	1.0	1.5

Note: Based on 99,960 problems managed.

Source: Morbidity and Treatment Survey 1995.

Table 7.13: GP consultations: 20 most frequently prescribed drugs

Drug name	Percentage of all scripts	Rate per 100 encounters
Amoxycillin	4.9	5.1
Paracetamol	4.6	4.7
Amoxycillin + clavulanic acid	2.9	3.0
Salbutamol	2.4	2.5
Codeine + paracetamol	2.3	2.3
Doxycycline	1.9	2.0
Cephalexin	1.8	1.9
Influenza vaccine	1.8	1.9
Erythromycin	1.8	1.9
Cefaclor	1.7	1.8
Betamethasone cream	1.6	1.6
Diclofenac	1.3	1.3
Temazepam	1.3	1.3
Roxithromycin	1.2	1.3
Ranitidine	1.2	1.2
Naproxen	1.1	1.2
Chloramphenical eye	1.1	1.1
Prochlorperazine	1.1	1.1
Frusemide	1.0	1.1
Enalapril maleat	1.0	1.1

Note: Based on 99,960 problems managed.

Source: Morbidity and Treatment Survey 1995.

Medicare

Data on the operation of Medicare, Australia's universal system of health insurance (see Box 7.4), provide an overview of the use of private medical services. These include services provided outside of hospital as well as medical services for private admitted patients in public and private hospitals. Note, however, that Medicare data do not provide a complete view of the use of medical services, as they do not include services for public patients in hospital, for eligible veterans, or those that are covered by compensation for which interim benefits have not been paid.

Box 7.4: Medicare

Medicare, a universal system of health insurance, came into operation in 1984. Administered by the Health Insurance Commission (HIC), the scheme covers everyone normally resident in Australia, except foreign diplomats and their dependants. Short-term visitors, except those from countries with which reciprocal health care agreements have been made, are not eligible for Medicare benefits.

A schedule of fees has been established, and Medicare benefits for services provided by private practitioners are based on those fees. Benefits are payable in respect of services provided by qualified medical practitioners, consultations by participating optometrists and certain services performed by eligible dental practitioners.

Some types of medical services do not qualify for Medicare benefits. These include services provided to eligible veterans, and their dependants, under Veterans' Affairs arrangements. Interim Medicare benefits may be paid for services covered by motor vehicle third party insurance and workers' compensation schemes, but these benefits are recovered by the Government at the time 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 (for example, examinations for employment purposes). To attract benefits, services must be 'clinically relevant', i.e. reasonably required for the treatment of the patient's condition.

Practitioners are not obliged to adhere to the schedule fees, except in the case of participating optometrists, but if they direct bill the HIC for any service rather than issuing patients with accounts, the amount payable is the Medicare benefit, and additional charges must not be raised for the service.

For private admitted patients in hospitals (including day-hospital facilities), the Medicare benefit is 75% of the schedule fee, but the gap between benefit and 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.

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 1997, that amount was set at $50.10. Patients remain responsible for payments of amounts charged above the schedule fee.

(continued)

Box 7.4 (continued): Medicare

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.

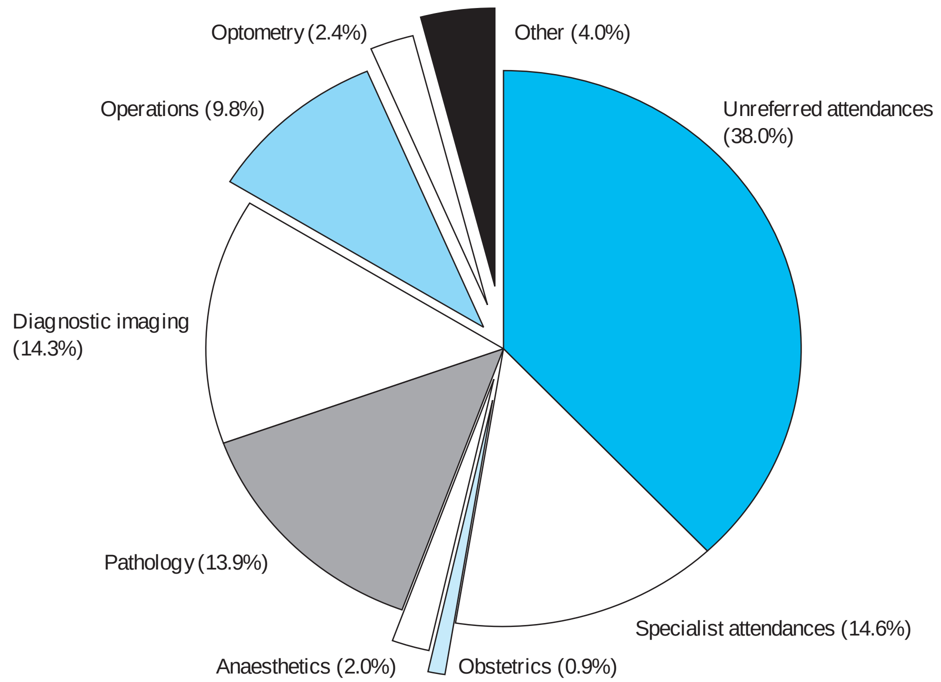
Agreements between the Commonwealth Government and State and Territory Governments provide for all Medicare beneficiaries to obtain inpatient and outpatient care at public hospitals without charge. Doctors appointed by the hospitals provide medical care for such 'public' patients (at no cost to them). Inpatients in public hospitals may choose to be private patients, in which case they are liable for accommodation and nursing charges set at levels agreed by the Commonwealth and for medical fees charged by private practitioners. Private health insurance can be purchased to cover hospital charges for private patients of public hospitals and patients of private hospitals. Uninsured patients can also elect to be treated as private patients, and pay the cost themselves.

In 1996–97, Medicare provided benefits for 198.8 million items. This represents an increase of 5.7% over the 188.0 million items in 1994–95. The increase over this period was in part due to effects of population growth (2.5%) and a rise in the number of items per person, some of which was due to structural changes to the Medicare Benefits Schedule (3.1%). Medicare items cover a range of different services, from a single doctor 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 on the basis 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, rather than referring to them as services as in previous editions of *Australia's Health*.

In 1996–97, a total of $6,158 million was paid in Medicare benefits, of which $2,340 million (38.0%) was for unreferred attendances, that is, general practitioner services, emergency attendances after hours, other prolonged attendances, group therapy and acupuncture. A further $898 million (14.6%) was paid for specialist attendances, $880 million (14.3%) for diagnostic imaging and $858 million (13.9%) for pathology tests (Figure 7.1).

Ignoring structural changes to the Medicare Benefits Schedule, the largest increases in total items of service from 1994–95 to 1996–97 were in radiotherapy and therapeutic nuclear medicine (12.0%), other services (11.9%) and optometry (11.5%). The very large increase in obstetrics services (139.2%) was due mainly to structural changes to the Medicare Benefits Schedule. (Up until 1 November 1995, for private patients on confinement, the antenatal care, confinement and postnatal care counted as only one item of service. With effect from 1 November 1995, antenatal visits for all patients are recorded individually.)

On average, each person in Australia received 10.7 items under Medicare in 1996–97 (or 9.8 items if patient episode initiation items, which cover the administrative costs associated with collection of specimens for pathology, are excluded). These services included 5.5 unreferred attendances, 1.0 specialist attendance and 2.7 pathology items.



Source: DHFS 1998.

Figure 7.1: Medicare benefits paid by broad type, 1996–97

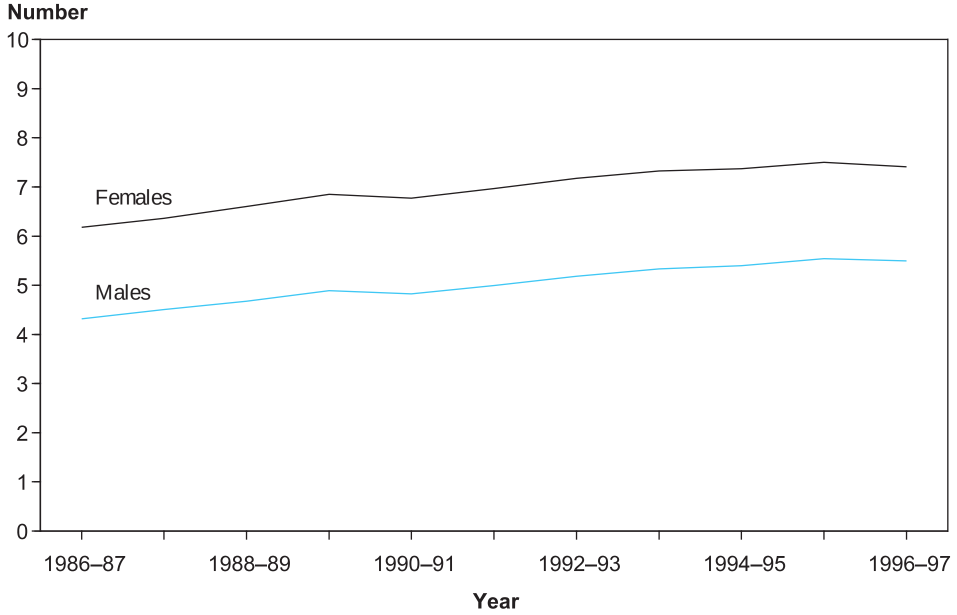
Since 1994–95, the number of items per person (including pathology patient episode initiation items) has increased from 10.4 to 10.7, an increase of 3.1%, or an average annual increase of 1.5% (Table 7.14, page 218). As noted above, some of this increase has been due to structural changes to the Medicare Benefits Schedule.

Although the average use was 10.7 items of all kinds per person, the actual number of items per person ranges very widely. For example, in 1996–97, 2.3% of the population received 51 or more items. These people accounted for 19.0% of total benefits paid. At the other end of the scale, 11.4% received no items and 35.5% received between one and five items, accounting for 7.7% of total benefits.

Between 1986–87 and 1996–97, the average number of consultations per person increased steadily (Figure 7.2, page 218). Consultations with general practitioners and specialists are included. The data exclude obstetrics, pathology, radiology, anaesthetics, optometry and surgery.

In 1986–87, males consulted a general practitioner or specialist on average 4.3 times per year and females 6.2 times per year. By 1996–97, this rate had increased to 5.5 consultations per year for males and 7.4 for females, representing average annual increases of 2.0% and 2.7%, respectively.

The increase in consultation rates may in part be due to improved access to doctors, as there was a 27% increase in the number of primary care practitioners between 1986–87



Note: Rates are age-adjusted to the total Australian population at 30 June 1991.

Sources: AIHW, derived from Medicare claims data provided by the HIC.

Figure 7.2: GP and specialist consultations per person, by sex, 1986–87 to 1996–97

Table 7.14: Medicare items processed per capita, by broad type, 1994–95 and 1996–97

Type of item	1994–95	1996–97	Total change (per cent)	Annual change (per cent)
Unreferred attendances[(a)]	5.45	5.53	1.4	0.7
Specialist attendances	0.97	0.98	1.4	0.7
Obstetrics	0.04	0.09	132.9	52.6
Anaesthetics	0.09	0.09	0.5	0.3
Pathology				
PEI items[(b)]	0.83	0.91	9.0	4.4
Other	1.76	1.80	2.1	1.0
Total	*2.60*	*2.71*	*4.3*	*2.1*
Diagnostic Imaging	0.55	0.56	2.4	1.2
Operations	0.28	0.29	2.6	1.3
Optometry	0.18	0.20	8.6	4.2
Other[(c)]	0.25	0.26	7.8	3.8
Total including PEI items	**10.41**	**10.72**	**2.9**	**1.5**
Total excluding PEI items	**9.57**	**9.81**	**2.4**	**1.2**

(a) Includes general practitioner attendances, emergency attendances, attendances after hours, other prolonged attendances, group therapy and acupuncture.
(b) Patient episode initiative 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: DHFS 1998.

and 1996–97 (AIHW 1998). Increased promotion and awareness of steps which individuals 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 across States. In 1996–97, the highest use was in New South Wales with 11.6 items per person, followed by Victoria (10.8 items), Queensland (10.5 items) and South Australia (10.1 items). The lowest per person use occurred in the Northern Territory (5.7 items). The average use for Australia was 10.7 items. One reason for the low rate in the Northern Territory is that a number of items are provided to Aboriginal and Torres Strait Islander peoples through programs other than Medicare, and these services are not included in the data reported here.

7.5 Use of dental services

This section focuses on the use of dental services with a particular emphasis on differences according to the age of the Australian population. The AIHW Dental Statistics and Research Unit collected the data presented here in a national telephone survey conducted in early 1996, as part of the then Commonwealth Dental Health Program (Box 7.5). A further survey is planned for 1999.

Box 7.5: National Dental Telephone Survey 1996

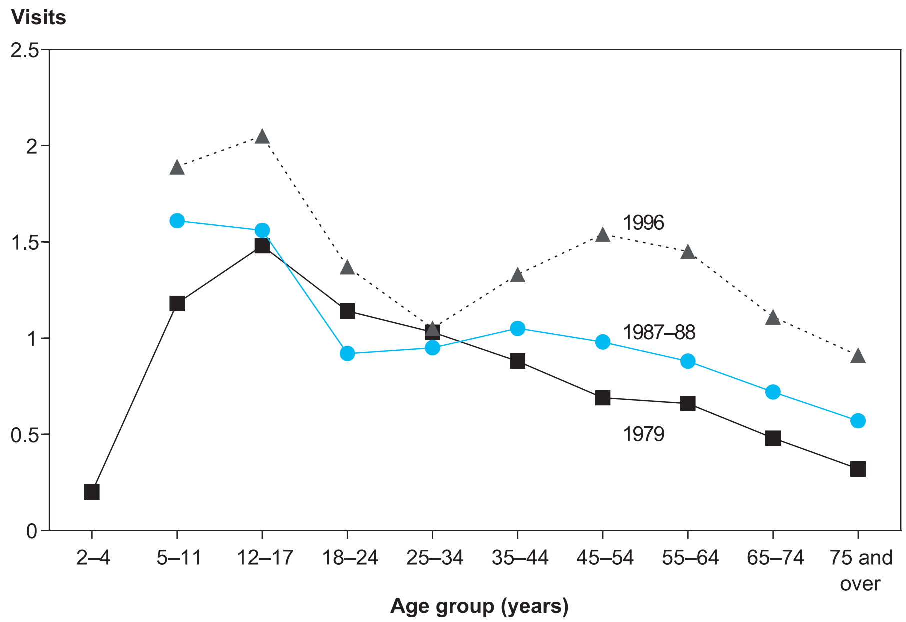
In the first quarter of 1996 the AIHW Dental Statistics and Research Unit conducted a national dental telephone interview survey. Information was collected from a random sample of 8,292 persons aged 5 years and over in all States and Territories. The purpose of the survey was to:

- *collect information on basic features of oral health and dental care within the Australian population;*
- *provide information on the broader parameters of dental health and access to services;*
- *monitor the extent of social inequalities associated with oral health and dental care within the community; and*
- *investigate the underlying reasons behind dental behaviours and their consequences.*

Despite the dramatic improvement in oral health reported earlier in Section 5.4 (page 128), there has been an increase in the per capita use of services by all ages since the late 1970s (Figure 7.3, page 220). The large rise in the adolescents (12–17 years) is largely due to the increase in orthodontal services, and the more than doubling in the use of services by persons aged over 45 years is associated with the dramatic decrease in edentulism (complete loss of teeth).

Children and adolescents were more likely than adults to have recently consulted a dental professional (Table 7.15, page 220). About a quarter of adults had not made a dental visit for 2 years or more. Young adults were least likely to have made a dental visit.

The distribution of dentate persons who visited a dental professional in the last 12 months by place of last dental visit is presented in Table 7.16 (page 221). In the 5–11 year age group, 58.6% attended public (school dental service) practices. The reverse was the case for adolescents where 39.0% attended public practice. For the remaining adult age groups it can be seen that nine in ten visited a private dental practice. In total, for those in the population with their own natural teeth, four out of every five visits are made to a private dental practitioner.



Source: ABS 1980a, b; Barnard 1993; AIHW Dental Statistics and Research Unit unpublished data.

Figure 7.3: Use of dental services: average number of visits per year, by age group, 1979, 1987–88, 1996

Table 7.15: Dentate persons: period since last visit to a dental professional by age, 1996

Age group (years)	Less than 12 months	1 year to < 2 years	2 years to < 5 years	5+ years
5–11	89.3	7.6	2.9	0.3
12–17	76.3	15.6	5.6	2.5
18–24	50.2	18.5	20.6	10.7
25–34	50.1	21.4	16.6	11.9
35–44	58.1	18.3	14.2	9.4
45–54	61.6	18.7	11.4	8.3
55–64	67.2	14.1	10.6	8.1
65–74	63.2	14.6	12.3	10.0
75 and over	64.8	14.7	9.5	11.1
Total	**62.6**	**16.8**	**12.4**	**8.1**

Source: AIHW Dental Statistics and Research Unit unpublished data.

Financial burden is an often-cited reason for why people have not recently visited a dentist or complied with recommended treatment. In the survey, nearly a quarter said they had avoided or delayed visiting a dental professional because of the cost and about 19% said that the cost had prevented them from having dental treatment which was recommended or which they wanted (Table 7.17). In both cases, cost was less of a deterrent for children and those aged 75 years and above.

In Section 5.4 (page 128) it was shown that there has been a dramatic reduction in the percentage of people who are edentulous (total tooth loss). There is a difference in the levels of dental insurance for the edentulous and those who are dentate (have one or more of their natural teeth). Overall, 38.5% of the Australian population reported that they were covered by dental insurance in 1996, with the highest percentages in the 35–44 and 45–54 age groups (Table 7.18, page 222).

Table 7.16: Dentate persons: place of last dental visit(a) by age, 1996

Age group (years)	Private	Public	Other
5–11	41.2	58.6	0.2
12–17	60.7	39.0	0.3
18–24	88.1	10.5	1.3
25–34	89.1	9.0	1.9
35–44	90.7	8.6	0.7
45–54	94.7	5.1	0.3
55–64	90.8	8.7	0.5
65–74	86.0	13.6	0.4
75 and over	90.6	9.4	—
Total	**79.0**	**20.3**	**0.7**

(a) Visits within the last 12 months.

Source: AIHW Dental Statistics and Research Unit unpublished data.

Table 7.17: Cost as a deterrent to receiving dental care, 1996

Age group (years)	Avoided or delayed visiting because of cost			Cost prevented recommended or wanted dental treatment		
	Dentate	Edentulous	Total	Dentate	Edentulous	Total
5–11	8.9	—	8.9	7.8	—	7.8
12–17	8.9	—	8.9	9.0	—	9.0
18–24	28.9	*	28.9	19.7	*	19.7
25–34	36.9	*	37.0	25.2	*	25.0
35–44	32.2	20.9	32.0	28.5	21.2	28.3
45–54	24.2	18.4	23.8	21.3	17.9	21.0
55–64	24.6	26.5	24.9	22.0	21.3	21.9
65–74	18.9	16.9	18.3	16.7	13.9	15.8
75 and over	11.4	12.6	12.0	6.2	13.0	9.5
Total	**24.5**	**18.3**	**24.0**	**19.6**	**15.6**	**19.2**

* Relative standard error greater than 40%.

Source: AIHW Dental Statistics and Research Unit unpublished data.

Table 7.18: Percentage of persons with dental insurance, by age and dentate status, 1996

Age group (years)	Dentate	Edentulous	Total
5–11	40.5	—	40.5
12–17	38.7	—	38.7
18–24	31.4	*	31.5
25–34	32.7	*	32.6
35–44	44.8	50.1	44.9
45–54	51.9	35.7	50.7
55–64	44.8	29.7	41.8
65–74	36.2	18.3	30.4
75 and over	29.9	18.5	24.3
Total	**39.8**	**24.3**	**38.5**

* Relative standard error greater than 40%.

Source: AIHW Dental Statistics and Research Unit unpublished data.

7.6 Use of medications

Use of medications is the most common health-related action taken by Australians (ABS 1997b). Prescription drugs are dispensed under the Pharmaceutical Benefits Scheme (PBS, see Box 7.6) and Repatriation Pharmaceutical Benefits Scheme (RPBS) programs, as private prescriptions, through hospitals, and through a group of smaller Commonwealth Government programs. In 1995–96 there was an estimated $5.4 billion expended on pharmaceuticals and other therapeutic agents, comprising $2.8 billion under the PBS, $0.6 billion in hospitals and the remainder on non-subsidised therapeutics from community pharmacies and other retail outlets.

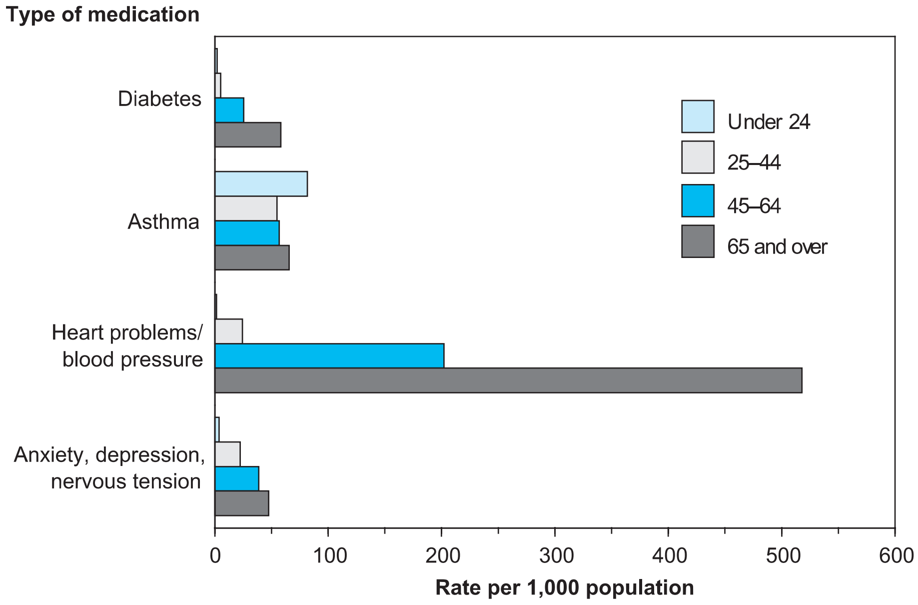
Use of medications—evidence from the National Health Survey

Based on results of the 1995 National Health Survey, an estimated 12.4 million Australians (68.8% of the population) used some form of medication (including vitamins, minerals and herbal or natural medicines) in the 2 weeks before interview.

In general, the use of medication as a health-related action increased with age, with the lowest usage in the 5–14 years age group (48.9%), increasing to 91.6% for people aged 75 years or more. Females reported more medication use than males (74.0% compared with 63.4%).

The most common type of medication used by both males and females was vitamins or minerals (25.8% of all people using medications), followed by pain relievers (23.6%) and medications for heart problems or blood pressure (10.6%). Excluding vitamins and minerals, medications for coughs and colds were the most common type of medication used by people aged under 5 years, and pain relievers were the most common between the ages of 5 and 54. In the older age groups, medications for heart problems or blood pressure were the most common types used (Figure 7.4).

Of the estimated 10.7 million people who used medications other than vitamins or minerals, approximately 62% did so on medical advice, and 51% required a prescription to obtain the medication (Figure 7.5, page 224). For some types of medications, such as those for diabetes and for anxiety, nervous tension or depression, virtually all use was on medical advice and required a prescription. Others, such as pain relievers and medications for coughs and colds, were mainly used without medical advice or a prescription.



Source: ABS 1997b.

Figure 7.4: Medication use, selected types, by age group, 1995

Box 7.6: The Pharmaceutical Benefits Scheme

The Pharmaceutical Benefits Scheme (PBS) subsidises the cost of a wide range of necessary and cost-effective medications. Its aim is to ensure that individuals are not financially precluded from access to these items. The items that attract benefits are reviewed frequently, and the price of every item covered is negotiated with the supplier.

Patients are grouped into two classes. Concessional beneficiaries, i.e. holders of Pensioner Health Benefit Cards and certain other entitlement cards issued by the Department of Social Security, pay a set contribution for each item. This contribution was $3.20 in January 1998, but is indexed from time to time in accordance with movements in the CPI. General beneficiaries, i.e. all others, pay a higher contribution for each item. Their contribution from January 1998 (also indexed), is the dispensed cost of the item up to a maximum of $20. Both classes of beneficiary pay additional amounts for some premium brands where there is a cheaper generic equivalent which is also PBS listed. The pharmacist then claims the remainder of the dispensed price of the item from the Health Insurance Commission.

The PBS also includes a safety net arrangement, which is a family-based scheme, and has been modified several times since its introduction in 1986. From January 1997, after general beneficiaries spend $612.60 on PBS items, they become entitled to benefits as for concessional beneficiaries for the rest of the calendar year. For concessional beneficiaries who

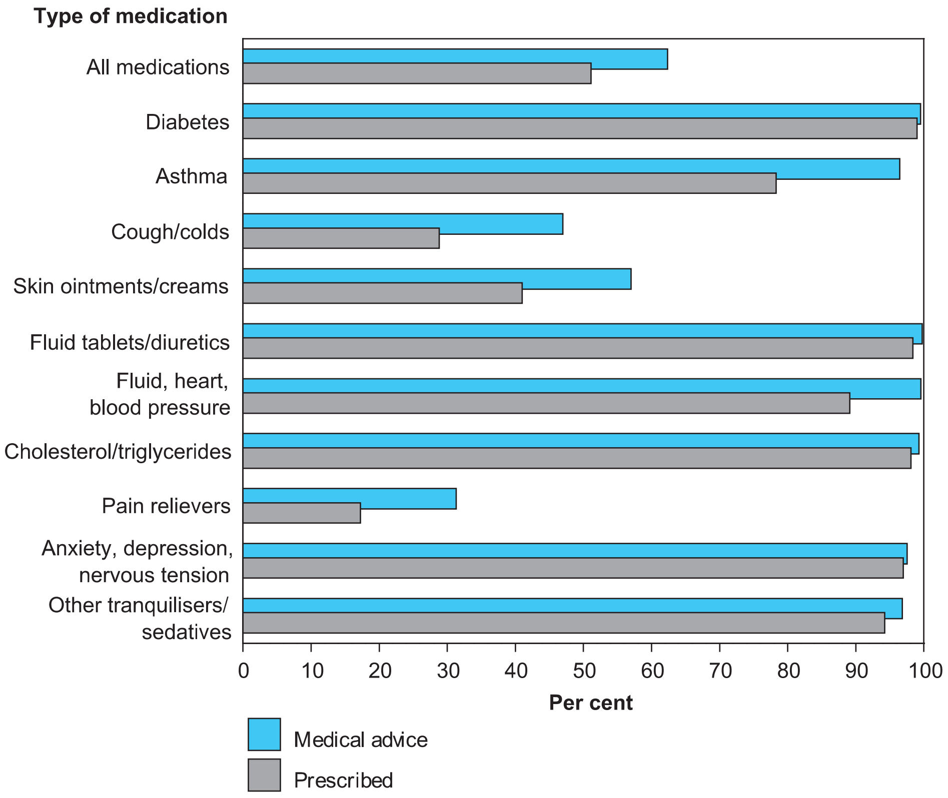
(continued)

Box 7.6 (continued): The Pharmaceutical Benefits Scheme

spend $166.40 on PBS items, they become entitled to receive free items for the rest of the calendar year.

The Commonwealth also helps in the provision and purchase of drugs through the Repatriation Pharmaceutical Benefits Scheme (RPBS), which provides assistance to specific groups of Australian war veterans and dependants. It is generally similar to the PBS for concessional beneficiaries.

Another group of Commonwealth payments is made for miscellaneous services, including subsidising highly specialised drugs, growth hormones, IVF programs and drugs for Doctors' Bags.



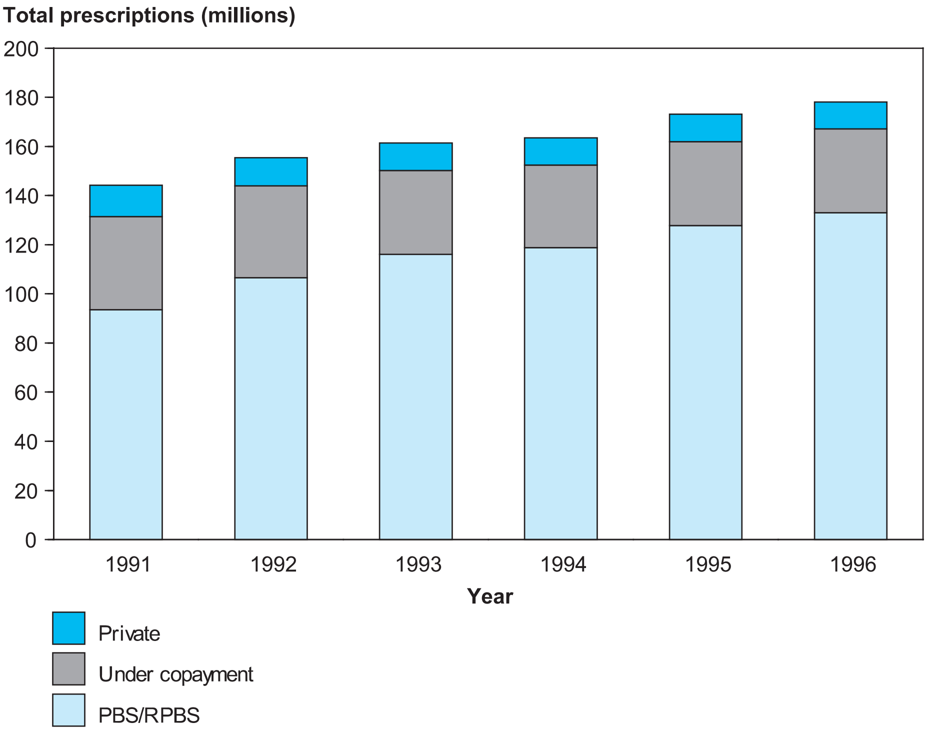
Source: ABS 1997b.

Figure 7.5: Persons who used medication: whether used on medical advice and whether medication prescribed, selected types, 1995

Pharmaceuticals from community pharmacies

Approximately 75% of prescriptions dispensed through community pharmacies qualify for benefits under the PBS (Box 7.6, page 223). The remainder are those which are priced under the general patient copayment threshold and those that are not listed on the PBS Schedule (i.e. private prescriptions). These do not attract a subsidy under the scheme and therefore are not processed by the Health Insurance Commission. To estimate the usage of these drugs, a survey is conducted each month by the Pharmacy Guild of Australia. The survey collects dispensing information from approximately 300 pharmacies which are members of the Guild. Combining the subsidised PBS/RPBS data with weighted values from the Guild survey for non-subsidised prescriptions, it is possible to estimate the total volume of dispensing from community pharmacies. Figure 7.6 shows dispensing experience for 1991 to 1996 by payment category.

Antibiotics, analgesics and antihypertensives feature prominently in the top 10 drugs by volume dispensed through community pharmacies in 1996 (Table 7.19, page 226). For some drugs (e.g. enalapril and simvastatin), almost all of their use is captured under the PBS, whereas for some other drugs (e.g. amoxycillin), around 50% of community use is subsidised.



Source: DHFS 1997b.

Figure 7.6: Community prescription use by payment category, 1991 to 1996

Table 7.19: Top 10 drugs dispensed in community pharmacies, 1996

Rank and drug name		Action	Number of prescriptions			Per cent subsidised
			PBS/RPBS	Guild Survey	Total	
1	amoxcyllin	antibiotic	2,799,138	2,718,299	5,517,437	50.7
2	paracetamol	analgesic	4,678,754	96,641	4,778,395	97.9
3	salbutamol	antiasthmatic	3,582,705	1,031,126	4,613,831	77.7
4	codeine with paracetamol	analgesic	2,924,221	1,038,697	3,962,918	73.8
5	simvastatin	serum lipid-reducing agent	3,419,079	1,276	3,420,355	100.0
6	ranitidine	treatment for peptic ulcer	3,328,787	16,920	3,345,707	99.5
7	temazepam	sedative	2,649,126	644,470	3,293,596	80.4
8	enalapril	antihypertensive	3,283,814	2,193	3,286,007	99.9
9	atenolol	antihypertensive	2,024,576	901,579	2,926,155	69.2
10	cefaclor	antibiotic	1,385,540	1,423,866	2,809,406	49.3

Source: DHFS 1997c.

PBS expenditure

The total cost of pharmaceuticals under the PBS was $3.1 billion in 1996–97, up from $1.5 billion in 1991–92 (Table 7.20). The majority of the expenditure in 1996–97 was on pharmaceuticals for concession card holders ($1.9 billion), who themselves contributed a further $0.25 billion to the cost of the drugs. Over this period, the largest increase was in benefits for non-safety net general beneficiaries (144%), due in part to an increase in the safety net threshold from $400 to $600 in 1996.

Table 7.20: Cost of pharmaceutical benefits, 1991–92 to 1996–97 ($ million)

Type of benefit	1991–92	1992–93	1993–94	1994–95	1995–96	1996–97
Commonwealth government payments						
Benefit prescriptions						
General						
No safety net	166	194	225	291	343	392
Safety net	55	119	143	93	119	73
Total general	*221*	*313*	*367*	*384*	*462*	*465*
Concessional						
No safety net	715	851	1,020	1,195	1,369	1,466
Safety net	197	253	298	303	360	402
Total concessional	*911*	*1,105*	*1,317*	*1,497*	*1,730*	*1,867*
Total benefit	*1,132*	*1,417*	*1,685*	*1,882*	*2,191*	*2,333*
Patient contribution						
General	135	173	194	230	252	278
Concessional	173	187	202	214	227	252
Total contribution	*308*	*360*	*396*	*445*	*478*	*530*
Total cost of prescriptions	**1,441**	**1,777**	**2,080**	**2,326**	**2,669**	**2,863**
Miscellaneous services	101	102	117	110	135	206
Total cost of pharmaceutical benefits	**1,542**	**1,879**	**2,197**	**2,436**	**2,805**	**3,068**

Source: DHFS 1997a.

References

Australian Bureau of Statistics (ABS) 1980a. Dental health (persons aged 15 years or more), February–May 1979. Cat. No. 4339.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1980b. Sight, hearing and dental health (persons aged 2 to 14 years), February–May 1979. Cat. No. 4337.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1996. 1994–95 Private hospitals, Australia. Cat. No. 4390.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1997a. 1995–96 Private hospitals, Australia. Cat. No. 4390.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1997b. 1995 National Health Survey: summary of results. Cat. No. 4364.0. Canberra: ABS.

Australian Institute of Health and Welfare (AIHW) 1997a. Australian hospital statistics, 1995–96. Health Services Series No. 10. AIHW Cat. No. HSE 3. Canberra: AIHW.

Australian Institute of Health and Welfare (AIHW) 1997b. Australian hospital statistics, 1993–95: an overview. Health Services Series No. 9. AIHW Cat. No. HSE 2. Canberra: AIHW.

Australian Institute of Health and Welfare (AIHW) 1998. Medical labour force, 1996. National Health Labour Force Series No. 13. AIHW Cat. No. HWL 5. Canberra: AIHW (in press).

Barnard PD 1993. National oral health survey, Australia, 1987–88. Final report. Canberra: AGPS.

Bridges-Webb C, Britt H, Miles DA, Neary S, Charles J & Traynor V 1992. Morbidity and treatment in general practice in Australia 1990–1991. Med J Aust 157 Suppl: S1–S57.

(Commonwealth) Department of Health and Family Services (DHFS) 1996. General practice in Australia: 1996. Canberra: DHFS.

(Commonwealth) Department of Health and Family Services (DHFS) 1997a. Expenditure and prescriptions, twelve months to 30 June 1997 (with annual supplements). Canberra: DHFS.

(Commonwealth) Department of Health and Family Services (DHFS) 1997b. Rx drug utilisation bulletin. Canberra: DHFS.

(Commonwealth) Department of Health and Family Services (DHFS) 1997c. Australian prescriber 1997. Canberra: DHFS.

(Commonwealth) Department of Health and Family Services (DHFS) 1998. Medicare statistics, December quarter 1997. Canberra: DHFS.

Foedinger G & Moon L 1998. Waiting times for elective surgery, 1995–96. Canberra: AIHW (in press).

Lamberts H & Woods M (eds) 1987. International classification of primary care. Oxford: Oxford University Press.

Moon L 1996. Waiting for elective surgery in Australian public hospitals, 1995. Health Services Series No. 7. Canberra: AIHW.

National Coding Centre (NCC) 1995. The Australian version of the International Classification of Diseases, 9th revision, clinical modification (ICD-9-CM), Vols 1–4, effective 1 July 1995. Sydney: University of Sydney.

Organisation for Economic Co-operation and Development (OECD) 1997. OECD health data 1997: a software for the comparative analysis of 29 health systems. Paris: OECD.

8 Developments in health information

8.1 What is national health information and why is it needed?

National health information is information that either is national in coverage or has national relevance and relates to:

- the health of the population;
- the determinants of the population's health, including external factors (physical/biological environment, social, cultural and economic) and those internal to individuals (e.g. psychological or physiological risk factors, attitudes and behaviour);
- health programs or health services, including those provided directly to individuals and those provided to communities, covering information on the nature of the services provided and their management, resourcing, accessibility, use and effectiveness; and
- the relationships among these elements.

Health information is needed by consumers and providers of health services, the health industry, governments and the community to enable informed decision making. Consumers need information to guide their decisions to seek care, modify their behaviour, choose between different treatment options and understand the care they are receiving. Providers of health services need information about the needs of the populations they serve, the effectiveness of their interventions and for whom they are effective, and the acceptability of these interventions to the community. Providers also require nationally consistent information to be able to compare the effectiveness and efficiency of their operations with those of their peers. The health industry and governments need information to make decisions about how to provide services equitably, efficiently and effectively, and to monitor health service financing, performance and health outcomes.

8.2 Structures and data development processes for national health information

Australia has a well-established infrastructure to develop and provide national health information (Figure 8.1, page 230).

National Health Information Agreement

The foundation of the framework is the National Health Information Agreement. The Agreement, signed by the Commonwealth and State and Territory health authorities, the Australian Bureau of Statistics and the Australian Institute of Health and Welfare,

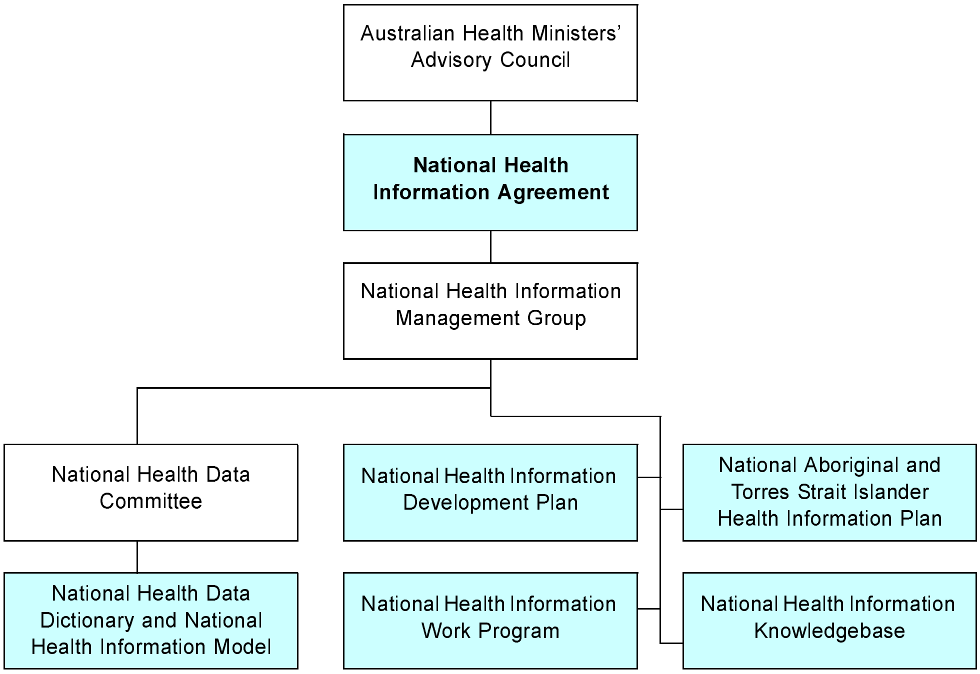


Figure 8.1: Operation of the National Health Information Agreement

came into effect in 1993, and has recently been extended to 2003. One of its objectives is to provide cooperative national structures and mechanisms to improve the collection, quality and dissemination of national health information. The Agreement is managed by the National Health Information Management Group.

The Agreement provides the basis for a national infrastructure, from which a number of important products have been developed. These include the National Health Information Work Program, the National Health Information Development Plan, the National Health Information Knowledgebase, the National Health Information Model, the National Health Data Dictionary and the National Aboriginal and Torres Strait Islander Health Information Plan.

National Health Information Work Program

The National Health Information Work Program is the rolling triennial program of priority health information development projects. Activities range from development work on standard definitions for community and primary health care, development of a national minimum data set for alcohol and other drug treatment services, to improved definitions and timeliness of existing collections such as hospital separations data.

National Health Information Development Plan

The National Health Information Development Plan (AIHW & AHMAC 1995) provides information planners, collectors and users with a list of priorities for national health information. Its purpose is to promote the development of high-priority health information and to increase the cost-effectiveness of Australia's health information systems. Progress on each of the highest priority development directions identified in the Plan is reported in Section 8.3.

National Health Data Dictionary

The National Health Data Dictionary (NHDD) has been produced each year since 1991. Originally it covered only the national minimum data set for institutional health care. However, since the implementation of the National Health Information Agreement in 1993, it has become the vehicle for all national data definitions developed through the National Health Data Committee. Coverage has extended beyond institutional health care, drawing on data development projects in the National Health Information Work Program. Consequently, Version 7, published in mid-1998, includes several new data elements for population health and non-institutional health care (NHDC 1998). Given the continuing policy interests in non-institutional health care, including continuity of care issues, further expansion of NHDD's coverage over the next few years is anticipated.

Commencing with the sixth edition of the NHDD issued in 1997 (NHDC 1997), a revised format for data definitions was incorporated based primarily on the international standard ISO/IEC 11179 *Specification and Standardization of Data Elements* (ISO & IEC 1997). The adaptation of this standard to health information is a progressive step in the management of metadata (the term used to describe data about health data).

National Health Information Knowledgebase

A significant advance in health information design in Australia was achieved in July 1997 with the launch by the Federal Health Minister, Dr Michael Wooldridge, of the National Health Information Knowledgebase (NHIK).

The Knowledgebase is an Internet-based electronic storage site and query tool for Australian national health metadata (AIHW 1997). Using international standards, it incorporates all of the national information development products and provides logical links between them. It offers free and coordinated electronic access to the full range of Australia's national health information development products. The NHIK was developed by AIHW under the auspices of the National Health Information Agreement (NHIA) and integrates:

- the National Health Information Model, a high-level framework for information management and development;
- the National Health Data Dictionary, reformatted in accordance with a metadata format based on the international standard ISO/IEC 11179 (*Specification and Standardization of Data Elements*);
- the *National Directory of Data Collections in Health, Welfare and Housing 1996*;
- the National Health Information Work Program;

- agreements to collect data, including National Minimum Data Sets; and
- the National Health Information Agreement itself, which provides the infrastructure for health information development in Australia.

The Knowledgebase provides a process for systematic development and registration of metadata and a repository (or *registry*) for metadata products. It helps users of shared data to develop a common understanding of the meaning, representation and identification of any unit of data and so facilitates data sharing across system and organisational boundaries. These latter features are of particular importance to organisations involved in electronic data interchange.

The Knowledgebase has the potential to become a comprehensive repository and data query facility that extends beyond the NHDD to incorporate metadata held at State/Territory, regional or local level, or by organisations in a particular field of specialisation.

The National Aboriginal and Torres Strait Islander Health Information Plan

The need to improve the quality of Indigenous health information was identified as the top national health information priority in the National Health Information Development Plan (AIHW & AHMAC 1995). The Aboriginal and Torres Strait Islander Health and Welfare Information Unit (a joint program of ABS and AIHW) was funded by the Australian Health Ministers' Advisory Council (AHMAC) to develop a National Indigenous Health Information Plan to remedy the data deficiencies. The Plan was presented to the October 1997 AHMAC meeting under a report entitled *The Aboriginal and Torres Strait Islander Health Information Plan…This Time, Let's Make it Happen* (AIHW & AHMAC 1998). AHMAC accepted the report, which has now been published. The Plan's major recommendations include:

- development, with the active involvement of communities, of specific protocols for the sensitive handling of data concerning Indigenous peoples;
- establishment of permanent and long-term positions for Indigenous personnel, to facilitate substantial improvements in the quality of information;
- ensuring all major health and related collections in all jurisdictions, including vital statistics, hospital separations, perinatal data and cancer registrations, have the capability to differentiate between Indigenous and other Australians;
- use of common identification classifications and collection protocols in all major collections;
- initiating processes to facilitate and oversee implementation of the Plan's recommendations in a cohesive, coordinated and cooperative manner; and
- encouraging the development of effective national leadership to facilitate and support jurisdictional initiatives, benchmarking, coordination and review.

To be fully effective, a commitment to sustained action is required. The National Health Information Management Group (NHIMG) has responsibility for overseeing the implementation of the Plan. A Working Group of representatives from NHIMG and relevant Indigenous health organisations has been created to facilitate this process. The ABS and

AIHW have accepted lead roles in working with organisations to implement Indigenous identification in priority information systems. ABS has this role for vital statistics (births and deaths) and AIHW for hospital separations, perinatal data and cancer registrations.

8.3 Progress and challenges in national health information

Progress in the National Health Information Development Plan priority areas

The National Health Information Development Plan identifies eight directions as the highest priority health information issues requiring national action:

- work with Aboriginal and Torres Strait Islander peoples to develop a plan to improve all aspects of information about their health and health services;
- develop a national health and welfare information model;
- in consultation with health service consumers and providers, examine the feasibility and usefulness of enhancing the ability to link health records, and identify the linkages that will result in the greatest community benefit;
- develop a plan to improve health outcomes information by developing clinically specific measures of health outcomes for major health problems and enhancing the usefulness of clinical information systems for measuring the effectiveness and outcomes of interventions;
- develop and collect standardised information on the incidence, prevalence, consequences and outcomes of care of severe mental illness;
- develop and collect standardised information on primary and other non-institutional health care encounter data;
- undertake a systematic review of current major health data collections and make recommendations regarding rationalisation and improvements in the cost-effectiveness of collections; and
- develop ongoing surveillance of potentially modifiable, major disease risk factors, including biological measurements where necessary, ensuring adequate coverage of small, priority populations.

Significant progress has been made in most of these priority directions.

Aboriginal and Torres Strait Islander health

As reported in Section 8.2, Health Ministers have endorsed a national plan to improve the quality of Indigenous health information. The challenge now is to implement the plan's recommendations in a cohesive, coordinated and cooperative manner.

National health and welfare information models

The National Health Information Model (NHIM) has been developed and is now used extensively as a framework for other developments in health information. The National

Health Data Dictionary (NHDD) will, in future, be presented according to the NHIM, starting with version 7.0. The National Community Services Information Model has also been developed, as the structural basis for the National Community Services Data Dictionary (NCSDD). The NCSDD is an important complement to the NHDD, and these developments will eventually lead to the integration of information models and data standards across both health and welfare.

Record linkage

Creating or using the capacity to link records in different health information collections can greatly increase the usefulness and, therefore, cost-effectiveness of information that is already collected. In particular, it can provide information on health service outcomes which is difficult to obtain in any other way.

The Australian Health Ministers' Advisory Council has given the AIHW the lead role to investigate possible approaches to developing and enhancing the ability to link health records for statistical and research purposes. The work will be undertaken in collaboration with the Department of Health and Family Services, the Health Insurance Commission, State and Territory health authorities and the WA Record Linkage project. The objectives of the project are to develop the means for accessing a range of health databases, to establish the technical feasibility for record linkage between these and AIHW databases, to define and implement demonstration linkage projects to investigate the value of this work, and to present the results of the project to the community.

The project entails gaining access to identifiable data held by the Health Insurance Commission, specifically data from the Medicare and Pharmaceutical Benefits Scheme databases. There are legislative constraints that limit access to these data in a format that enables record linkage. AIHW will seek to refine the data linkage process to enable access to records in ways that are consistent with privacy and ethical requirements.

AIHW and others proposed to the House of Representatives Standing Committee on Legal and Constitutional Affairs Inquiry into the Treatment of Census Forms in 1997 that the retention of census records by ABS should be investigated to permit linkage of census data across censuses and with other health data sets. Such arrangements are common in other countries, notably the United Kingdom. The Standing Committee had yet to report at the time of writing.

Health outcomes

In 1993, the Australian Health Ministers' Advisory Council adopted the following definition of a health outcome:

> A change in the health of an individual, a group of people or population, which is attributable to an intervention or series of interventions. (AHMAC 1993)

This definition is equally applicable to clinical care and population health, and provides a common framework for the focus on outcomes in public health programs, health services delivery and the practice of clinical medicine.

The health outcomes focus provides the basis for the development of national health strategies and programs for some years, and the current national health priorities (see Section 4.1, page 75) had their origins in the setting of health goals and targets, initially released in 1988 through the *Health for All Australians* report. In 1996, the National

Health Information Management Group developed a classification of health outcome indicators, which recognised the complex process required to achieve health outcomes and identified the range of interventions (prevention, treatment, support and after care) involved. This classification has been used to develop indicators for the National Health Priority Areas initiative, which are used by the AIHW for monitoring health outcomes and reporting progress at the population level for the five priority areas.

Commonwealth Government and State and Territory Governments are jointly undertaking a series of coordinated care trials to determine the extent to which coordination of health services contributes to improved patient outcomes. The aim is to improve the matching of services to client needs, reducing the impact of access or other factors. A number of the trials target Aboriginal and Torres Strait Islander communities. To ensure nationally consistent evaluation of health and wellbeing outcomes, the SF-36 instrument has been adopted as the standard measure of health status for adults and the Child Health Questionnaire for children involved in the trials. The trials will conclude in December 1999.

Severe mental illness

Several initiatives are in progress under the National Mental Health Strategy to improve data standards for the collection of information on patients and care provided in institutions and in the community for severe mental illness.

A study of low-prevalence, severe mental illness was conducted in August 1997 in Melbourne, Brisbane, Perth and Canberra. This study, when completed, will complement the results of the National Survey of Mental Health and Wellbeing (ABS 1998a). A separate study was needed as severe illnesses such as bipolar disorder, schizophrenia and other psychoses have a prevalence of only about 1% and cannot be identified through random sampling in the general population. Estimates will be produced of the 1-month and 1-year prevalence of severe mental illness in the community and the extent to which services are being used currently, or have been used in the past (including government-funded specialised psychiatric services, non-government organisations, and services in the private sector such as general practice). The study will also make an assessment of the personal and social circumstances of people who have a low-prevalence severe mental illness.

A national minimum data set for mental health care has been developed for collecting information on a continuous basis on people who receive health care services for any mental disorder in both hospital and community settings. This will enable data to be collected on the demographic characteristics of patients, clinical diagnoses and how treatment is managed. Data on patients admitted to specialised psychiatric services in hospital will become available at the end of 1998, and data on service delivery (cost, size and volume of services) will become available in 1999. Data on patients receiving care from community mental health services will not be available until 2000.

Non-institutional health care data

General practitioners play an important role in the provision of primary health care services and in providing access for their patients to pharmaceuticals, specialists, hospitals and other health care services. Public expenditure on the services they provide is uncapped and forms a substantial and increasing proportion of total government expenditure on health.

Despite this, few data have been collected on the activities of general practitioners, with the limited Medicare data being the only source of national, routinely collected information. No national data have been available on the 'casemix' of general practitioners, that is, on the characteristics of their patients, the problems or diagnoses managed, and the nature of the management.

In response to this need for primary health care data, AIHW and the University of Sydney are collaborating on a national, continuous survey of general practitioner activity, entitled 'Bettering the Evaluation And Care of Health' (BEACH).

This survey, for which data collection began in April 1998, builds on the experience of the 1990–91 Australian Morbidity and Treatment Survey (Bridges-Webb et al. 1992). Each year, it will sample about 1,000 general practitioners nationally on a rolling basis. The general practitioners will be asked to supply some information on themselves and on 100 consecutive patient encounters, including home visits and consultations in nursing homes and hospitals.

Data collected for each encounter will include demographic characteristics of the patient, payment type, the patient's reasons for encounter, up to four diagnoses or problems and, for samples of patients, information on the patient's smoking and alcohol consumption, general health and other characteristics. For each problem or diagnosis, information will be collected on medications prescribed or advised; procedures, treatments and counselling provided by the general practitioner; and referrals, admissions, pathology tests and diagnostic imaging ordered. First reports from BEACH are expected to be published during 1999.

BEACH's financing is innovative, with funders including government agencies and pharmaceutical companies. Although data will be released publicly at the aggregate level as for any AIHW activity, funders will receive sets of detailed reports and unit record data, as well as being able to add their own questions to the survey each year. Since public funds for health information are limited, the success of the public–private model for the BEACH survey will be closely monitored.

In addition to the developments in general practice described above, national minimum data sets are being developed in the areas of alcohol and other drug treatment services, mental health services and palliative care that include outpatient and community care within their scope.

Potentially modifiable major disease risk factors

A National Centre for Monitoring Cardiovascular Disease was established within AIHW in January 1996. Its role is to establish and maintain a national monitoring system for cardiovascular disease, its risk factors and management. A major project currently being undertaken is to standardise risk factor definitions and measurement for use in data collections including population surveys. National consensus has been reached on data standards for overweight/obesity and related measures. Work is continuing on developing national data standards for physical activity, smoking, high blood pressure and high blood cholesterol. Nationally agreed data definitions will be published in the National Health Data Dictionary.

AIHW has been selected to develop and maintain a National Insulin-Treated Diabetes Mellitus Register. The Register will provide a sampling frame for research, to monitor and report on insulin-treated diabetes mellitus (ITDM) incidence, to assess the feasibility and cost of estimating complete ITDM prevalence, to provide information to health service providers and planners at Commonwealth, State and local levels, and to assist in monitoring national diabetes indicators.

The planned start date for the Register is 1 September 1998. The main sources of data for the Register will be the National Diabetic Services Scheme (administered by Diabetes Australia) and the State-based databases maintained by the Australian Paediatric Endocrine Group. AIHW will undertake extensive quality assurance of these data, including confirmation of an insulin-dependent diabetes mellitus diagnosis. Major outputs from the Register will be in the form of incidence and prevalence reports. First reports are expected to be available 6–12 months after the start date.

Other achievements and developments in health information

Introduction of ICD-10 and ICD-10-AM

ICD-10 is the International Classification of Diseases and Related Health Problems—Tenth Revision, produced by the World Health Organization (WHO) as the most recent in its series of ICD classifications. It was adopted by the World Health Assembly in 1990.

ICD-10 is a comprehensive statistical classification, much improved over ICD-9 and more accurately reflecting current understanding of clinical conditions. The classification uses an alphanumeric coding scheme, comprising one alphabetical character generally followed by two, three or four numerals. This arrangement has more than doubled the size of the coding frame in comparison with the numerical format of ICD-9. The subject matter of each chapter of ICD-10 is generally the same as in ICD-9, although there has been some relocation of diseases and conditions to improve consistency between the classification and current medical knowledge.

The Australian Bureau of Statistics plans to implement ICD-10 from 1 January 1999 for coding causes of death. This is consistent with international moves to update to the new classification for mortality coding.

In Australia, for morbidity coding, the National Centre for Classification in Health (NCCH) has produced the International Classification of Diseases and Related Health Problems—Tenth Revision—Australian Modification (ICD-10-AM). NCCH has undertaken this work with the input of Australian clinicians and coding specialists, and in close collaboration with the WHO to ensure that international comparability is maintained (NCCH 1997).

ICD-10-AM consists of:

- a disease classification based on the WHO version of ICD-10 with modifications to ensure a current and appropriate classification for Australian clinical practice;
- a new Australian procedure classification based on the Medicare Benefits Schedule (referred to as MBS—Extended, or MBS-E); and
- Australian Coding Standards for selection of disease and procedure codes.

Hospitals in some States and Territories will begin using ICD-10-AM in July 1998, with the others to follow in July 1999.

Burden of disease, injury and risk factors

There is increasing international interest in summary measures of population health that combine the impact of mortality and morbidity in a single indicator. One such indicator is the health-adjusted life expectancy, which estimates a population's average expectation of years of equivalent good health (Wolfson 1996). A related measure, the disability-adjusted life year (DALY) allows the loss of health associated with specific diseases, injury and risk factors to be quantified.

Disease-specific measures of population health such as the DALY in principle allow measurement of the potential for population health gain (outcomes) in relation to a particular health problem, and monitoring of the actual health gain at population level for the health problem. The size of health problems is also an important input (together with information on the cost-effectiveness of potential programs) to help set priorities for health service programs, public health programs and for research and development. The results of cost-effectiveness studies can be expressed in dollars per DALY gained, allowing economic data on the cost per unit of health gain to be used in conjunction with population data on the potential for health gain.

The DALY was developed for the 1993 World Development Report (World Bank 1993) in order to carry out a complete assessment of the global burden of disease by region for 1990. It extends the concept of potential years of life lost due to premature death (PYLL) to include equivalent years of 'healthy' life lost by virtue of being in states of ill-health. The DALY has been used to provide a comprehensive assessment of the global burden of disease, injury and selected risk factors (Murray & Lopez 1996a, b), an analysis of the potential for cost-effective public health interventions at the global level (World Bank 1993; Bobadilla et al. 1994), and as the basis for an evidence-based approach to the identification of global priorities for health research and development (Ad Hoc Committee on Health Research Relating to Future Intervention Options 1996).

The DALY involves explicit underlying assumptions (particularly in relation to weights for health states). This explicitness exposes social choices and values that are often left implicit in the prioritising of health problems. AIHW will be undertaking a review of the DALY methodology during 1998–99, which will examine these issues, and plans to develop national estimates of disease burden.

Health satellite accounts

The UN *System of National Accounts 1993* (Inter-Secretariat Working Group 1993) introduced the concept of satellite accounts as a way of going beyond the rigidity of the national accounts structure to provide a focus on data which is of particular relevance to specific policy areas.

Satellite accounts enable the use of complementary or alternative concepts to those contained in the conceptual framework of national accounts. For example, the disease costing work of AIHW has used basic health expenditure data and subdivided it by disease, to give an alternative perspective on the data.

Satellite accounts enable the linkage of non-monetary data sources and analysis to the monetary accounting system. Monetary expenditure in health by itself tells us little about what is happening in the health system. But if these expenditures can be linked to output and outcome measures such as number of hospital separations and changes in health status, then the expenditure information becomes more meaningful. Linking together expenditure and workforce data to calculate cost per full-time equivalent staff person is another example of the usefulness of linking.

In order to link expenditure, workforce, disease and other data in a useful way, the definitions used in each of these areas need to be clear. Thus a large part of the satellite accounts project being undertaken by AIHW involves documenting and refining the definitions and methodologies used in the health and welfare services expenditure area.

This information will be brought together in a publication *Health and Welfare Satellite Accounts: Concepts, Sources and Methods*, which will complement the ABS publications *Australian National Accounts: Concepts, Sources and Methods* (ABS 1990) and *Government Finance Statistics Australia: Concepts, Sources and Methods 1994* (ABS 1994).

This publication not only will provide an integrating framework for AIHW health and welfare services expenditure collections, but also will be a useful framework for all AIHW collections. It will spell out the exact relationship between the satellite accounts the AIHW produces and the ABS Australian National Accounts.

It will discuss issues such as:

- the definitions of ‘health’ and ‘welfare services’;
- the relationship between the Government Purpose Classification and the Australian and New Zealand Standard Industrial Classification in health and welfare services;
- the relationship between the household sector and the government and non-government sectors, particularly the not-for-profit sector;
- disease costing and appropriate and inappropriate ways of measuring disease costs;
- distributional aspects of health and welfare services expenditure, i.e. who uses and who funds the services; and
- international comparisons of health and welfare services expenditures.

AIHW has released satellite account discussion papers on:

- a conceptual framework for health and welfare services satellite accounts;
- estimating expenditure on welfare services by non-government organisations; and
- disease costing.

A discussion paper on capital expenditure, capital stock and the consumption of fixed capital in the health and community services sector will also be released in 1998.

International comparison of health expenditure statistics

Comparing health expenditure statistics internationally is difficult, as the scope of health services varies and different countries use different definitions and methodologies. For example, there are significant differences between countries as to what proportion of aged care expenditure is allocated to health and what proportion to welfare services.

Two international projects are under way to improve comparisons. First, the Organisation for Economic Co-operation and Development (OECD) has produced a comprehensive System of Health Accounts (OECD 1997), which provides a systematic conceptual framework for collecting health expenditure data. Second, Statistics Netherlands has been making detailed bilateral comparisons of health expenditure in the Netherlands with Belgium, Denmark, France, Germany and Switzerland. Comparisons have been made for 1992–93 and for 1994–95. Australia is now participating in this project.

Australian Longitudinal Study on Women's Health

In June 1995, a multidisciplinary team of researchers from the University of Newcastle (in partnership with the University of Queensland) was commissioned to carry out the first Australian Longitudinal Study on Women's Health (Brown et al. 1996). The study is funded by the Commonwealth Department of Health and Family Services, initially for 3 years, but the design provides for it to be continued for 20–30 years. The longitudinal research design will help clarify important cause–effect relationships, within a social model of health which incorporates input from a variety of academic disciplines.

The project involves three large age cohorts of women: 'young' women aged 18 to 23 years (14,762 at the time of baseline data collection in 1996), 'mid-age' women aged 45 to 50 years (14,072) and 'older' women aged 70 to 75 years (13,023); two smaller cohorts of women from the Philippines and the former Yugoslav republics (300 in each cohort); and three small cohorts of women from urban and rural Indigenous communities (Brown et al. 1998). Baseline data collection for the three main age cohorts and the Filipina and Yugoslav cohorts is completed, and data from the Indigenous cohorts will be available in 1998.

It is proposed to survey each of the cohorts at 3-yearly intervals, on a 'rolling' basis, beginning with the mid-age and Filipina cohorts in 1998, followed by the older and Yugoslav cohorts in 1999 and the young and Indigenous cohorts in 2000. Three-yearly surveys are necessary to ensure accurate documentation of major life events such as birth of first child (young), menopause (middle), and events such as widowhood and the onset of age-related health problems (e.g. dementia, Alzheimer's disease) in the older cohort. In the years between the 3-yearly follow-up surveys for each of the main cohorts, nested substudies are proposed, using qualitative as well as quantitative methodologies, to allow more in-depth investigation of issues arising from the main study.

8.4 Gaps and deficiencies in health statistics

The quality of Indigenous health statistics

Indigenous identification

ABS has developed a standard procedure for identifying Aboriginal and Torres Strait Islander peoples, based on self-reported Indigenous origin (see Box 8.1). The standard is contained in the National Health Data Dictionary (NHDC 1997) and is supported by Australia's Registrars of Births, Deaths and Marriages. It is used in most survey data collections and, as collection forms are revised, is gradually being adopted in administrative collections. However, at present there is considerable variation in the way Indigenous status is collected and recorded in administrative data collections, which reduces the value of the data for analysis.

Box 8.1: Indigenous status

The standard for identifying Indigenous people is based on the Commonwealth working definition of an Aboriginal or Torres Strait Islander. This is:

> *'…a person of Aboriginal or Torres Strait Islander descent who identifies as an Aboriginal or Torres Strait Islander and is accepted as such by the community in which he or she lives'.*

There are three components to this definition: descent or origin, self-identification and community acceptance. The standard question for identifying Indigenous people uses the first component:

Are you of Aboriginal or Torres Strait Islander origin?
For persons of both Aboriginal and Torres Strait Islander origin, mark both boxes.
☐ No
☐ Yes, Aboriginal
☐ Yes, Torres Strait Islander

Although the question uses only the origin component of the definition, some people responding to this question may, however, interpret the concept more broadly than this.

Source: NHDC 1997.

Changes in Indigenous population counts and estimates

Recent changes in the estimated size of the Indigenous population present users of Indigenous health statistics with considerable difficulties in analysing changes over time.

Based on Census results, the final estimated Indigenous population of Australia at 30 June 1996 was 386,049 (ABS 1998b). This is a substantial increase over the 319,200 estimated population in 1991. The increase was mainly in the urban areas, and is much larger than could be expected due to natural increase. More information is needed about the propensity to identify as of Aboriginal or Torres Strait Islander origin to permit accurate interpretation of basic population and health statistics.

National surveys

The 1995 National Health Survey included a supplementary sample of households designed to increase the survey's Indigenous sample. The Australian Bureau of Statistics is analysing the results of the survey to assess the extent to which the enhanced sample is representative of the population. This will assist in developing strategies for collecting information on the health of Indigenous peoples in future surveys.

Whether a second National Aboriginal and Torres Strait Islander Survey will be conducted in the year 2000 remains the subject of discussion between the Australian Bureau of Statistics and stakeholders. An adequate evaluation of data quality achieved in both urban and rural/remote communities is an important input to this consideration. The Aboriginal and Torres Strait Islander Commission's plan to conduct a second Housing and Community Infrastructure Needs Survey in 1998 (or 1999) may permit collection of some information on health services infrastructure (and related issues) available to remote and rural Indigenous communities.

For evaluation and further planning of programs to improve the health of Australian Indigenous peoples, a comprehensive solution to the problem of obtaining reliable health outcomes data relevant to programs at national and regional levels needs to be found.

Quality of Indigenous birth and death registrations

The completeness of Indigenous birth and death registrations can be assessed by comparing the number of recorded births or deaths with the number expected, based on demographic characteristics of the population. However, because of the largely unexplained increase in the estimated size of the Indigenous population between 1991 and 1996, estimates of the completeness of Indigenous birth and death notifications for some States and Territories differ depending on whether they are based on the 1991 or 1996 Census year. Overall, only the Northern Territory, Western Australia, South Australia and the Australian Capital Territory are estimated to have reasonably complete coverage for the past few years. Other States, with the exception of Queensland which is estimated to be close to complete coverage for births and deaths in late 1996, have shown little improvement in their coverage since the early 1990s.

The Australian Bureau of Statistics has committed substantial resources and effort in each jurisdiction to overcome these long-standing deficiencies.

Other health data collections

Most other health data collections either do not have an Indigenous identifier or their completeness is unknown. In a recent study of the expenditure on Aboriginal and Torres Strait Islander health conducted by AIHW and the National Centre for Epidemiology and Population Health at the Australian National University, estimates of the number of interactions by Indigenous people with services and/or expenditure on Indigenous services were derived. Table 8.1 indicates those collections that were able to provide some information about the level of health service use by and expenditure for Indigenous people. It is clear that the majority of collections in most States are still not able to provide any reliable Indigenous statistics. Clearly, much still needs to be done to standardise and improve procedures for identifying Indigenous people in administrative collections.

Table 8.1: Indigenous expenditure information available from State and Territory collections

Services	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Hospitals—admitted patients	yes	yes	yes	yes	yes	no	yes	yes
Hospitals—non-admitted patients	yes	no	yes	yes	no	no	yes	yes
Mental institutions	yes	no	no	yes	no	no	n.a.	n.a.
Nursing homes	yes	no	no	yes	no	no	n.a.	yes
Community health	yes	yes	no	yes	no	no	yes	yes
Transport	yes	no	no	yes	no	no	no	yes
Public health	yes	no	no	yes	no	no	no	yes
Administration/research	no	no	no	no	yes	no	no	no

Note: 'yes' indicates some useful information can be obtained. However, this could well involve an uncertain level of underidentification of Indigenous peoples.

Source: DHFS 1998.

Data requirements for national health priority areas

The *First Report on National Health Priority Areas 1996* (AIHW & DHFS 1997) was unable to report progress against several of the NHPA indicators because of gaps and deficiencies in the data. Little information is available on the health of Indigenous peoples and efforts are under way in all priority areas to overcome this major deficiency in national data collections. There are no time series available for some indicators because of the infrequency of data collection, and data standards are either lacking or not consistently applied across all States and Territories.

- In the area of cardiovascular health, data were not available for reporting on more than half of the priority indicators. To overcome this, data development work on cardiovascular indicators is currently under way. Also, the indicator set is being revised to include indicators for stroke, in addition to those for coronary heart disease. National data standards and definitions have been developed for measuring the prevalence of overweight or obese people, and are being developed for smoking prevalence, physical inactivity, total cholesterol and blood pressure.

- Mortality data are extensively used for the cancer control indicators. There are some problems related to the use of mortality data, as not all conditions listed on death certificates have been coded in the past. The introduction of automated cause-of-death coding is expected to overcome this difficulty. Data on cancer incidence are currently available to 1994 for all States and Territories, except Queensland, for which data are available to 1990. There is very little data available on survival rates and patient satisfaction with cancer treatment services.

- Mortality data and hospital separations data are the major data sources for the injury prevention and control indicators. At present, information is not available on some of the factors relating to fatal injury, such as type of injury and place of injury. The introduction of ICD-10 coding will reduce this problem if relevant components are applied. Limited information is available about the large proportion of injury cases that do not result in death or admission to hospital. Also, little information is available on factors that increase susceptibility to injury, such as consumption of alcohol (except in the case of traffic accidents) and osteoporosis in fall-related injuries.

- Limited information is available for reporting on mental health. Problems with case identification and standardisation of psychiatric diagnoses contribute to the lack of reliable statistics. Some information on the prevalence of selected mental disorders is now available from the 1997 National Survey of Mental Health and Wellbeing (ABS 1998a). At present, no data are available about the consumers of mental health services in community settings. Depression has been identified as a specific condition for which indicators need to be developed.

- There is currently no reliable estimate of the prevalence of diabetes mellitus in Australia, and no national information on its incidence. The National Diabetes Register, currently being established by the AIHW, will provide some information for monitoring insulin-treated diabetes.

Health surveys

There is a need for ongoing surveillance of risk factors, by population surveys and other means, if preventive activities are to be appropriately targeted and adequately evaluated. This is especially true for biological risk factors, such as blood cholesterol levels. A workshop at AIHW in 1997 endorsed the need for a National Biomedical Risk Factor Survey that includes a blood sample, to meet the need for information in the areas of cardiovascular disease, diabetes, nutrition and communicable diseases. A steering group will further develop the survey and investigate options for funding.

The Australian Bureau of Statistics decision in early 1998 to review its health survey strategy provides an opportunity for a more comprehensive set of health surveys in Australia, combining the resources and requirements of all stakeholders. As well as risk factors, regular data on topics such as mental health, dental health and nutrition are needed.

Public health information

Public health is characterised by a focus on interventions at the population level and, hence, relies to an even greater extent than do clinical services on population-based health information for planning, priority setting, monitoring and evaluation. The areas best covered by current national data collections relate to disease, injury and aspects of biological and behavioural risk factors. Much less data are available for other determinants of health or for factors that enable or promote health.

Many existing health data collections could be more effectively used for developing quasi-national monitoring and surveillance indicators relevant to public health activities, if there were nationally agreed classifications and standards for survey instruments, methods and indicators. Current development of a National Public Health Information Development Plan by the National Public Health Partnership will consider these needs and provide a strategy for meeting them. AIHW has begun development of data items and definitions under the National Health Information Agreement for some determinants of health.

Socioeconomic disadvantage and related sociodemographic factors are now recognised as important determinants of health in addition to the better-studied individual biological and lifestyle risk factors. Cross-sectional population health studies have shown an association between aspects of socioeconomic disadvantage and worse health. However, such studies are unable to determine whether socioeconomic disadvantage causes worse health or whether health problems result in socioeconomic disadvantage. Australian longitudinal studies are required to clarify this aspect of causality. However, such studies are extremely expensive to mount as one-off research studies. Record linkage offers the potential for longitudinal studies to be conducted for considerably lower costs.

National information on health promotion and public health programs, their nature, the need for them, and their distribution, target populations and cost is minimal in comparison with information on treatment services. National data on public health expenditure is not currently available, although AIHW is undertaking work to rectify this.

Health service outcomes and quality of health care

There is little information about the health outcomes that result from the $43 billion spent on health services in Australia. However, increasingly the data are available to partially understand the relationship between health services and change in health status.

With the advent of performance indicators in the health sector, there is increasing demand for consistent and timely data on the performance of health service providers including hospitals. The quality of care provided is regarded as an important indicator of performance, but, as noted by the Steering Committee for the Review of Commonwealth/State Service Provision, information is limited (SCRCSSP 1998).

At present the only indicator of quality of care for which there is data, is the number of beds in hospitals that have been accredited by the Australian Council on Healthcare Standards (NHMBWG 1996; see also ACHS 1996). Recommendations for improvements in the structure and direction of the quality of acute hospital care and health outcomes have been developed under the National Hospital Outcomes Program (DHFS 1997).

In the case of adverse outcomes, some potential hospital-level indicators of quality of care (unplanned readmission to hospital, unexpected return to operating theatre, and hospital-acquired infections) have recently been tested for validity and reliability and for the ease of collection of the data required for their measurement. However, a valid relationship between quality of care and the indicators tested could not be demonstrated and the data to measure these outcomes could not be extracted from the available administrative databases. The Quality in Australian Health Care Study (Wilson et al. 1995) also documented adverse events in health care, and similarly commented that useable information could not be extracted from data routinely collected on patients in hospital.

References

Ad Hoc Committee on Health Research Relating to Future Intervention Options 1996. Investing in health research and development. Document TDR/Gen/96.1. Geneva: World Health Organization.

Australian Bureau of Statistics (ABS) 1990. Australian national accounts: concepts, sources and methods. Cat. No. 5216.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1994. Government finance statistics Australia: concepts, sources and methods 1994. Cat. No. 5514.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1998a. Mental health and wellbeing, profile of adults, Australia, 1997. Cat. No. 4326.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1998b. Experimental estimates of the Aboriginal and Torres Strait Islander population. Cat. No. 3230.0. Canberra: ABS.

Australian Council on Healthcare Standards (ACHS) 1996. Annual report 1995–96. Sydney: ACHS.

Australian Health Ministers' Advisory Council (AHMAC) 1993. AHMAC Health Outcomes Seminar: outline of proceedings (including the AHMAC sunshine statement). Canberra: AHMAC.

Australian Institute of Health and Welfare (AIHW) 1997. National health information knowledgebase. http://www.aihw.gov.au.

Australian Institute of Health and Welfare (AIHW) & Australian Health Ministers' Advisory Council (AHMAC) 1995. National health information development plan. Canberra: AGPS.

Australian Institute of Health and Welfare (AIHW) & Australian Health Ministers' Advisory Council (AHMAC) 1998. The Aboriginal and Torres Strait Islander health information plan…this time let's make it happen. Canberra: AGPS.

Australian Institute of Health and Welfare (AIHW) & (Commonwealth) Department of Health and Family Services (DHFS) 1997. First report on national health priority areas 1996. AIHW Cat. No. PHE 1. Canberra: AIHW & DHFS.

Bobadilla J-L, Cowley O, Musgrove P & Saxenian H 1994. Design, content and financing of an essential national package of health services. Bulletin of the World Health Organization 72(4):653–62.

Bridges-Webb C, Britt H, Miles DA, Neary S, Charles J & Traynor V 1992. Morbidity and treatment in general practice in Australia 1990–1991. Med J Aust 157 Suppl: S1–S57.

Brown W, Byles J, Bryson L, Dobson A, Manderson L, Schofield M & Williams G 1996. Establishment of the Australian longitudinal study of women's health. J Womens Health 5:467–72.

Brown W, Bryson L, Byles J, Dobson A, Lee C, Mishra M & Schofield M 1998. Women's health Australia: recruitment for a national longitudinal cohort study. Women Health 28(2) (in press).

Department of Environment, Sports and Territories 1996. State of the environment Australia 1996. Melbourne: CSIRO Publishing.

(Commonwealth) Department of Health and Family Services (DHFS) 1997. Quality outcome indicators for acute healthcare services. Canberra: DHFS.

(Commonwealth) Department of Health and Family Services (DHFS) 1998. Expenditures on health services for Aboriginal and Torres Strait Islander people. Canberra: AGPS.

International Organization for Standardization (ISO) & International Electrotechnical Commission (IEC) 1997. ISO/IEC 11179 Specification and standardization of data elements. Geneva: ISO & IEC.

Inter-Secretariat Working Group 1993. System of national accounts 1993. Brussels/Luxembourg, New York, Paris, Washington DC: Commission of the European Communities, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, World Bank.

Murray CJL & Lopez AD, eds 1996a. The global burden of disease: a comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020. Harvard: Harvard School of Public Health.

Murray CJL & Lopez AD 1996b. Global health statistics: a compendium of incidence, prevalence and mortality estimates for over 200 conditions. Harvard: Harvard School of Public Health.

National Centre for Classification in Health (NCCH) 1997. ICD-10-AM implementation kit. Sydney: NCCH.

National Health Data Committee (NHDC) 1997. National health data dictionary, version 6.0. Canberra: AIHW.

National Health Data Committee (NHDC) 1998. National health data dictionary, version 7.0. Canberra: AIHW (in press).

National Health Ministers' Benchmarking Working Group (NHMBWG) 1996. First national report on health sector performance indicators: public hospitals—the state of play. Canberra: AIHW.

Organisation for Economic Co-operation and Development (OECD) 1997. Principles of health accounting for international data collections (DEELSA/ELSA/HP(97)3). Paris: OECD.

Steering Committee for the Review of Commonwealth/State Service Provision (SCRCSSP) 1998. Report on government services, vol. 1: education, health, justice emergency management. Melbourne: SCRCSSP.

Wilson R McL, Runciman WB, Gibberd RW, Harrison BT, Newby L & Hamilton JD 1995. The Quality in Australian Health Care Study. Med J Aust 163:458–71.

Wolfson MC 1996. Health-adjusted life expectancy. Health Rep 8(1):41–45.

World Bank 1993. World development report 1993: investing in health. New York: Oxford University Press.

Statistical tables

Population

Table S1: Estimated resident population by sex and age group, selected years, 1901 to 1997 (number)

Age group	1901	1921	1941	1961	1981	1991	1997[(a)]
Males							
Less than 1	47,247	68,140	64,746	116,736	117,842	132,946	129,403
1–4	172,957	237,382	235,996	451,006	465,376	519,356	533,852
5–14	450,067	569,576	572,940	1,058,453	1,321,340	1,290,729	1,346,497
15–24	366,146	455,681	631,286	776,319	1,320,618	1,405,897	1,361,556
25–34	320,455	453,279	594,709	728,618	1,244,663	1,416,512	1,439,422
35–44	279,558	367,484	493,543	739,220	931,360	1,319,366	1,426,530
45–54	156,674	280,969	434,359	628,894	772,879	960,260	1,207,416
55–64	99,170	207,023	305,575	428,856	661,984	734,081	792,712
65–74	64,716	89,483	172,064	266,069	426,174	548,636	616,527
75–84	18,731	29,188	68,762	102,292	158,247	243,406	298,840
85 and over	2,207	4,665	7,739	15,789	27,784	44,220	65,261
All ages	**1,977,928**	**2,762,870**	**3,581,719**	**5,312,252**	**7,448,267**	**8,615,409**	**9,218,016**
Females							
Less than 1	46,077	65,312	62,008	111,755	112,880	126,139	122,698
1–4	168,836	229,372	226,841	429,996	443,520	493,262	506,277
5–14	441,003	555,222	551,617	1,009,052	1,264,582	1,223,098	1,281,609
15–24	365,792	462,563	613,096	730,052	1,278,293	1,354,941	1,305,694
25–34	293,424	458,492	573,606	665,421	1,212,261	1,408,886	1,440,428
35–44	216,135	351,166	473,819	707,223	891,517	1,303,292	1,433,716
45–54	118,574	255,574	439,892	596,964	737,394	915,819	1,176,759
55–64	80,302	178,233	305,835	435,378	691,752	728,737	782,610
65–74	48,935	80,705	184,734	332,702	511,502	633,509	679,296
75–84	14,757	30,777	78,425	148,351	256,487	370,917	434,322
85 and over	2,038	5,448	10,714	29,040	74,805	110,027	150,822
All ages	**1,795,873**	**2,672,864**	**3,520,587**	**5,195,934**	**7,474,993**	**8,668,627**	**9,314,231**

(a) Preliminary data.

Note: Population estimates are for 30 June of each year.

Sources: Commonwealth Statistician 1925; CBCS 1943, 1970a; ABS Cat. No. 3201.0.

Fertility and pregnancy

Table S2: Age-specific birth rates[a] and total fertility rates[b], 1921 to 1996 (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
Annual rates								
1992	21.9	74.8	132.5	104.6	38.4	6.1	0.3	1,894
1993	20.9	71.1	130.0	105.5	39.0	6.3	0.2	1,865
1994	20.7	69.2	126.0	105.1	41.2	6.7	0.3	1,846
1995	20.5	66.7	121.6	106.1	42.5	7.2	0.3	1,824
1996	20.1	64.6	116.7	106.2	43.8	7.6	0.3	1,796

(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, 1996 (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	19.9	66.8	117.7	106.0	46.3	8.2	0.2	1,825
Vic	12.8	50.4	112.1	113.1	46.0	7.8	0.3	1,712
Qld	26.0	75.8	118.9	100.7	39.8	6.7	0.2	1,840
WA	22.8	66.9	120.6	104.7	41.2	6.0	0.2	1,812
SA	18.3	62.0	114.7	103.7	42.1	8.1	0.3	1,746
Tas	26.8	88.5	130.4	98.7	31.8	6.5	0.4	1,916
ACT	14.4	44.9	112.5	105.8	48.7	8.9	0.3	1,677
NT	78.6	118.7	116.9	92.4	44.4	6.2	—	2,286
Australia	**20.1**	**64.6**	**116.7**	**106.2**	**43.8**	**7.6**	**0.3**	**1,796**

(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 1997a.

Table S4: Crude birth rates[(a)] for 1995–2000 and total fertility rates[(b)], (latest year) selected countries

	Crude birth rate		Total fertility rate	
Country	**Year**	**Rate**	**Year**	**Rate**
Australia	**1995**	**14.1**	**1994**	**1,846**
Canada	1994	13.2	1992	1,694
Chile	1994	20.6	1994	2,321
France	1995	12.5	1993	1,654
Germany	1995	9.3	1994	1,243
Greece	1995	9.8	1994	1,357
Hong Kong	1994	11.8	1994	1,215
Iceland	1994	16.3	1993	2,222
India	1994	28.6	1990–95	3,746
Indonesia	1990–95	24.7	1990–95	2,900
Ireland	1994	13.4	1994	1,854
Israel	1995	21.0	1994	2,904
Italy	1994	9.2	1993	1,221
Japan	1994	9.9	1994	1,500
Lebanon	1990–95	26.9	1990–95	3,085
Malaysia	1990–95	28.7	1990–95	3,620
Malta	1995	11.1	1994	1,890
Netherlands	1995	12.3	1994	1,569
New Zealand	1995	16.3	1992	2,124
Norway	1995	13.8	1993	1,860
Philippines	1990–95	30.4	1994	3,522
Poland	1995	11.5	1994	1,798
Russian Federation	1995	9.3	1994	1,400
Singapore	1995	16.3	1995	1,707
South Africa	1990–95	31.2	1990–95	4,095
Spain	1995	9.1	1991	1,302
Sweden	1995	11.7	1994	1,889
Switzerland	1995	11.6	1994	1,490
United Kingdom	1994	12.9	1994	1,740
United States	1994	15.3	1993	2,046
Vietnam	1990–95	30.7	1990–95	3,867

(a) Live births per 1,000 mid-year population.

(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: UN 1997.

Table S5: Birthweight distribution of total births[a], States and Territories, 1995

Births/birthweight	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Births					(Number)				
Less than 2,500 g	5,091	4,151	3,293	1,673	1,329	431	282	321	16,571
All births	**87,391**	**63,715**	**48,535**	**25,448**	**19,620**	**6,781**	**4,899**	**3,655**	**260,044**
Birthweight (g)					(Per cent)				
Less than 500	0.2	0.3	0.3	0.3	0.3	0.3	0.1	0.3	0.2
500 to 999	0.4	0.5	0.6	0.4	0.7	0.7	0.5	0.6	0.5
1,000 to 1,499	0.5	0.6	0.7	0.7	0.7	0.6	0.5	0.6	0.6
1,500 to 1,999	1.1	1.2	1.5	1.2	1.3	1.1	1.4	1.6	1.2
2,000 to 2,499	3.7	3.9	3.8	3.9	3.8	3.7	3.4	5.7	3.8
Less than 2,500	**5.8**	**6.5**	**6.8**	**6.6**	**6.8**	**6.4**	**5.9**	**8.8**	**6.4**
2,500 to 2,999	15.2	15.5	14.8	15.9	15.3	14.4	13.5	19.0	15.3
3,000 to 3,499	36.5	36.1	35.6	37.2	36.3	33.8	36.4	36.9	36.2
3,500 to 3,999	30.7	30.5	30.7	29.7	29.8	32.0	31.7	26.6	30.5
4,000 to 4,499	9.9	9.7	10.4	9.3	10.1	11.3	10.9	7.5	9.9
4,500 and over	1.8	1.8	1.7	1.4	1.7	2.1	1.7	1.2	1.7

(a) Includes live births and foetal deaths (stillbirths) with known birthweight. Totals include births with unstated birthweights.

Source: AIHW National Perinatal Statistics Unit 1997.

Table S6: Infant mortality rates, States and Territories, selected years, 1901 to 1996 (per 1,000 live births)

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
1901	103.7	102.9	101.9	128.9	100.0	89.0	(a)	62.5	103.6
1921	62.6	72.6	54.2	78.3	65.5	78.0	74.0	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	10.3	9.3	10.4	8.9	8.0	12.3	8.9	23.5	10.0
1990	8.1	7.8	7.7	8.6	8.5	8.9	9.4	15.2	8.2
1991	7.2	6.5	7.6	7.2	5.5	9.0	7.6	14.2	7.1
1992	7.4	5.6	7.9	7.0	6.1	6.6	6.3	15.5	7.0
1993	6.2	5.4	7.0	5.9	5.2	5.9	4.3	15.3	6.1
1994	6.1	5.3	6.3	5.5	5.1	6.7	5.4	10.2	5.9
1995	5.5	5.1	6.4	5.1	6.1	5.5	5.9	11.7	5.7
1996	5.6	5.1	6.4	6.2	5.1	4.5	6.2	12.4	5.7

(a) Part of New South Wales prior to 1911.

Sources: CBCS 1963; ABS Cat. No. 3302.0; ABS Cat. No. 3101.0.

Table S7: Perinatal mortality rates[(a)], by age group of mother, 1981 and 1986 to 1996 (per 1,000 live births plus foetal deaths)

	Age group of mother (years)						
Year	Under 20	20–24	25–29	30–34	35–39	40 and over	Total
1981	18.1	12.5	11.7	12.7	17.9	27.8	13.2
1986	14.3	11.3	9.9	10.5	14.8	23.9	11.5
1987	14.0	10.4	9.1	10.4	12.1	17.6	10.6
1988	14.5	11.0	9.2	9.6	12.9	17.8	10.7
1989	13.2	10.2	8.5	9.6	11.0	16.6	9.9
1990	14.0	10.4	9.2	9.7	11.6	17.0	10.3
1991	14.0	10.0	8.1	9.3	9.8	18.9	9.6
1992	12.9	9.7	8.2	8.7	10.0	15.4	9.4
1993	11.3	8.5	7.2	7.1	9.1	10.6	8.2
1994	10.4	8.2	6.8	7.4	9.2	12.5	8.0
1995	14.1	8.8	6.8	6.9	8.2	12.0	8.1
1996	12.6	9.0	7.2	7.7	8.5	15.3	8.5

(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.

Sources: ABS Cat. No. 3304.0; Lancaster et al. 1996; AIHW National Perinatal Statistics Unit 1997 and unpublished.

Table S8: Perinatal mortality rates[(a)], States and Territories, 1981 and 1986 to 1996 (per 1,000 live births plus foetal deaths)

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
1981	13.8	13.3	13.0	12.4	10.6	13.2	10.1	27.9	13.2
1986	11.5	11.7	10.9	11.0	10.1	15.7	10.7	19.7	11.5
1987	10.8	10.2	11.0	10.6	8.8	9.4	10.9	19.0	10.6
1988	11.1	10.1	10.6	9.0	10.0	13.0	11.0	19.9	10.7
1989	10.3	9.3	9.7	8.8	10.1	11.0	9.6	21.1	9.9
1990	10.5	10.5	9.3	9.3	10.2	10.0	12.0	17.0	10.3
1991	10.0	8.8	10.3	8.8	8.0	11.9	10.5	16.8	9.6
1992	10.6	8.2	9.3	8.7	8.1	9.1	9.0	17.0	9.4
1993	8.5	7.5	8.1	7.3	7.6	9.5	7.2	19.3	8.2
1994	8.3	8.0	8.1	7.1	7.0	7.9	6.0	14.8	8.0
1995	7.9	7.7	8.9	7.8	8.3	8.0	8.1	14.0	8.1
1996	9.6	7.3	8.5	8.4	7.5	8.6	7.9	10.6	8.5

(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.

Sources: ABS Cat. No. 3304.0; Lancaster et al. 1996; AIHW National Perinatal Statistics Unit 1997 and unpublished.

Table S9: Neonatal, postneonatal and infant mortality rates[(a)], by sex, selected countries, latest available year (per 1,000 live births)

	Males			Females		
Country	Neonatal	Post-neonatal	Infant	Neonatal	Post-neonatal	Infant
Australia (1996)	**4.2**	**2.3**	**6.5**	**3.4**	**1.6**	**5.0**
Australia (1994)	***4.4***	***2.1***	***6.5***	***3.4***	***1.8***	***5.2***
Canada (1993)	4.5	2.4	6.9	3.7	1.9	5.7
Chile (1992)	7.2	5.6	12.8	6.4	4.7	11.1
France (1993)	3.6	3.9	7.5	2.6	2.8	5.4
Germany (1994)	3.6	2.6	6.2	2.9	2.1	5.0
Greece (1994)	5.9	2.2	8.1	5.2	2.5	7.7
Hong Kong (1993)	2.7	2.1	4.8	2.8	1.7	4.5
Iceland (1993)	4.3	2.1	6.4	1.3	1.7	3.1
Ireland (1992)	4.7	2.8	7.5	3.8	1.9	5.8
Israel (1993)	5.3	3.1	8.3	4.1	3.1	7.2
Italy (1992)	6.0	1.6	7.6	4.6	1.3	5.9
Japan (1994)	2.6	2.1	4.7	2.1	1.7	3.8
Malaysia (1993)	8.5	4.2	12.7	7.4	3.6	10.0
Malta (1993)	9.0	1.5	10.5	3.6	2.0	5.7
Netherlands (1994)	4.5	1.8	6.3	3.4	1.5	4.9
New Zealand (1993)	4.0	3.9	7.8	3.6	3.1	6.8
Norway (1993)	4.0	1.9	5.9	2.9	1.4	4.3
Philippines (1992)	11.6	12.9	24.5	8.6	10.4	19.0
Poland (1994)	12.3	4.1	16.4	10.2	3.6	13.8
Russian Federation (1994)	13.8	7.4	21.2	9.7	6.0	15.7
Singapore (1994)	2.5	1.9	4.4	2.3	1.8	4.1
Spain (1992)	5.1	2.6	7.8	4.1	2.2	6.3
Sweden (1993)	3.5	2.0	5.4	2.6	1.5	4.1
Switzerland (1994)	3.5	2.2	5.7	3.0	1.5	4.5
United Kingdom (1994)	4.6	2.3	6.9	3.6	1.8	5.4
United States (1993)	5.8	3.5	9.3	4.8	2.6	7.4

(a) Neonatal: Less than 28 days. Postneonatal: 28 to 364 days. Infant: Less than 1 year.

Sources: WHO 1996; UN 1997; ABS Cat. No. 3302.0.

Mortality

Table S10: Life expectancy at selected ages by sex, 1901 to 1994–96 (years)

	At birth		At age 15		At age 65	
Year	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**
Annual averages						
1901–1910	55.2	58.8	49.0	51.9	11.3	12.9
1920–1922	59.2	63.3	51.4	54.6	12.0	13.6
1946–1948	66.1	70.6	54.3	58.3	12.3	14.4
1960–1962	67.9	74.2	55.1	61.0	12.5	15.7
1980–1982	71.2	78.3	57.4	64.3	13.8	18.0
Annual rates						
1990	73.9	80.0	59.8	65.8	15.2	19.0
1991	74.4	80.3	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
1994–96(a)	75.2	81.1	60.9	66.7	15.8	19.6

(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: CBCS 1970b; Office of the Australian Government Actuary 1985; ABS Cat. No. 3302.0; ABS unpublished data.

Table S11: Life expectancy at selected ages by sex, States and Territories, 1994–96 (years)

	At birth		At age 15		At age 65	
State/Territory	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**
New South Wales	75.0	80.9	60.7	66.5	15.7	19.5
Victoria	75.6	81.2	61.2	66.8	15.8	19.6
Queensland	75.1	80.9	60.8	66.6	16.0	19.7
Western Australia	75.4	81.3	61.2	66.9	16.0	19.9
South Australia	75.3	81.3	61.0	66.8	15.9	19.8
Tasmania	74.1	80.0	59.9	65.5	15.0	18.9
Australian Capital Territory	76.6	81.6	62.2	67.2	16.6	19.8
Northern Territory	69.2	75.0	55.4	61.3	14.1	16.8
Australia	**75.2**	**81.1**	**60.9**	**66.7**	**15.8**	**19.6**

Note: The methodology used by the ABS to calculate life expectancy 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 at selected ages, selected countries, latest year (years)

	At birth		At age 15		At age 65	
Country/year	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**
Australia 1994–96	**75.2**	**81.1**	**60.9**	**66.7**	**15.8**	**19.6**
Australia (1994)	***75.0***	***80.9***	***60.8***	***67.0***	***15.7***	***19.7***
Canada (1993)	74.8	81.0	60.5	66.6	15.8	19.9
Chile (1995)	71.8	77.8	58.3	64.1	15.0	18.1
France (1993)	73.8	82.1	59.6	67.7	16.2	21.0
Germany (1994)	73.0	79.6	58.7	65.2	14.7	18.4
Greece (1994)	75.2	80.2	61.0	66.0	16.2	18.5
Hong Kong (1994)	76.9	82.9	62.4	68.6	17.2	21.4
Iceland (1993)	76.2	78.9	n.a.	n.a.	n.a.	n.a.
Indonesia (1990–95)	61.0	64.5	n.a.	n.a.	n.a.	n.a.
Ireland (1992)	72.6	78.2	58.4	63.8	13.6	17.3
Israel (1993)	75.3	79.1	61.3	64.9	16.0	17.9
Italy (1992)	73.8	80.3	59.7	66.1	15.1	18.9
Japan (1994)	76.6	83.0	62.2	68.5	16.7	21.0
Lebanon (1990–95)	66.6	70.5	n.a.	n.a.	n.a.	n.a.
Malaysia (1990–95)	68.7	73.0	n.a.	n.a.	n.a.	n.a.
Malta (1994)	74.9	79.1	60.8	64.9	14.9	17.4
Netherlands (1994)	74.6	80.4	60.3	65.9	14.8	19.1
New Zealand (1993)	73.3	78.9	59.2	64.7	15.0	18.6
Norway (1993)	74.2	80.3	59.9	65.8	14.8	18.8
Philippines (1991)	63.1	66.7	53.5	56.3	12.3	13.7
Poland (1994)	67.4	76.0	53.9	62.4	12.7	16.4
Russian Federation (1994)	57.6	71.2	44.4	57.8	10.4	14.6
Singapore (1994)	73.5	79.0	59.1	64.5	15.2	15.3
South Africa (1990–95)	60.0	66.0	n.a.	n.a.	n.a.	n.a.
Spain (1992)	73.7	81.1	59.6	66.9	15.8	19.6
Sweden (1994)	76.1	81.4	61.6	66.8	16.0	19.8
Switzerland (1994)	75.1	81.9	60.9	67.5	16.1	20.5
United Kingdom (1994)	74.2	79.4	59.9	65.0	14.7	18.4
United States (1993)	72.2	78.8	58.1	64.7	15.3	18.9
Vietnam (1990–95)	62.9	67.3	n.a.	n.a.	n.a.	n.a.

Sources: WHO 1994, 1995, 1996; UN 1997; ABS 3302.0, 1997b.

Table S13: Age-specific, crude and age-standardised death rates, all causes by sex, selected years, 1921 to 1996 (per 100,000 population)

Sex/age group (years)	1921	1941	1961	1981	1991	1996
Males						
0–4	2,213	1,289	564	281	191	157
5–9	200	139	49	34	20	17
10–14	172	108	52	29	22	22
15–19	219	159	123	124	88	83
20–24	321	205	161	153	128	122
25–29	373	199	146	133	127	123
30–34	442	232	169	123	133	141
35–39	584	339	229	165	161	155
40–44	730	461	380	261	198	196
45–49	994	737	588	455	313	269
50–54	1,299	1,161	992	790	517	441
55–59	1,895	1,775	1,614	1,294	885	727
60–64	2,878	2,774	2,619	1,983	1,543	1,310
65–69	4,199	4,251	4,117	3,231	2,489	2,178
70–74	6,199	6,479	6,252	5,195	3,927	3,617
75–79	10,076	10,054	9,312	8,018	6,547	5,832
80–84	15,368	15,264	14,084	12,112	10,548	10,076
85 and over	26,213	29,453	23,772	20,814	17,571	18,130
Crude rate	**1,106**	**1,099**	**946**	**815**	**744**	**749**
ASR[(a)]	**1,733**	**1,578**	**1,358**	**1,109**	**885**	**820**
Females						
0–4	1,771	1,022	443	216	151	121
5–9	192	103	38	18	14	11
10–14	128	73	30	20	15	17
15–19	205	104	47	45	37	29
20–24	290	155	61	48	45	33
25–29	377	202	74	51	54	42
30–34	426	234	92	57	54	50
35–39	535	311	146	87	77	76
40–44	563	374	209	143	111	105
45–49	690	565	347	265	187	166
50–54	943	780	542	378	307	277
55–59	1,289	1,103	785	617	484	447
60–64	1,915	1,805	1,298	971	797	706
65–69	3,112	2,884	2,178	1,568	1,305	1,134
70–74	5,041	4,789	3,652	2,552	2,187	1,927
75–79	8,295	8,275	6,271	4,426	3,797	3,478
80–84	13,136	12,704	10,241	7,597	6,487	6,235
85 and over	22,345	25,457	20,670	16,035	14,351	14,568
Crude rate	**873**	**901**	**745**	**646**	**635**	**657**
ASR[(a)]	**1,394**	**1,225**	**875**	**633**	**537**	**501**

(a) Age-standardised to the total Australian population at 30 June 1991.

Source: AIHW Mortality Database.

Table S14: Age-specific, crude and age-standardised death rates, all causes by State or Territory of usual residence, 1996 (per 100,000 population)

Sex/age group (years)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Males									
0–4	151	139	174	195	144	108	160	316	157
5–9	16	20	21	15	12	—	—	35	17
10–14	20	15	27	35	21	5	34	38	22
15–19	74	73	117	71	76	105	70	69	83
20–24	120	105	135	145	117	115	118	199	122
25–29	131	105	144	119	98	98	115	229	123
30–34	145	116	160	135	140	157	103	377	141
35–39	155	138	160	165	151	146	160	389	155
40–44	195	171	219	185	220	182	143	451	196
45–49	256	239	317	251	270	303	240	628	269
50–54	443	381	500	441	441	530	306	772	441
55–59	717	689	749	685	755	858	703	1,645	727
60–64	1,314	1,295	1,350	1,257	1,273	1,344	1,283	1,868	1,310
65–69	2,167	2,115	2,214	2,100	2,269	2,575	2,015	2,943	2,178
70–74	3,539	3,632	3,676	3,347	3,635	4,547	4,372	3,934	3,617
75–79	5,802	5,887	5,737	5,907	5,709	6,219	6,068	8,372	5,832
80–84	10,137	9,941	10,194	10,145	9,748	10,880	10,143	8,182	10,076
85 and over	18,079	18,434	17,237	19,054	17,379	20,305	22,034	14,474	18,130
Crude rate	**764**	**754**	**735**	**673**	**833**	**874**	**505**	**521**	**749**
ASR(a)	**815**	**803**	**834**	**818**	**807**	**908**	**858**	**1,042**	**820**
Females									
0–4	119	103	149	115	103	90	147	264	121
5–9	11	11	14	11	10	6	18	13	11
10–14	18	12	20	17	16	17	9	41	17
15–19	23	31	40	30	23	60	16	15	29
20–24	33	31	32	33	39	31	28	73	33
25–29	37	39	49	54	36	54	46	44	42
30–34	49	47	58	51	39	61	23	131	50
35–39	71	70	80	73	91	94	100	157	76
40–44	100	102	110	124	89	125	79	181	105
45–49	180	138	163	145	181	249	162	308	166
50–54	266	282	296	255	256	378	178	578	277
55–59	442	421	493	392	477	579	303	693	447
60–64	727	667	679	672	685	925	861	1,684	706
65–69	1,131	1,079	1,110	1,164	1,133	1,348	1,823	2,355	1,134
70–74	1,901	1,919	1,890	1,908	1,953	2,207	2,362	3,586	1,927
75–79	3,502	3,430	3,511	3,376	3,444	3,847	3,295	4,124	3,478
80–84	6,233	6,377	6,339	5,847	5,803	6,339	8,220	6,250	6,235
85 and over	14,468	14,777	14,360	14,737	14,388	15,426	14,248	12,288	14,568
Crude rate	**681**	**681**	**609**	**575**	**746**	**762**	**437**	**316**	**657**
ASR(a)	**499**	**494**	**506**	**491**	**491**	**564**	**554**	**700**	**501**

(a) Age-standardised to the total Australian population at 30 June 1991.

Source: AIHW Mortality Database.

Table S15: Age-specific, crude and age-standardised death rates, all causes, by sex, 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**
Males						
Australia (1996)	**643**	**38**	**20**	**103**	**132**	**175**
Australia (1994)	***653***	***38***	***20***	***98***	***127***	***177***
Canada (1993)	690	37	19	94	126	200
Chile (1992)	1,545	87	31	118	174	269
France (1993)	749	39	21	107	178	296
Germany (1994)	620	35	18	90	118	245
Greece (1994)	812	27	19	102	128	176
Hong Kong (1994)	466	23	15	48	78	144
Iceland (1993)	644	30	9	62	68	140
Ireland (1992)	753	34	22	98	121	160
Israel (1993)	834	51	22	76	85	150
Italy (1992)	884	32	23	103	150	186
Japan (1994)	471	45	19	63	76	153
Malaysia (1991)	1,350	95	59	142	182	293
Malta (1993)	1,045	63	7	41	89	103
Netherlands (1993)	719	36	20	64	85	156
New Zealand (1993)	784	47	19	159	134	210
Norway (1993)	586	34	20	79	103	184
Philippines (1990)	2,714	379	101	185	338	497
Poland (1994)	1,643	52	28	118	201	456
Russian Federation (1994)	2,124	116	65	304	666	1,270
Singapore (1994)	439	42	22	105	130	210
Spain (1992)	778	45	23	111	206	245
Sweden (1993)	543	26	18	61	87	170
Switzerland (1994)	573	41	25	112	160	200
United Kingdom (1994)	691	31	19	74	100	170
United States (1992)	939	48	27	142	202	319

(continued)

Table S15 (continued): Age-specific, crude and age-standardised death rates, all causes, by sex, selected countries, latest year (per 100,000 population)

	Age group (years)					
Country/year	**45–54**	**55–64**	**65–74**	**75 and over**	**Crude rate**	**ASR[(b)]**
Males						
Australia (1996)	**344**	**993**	**2,825**	**9,276**	**749**	**799**
Australia (1994)	***362***	***1,085***	***3,017***	***9,629***	***759***	***838***
Canada (1993)	417	1,179	3,051	9,391	762	873
Chile (1992)	586	1,573	3,515	10,935	600	1,205
France (1993)	567	1,354	2,844	10,001	982	909
Germany (1994)	585	1,422	3,525	11,788	1,029	1,028
Greece (1994)	415	1,115	2,779	9,814	998	841
Hong Kong (1994)	398	1,140	2,977	7,345	556	759
Iceland (1993)	315	970	2,488	9,220	661	749
Ireland (1992)	463	1,406	4,191	12,059	934	1,109
Israel (1993)	363	1,181	3,024	9,978	655	869
Italy (1992)	453	1,280	3,118	9,707	1,026	921
Japan (1994)	380	1,039	2,387	8,895	783	768
Malaysia (1991)	721	1,879	4,239	10,967	520	1,166
Malta (1993)	314	1,200	3,564	11,183	784	971
Netherlands (1993)	404	1,276	3,580	11,783	924	1,008
New Zealand (1993)	445	1,296	3,368	10,307	831	970
Norway (1993)	413	1,250	3,471	11,245	1,115	978
Philippines (1990)	922	1,822	3,765	10,832	610	1,247
Poland (1994)	1,038	2,381	4,881	13,143	1,091	1,438
Russian Federation (1994)	2,439	4,177	6,741	14,941	1,765	2,291
Singapore (1994)	500	1,483	3,785	8,853	571	958
Spain (1992)	494	1,267	2,957	9,728	927	923
Sweden (1993)	376	1,060	2,967	10,544	1,134	876
Switzerland (1994)	407	988	2,833	9,868	914	847
United Kingdom (1994)	412	1,282	3,678	10,898	1,061	967
United States (1992)	800	1,969	4,073	11,659	958	1,236

(continued)

Table S15 (continued): Age-specific, crude and age-standardised death rates, all causes, by sex, 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 (1996)	**496**	**29**	**14**	**31**	**46**	**90**
Australia (1994)	***515***	***32***	***15***	***33***	***44***	***94***
Canada (1993)	567	26	15	37	48	101
Chile (1992)	1,313	59	22	42	58	135
France (1993)	539	28	15	39	64	118
Germany (1994)	496	31	13	33	48	117
Greece (1994)	773	27	14	33	38	81
Hong Kong (1994)	497	28	13	28	39	78
Iceland (1993)	305	11	—	30	24	84
Ireland (1992)	576	32	13	28	43	106
Israel (1993)	722	49	15	23	43	89
Italy (1992)	691	28	16	30	52	90
Japan (1994)	376	36	12	25	38	84
Malaysia (1991)	1,160	80	38	57	88	171
Malta (1993)	567	9	15	19	35	96
Netherlands (1993)	534	31	16	26	51	107
New Zealand (1993)	677	48	20	53	64	116
Norway (1993)	433	34	11	29	42	98
Philippines (1990)	2,122	340	81	90	146	240
Poland (1994)	1,378	46	18	35	57	157
Russian Federation (1994)	1,573	93	38	90	154	335
Singapore (1994)	410	39	13	40	46	102
Spain (1992)	628	35	18	37	59	93
Sweden (1993)	412	21	14	30	43	90
Switzerland (1994)	446	30	13	39	62	99
United Kingdom (1994)	544	27	12	28	45	110
United States (1992)	761	39	18	47	74	141

(continued)

Table S15 (continued): Age-specific, crude and age-standardised death rates, all causes, by sex, selected countries, latest year (per 100,000 population)

	Age group (years)					
Country/year	**45–54**	**55–64**	**65–74**	**75 and over**	**Crude rate**	**ASR[(b)]**
Females						
Australia (1996)	**215**	**568**	**1,514**	**7,139**	**658**	**519**
Australia (1994)	***222***	***594***	***1,618***	***7,310***	***661***	***538***
Canada (1993)	245	665	1,652	6,879	654	528
Chile (1992)	327	864	2,111	8,901	491	774
France (1993)	241	523	1,211	7,672	868	475
Germany (1994)	292	647	1,883	9,105	1,136	610
Greece (1994)	198	501	1,548	8,823	880	577
Hong Kong (1994)	191	557	1,635	5,637	435	461
Iceland (1993)	323	570	1,522	8,686	668	556
Ireland (1992)	301	834	2,314	8,997	810	702
Israel (1993)	228	730	2,033	8,364	600	640
Italy (1992)	226	560	1,513	7,604	900	542
Japan (1994)	192	440	1,133	6,025	632	423
Malaysia (1991)	427	1,176	3,192	9,087	402	850
Malta (1993)	170	750	1,907	8,633	693	641
Netherlands (1993)	259	663	1,705	8,379	879	586
New Zealand (1993)	307	838	1,977	7,685	743	625
Norway (1993)	228	641	1,710	8,442	1,048	580
Philippines (1990)	452	963	2,373	9,307	425	837
Poland (1994)	382	931	2,503	10,641	918	808
Russian Federation (1994)	744	1,494	3,281	11,791	1,370	1,099
Singapore (1994)	292	895	2,382	6,909	445	633
Spain (1992)	202	491	1,358	7,484	776	517
Sweden (1993)	232	592	1,608	8,067	1,084	546
Switzerland (1994)	217	516	1,338	7,405	860	486
United Kingdom (1994)	276	758	2,170	8,394	1,088	616
United States (1992)	326	855	1,971	7,149	807	604

(a) Infant mortality per 100,000 births.

(b) Age-standardised rate. Reference population is the European standard population (WHO 1995). Standard death rates in this table are different from the standard rates in other tables because of the use of a different reference population.

Sources: WHO 1994, 1995, 1996; UN 1995; AIHW Mortality Database.

Table S16: Age-standardised death rates[(a)], by sex and ICD-9 chapter, selected years, 1921 to 1996 (per 100,000 population)

Sex/ICD-9 chapter	1921	1941	1961	1981	1986	1991	1994	1995	1996
Males									
Infectious and parasitic[(b)]	210	93	17	5	5	6	7	7	12
Neoplasms	157	179	197	242	241	237	243	235	234
Endocrine, nutritional	16	24	16	18	20	24	28	27	24
Blood diseases	10	6	4	3	4	3	2	2	2
Mental disorders	7	4	5	9	13	13	17	18	19
Nervous system diseases	47	26	15	13	14	16	18	18	19
Circulatory diseases	387	635	759	565	463	381	356	335	326
Respiratory diseases	207	149	108	98	86	78	77	69	71
Digestive diseases	59	57	39	36	32	29	25	24	24
Genitourinary diseases	126	138	44	16	14	14	14	13	13
Skin diseases	5	3	2	1	1	1	1	1	1
Musculoskeletal diseases	7	5	4	3	3	3	3	3	3
Congenital diseases	9	10	10	7	5	5	5	4	4
Perinatal diseases	54	43	20	7	6	5	4	4	4
Ill-defined conditions	315	103	15	6	6	5	3	3	3
Injury and poisoning	117	104	104	81	72	65	59	59	61
All causes	**1,733**	**1,577**	**1,358**	**1,109**	**984**	**885**	**862**	**822**	**820**
Females									
Infectious and parasitic[(b)]	158	58	9	4	3	4	4	4	5
Neoplasms	159	163	139	136	145	144	142	141	141
Endocrine, nutritional	26	40	20	15	15	15	17	16	16
Blood diseases	13	6	5	3	3	2	2	2	2
Mental disorders	3	3	2	6	9	9	14	14	15
Nervous system diseases	36	22	9	8	10	12	14	13	13
Circulatory diseases	345	523	514	347	297	246	232	218	211
Respiratory diseases	160	115	45	32	32	34	37	35	38
Digestive diseases	58	40	23	20	21	19	17	16	15
Genitourinary diseases	67	76	20	12	11	10	10	9	10
Complications of pregnancy	24	14	2	—	—	—	—	—	—
Skin diseases	5	3	2	—	1	1	1	1	1
Musculoskeletal diseases	9	6	4	4	4	5	5	5	5
Congenital diseases	7	9	8	6	5	4	4	4	3
Perinatal diseases	40	33	15	5	4	4	3	3	4
Ill-defined conditions	250	74	14	4	4	3	3	2	2
Injury and poisoning	34	40	42	30	28	25	21	23	21
All causes	**1,394**	**1,225**	**875**	**633**	**591**	**537**	**525**	**507**	**501**

(a) Age-standardised to the total Australian population at 30 June 1991.
(b) From 1996, includes AIDS and AIDS-related deaths.

Source: AIHW Mortality Database.

Table S17: Age-standardised death rates[(a)], by sex and ICD-9 chapter, States and Territories, 1996 (per 100,000 population)

Sex/ICD-9 chapter	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Males									
Infectious and parasitic[(b)]	15	11	11	9	10	7	10	25	12
Neoplasms	226	238	241	238	225	263	260	227	234
Endocrine, nutritional	18	31	22	24	26	23	20	44	24
Blood diseases	2	3	2	1	2	3	5	5	2
Mental disorders	19	17	16	24	23	15	15	21	19
Nervous system diseases	19	19	15	22	16	23	18	34	19
Circulatory diseases	336	311	332	306	327	361	366	311	326
Respiratory diseases	71	70	71	76	63	84	54	162	71
Digestive diseases	25	22	24	22	26	25	27	18	24
Genitourinary diseases	13	14	12	13	13	10	16	5	13
Skin diseases	1	1	1	1	1	—	1	6	1
Musculoskeletal diseases	2	3	3	3	3	4	2	—	3
Congenital diseases	3	4	4	5	3	5	4	6	4
Perinatal diseases	4	4	4	5	5	3	5	11	4
Ill-defined conditions	3	2	3	4	2	11	4	16	3
Injury and poisoning	58	51	73	65	62	72	50	151	61
All causes	**815**	**803**	**834**	**818**	**807**	**908**	**858**	**1042**	**820**
Females									
Infectious and parasitic[(b)]	5	5	4	4	5	4	9	16	5
Neoplasms	138	144	139	139	141	154	163	165	141
Endocrine, nutritional	13	20	17	18	18	20	13	45	16
Blood diseases	1	2	1	2	1	3	2	5	2
Mental disorders	14	16	14	18	17	13	11	15	15
Nervous system diseases	13	12	11	15	15	12	14	6	13
Circulatory diseases	218	203	214	197	204	232	238	217	211
Respiratory diseases	39	36	37	38	32	47	33	97	38
Digestive diseases	15	15	17	15	14	19	23	14	15
Genitourinary diseases	10	9	11	8	10	12	15	23	10
Complications of pregnancy	—	—	—	—	—	—	—	1	—
Skin diseases	1	1	1	1	1	2	—	8	1
Musculoskeletal diseases	4	5	5	6	4	6	6	10	5
Congenital diseases	4	3	4	3	3	2	1	5	3
Perinatal diseases	4	3	5	2	3	3	6	4	4
Ill-defined conditions	2	2	3	2	3	7	1	14	2
Injury and poisoning	18	18	25	24	20	30	19	56	21
All causes	**499**	**494**	**506**	**491**	**491**	**564**	**554**	**700**	**501**

(a) Age-standardised to the total Australian population at 30 June 1991.
(b) From 1996, includes AIDS and AIDS-related deaths.

Source: AIHW Mortality Database.

Table S18: Age-standardised death rates[(a)], by selected ICD-9 chapters and sex, selected countries, latest year (per 100,000 population)

	ICD-9 chapter					
Country/year	Infectious & parasitic	Neoplasms	Circulatory	Digestive	Injury & poisoning	All causes
Males						
Australia (1996)	**12**	**240**	**327**	**25**	**60**	**826**
Australia (1994)	***7***	***246***	***340***	***25***	***57***	***840***
Canada (1993)	6	244	330	32	65	873
Chile (1992)	30	213	326	76	126	1,074
France (1993)	11	293	254	47	96	909
Germany (1994)	7	266	452	54	62	1,028
Greece (1994)	6	219	378	25	59	841
Hong Kong (1994)	30	248	199	35	37	759
Iceland (1994)	n.a.	n.a.	n.a.	n.a.	n.a.	762
Ireland (1992)	6	271	504	28	59	1,109
Israel (1993)	12	196	373	26	56	869
Italy (1992)	4	278	354	50	62	921
Japan (1994)	14	228	233	36	64	768
Malta (1994)	n.a.	n.a.	n.a.	n.a.	n.a.	942
Netherlands (1994)	7	286	361	31	41	953
New Zealand (1993)	5	262	421	25	71	970
Norway (1993)	6	230	422	26	68	978
Poland (1994)	11	298	705	47	127	1,438
Russian Federation (1994)	37	314	1,131	65	416	2,291
Singapore (1994)	23	249	344	27	61	958
Spain (1992)	12	258	316	57	65	923
Sweden (1993)	7	195	420	28	61	876
Switzerland (1994)	20	248	322	27	82	847
United Kingdom (1994)	5	262	417	30	41	967
United States (1992)	13	248	399	35	84	993

(continued)

Table S18 (continued): Age-standardised death rates[(a)], by selected ICD-9 chapters and sex, selected countries, latest year (per 100,000 population)

	ICD-9 chapter					
Country/year	Infectious & parasitic	Neoplasms	Circulatory	Digestive	Injury & poisoning	All causes
Females						
Australia (1996)	**5**	**148**	**210**	**16**	**21**	**509**
Australia (1994)	***4***	***150***	***235***	***17***	***21***	***539***
Canada (1993)	4	156	195	20	26	528
Chile (1992)	20	161	242	41	32	712
France (1993)	7	129	149	25	41	475
Germany (1994)	4	159	287	30	25	610
Greece (1994)	4	116	305	13	19	577
Hong Kong (1994)	20	131	145	19	22	461
Iceland (1994)	n.a.	n.a.	n.a.	n.a.	n.a.	526
Ireland (1992)	4	187	302	20	21	702
Israel (1993)	11	152	276	21	26	640
Italy (1992)	2	144	237	26	25	542
Japan (1994)	7	111	154	18	25	423
Malta (1994)	n.a.	n.a.	n.a.	n.a.	n.a.	656
Netherlands (1994)	5	162	207	23	21	566
New Zealand (1993)	3	179	267	18	27	625
Norway (1993)	5	150	235	17	27	580
Poland (1994)	4	155	437	25	34	808
Russian Federation (1994)	8	142	667	30	98	1,099
Singapore (1994)	16	151	255	15	21	633
Spain (1992)	6	117	222	26	19	517
Sweden (1993)	5	144	242	17	26	546
Switzerland (1994)	8	139	198	15	36	486
United Kingdom (1994)	4	177	249	23	17	616
United States (1992)	9	163	247	22	28	604

(a) Reference population is the European standard population (WHO 1995). Standard death rates in this table are different from the standard rates in other tables because of the use of a different reference population.

Sources: WHO 1994, 1995, 1996; UN 1997; AIHW Mortality Database.

Table S19: Age-standardised death rates(a), States and Territories, by major causes of death, 1992–96 and changes from 1987–91 to 1992–96

Cause of death	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Ischaemic heart disease								
Males	217.1	201.5	220.9	204.1	213.6	220.5	188.9	206.8
Per cent change 87–91 to 92–96	*–19.6*	*–17.0*	*–17.3*	*–16.9*	*–21.2*	*–20.0*	*–10.2*	*–20.3*
Females	120.2	109.0	124.2	107.6	115.2	120.7	106.7	91.4
Per cent change 87–91 to 92–96	*–18.3*	*–16.0*	*–15.7*	*–16.7*	*–18.9*	*–17.5*	*–16.9*	*–37.0*
Cerebrovascular disease (stroke)								
Males	73.0	62.2	67.7	66.8	70.3	72.3	62.7	76.3
Per cent change 87–91 to 92–96	*–16.1*	*–13.0*	*–13.4*	*–6.9*	*–12.7*	*–10.2*	*–18.9*	*10.7*
Females	64.8	56.0	61.3	56.7	61.2	64.9	60.8	66.9
Per cent change 87–91 to 92–96	*–19.3*	*–15.0*	*–14.5*	*–8.5*	*–8.9*	*–13.5*	*1.2*	*14.6*
Lung cancer								
Males	56.7	58.0	57.9	57.2	54.9	61.0	45.8	91.1
Per cent change 87–91 to 92–96	*–8.5*	*–9.4*	*–6.8*	*–8.3*	*–7.7*	*–6.0*	*–31.2*	*34.5*
Females	18.7	19.8	17.2	20.3	16.8	20.9	17.9	36.1
Per cent change 87–91 to 92–96	*10.7*	*10.6*	*22.6*	*2.8*	*2.1*	*–2.0*	*–27.0*	*26.5*
Chronic obstructive pulmonary disease								
Males	49.0	50.8	47.7	44.5	46.2	59.7	41.6	92.6
Per cent change 87–91 to 92–96	*–17.2*	*–14.8*	*–17.4*	*–14.2*	*–12.0*	*–16.1*	*–25.8*	*–30.8*
Females	19.2	19.0	16.4	16.2	15.0	24.4	18.4	64.9
Per cent change 87–91 to 92–96	*6.7*	*8.4*	*11.5*	*20.6*	*23.1*	*17.8*	*–6.7*	*0.2*
Colorectal cancer								
Males	28.6	31.9	28.5	28.5	29.5	34.0	36.1	24.8
Per cent change 87–91 to 92–96	*–5.6*	*–6.3*	*–4.4*	*1.9*	*3.2*	*4.6*	*0.4*	*19.6*
Females	18.3	21.6	18.8	19.8	18.6	23.7	21.2	25.1
Per cent change 87–91 to 92–96	*–5.5*	*–7.6*	*–8.7*	*–8.3*	*–9.8*	*5.5*	*–21.1*	*66.6*
All causes								
Males	857.4	832.0	845.0	820.6	842.3	925.8	828.5	1,176.5
Per cent change 87–91 to 92–96	*–0.1*	*–0.1*	*–0.1*	*–0.1*	*–0.1*	*–0.1*	*–0.1*	*–0.1*
Females	520.2	512.3	516.0	497.6	508.3	573.2	525.7	832.0
Per cent change 87–91 to 92–96	*–0.1*	*–0.1*	*–0.1*	*–0.1*	*–0.1*	*–0.1*	*–0.1*	*–0.1*

(a) Age standardised to the Australian population at 30 June 1991.

Source: ABS Cat. No. 3201.0.

Infectious diseases

Table S20: Notifiable diseases, 1991 to 1996 (number)

Disease	1991	1992	1993	1994	1995	1996
Arbovirus infection, nec	201	303	578	587	793	889
Dengue	46	366	690	17	34	43
Ross River virus	3,532	5,630	5,428	3,974	2,602	7,823
Brucellosis	28	29	20	34	29	38
Campylobacteriosis	8,672	9,135	8,111	10,117	10,933	12,158
Chancroid	—	5	1	—	2	3
Chlamydial infection	4,044	6,293	6,500	6,519	6,411	8,420
Cholera	—	3	6	3	5	4
Diphtheria	8	14	1	—	—	—
Donovanosis	72	78	67	117	85	50
Gonococcal infection	2,530	2,908	2,811	2,971	3,259	4,173
Haemophilus influenzae, type b infection	549	501	396	169	74	51
Hepatitis A	2,195	2,109	2,006	1,894	1,601	2,150
Hepatitis B	3,652	5,219	2,254	327	321	225
Hepatitis C	4,116	8,812	7,572	8,941	9,670	9,561
Hepatitis, nec	338	70	72	42	55	36
Hydatid infection	44	38	32	56	46	45
Legionellosis	110	185	178	179	160	192
Leprosy	13	16	15	11	7	10
Leptospirosis	169	159	178	123	149	227
Listeriosis	44	38	53	34	58	70
Lymphogranuloma venereum	—	3	1	2	1	—
Malaria	790	712	688	703	625	849
Measles	1,380	1,425	4,536	4,895	1,324	498
Meningococcal infection	285	292	378	383	382	426
Mumps	nn	23	28	94	153	128
Ornithosis	136	94	98	85	176	85
Pertussis	337	739	3,990	5,633	4,297	4,031
Q fever	595	543	889	667	473	555
Rubella	620	3,810	3,812	3,315	4,380	2,845
Salmonellosis	5,440	4,614	4,731	5,283	5,895	5,819
Shigellosis	902	694	708	724	734	676
Syphilis	2,053	2,695	2,305	2,324	1,854	1,523
Tetanus	7	14	10	15	7	2
Tuberculosis	903	970	1,071	1,024	1,073	1,067
Typhoid	89	50	72	50	70	84
Yersiniosis	515	567	459	414	306	268

nec not elsewhere classified.
nn not notifiable.

Note: In the period 1991–1996 there were no reported cases of the following notifiable diseases: botulism, plague, poliomyelitis, rabies, viral haemorrhagic fever, yellow fever.

Sources: DHHLGCS 1993; DHSH 1994, 1995b; DHFS 1996, 1997.

Table S21: Characteristics of AIDS cases, by age, sex, State/Territory, exposure category and defining condition, 1987 to 1996

Description	1988	1989	1990	1991	1992	1993	1994	1995	1996
Total cases	**536**	**614**	**673**	**801**	**789**	**836**	**933**	**762**	**555**
Median age (years)									
Males	36	37	37	37	38	37	37	37	38
Females	31	34	37	36	38	37	31	33	37
Males (per cent)	**97.0**	**97.6**	**97.2**	**96.4**	**95.2**	**94.9**	**95.1**	**95.5**	**95.1**
State/Territory (per cent)									
NSW	59.7	58.1	62.7	55.1	54.5	56.9	57.5	57.2	52.1
Vic	22.6	21.3	18.4	23.0	21.3	21.1	20.2	20.5	22.2
Qld	7.3	8.1	8.5	10.5	11.3	11.0	10.6	13.3	12.4
WA	4.7	5.1	4.2	4.7	5.8	3.8	4.4	3.4	6.1
SA	4.1	4.7	3.7	4.7	4.2	5.4	5.1	4.1	4.7
Tas	0.2	1.0	0.6	0.4	1.3	0.1	0.5	0.1	0.7
NT	—	0.2	0.5	0.6	0.6	0.6	0.3	0.4	0.2
ACT	1.5	1.5	1.5	1.0	1.0	1.1	1.4	1.1	1.6
Exposure category (per cent)									
Male homosexual/bisexual contact	88.8	86.3	85.6	81.0	79.5	78.0	80.4	78.0	74.8
Male homosexual/bisexual contact and ID use	3.0	3.3	2.4	3.6	4.8	6.7	4.6	4.9	5.4
ID use (female and heterosexual male)	2.1	2.3	2.2	3.6	2.0	3.0	2.8	3.4	4.0
Heterosexual contact	1.7	1.6	2.8	4.7	6.3	6.1	5.9	6.0	7.2
Haemophilia/coagulation disorder	1.3	2.3	1.8	1.4	1.7	1.2	1.0	1.8	0.9
Receipt of blood transfusion, blood components or tissue	1.3	1.5	2.1	2.0	1.9	1.0	0.9	0.7	0.9
Mother with/at risk for HIV infection	0.2	0.2	0.5	0.4	0.5	—	0.6	0.5	—
Other/undetermined	1.7	2.6	2.7	3.3	3.3	4.1	3.8	4.7	6.9
AIDS-defining condition (per cent)									
Pneumocystis carinii pneumonia (PCP)	39.7	35.2	29.7	31.3	27.0	22.1	22.0	20.3	23.6
Kaposi's sarcoma (KS)—skin	14.9	14.0	10.7	12.0	12.3	11.4	10.0	10.6	10.6
PCP and other (not KS)	6.3	4.9	7.3	5.4	6.1	3.8	2.6	3.8	4.0
Oesophageal candidiasis	5.2	5.4	7.6	7.6	8.9	11.5	14.7	16.4	15.3
Other	33.8	40.6	44.8	43.7	45.5	51.2	50.8	48.8	46.4

Source: NCHECR 1997.

Cancer

Table S22: Leading cancers[(a)], new cases and deaths by type and sex, 1994

Cancer	New cases				Deaths			
	Number	Per cent	Rate[(b)]	Lifetime risk[(c)]	Number	Per cent	Rate[(b)]	PYLL[(d)]
Males								
Prostate	12,788	30.0	158.7	1 in 8	2,613	13.7	35.0	6,455
Colorectal	5,431	12.7	65.6	1 in 18	2,501	13.1	30.7	19,710
Lung	5,195	12.2	63.1	1 in 19	4,833	25.3	59.0	32,830
Melanoma	3,694	8.7	42.9	1 in 28	609	3.2	7.3	7,468
Bladder	1,771	4.2	22.1	1 in 62	509	2.7	6.7	2,008
Unknown primary	1,547	3.6	19.1	1 in 68	1,164	6.1	14.5	8,505
NHL[(e)]	1,468	3.4	17.2	1 in 70	790	4.1	9.6	9,195
Stomach	1,200	2.8	14.8	1 in 89	827	4.3	10.2	6,105
Kidney	1,036	2.4	12.2	1 in 89	464	2.4	5.6	4,453
Pancreas	768	1.8	9.4	1 in 127	790	4.1	9.7	5,830
All cancers	**42,615**	**100.0**	**516.0**	**1 in 3**	**19,132**	**100.0**	**237.3**	**149,768**
Females								
Breast	9,704	29.5	101.0	1 in 11	2,669	18.6	26.6	31,273
Colorectal	4,582	13.9	44.9	1 in 27	2,126	14.9	20.1	13,020
Melanoma	3,081	9.4	32.4	1 in 37	288	2.0	2.9	3,565
Lung	2,110	6.4	21.1	1 in 51	1,901	13.3	18.9	13,968
Unknown primary	1,306	4.0	12.3	1 in 109	957	6.7	8.9	5,518
Uterus	1,304	4.0	13.4	1 in 77	248	1.7	2.4	1,478
NHL[(e)]	1,216	3.7	12.2	1 in 98	639	4.5	6.1	4,505
Cervix	1,121	3.4	12.0	1 in 101	340	2.4	3.5	5,135
Ovary	1,038	3.2	10.7	1 in 100	743	5.2	7.5	7,638
Pancreas	708	2.2	6.7	1 in 201	690	4.8	6.5	3,375
All cancers	**32,882**	**100.0**	**333.8**	**1 in 4**	**14,312**	**100.0**	**138.6**	**120,020**

(a) Rankings are based on the number of new cases; excludes non-melanocytic skin cancers.
(b) 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 to 74.
(d) Potential years of life lost between the ages of 0 and 74 years.
(e) Non-Hodgkin's lymphoma.

Source: AIHW & AACR 1998.

Table S23: Major cancers, age-standardised incidence rates[(a)], by sex, 1988 to 1994 (per 100,000 population)

Cancer	1988	1989	1990	1991	1992	1993	1994
Males							
Prostate	69.8	74.3	81.7	91.1	103.2	138.3	158.7
Colorectal	61.9	63.7	62.5	66.0	65.5	63.8	65.6
Lung	66.6	66.7	64.4	63.8	62.7	60.2	63.1
Melanoma	40.4	39.3	39.2	38.8	41.2	43.0	42.9
Bladder	23.8	22.5	20.8	19.5	21.1	21.1	22.1
Non-Hodgkin's lymphoma	15.6	15.9	16.5	17.5	18.2	17.8	17.2
All cancers	**424.6**	**429.9**	**430.5**	**445.2**	**462.5**	**488.9**	**516.0**
Females							
Breast	77.3	81.0	80.5	86.7	85.2	90.7	101.0
Colorectal	42.6	44.1	43.0	45.3	45.1	43.6	44.9
Melanoma	32.9	29.9	30.2	30.4	31.9	32.4	32.5
Lung	19.1	19.9	20.0	20.0	20.3	20.9	21.1
Uterus	12.2	11.8	12.0	12.8	13.0	12.9	13.4
Non-Hodgkin's lymphoma	10.7	11.1	10.7	11.8	12.2	11.7	12.2
Cervix	12.8	12.4	12.3	12.1	11.4	10.9	12.0
Bladder	6.9	6.1	5.8	5.2	5.3	5.5	5.7
All cancers	**304.2**	**306.4**	**304.4**	**317.3**	**318.5**	**319.8**	**333.8**

(a) Age-standardised to the Australian population at 30 June 1991.

Sources: AIHW Mortality Database; AIHW & AACR 1998.

Table S24: Major cancers, average annual age-standardised incidence rates[(a)], by sex, States and Territories 1990–94 and Australia 1994 (per 100,000 population)

Cancer	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust[(b)]
Males									
Prostate	118.8	105.6	n.a.	129.4	122.4	129.5	116.0	53.8	158.7
Lung	66.2	67.7	n.a.	62.5	65.4	66.8	64.5	47.5	65.6
Colorectal	64.4	64.4	n.a.	66.1	65.5	69.6	50.5	68.7	63.1
Melanoma	44.0	29.9	n.a.	45.6	36.7	31.8	35.7	26.5	42.9
Bladder	18.2	28.7	n.a.	14.1	16.7	27.6	15.2	17.8	22.1
Females									
Breast	90.1	89.2	n.a.	91.9	89.5	86.1	88.9	59.6	101.0
Colorectal	44.0	48.7	n.a.	45.1	46.8	47.3	46.8	38.0	44.9
Melanoma	31.4	25.1	n.a.	33.4	32.7	28.6	25.4	15.1	32.5
Lung	21.0	21.7	n.a.	24.1	21.0	23.7	22.3	39.0	21.1
Cervix	11.8	11.4	n.a.	12.6	9.2	12.7	11.3	17.1	12.0

(a) Age-standardised to the Australian population at 30 June 1991.
(b) State and Territory averages for 1990–94 do not equate to a single-year average for Australia.

Source: AIHW & AACR 1998.

Table S25: Major cancers, age-standardised incidence rates[(a)], by sex, selected countries 1988–92 and Australia 1992 (per 100,000 population)

Males	**Colon**	**Rectum**	**Lung**	**Melanoma**	**Prostate**	**All cancers**[(b)]
Australia	28.6	18.0	44.3	32.4	63.4	327.2
Brazil (Porto Alegre)	15.7	12.4	67.5	5.3	42.8	326.4
Canada	26.9	16.1	65.4	7.7	64.7	322.1
England and Wales[(c)]	19.3	14.6	62.4	4.6	28.0	261.1
Italy (Venice)	22.3	13.1	81.9	6.1	26.8	355.9
Japan (Osaka)	20.7	13.5	43.5	0.2	6.8	272.8
Netherlands	21.9	14.5	73.0	6.9	39.6	288.4
New Zealand (non-Maori)	31.2	20.1	46.5	25.0	37.8	290.3
United States (white)	28.1	14.3	61.3	13.1	100.8	370.9
Females	**Colon**	**Rectum**	**Lung**	**Melanoma**	**Breast**	**All cancers**[(b)]
Australia	22.2	10.4	15.0	26.3	69.4	247.2
Brazil (Porto Alegre)	13.7	6.9	14.4	5.0	62.0	231.5
Canada	21.3	9.2	28.0	6.9	76.8	252.8
England and Wales[(c)]	15.6	8.1	22.8	6.6	68.8	225.5
Italy (Venice)	16.4	7.9	13.9	7.0	72.6	230.6
Japan (Osaka)	13.1	6.8	12.4	0.2	24.3	230.6
Netherlands	18.9	8.9	13.0	9.8	79.6	225.0
New Zealand (non-Maori)	29.6	11.2	18.2	29.8	77.2	274.6
United States (white)	20.8	8.7	33.8	10.2	90.7	280.9

(a) Age-standardised to the World Standard Population.
(b) Excludes non-melanocytic skin cancer.
(c) 1988–90.

Source: Parkin et al. 1997.

Dental health

Table S26: Dental caries experience[(a)] of 6-year-old and 12-year-old school children, States and Territories, 1990 to 1995 (mean number of teeth)

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
6-year-olds (dmft)									
1990	2.20	2.10	2.43	1.54	1.88	1.59	1.15	2.08	2.06
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	1.06
1994	1.11	(b)	1.37	1.07	0.59	n.a.	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
12-year-olds (DMFT)									
1990	1.32	(b)	1.69	1.75	1.26	1.11	1.03	1.18	1.44
1991	1.18	(b)	1.54	1.43	1.06	1.18	0.91	1.26	1.29
1992	1.19	(b)	1.50	1.22	1.04	0.98	0.76	0.91	1.22
1993	1.04	(b)	1.44	1.20	0.64	0.96	0.77	0.85	1.10
1994	1.93	1.67	2.27	1.37	1.17	n.a.	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

(a) As measured by dmft/DMFT index (number of decayed, missing and filled primary or permanent teeth).
(b) Insufficient numbers examined to provide an estimate.

Source: AIHW Dental Statistics and Research Unit unpublished data.

Table S27: Primary teeth with caries experience (dmft)[(a)], 4- to 10-year-old children, 1990 to 1995 (mean number of teeth)

	Age (years)						
	Four	Five	Six	Seven	Eight	Nine	Ten
1990	(b)	1.85	2.06	2.20	2.31	2.28	1.78
1991	(b)	1.78	1.94	2.13	2.24	2.22	1.81
1992	(b)	1.80	1.95	1.93	2.21	2.11	1.74
1993	(b)	1.76	1.90	2.01	2.15	2.13	1.73
1994	1.76	1.56	1.79	1.95	2.13	2.01	1.71
1995	(b)	1.49	1.73	1.87	2.05	1.97	1.61

(a) As measured by dmft index (number of decayed, missing and filled primary teeth).
(b) Insufficient numbers examined to provide an estimate.

Source: AIHW Dental Statistics and Research Unit unpublished data.

Table S28: Permanent teeth with caries experience (DMFT), 6- to 12-year-old children, 1989 to 1995 (mean number of teeth)

	Age (years)						
	Six	Seven	Eight	Nine	Ten	Eleven	Twelve
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

Source: AIHW Dental Statistics and Research Unit unpublished data.

Smoking

Table S29: Current smokers, by age group and sex, 1976 to 1995 (per cent)

	Year of survey						
Age group	**1976**	**1980**	**1983**	**1986**	**1989**	**1992**	**1995**
Males							
16–19	37.2	35.7	31.9	31.2	20.0	21.1	28.9
20–24	47.6	56.5	44.9	41.1	41.0	36.8	32.7
25–29	46.8	48.6	49.2	38.8	38.9	36.9	34.7
30–34	45.7	40.0	43.5	34.5	36.7	34.1	34.0
35–39	46.9	41.8	42.2	34.7	35.4	29.5	29.6
40–44	43.4	43.1	42.6	36.6	32.3	35.1	30.4
45–49	40.7	47.4	43.1	29.0	26.3	30.4	26.6
50–54	53.9	47.1	38.0	35.5	22.1	26.9	30.3
55–59	39.7	40.1	38.1	34.8	25.5	26.8	28.0
60–69	36.0	26.8	33.7	29.2	21.4	19.7	18.2
70 and over	35.3	18.5	26.6	16.3	20.8	11.2	14.2
Total	**43.9**	**41.1**	**40.3**	**33.4**	**30.2**	**28.2**	**27.1**
Females							
16–19	32.2	37.3	44.9	27.9	31.1	24.7	31.0
20–24	44.1	40.0	44.9	41.2	37.7	36.2	33.9
25–29	43.5	40.5	34.5	39.0	36.7	32.8	35.0
30–34	37.9	35.8	32.1	31.3	30.4	28.7	32.9
35–39	28.0	33.3	28.8	29.0	26.4	27.6	25.1
40–44	34.4	29.5	28.1	30.0	24.2	25.5	26.6
45–49	35.8	20.0	38.5	25.1	28.8	27.3	15.0
50–54	38.3	31.3	25.5	27.6	27.9	17.5	21.0
55–59	17.9	26.1	29.1	23.6	17.6	16.8	18.3
60–69	18.8	23.0	22.2	20.9	19.6	17.8	14.7
70 and over	11.3	10.1	8.4	11.6	10.5	6.2	8.0
Total	**32.5**	**31.1**	**30.9**	**28.9**	**27.0**	**23.8**	**23.2**

Sources: Hill et al. 1988, 1991; Hill & White 1995; Hill et al. 1998.

Use of hospitals

Table S30: Separations from public hospitals, by age group and sex, States and Territories, 1995–96

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Males									
Under 1	28,241	15,841	13,422	8,178	4,759	1,261	1,467	1,468	74,637
1–4	32,802	18,736	17,296	9,576	10,207	1,546	1,541	1,792	93,496
5–14	36,815	21,705	19,923	11,023	10,817	1,837	1,613	1,389	105,122
15–24	41,888	28,362	28,019	12,245	10,462	2,728	2,143	1,655	127,502
25–34	51,311	38,170	32,943	17,362	13,989	2,995	2,547	2,874	162,191
35–44	56,452	40,627	34,585	17,577	15,052	3,439	3,106	3,619	174,457
45–54	63,170	47,253	37,770	18,471	16,671	3,869	3,625	2,592	193,421
55–64	75,249	59,119	40,845	18,519	18,320	4,670	4,259	3,028	224,009
65–74	111,154	78,606	43,776	24,552	27,038	6,528	3,436	1,711	296,801
75 and over	86,015	55,807	32,377	18,088	25,369	5,508	1,823	428	225,415
Total	**583,097**	**404,254**	**300,956**	**155,591**	**152,690**	**34,382**	**25,560**	**20,564**	**1,677,094**
Females									
Under 1	20,682	10,802	10,057	5,560	3,200	930	1,176	1,221	53,628
1–4	21,698	12,027	12,584	6,426	6,947	1,102	1,020	1,361	63,165
5–14	24,223	15,351	13,788	8,199	7,473	1,339	1,186	1,065	72,624
15–24	73,452	52,156	49,900	23,497	20,093	5,483	3,623	4,215	232,419
25–34	118,420	94,165	64,285	34,398	30,970	7,036	6,495	5,966	361,735
35–44	77,453	59,558	39,181	24,339	19,791	4,278	4,911	4,586	234,097
45–54	65,706	49,691	33,492	18,924	17,172	4,014	3,328	2,798	195,125
55–64	67,309	46,714	31,891	16,900	16,628	3,731	3,111	2,128	188,412
65–74	94,167	60,805	38,055	20,519	22,614	4,865	3,856	1,552	246,433
75 and over	109,910	67,937	37,794	22,870	26,290	5,278	2,555	545	273,179
Total	**673,024**	**469,238**	**331,029**	**181,632**	**171,187**	**38,056**	**31,261**	**25,444**	**1,920,871**
Total separations	**1,256,122**	**873,505**	**631,988**	**337,226**	**323,884**	**72,440**	**56,828**	**46,009**	**3,598,002**

Note: Totals include separations for which sex and/or age was not reported.

Source: AIHW 1997.

Table S31: Separations from private hospitals, by age group and sex, States and Territories, 1995–96

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Males									
Under 1	4,676	2,875	2,806	1,305	401	691	622	n.a.	13,376
1–4	4,376	3,865	4,227	1,387	1,565	806	173	n.a.	16,399
5–14	6,456	5,801	5,390	1,872	2,111	1,162	237	n.a.	23,029
15–24	14,067	12,108	8,850	3,648	4,284	1,659	632	n.a.	45,248
25–34	18,757	15,465	10,709	4,293	5,534	2,041	588	n.a.	57,387
35–44	25,934	20,438	15,347	5,876	6,916	2,661	711	n.a.	77,883
45–54	34,557	27,610	23,613	7,518	10,045	3,342	856	n.a.	107,541
55–64	34,096	29,064	23,949	7,634	9,176	3,170	744	n.a.	107,833
65–74	41,740	37,240	35,453	9,024	11,316	4,144	950	n.a.	139,867
75 and over	26,847	27,403	27,789	7,436	86,17	3,056	438	n.a.	101,586
Total	**211,506**	**181,869**	**158,133**	**49,993**	**59,985**	**22,732**	**5,951**	**n.a.**	**690,169**
Females									
Under 1	3,856	1,783	1,933	843	321	521	609	n.a.	9,866
1–4	2,636	2,265	2,801	967	1,032	468	99	n.a.	10,268
5–14	5,492	5,048	4,295	1,688	1,707	929	201	n.a.	19,360
15–24	25,438	17,020	13,484	7,427	5,379	3,072	861	n.a.	72,681
25–34	48,002	40,862	31,298	12,483	11,972	5,489	1,693	n.a.	151,799
35–44	43,736	35,893	28,210	10,816	11,116	4,636	1,380	n.a.	135,787
45–54	40,960	35,026	27,943	9,689	11,772	4,249	1,129	n.a.	130,768
55–64	32,317	28,820	23,143	6,815	8,715	3,191	677	n.a.	103,678
65–74	37,841	35,669	28,972	6,628	11,141	3,793	671	n.a.	124,715
75 and over	32,963	39,082	29,683	6,620	15,628	3,736	553	n.a.	128,265
Total	**273,252**	**241,468**	**191,764**	**63,976**	**78,813**	**30,086**	**7,873**	**n.a.**	**887,232**
Total separations	**484,783**	**423,351**	**349,906**	**113,969**	**138,823**	**52,818**	**13,824**	**n.a.**	**1,577,474**

Note: Totals include separations for which sex and/or age was not reported.

Source: AIHW 1997.

Table S32: Patient days in public hospitals, by age group and sex, States and Territories, 1995–96

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Males									
Under 1	137,256	87,924	66,491	39,125	28,776	7,045	8,251	12,224	387,092
1–4	66,426	34,168	34,291	21,732	19,847	3,042	3,604	11,093	194,203
5–14	84,925	45,862	42,250	25,834	22,491	4,666	3,423	4,858	234,309
15–24	171,367	82,291	84,465	54,026	36,085	9,142	7,128	7,944	452,448
25–34	230,865	105,054	99,989	69,211	56,853	17,892	8,750	10,325	598,939
35–44	240,186	114,490	109,477	78,499	55,634	28,619	9,062	11,170	647,137
45–54	297,517	159,482	140,033	65,339	62,746	20,797	10,683	10,628	767,225
55–64	387,845	214,360	168,836	85,900	72,884	52,405	14,649	10,016	1,006,895
65–74	695,241	363,717	249,958	117,876	166,259	41,765	18,823	6,724	1,660,363
75+	867,934	436,549	281,253	141,917	202,861	54,950	19,899	4,852	2,010,215
Total	**3,179,562**	**1,643,958**	**1,277,043**	**699,459**	**724,474**	**240,327**	**104,272**	**89,861**	**7,958,956**
Females									
Under 1	109,083	68,567	54,375	30,261	21,770	5,487	6,858	10,906	307,307
1–4	45,753	22,830	26,265	14,911	14,449	2,104	2,257	8,250	136,819
5–14	66,239	35,802	33,568	19,847	16,579	3,594	2,789	4,073	182,491
15–24	241,449	143,543	137,616	77,155	55,981	17,463	11,686	14,480	699,373
25–34	413,292	281,938	193,764	118,473	102,200	24,384	20,388	19,076	1,173,515
35–44	289,445	168,967	132,464	81,918	72,669	15,327	14,409	12,998	788,197
45–54	270,063	140,720	108,313	62,961	66,018	37,563	11,325	9,166	706,129
55–64	331,403	176,947	127,673	67,618	61,123	20,829	12,975	7,350	805,918
65–74	677,779	322,451	218,292	112,908	138,032	37,071	17,759	5,451	1,529,743
75+	1,349,127	653,657	460,032	214,919	294,218	99,156	27,237	4,180	3,102,526
Total	**3,793,647**	**2,015,470**	**1,492,374**	**800,971**	**843,069**	**262,978**	**127,683**	**96,006**	**9,432,198**
Total patient days	**6,973,211**	**3,659,478**	**2,769,424**	**1,500,481**	**1,567,556**	**503,307**	**231,980**	**185,876**	**17,391,313**

Note: Totals include patient days for which sex and/or age was not reported.

Source: AIHW 1997.

Table S33: Patient days in private hospitals, by age group and sex, States and Territories, 1995–96

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Males									
Under 1	23,076	10,630	13,923	7,088	1,821	2,432	3,180	n.a.	62,150
1–4	7,266	4,507	5,587	2,094	1,679	973	174	n.a.	22,280
5–14	11,767	8,746	14,378	2,442	2,621	1,650	274	n.a.	41,878
15–24	26,439	38,267	19,287	6,524	8,331	3,154	943	n.a.	102,945
25–34	37,594	36,093	27,669	8,134	11,727	4,135	1,051	n.a.	126,403
35–44	56,533	47,313	36,100	13,520	15,890	5,705	1,476	n.a.	176,537
45–54	85,564	69,236	71,130	21,062	25,684	9,109	1,841	n.a.	283,626
55–64	91,347	84,771	73,081	23,782	28,334	10,110	2,290	n.a.	313,715
65–74	142,556	142,638	166,735	44,800	43,769	18,227	4,057	n.a.	562,782
75+	132,350	168,356	198,406	54,626	55,581	19,057	2,628	n.a.	631,004
Total	**614,492**	**610,557**	**626,296**	**184,072**	**195,470**	**74,552**	**17,914**	**n.a.**	**2,323,353**
Females									
Under 1	20,785	9,091	12,497	4,931	1,741	2,244	3,103	n.a.	54,392
1–4	4,567	2,648	3,867	1,237	1,188	601	101	n.a.	14,209
5–14	115,66	7,347	7,349	4,136	2,167	1,413	227	n.a.	34,205
15–24	52,006	39,939	34,726	15,860	11,998	7,244	1,617	n.a.	163,390
25–34	147,530	141,091	110,875	44,184	41,720	17,359	6,680	n.a.	509,439
35–44	118,706	101,658	92,876	37,616	37,695	13,665	4,565	n.a.	406,781
45–54	111,301	100,981	77,732	30,653	40,461	13,191	3,279	n.a.	377,598
55–64	93,827	90,474	79,774	24,193	32,683	11,050	2,311	n.a.	334,312
65–74	151,320	158,332	145,887	33,800	54,014	20,194	3,207	n.a.	566,754
75+	231,039	342,578	317,841	53,232	132,776	25,797	4,354	n.a.	1,107,617
Total	**942,658**	**994,139**	**883,426**	**249,842**	**356,539**	**112,766**	**29,444**	**n.a.**	**3,568,814**
Total patient days	**1,557,311**	**1,604,822**	**1,509,736**	**433,914**	**552,051**	**187,318**	**47,358**	**n.a.**	**5,892,510**

Note: Totals include patient days for which sex and/or age was not reported.

Source: AIHW 1997.

Table S34: Separations, same-day separations, patient days and average length of stay by principal diagnosis, grouped into ICD-9-CM chapters, public hospitals, 1995–96

Principal diagnosis		Separations	Per cent same-day separations	Patient days	ALOS (days)	ALOS (days) excluding same-day
001–139	Infectious and parasitic	73,714	24.7	280,330	3.8	4.7
140–239	Neoplasms	211,760	37.1	1,252,166	5.9	8.8
240–279	Endocrine, nutritional	48,672	27.9	290,388	6.0	7.9
280–289	Blood diseases	45,687	54.0	125,670	2.8	4.8
290–319	Mental disorders	143,673	24.4	2,326,236	16.9	22.2
320–389	Nervous system diseases	146,820	45.6	653,423	4.5	7.3
390–459	Circulatory diseases	306,702	14.8	2,082,652	6.8	7.8
460–519	Respiratory diseases	243,977	10.5	1,144,825	4.7	5.1
520–579	Digestive diseases	346,015	43.9	1,088,561	3.1	4.8
580–629	Genitourinary diseases	221,995	44.9	661,539	3.0	4.6
630–677	Complications of pregnancy	330,025	19.1	1,129,556	3.4	4.0
680–709	Skin diseases	63,687	35.1	346,284	5.4	7.8
710–739	Musculoskeletal diseases	137,934	32.2	703,917	5.1	7.1
740–759	Congenital anomalies	25,562	36.6	116,576	4.6	6.6
760–779	Perinatal diseases	41,769	7.7	380,931	9.1	9.8
780–799	Ill-defined conditions	205,417	32.3	628,319	3.1	4.0
800–999	Injury and poisoning	323,013	25.3	1,462,768	4.5	5.7
V01–V82	Other	679,986	83.8	2,601,809	3.8	18.5
	Not reported	1,594	14.6	115,363	136.5	163.9
Total		**3,598,002**	**39.5**	**17,391,313**	**4.8**	**7.4**

Note: ALOS—average length of stay.

Source: AIHW 1997.

Table S35: Separations, same-day separations, patient days and average length of stay by principal diagnosis, grouped into ICD-9-CM chapters, private hospitals, 1995–96

Principal diagnosis		Separations	Per cent same-day separations	Patient days	ALOS (days)	ALOS (days) excluding same-day
001–139	Infectious and parasitic	10,926	35.9	44,576	4.1	5.8
140–239	Neoplasms	137,458	49.1	566,456	4.1	7.1
240–279	Endocrine, nutritional	12,000	23.2	69,033	5.8	7.2
280–289	Blood diseases	11,075	50.1	31,717	2.9	4.7
290–319	Mental disorders	48,225	46.6	535,681	11.1	19.9
320–389	Nervous system diseases	125,048	57.5	286,911	2.3	4.0
390–459	Circulatory diseases	106,088	20.0	639,784	6.0	7.3
460–519	Respiratory diseases	61,721	10.9	278,641	4.5	4.9
520–579	Digestive diseases	286,336	67.4	561,428	2.0	3.9
580–629	Genitourinary diseases	134,507	52.2	353,140	2.6	4.4
630–677	Complications of pregnancy	98,171	32.2	423,659	4.3	5.9
680–709	Skin diseases	27,405	55.5	108,536	4.0	7.7
710–739	Musculoskeletal diseases	156,190	33.5	676,637	4.3	6.0
740–759	Congenital anomalies	9,727	44.5	25,241	2.6	3.9
760–779	Perinatal diseases	9,295	6.5	61,439	6.6	7.0
780–799	Ill-defined conditions	71,902	45.5	182,892	2.5	3.8
800–999	Injury and poisoning	70,984	25.6	383,327	5.4	6.9
V01–V82	Other	198,232	75.7	650,688	3.3	10.4
	Not reported	2,184	53.5	12,724	5.8	11.4
Total		**1,577,474**	**48.9**	**5,892,510**	**3.7**	**6.4**

Note: ALOS—average length of stay.

Source: AIHW 1997.

Table S36: Separations, same-day separations, patient days and average length of stay by principal procedure, grouped into ICD-9-CM chapters, public hospitals, 1995–96

Principal procedure		Separations	Per cent same-day separations	Patient days	ALOS (days)	ALOS (days) excluding same-day
010–059	Operations on the nervous system	48,145	38.5	245,163	5.1	7.7
060–079	Operations on the endocrine system	5,425	2.1	26,874	5.0	5.0
080–169	Operations on the eye	60,140	54.5	104,232	1.7	2.6
180–209	Operations on the ear	26,951	69.3	40,254	1.5	2.6
210–299	Operations on the nose, mouth and pharynx	85,485	43.3	144,408	1.7	2.2
300–349	Operations on the respiratory system	29,938	32.0	240,469	8.0	11.3
350–399	Operations on the cardiovascular system	405,789	80.4	907,444	2.2	7.3
400–419	Operations on the haemic and lymphatic system	13,228	38.7	97,245	7.4	11.4
420–549	Operations on the digestive system	331,320	49.5	1,262,723	3.8	6.6
550–599	Operations on the urinary system	57,424	42.9	222,485	3.9	6.0
600–649	Operations on the male genital organs	45,009	48.9	127,331	2.8	4.6
650–719	Operations on the female genital organs	170,789	60.2	367,581	2.2	3.9
720–759	Obstetrical procedures	162,635	4.3	751,141	4.6	4.8
760–849	Operations on the musculoskeletal system	181,605	25.5	985,215	5.4	6.9
850–869	Operations on the integumentary system[(a)]	120,571	48.8	490,947	4.1	7.0
870–999	Miscellaneous diagnostic and therapeutic procedures	470,919	48.7	2,492,417	5.3	9.4
	No principal procedure or not reported	1,382,629	23.0	8,885,384	6.5	8.1
Total		**3,598,002**	**39.5**	**17,391,313**	**4.8**	**7.4**

(a) Breast, skin and subcutaneous tissue.

Note: ALOS—average length of stay.

Source: AIHW 1997.

Table S37: Separations, same-day separations, patient days and average length of stay by principal procedure, grouped into ICD-9-CM chapters, private hospitals, 1995–96

Principal procedure		Separations	Per cent same-day separations	Patient days	ALOS (days)	ALOS (days) excluding same day
010–059	Operations on the nervous system	33,238	47.6	111,781	3.4	5.5
060–079	Operations on the endocrine system	3,237	1.6	13,437	4.2	4.2
080–169	Operations on the eye	83,062	58.2	115,507	1.4	1.9
180–209	Operations on the ear	26,658	75.7	33,109	1.2	2.0
210–299	Operations on the nose, mouth and pharynx	103,078	48.0	138,789	1.3	1.7
300–349	Operations on the respiratory system	8,626	43.4	46,954	5.4	8.9
350–399	Operations on the cardiovascular system	83,419	48.0	287,539	3.4	5.7
400–419	Operations on the haemic and lymphatic system	4,852	46.0	20,522	4.2	7.0
420–549	Operations on the digestive system	296,262	71.2	657,669	2.2	5.2
550–599	Operations on the urinary system	48,778	57.9	122,714	2.5	4.6
600–649	Operations on the male genital organs	33,157	43.7	99,176	3.0	4.5
650–719	Operations on the female genital organs	122,722	69.0	265,605	2.2	4.8
720–759	Obstetrical procedures	49,903	1.7	322,807	6.5	6.6
760–849	Operations on the musculoskeletal system	159,812	32.9	644,274	4.0	5.5
850–869	Operations on the integumentary system(a)	80263	55.7	208,883	2.6	4.6
870–999	Miscellaneous diagnostic and therapeutic procedures	133588	53.4	548951	4.1	7.7
	No principal procedure or not reported	306,819	27.3	2,254,799	7.3	9.7
Total		**1,577,474**	**48.9**	**5,892,510**	**3.7**	**6.4**

(a) Breast, skin and subcutaneous tissue.

Note: ALOS—average length of stay.

Source: AIHW 1997.

Table S38: Separations[(a)], same-day separations, patient days, average length of stay and cost by Major Diagnostic Category, public hospitals, 1995–96

Major Diagnostic Category		Separations	Per cent same-day separations	Patient days	ALOS (days)	ALOS (days) excluding same-day	Estimated cost[(c)] ($'000)
01	Nervous system	177,666	24.0	1,408,513	7.8	10.0	660,288
02	Eye diseases, disorders	67,496	50.7	125,357	1.8	2.7	138,197
03	Ear, nose, mouth, throat	166,605	38.5	315,732	1.9	2.4	226,008
04	Respiratory system	221,616	11.6	1,189,991	5.3	5.9	630,608
05	Circulatory system	297,597	16.0	1,586,048	5.3	6.1	1,104,312
06	Digestive system	397,681	43.5	1,201,283	3.0	4.5	779,235
07	Hepatobiliary, pancreas	68,924	15.4	335,936	4.8	5.5	241,552
08	Musculoskeletal system and connective tissue	279,933	27.7	1,430,632	5.1	6.6	943,176
09	Skin, subcutaneous tissue and breast	143,917	47.3	517,821	3.6	5.9	306,246
10	Endocrine, nutritional and metabolic	40,364	17.1	226,309	5.6	6.5	114,930
11	Kidney and urinary tract	424,662	81.6	745,635	1.8	5.0	486,250
12	Male reproductive	52,972	45.7	152,409	2.8	4.4	108,344
13	Female reproductive	148,981	56.8	360,321	2.4	4.3	272,726
14	Pregnancy, childbirth and puerperium	333,909	18.9	1,140,286	3.4	4.0	686,607
15	Newborns, neonates	63,218	10.7	473,638	7.5	8.3	258,657
16	Blood, blood-forming organs, immunological	53,939	59.9	135,915	2.5	4.8	93,433
17	Neoplastic disorders	153,442	86.6	301,372	2.0	8.2	216,158
18	Infectious and parasitic diseases	49,214	24.5	234,984	4.7	6.0	165,271
19	Mental diseases and disorders	98,958	27.6	1,018,256	10.3	14.1	373,720
20	Alcohol/drug use and disorders	22,904	18.3	105,606	4.6	5.4	38,011
21	Injury, poison, toxic effects of drugs	99,412	30.2	327,306	3.2	4.2	229,374
22	Burns	5,612	16.6	39,679	7.0	8.2	32,513
23	Factors influencing health status, other contacts	94,709	64.6	448,496	4.0	9.6	187,123
ED	Edit DRG[(b)]	21,162	27.4	319,495	5.5	7.7	99,556
PR	Pre-MDC[(b)]	7,945	2.3	237,703	29.9	30.6	277,032
Total		**3,492,838**	**39.6**	**14,378,723**	**4.0**	**6.0**	**8,669,327**

(a) Separations for acute and unspecified type of episode of care only.

(b) Major Diagnostic Categories (MDCs) are groupings of AN-DRGs within the AN-DRG (casemix) classification. 'Pre-MDC' is a group of particularly resource-intensive AN-DRGs such as transplants. Separations in the 'Edit DRG' grouping did not have a valid AN-DRG.

(c) The estimated total hospital cost is the sum of the estimated costs for each AN-DRG within the Major Diagnostic Category, calculated using the estimated average cost for all public hospital separations ($2,519) and relative cost weights for each AN-DRG.

Note: Abbreviations: ALOS—Average length of stay; MDC—Major Diagnostic Category; DRG—Diagnosis Related Group.

Source: AIHW 1997.

Table S39: Separations[(a)], same-day separations, patient days, average length of stay and cost by Major Diagnostic Category, private hospitals, 1995–96

	Major Diagnostic Category	Separations	Per cent same-day separations	Patient days	ALOS (days)	ALOS (days) excluding same-day	Estimated cost[(c)] ($'000)
01	Nervous system	42,581	26.6	282,935	6.7	8.8	101,165
02	Eye diseases, disorders	81,272	57.9	114,811	1.4	2.0	133,434
03	Ear, nose, mouth, throat	122,404	50.4	179,504	1.5	1.9	106,031
04	Respiratory system	42,921	7.5	272,126	6.3	6.7	94,052
05	Circulatory system	88,250	13.4	469,110	5.3	6.0	268,128
06	Digestive system	288,449	71.6	614,018	2.1	5.0	294,658
07	Hepatobiliary, pancreas	21,925	9.0	102,206	4.7	5.0	51,717
08	Musculoskeletal system and connective tissue	197,338	32.6	882,924	4.5	6.2	512,851
09	Skin, subcutaneous tissue and breast	92,804	56.9	253,115	2.7	5.1	155,485
10	Endocrine, nutritional and metabolic	10,838	15.6	58,356	5.4	6.2	24,476
11	Kidney and urinary tract	80,218	66.5	176,614	2.2	4.6	86,696
12	Male reproductive	36,175	46.9	105,911	2.9	4.6	59,458
13	Female reproductive	99,761	60.3	249,457	2.5	4.8	148,249
14	Pregnancy, childbirth and puerperium	99,604	31.5	431,671	4.3	5.9	216,667
15	Newborns, neonates	16,772	9.8	96,056	5.8	6.4	36,658
16	Blood, blood-forming organs, immunological	12,746	54.5	33,224	2.6	4.5	16,011
17	Neoplastic disorders	46,853	84.4	88,258	1.9	6.7	47,096
18	Infectious and parasitic diseases	7,644	19.8	42,924	5.7	6.8	17,690
19	Mental diseases and disorders	37,382	49.1	368,504	9.6	18.6	88,885
20	Alcohol/drug use and disorders	5,623	39.5	51,737	9.3	14.7	12,487
21	Injury, poison, toxic effects of drugs	14,337	29.8	56,613	4.0	5.3	27,125
22	Burns	451	23.9	3,246	7.7	9.4	1,295
23	Factors influencing health status, other contacts	47,265	73.2	143,077	3.0	8.6	50,744
ED	Edit DRG[(b)]	46,183	48.8	155,479	3.3	5.6	74,802
PR	Pre-MDC[(b)]	639	1.1	18,509	29.2	29.5	13,208
Total		**1,540,435**	**49.1**	**5,250,385**	**3.4**	**5.8**	**2,639,068**

(a) Separations for acute and unspecified type of episode of care only.

(b) Major Diagnostic Categories (MDCs) are groupings of AN-DRGs within the AN-DRG (casemix) classification. 'Pre-MDC' is a group of particularly resource-intensive AN-DRGs such as transplants. Separations in the 'Edit DRG' grouping did not have a valid AN-DRG.

(c) The estimated total hospital cost is the sum of the estimated costs for each AN-DRG within the Major Diagnostic Category, calculated using the estimated average cost for all private hospital separations ($1,716) and relative cost weights for each AN-DRG.

Note: Abbreviations: ALOS—Average length of stay; MDC—Major Diagnostic Category; DRG—Diagnosis Related Group.

Source: AIHW 1997.

Health expenditure

Table S40: Total health services expenditure, current and constant (average 1989–90) prices[(a)], and annual growth rates, 1984–85 to 1996–97

	Amount ($ million)		Growth rate over previous year (%)	
Year	**Current**	**Constant**	**Current**	**Constant**
1984–85	16,546	22,862	n.a.	n.a.
1985–86	18,586	24,180	12.3	5.8
1986–87	21,115	25,341	13.6	4.8
1987–88	23,333	26,287	10.5	3.7
1988–89	26,127	27,719	12.0	5.4
1989–90	28,800	28,800	10.2	3.9
1990–91	31,270	29,422	8.6	2.2
1991–92	33,084	30,203	5.8	2.7
1992–93	34,892	31,393	5.5	3.9
1993–94	36,587	32,589	4.9	3.8
1994–95	38,701	33,957	5.8	4.2
1995–96	41,308	35,716	6.7	5.2
1996–97[(b)]	43,204	36,768	4.6	2.9
Average annual growth rates				
1984–85 to 1987–88			12.1	4.8
1987–88 to 1992–93			8.4	3.6
1992–93 to 1996–97			5.5	4.0

(a) Health services expenditure 1984–85 to 1996–97 deflated to constant (average 1989–90) prices using specific health deflators.

(b) Preliminary estimates.

Source: AIHW Health Expenditure Database.

Table S41: Total health services expenditure constant (average 1989–90) prices[(a)], by source of funds, 1975–76 to 1996–97 ($ million)

	Government sector				
Year	Commonwealth[(b)]	State and local	Total	Non-government[(b)]	Total expenditure
1975–76	8,301	4,458	12,758	4,921	17,679
1976–77	7,403	4,522	11,926	6,095	18,021
1977–78	6,798	4,801	11,599	7,243	18,841
1978–79	6,872	5,233	12,105	7,412	19,517
1979–80	6,747	5,180	11,927	7,575	19,502
1980–81	6,957	5,318	12,276	7,424	19,699
1981–82	7,068	5,530	12,597	7,795	20,393
1982–83	6,972	5,467	12,439	8,234	20,673
1983–84	8,351	5,692	14,043	7,917	21,960
1984–85	10,454	5,797	16,250	6,611	22,862
1985–86	11,030	6,147	17,177	7,003	24,180
1986–87	11,253	6,557	17,810	7,531	25,341
1987–88	11,540	6,788	18,329	7,958	26,287
1988–89	11,802	7,160	18,962	8,757	27,719
1989–90	12,104	7,513	19,617	9,183	28,800
1990–91	12,301	7,560	19,862	9,560	29,422
1991–92	12,842	7,540	20,382	9,821	30,203
1992–93	13,661	7,563	21,224	10,169	31,393
1993–94	14,686	7,258	21,944	10,644	32,589
1994–95	15,194	7,704	22,898	11,059	33,957
1995–96	16,147	8,218	24,365	11,351	35,716
1996–97[(c)]	16,599	8,700	25,299	11,470	36,768

(a) Health expenditure 1975–76 to 1996–97 deflated to constant (average 1989–90) prices using specific health deflators.
(b) Not adjusted for tax expenditures.
(c) Preliminary estimates.

Source: AIHW Health Expenditure Database.

Table S42: Annual growth in recurrent health services expenditure constant (average 1989–90) prices[(a)], by area of expenditure, 1984–85 to 1995–96 (per cent)

Area of expenditure	**1984–85 to 1989–90[(b)]**	**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**	**1984–85 to 1995–96[(b)]**	**1989–90 to 1995–96[(b)]**
Total hospitals	3.2	1.8	2.7	1.2	1.3	4.2	5.8	3.0	2.8
Recognised public hospitals	3.4	–0.4	1.8	1.3	2.0	4.8	8.2	3.1	2.9
Private hospitals	7.3	11.3	8.3	5.6	6.6	9.3	9.3	7.9	8.4
Repatriation hospitals	6.5	5.7	0.1	–6.3	–29.1	–35.1	–93.4	–25.2	–44.3
Public acute hospitals	3.5	–0.1	1.7	0.9	0.4	3.3	5.9	2.7	2.0
Public psychiatric hospitals	–9.0	1.3	–2.1	–10.4	–5.3	–4.3	–17.1	–7.6	–6.5
Nursing homes	2.9	6.9	0.8	0.1	–0.4	1.0	5.6	2.6	2.3
Ambulance	2.5	–0.9	5.9	4.1	0.2	–7.6	1.8	1.4	0.5
Other institutional (nec)	9.6	6.5	6.7	0.0	66.0	5.1	7.6	11.7	13.4
Total institutional	*3.1*	*2.6*	*2.5*	*1.1*	*1.3*	*3.4*	*5.7*	*2.9*	*2.7*
Medical services	5.7	3.1	5.6	7.9	5.3	5.8	5.2	5.6	5.5
Other professional services	8.6	7.9	–5.2	2.3	1.9	6.0	2.9	5.3	2.6
Total pharmaceuticals	6.6	4.0	6.0	6.6	11.9	11.6	9.1	7.4	8.2
Benefit-paid pharmaceuticals	4.4	–5.6	5.3	16.0	17.8	11.3	17.4	7.5	10.0
All other pharmaceuticals	10.1	17.4	6.7	–3.8	4.0	12.0	–3.2	7.4	5.2
Aids and appliances	6.3	5.4	4.6	–0.5	7.9	1.1	1.2	4.6	3.2
Other non-institutional services	7.3	7.3	1.3	3.7	0.4	2.9	1.7	4.0	1.4
Community and public health	11.9	–13.6	–4.0	14.8	9.7	n.a.	n.a.	n.a.	n.a.
Dental services	3.5	4.8	0.2	5.9	–3.3	n.a.	n.a.	n.a.	n.a.
Administration	7.0	7.9	9.1	–10.8	–6.8	n.a.	n.a.	n.a.	n.a.
Research	7.1	2.4	3.9	5.9	10.9	10.6	10.5	7.2	7.3
Total non-institutional	*6.6*	*2.3*	*3.5*	*5.7*	*5.3*	*6.2*	*5.1*	*5.5*	*4.7*
Total recurrent expenditure	**4.8**	**2.5**	**3.0**	**3.4**	**3.4**	**4.8**	**5.4**	**4.2**	**3.7**

(a) Health expenditure 1984–85 to 1996–97 deflated to constant (average 1989–90) prices using specific health deflators.

(b) Average annual growth.

Source: AIHW Health Expenditure Database.

Table S43: Health services expenditure, current prices, by source of funds, 1984–85 to 1996–97 ($ million)

	Government sector				
Year	Commonwealth[(a)]	State and local	Total	Non-government[(a)]	Total expenditure
1984–85	7,625	4,267	11,892	4,654	16,546
1985–86	8,547	4,815	13,362	5,224	18,586
1986–87	9,362	5,577	14,939	6,176	21,115
1987–88	10,275	6,077	16,352	6,981	23,333
1988–89	11,129	6,788	17,918	8,209	26,127
1989–90	12,165	7,513	19,678	9,122	28,800
1990–91	13,200	7,958	21,158	10,112	31,270
1991–92	14,167	8,138	22,305	10,779	33,084
1992–93	15,273	8,268	23,541	11,351	34,892
1993–94	16,590	8,000	24,589	11,998	36,587
1994–95	17,413	8,608	26,021	12,680	38,701
1995–96	18,835	9,309	28,145	13,163	41,308
1996–97[(b)]	19,651	10,019	29,670	13,535	43,204

(a) Commonwealth Government and non-government expenditure adjusted for tax expenditures.
(b) Preliminary estimates.

Source: AIHW Health Expenditure Database.

Table S44: Total health services expenditure (current prices), by area of expenditure and source of funds, 1995–96(a) ($ million)

	Government sector			Non-government sector				
Area of expenditure	Commonwealth(b)	State and local	Total	Health insurance funds	Individuals	Other(c)	Total	Total all sectors
Total hospitals	5,498	5,425	10,924	2,611	306	1,012	3,929	14,852
Recognised public hospitals	5,181	5,043	10,224	380	—	645	1,025	11,249
Private hospitals	295	—	295	2,231	293	364	2,888	3,183
Repatriation hospitals	16	—	16	—	—	—	—	16
Public psychiatric hospitals	7	382	389	—	13	3	15	404
Nursing homes	2,055	223	2,277	—	677	—	677	2,954
Ambulance	41	232	274	91	71	33	194	468
Other institutional (nec)	140	—	140	—	—	—	—	140
Total institutional	*7,735*	*5,880*	*13,615*	*2,702*	*1,053*	*1,045*	*4,800*	*18,414*
Medical services	6,497	—	6,497	223	757	395	1,375	7,872
Other professional services	195	—	195	215	758	182	1,155	1,350
Total pharmaceuticals	2,504	11	2,515	44	2,063	35	2,142	4,657
Benefit-paid pharmaceuticals	2,504	—	2,504	—	493	—	493	2,997
All other pharmaceuticals	—	11	11	44	1,569	35	1,649	1,660
Aids and appliances	148	—	148	172	438	32	642	789
Other non-institutional	1,156	(d)1,775	2,932	1,069	1,149	12	2,230	5,162
Community and public health	521	n.a.	n.a.	2	—	3	4	n.a.
Dental services	152	n.a.	n.a.	564	1,149	10	1,722	n.a.
Administration	484	n.a.	n.a.	504	—	—	504	n.a.
Research(e)	395	187	583	—	125	—	125	707
Total non-institutional	*10,895*	*1,973*	*12,868*	*1,724*	*5,289*	*656*	*7,668*	*20,537*
Total recurrent expenditure	**18,630**	**7,853**	**26,483**	**4,426**	**6,342**	**1,701**	**12,468**	**38,951**
Capital expenditure	*46*	*903*	*949*	*n.a.*	*n.a.*	*836*	*836*	*1,786*
Capital consumption	*18*	*553*	*571*	(f)	(f)	(f)	(f)	*571*
Total health expenditure	**18,694**	**9,309**	**28,004**	**4,426**	**6,342**	**2,537**	**13,304**	**41,308**

(a) This table shows the amounts provided by the Commonwealth Government, State and Territory Governments and local government authorities and by the non-government sector to fund expenditure on health services. It does not show gross outlays on health services by each of the levels of government or the non-government sector.

(b) Commonwealth expenditure includes funding of health services for veterans by the Department of Veterans' Affairs as well as general health funding by the Commonwealth Department of Health and Family Services.

(c) 'Other' includes expenditure on health services by Workers' Compensation and Compulsory Motor Vehicle Third Party insurance providers.

(d) State and local government expenditure on 'other non-institutional services' cannot be reliably divided into community and public health, dental services and administration categories.

(e) Health services research expenditure is allocated to the level of government or the sector that actually undertakes the research activity, not according to the source of funds.

(f) Private capital consumption (depreciation) is included as part of the recurrent expenditure.

Source: AIHW Health Expenditure Database.

Table S45: Total health expenditure as a proportion of GDP, Australia and selected OECD countries, 1975 to 1996 (per cent)

Year	Aust	Can	Fra	Jpn	NZ	UK	USA	Seven country mean(a)	Six country mean(b)
1975	7.5	7.2	7.0	5.5	6.7	5.5	8.2	7.3	6.1
1976	7.5	7.2	7.0	5.5	6.3	5.5	8.5	7.4	6.1
1977	7.8	7.2	7.0	5.7	6.6	5.3	8.6	7.5	6.2
1978	7.6	7.2	7.3	5.9	7.1	5.3	8.5	7.5	6.3
1979	7.4	7.0	7.4	6.0	—	5.3	8.7	(c)7.6	(c)6.4
1980	7.3	7.3	7.6	6.4	6.0	5.6	9.1	8.0	6.6
1981	7.4	7.5	7.9	6.5	6.0	5.9	9.4	8.2	6.9
1982	7.7	8.3	8.0	6.7	6.1	5.8	10.2	8.7	7.0
1983	7.6	8.5	8.2	6.8	6.0	6.0	10.5	8.9	7.1
1984	7.6	8.3	8.5	6.5	5.7	5.9	10.4	8.8	7.1
1985	7.7	8.4	8.5	6.7	5.3	5.9	10.7	9.0	7.1
1986	8.0	8.7	8.5	6.6	5.3	5.9	10.9	9.2	7.1
1987	7.8	8.6	8.5	6.6	5.9	5.9	11.1	9.3	7.1
1988	7.7	8.5	8.6	6.3	6.5	5.8	11.5	9.4	7.0
1989	7.8	8.7	8.7	6.1	6.6	5.8	12.0	9.6	6.9
1990	8.2	9.2	8.9	6.0	7.0	6.0	12.7	10.0	7.0
1991	8.5	9.9	9.1	6.0	7.5	6.5	13.5	10.5	7.3
1992	8.6	10.3	9.4	6.3	7.6	6.9	14.1	10.9	7.6
1993	8.5	10.2	9.8	6.6	7.3	6.9	14.3	11.2	7.7
1994	8.5	9.9	9.7	6.9	7.1	6.9	14.1	11.2	7.8
1995	8.5	9.7	9.9	7.2	7.1	6.9	14.2	11.4	8.0
1996	8.5	9.2	9.6	—	7.2	6.9	14.2	(d)12.4	(d)8.5

(a) Weighted mean.
(b) Weighted mean. Excludes United States.
(c) Excludes New Zealand.
(d) Excludes Japan.

Sources: AIHW Health Expenditure Database; OECD unpublished health expenditure data.

Table S46: Total health services expenditure, constant (average 1989–90) prices, by area of expenditure, selected years ($ million)

Area of expenditure	1984–85	1987–88	1992–93	1995–96
Total hospitals	9,309	10,447	11,509	12,855
Recognised public hospitals	6,944	7,755	8,426	9,737
Private hospitals	1,194	1,365	2,165	2,755
Repatriation hospitals	334	383	453	14
Public psychiatric hospitals	837	944	465	350
Nursing homes	1,929	2,139	2,406	2,557
Other institutional (nec)	384	413	494	526
Total institutional	*11,622*	*12,999*	*14,409*	*15,938*
Medical services	3,755	4,470	5,808	6,804
Other professional services	662	856	1,047	1,164
Total pharmaceuticals	1,809	2,062	2,926	3,988
Benefit-paid pharmaceuticals	1,165	1,280	1,672	2,572
All other pharmaceuticals	644	782	1,255	1,415
Aids and appliances	413	498	614	677
Other non-institutional services	2,726	3,102	4,010	4,226
Community and public health	861	1,009	1,438	n.a.
Dental services	1,156	1,323	1,528	n.a.
Administration	710	770	1,043	n.a.
Research	283	346	450	611
Total non-institutional	*9,649*	*11,334*	*14,855*	*17,469*
Total recurrent expenditure	**21,271**	**24,333**	**29,264**	**33,408**
Capital expenditure	*1,084*	*1,434*	*1,633*	*1,747*
Capital consumption	*507*	*520*	*496*	*562*
Total health expenditure	**22,862**	**26,287**	**31,393**	**35,716**

Source: AIHW Health Expenditure Database.

Table S47: Proportion of recurrent health services expenditure (current prices), by area of expenditure, 1984–85 to 1995–96 (per cent)

Area of expenditure	1984–85	1989–90	1990–91	1991–92	1992–93	1993–94	1994–95	1995–96
Total hospitals	44.0	40.6	40.1	39.7	38.7	37.9	37.8	38.1
Recognised public hospitals	32.8	30.6	29.6	29.0	28.3	27.9	28.0	28.9
Private hospitals	5.6	6.3	6.9	7.2	7.3	7.5	7.9	8.2
Repatriation hospitals	1.6	1.7	1.7	1.7	1.5	1.0	0.6	..
Public psychiatric hospitals	4.0	2.0	1.9	1.8	1.6	1.4	1.3	1.0
Nursing homes	9.1	8.3	8.6	8.4	8.1	7.8	7.5	7.6
Ambulance	1.6	1.5	1.4	1.4	1.4	1.4	1.2	1.2
Other institutional (nec)	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.4
Total institutional	*54.9*	*50.5*	*50.3*	*49.8*	*48.4*	*47.4*	*47.0*	*47.3*
Medical services	17.4	18.4	18.7	19.0	19.6	20.1	20.3	20.2
Other professional services	2.0	3.7	3.9	3.7	3.7	3.6	3.6	3.5
Total pharmaceuticals	8.6	9.3	9.5	9.9	10.5	11.1	11.7	12.0
Benefit-paid pharmaceuticals	5.5	5.4	5.0	5.2	6.0	6.7	7.0	7.7
All other pharmaceuticals	3.1	3.9	4.5	4.7	4.5	4.4	4.7	4.3
Aids and appliances	2.0	2.1	2.2	2.2	2.2	2.2	2.1	2.0
Other non-institutional services	12.1	14.4	13.8	13.8	14.0	13.8	13.6	13.3
Community and public health	3.9	5.6	4.7	4.4	4.9	5.2	n.a	n.a
Dental services	4.6	5.1	5.3	5.3	5.5	5.4	n.a	n.a
Administration	3.6	3.7	3.8	4.1	3.6	3.2	n.a	n.a
Research	1.4	1.5	1.5	1.5	1.5	1.7	1.7	1.8
Total non-institutional	*45.1*	*49.5*	*49.7*	*50.2*	*51.6*	*52.6*	*53.0*	*52.7*
Total recurrent expenditure	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: AIHW Health Expenditure Database.

Health labour force

Table S48: Employment in the health industry, August 1981 to August 1997

Year	Employed in health industry ('000)	All employed persons ('000)	Proportion of all employed persons (per cent)	Civilian labour force[(a)] ('000)	Proportion of civilian labour force[(a)] (per cent)
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

(a) Includes unemployed persons looking for work.

Sources: ABS Cat. No. 6203.0; Labour Force Survey Estimates on microfiche.

Use of professional services

Table S49: Medical and optometrical services, fees and benefits under Medicare, 1990–91 to 1996–97

Year	Number of items (million)	Fees charged ($ million)	Schedule fees ($ million)	Benefits paid ($ million)
GP attendances				
1990–91	85.0	1,800.7	1,919.5	1,631.4
1991–92	89.0	1,974.4	2,135.2	1,781.8
1992–93	93.2	2,166.2	2,353.4	1,997.8
1993–94	96.7	2,288.7	2,503.1	2,126.1
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
Specialist attendances				
1990–91	14.9	792.5	770.8	648.4
1991–92	15.6	863.7	840.6	705.0
1992–93	16.3	930.9	908.0	763.3
1993–94	16.8	977.4	957.4	806.2
1994–95	17.5	1,031.2	1,005.7	847.3
1995–96	18.1	1,084.7	1,053.5	887.8
1996–97	18.2	1,109.3	1,066.6	897.7
Obstetrics				
1990–91	0.6	95.4	76.0	58.3
1991–92	0.6	95.5	73.9	56.7
1992–93	0.7	93.7	71.8	55.3
1993–94	0.7	92.0	70.0	54.1
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
Anaesthetics				
1990–91	1.5	135.5	113.5	85.9
1991–92	1.6	151.3	125.4	94.9
1992–93	1.6	165.4	137.9	104.4
1993–94	1.6	171.2	142.4	107.7
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
Pathology[(a)]				
1990–91	26.1	729.0	754.2	631.9
1991–92	30.4	725.4	751.7	629.2
1992–93	39.7	734.5	757.0	634.0
1993–94	42.9	795.5	837.8	703.1
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

(continued)

Table S49 (continued): Medical and optometrical services, fees and benefits under Medicare, 1990–91 to 1996–97

Year	Number of items (million)	Fees charged ($ million)	Schedule fees ($ million)	Benefits paid ($ million)
Diagnostic imaging				
1990–91	8.3	638.6	626.3	534.9
1991–92	8.5	683.9	678.8	578.8
1992–93	9.1	762.7	765.7	655.2
1993–94	9.5	833.7	848.4	728.7
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
Operations				
1990–91	4.5	595.5	532.4	420.9
1991–92	4.7	665.0	593.0	468.0
1992–93	4.9	718.4	643.4	509.3
1993–94	5.0	727.6	652.6	515.8
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	582.1
Optometry				
1990–91	2.6	99.4	113.6	96.6
1991–92	2.8	108.6	124.8	106.1
1992–93	3.0	119.1	137.6	117.0
1993–94	3.2	125.7	145.6	123.9
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
All other services(b)				
1990–91	3.4	111.4	92.7	117.9
1991–92	3.6	143.0	109.0	148.3
1992–93	3.8	197.0	193.4	165.1
1993–94	4.2	227.9	225.0	191.2
1994–95	4.4	257.9	255.0	216.4
1995–96	4.5	283.3	280.9	238.2
1996–97	4.8	301.2	292.9	247.6
Total services				
1990–91	146.9	5,056.0	5,069.1	4,243.3
1991–92	156.8	5,475.8	5,524.3	4,588.2
1992–93	172.3	5,922.1	5,998.5	5,023.7
1993–94	180.6	6,275.2	6,414.0	5,380.1
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

(a) In February 1992, a patient episode initiation item was introduced, artificially inflating the number of pathology items.
(b) Includes radiotherapy and nuclear medicine therapy, assistance at operations and other miscellaneous items.

Source: DHFS 1998.

Table S50: Medicare items, age-specific rates, by sex, 1991–92 to 1996–97 (items per person)

Sex/age group	1991–92	1992–93	1993–94	1994–95	1995–96	1996–97
Males						
0–4	8.90	9.73	9.85	9.60	9.80	9.60
5–9	5.00	5.39	5.43	5.24	5.30	5.21
10–14	4.22	4.50	4.60	4.50	4.54	4.48
15–19	4.37	4.68	4.68	4.67	4.86	4.83
20–24	4.57	4.90	5.00	5.02	5.32	5.26
25–34	5.14	5.49	5.58	5.77	5.97	5.93
35–44	6.00	6.39	6.60	6.91	7.11	7.07
45–54	7.66	8.22	8.82	9.23	9.48	9.45
55–64	11.70	12.72	13.35	14.01	14.41	14.42
65–74	12.55	14.18	15.82	17.11	18.35	19.07
75 and over	17.35	18.85	19.85	20.38	20.69	20.54
Crude rate	**7.11**	**7.73**	**8.07**	**8.35**	**8.68**	**8.71**
Age-standardised rate(a)	**7.24**	**7.85**	**8.20**	**8.45**	**9.01**	**9.01**
Females						
0–4	8.10	8.88	9.01	8.80	8.98	8.82
5–9	4.99	5.39	5.44	5.23	5.26	5.21
10–14	4.39	4.68	4.79	4.67	4.66	4.60
15–19	7.63	8.18	8.27	8.37	8.64	8.43
20–24	10.20	11.13	11.43	11.64	12.12	11.72
25–34	11.38	12.40	12.62	13.05	13.57	13.51
35–44	10.36	11.27	11.61	12.11	12.23	12.17
45–54	11.71	12.77	13.52	14.00	14.06	14.02
55–64	13.85	15.03	15.54	16.20	16.67	16.87
65–74	16.46	17.73	18.57	19.21	20.08	20.45
75 and over	20.41	21.94	22.87	23.43	24.10	24.36
Crude rate	**10.81**	**11.75**	**12.14**	**12.49**	**12.84**	**12.85**
Age-standardised rate(a)	**10.61**	**11.51**	**11.88**	**12.19**	**12.28**	**12.24**

(a) Age-standardised to the total Australian population at 30 June 1991.

Source: HIC 1992, 1993, 1994, 1995, 1996, 1997.

Table S51: Medicare items, age-specific rates, by sex, States and Territories, 1996–97 (items per person)

Sex/age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Males									
0–4	10.06	9.75	9.79	8.40	9.55	8.23	8.85	5.35	9.60
5–9	5.44	5.58	5.06	4.63	5.00	4.41	4.69	2.69	5.21
10–14	4.73	4.54	4.51	4.11	4.28	3.90	4.09	2.38	4.48
15–19	5.17	4.78	4.90	4.33	4.66	4.26	4.22	2.38	5.26
20–24	5.76	5.43	5.08	4.40	4.98	4.76	4.41	2.38	5.26
25–34	6.57	6.11	5.58	4.97	5.53	5.16	5.03	3.25	5.93
35–44	7.88	7.05	6.91	6.03	6.37	5.88	5.98	4.59	7.07
45–54	10.51	9.22	9.34	8.36	8.37	8.34	8.16	6.47	9.45
55–64	15.92	14.14	14.08	13.06	12.65	12.71	12.20	9.17	14.42
65–74	20.58	19.08	18.28	17.94	17.26	15.61	17.47	11.92	19.07
75 and over	21.50	21.19	19.50	19.43	19.66	16.13	20.59	10.50	20.54
Crude rate	**9.57**	**8.82**	**8.40**	**7.54**	**8.26**	**7.53**	**7.04**	**4.39**	**8.71**
ASR(a)	**9.74**	**9.08**	**8.79**	**8.09**	**8.35**	**7.66**	**8.06**	**5.23**	**9.01**
Females									
0–4	9.33	8.76	9.05	7.79	8.74	7.64	8.17	5.09	8.82
5–9	5.37	5.60	5.05	4.73	4.99	4.51	4.78	2.84	5.21
10–14	4.76	4.72	4.63	4.31	4.41	4.29	4.17	2.55	4.60
15–19	8.74	7.95	9.07	8.36	7.73	8.60	7.47	5.40	8.43
20–24	12.45	11.50	11.97	11.25	10.29	11.98	10.05	7.48	11.72
25–34	14.14	13.82	13.29	13.02	12.20	12.80	12.09	9.01	13.51
35–44	13.02	12.12	12.08	11.50	10.93	10.97	10.76	8.66	12.17
45–54	15.06	13.73	14.24	13.07	12.51	13.02	12.04	10.10	14.02
55–64	18.23	16.50	16.99	15.47	14.88	15.40	15.00	10.42	16.87
65–74	21.81	20.06	20.81	18.73	18.36	17.94	18.43	12.75	20.45
75 and over	24.82	24.95	25.05	22.10	23.05	21.34	22.74	15.46	24.36
Crude rate	**13.68**	**12.92**	**12.78**	**11.75**	**11.98**	**11.82**	**10.83**	**7.38**	**12.85**
ASR(a)	**12.93**	**12.19**	**12.41**	**11.42**	**11.16**	**11.29**	**10.94**	**7.87**	**12.24**

(a) Age-standardised to the total Australian population at 30 June 1991.

Source: HIC 1997.

Table S52: Medicare items, percentage of enrolled persons by number of items, by age group and sex, 1996–97

	Number of items					
Sex/age group	**0**	**1**	**2**	**3**	**4**	**5 or more**
Males						
0–4	6.56	6.65	7.28	7.49	7.28	64.74
5–9	13.97	12.54	11.68	10.21	8.75	42.85
10–14	18.26	15.03	12.84	10.44	8.40	35.03
15–19	18.78	14.58	11.96	9.72	7.85	37.11
20–24	20.60	13.69	10.98	8.89	7.34	38.50
25–34	21.88	13.60	10.61	8.39	6.87	38.65
35–44	19.59	12.56	9.65	7.68	6.46	44.06
45–54	15.17	10.65	8.14	6.60	5.74	53.70
55–64	11.29	6.81	5.49	4.77	4.56	67.08
65–74	12.95	4.56	3.87	3.45	3.39	71.78
75 and over	20.03	3.87	3.23	2.70	2.70	67.47
All ages	**16.83**	**11.07**	**9.07**	**7.52**	**6.44**	**49.07**
Females						
0–4	7.34	7.50	7.97	8.00	7.73	61.46
5–9	14.23	12.92	11.77	10.28	8.63	42.17
10–14	18.16	15.36	12.95	10.38	8.22	34.93
15–19	11.35	10.27	9.43	8.24	7.11	53.60
20–24	7.34	5.69	5.82	5.88	5.79	69.48
25–34	8.48	5.33	5.07	5.28	5.25	70.59
35–44	9.31	6.67	5.79	5.96	5.76	66.51
45–54	7.74	5.74	5.01	4.99	5.00	71.52
55–64	7.07	4.38	4.05	4.08	4.12	76.30
65–74	8.28	3.14	3.09	3.10	3.22	79.17
75 and over	12.62	2.13	2.19	2.21	2.38	78.47
All ages	**9.75**	**6.83**	**6.28**	**5.99**	**5.62**	**65.53**

Source: HIC 1997.

National Health Priority Areas

Table S53: Status of indicators for cardiovascular health

	Baseline		Most recent data	
Descriptor	**Year**	**Value**	**Year**	**Value**
Death rate for coronary heart disease among adults aged 25–74 years (deaths per 100,000 population)				
Men	1992	179.9	1996	141.5
Women	1992	67.7	1996	49.5
Death rate for coronary heart disease among Indigenous people (deaths per 100,000 population)				
Males	1992	342	1996	251
Females	1992	240	1996	172
Prevalence of smoking among adults aged 18 years and over (per cent)				
Men	1989–90	31.6	1995	27.6
Women	1989–90	25.1	1995	20.6
Prevalence of smoking among 15-year-old secondary school students (per cent)				
Males	1990	22	1993	24
Females	1990	29	1993	28
Percentage of adults not engaged in physical activity in a 2-week period				
Men	1989–90	35.6	1995	33.3
Women	1989–90	36.0	1995	34.2
Average contribution of fat as a proportion of total energy intake in the food supply (per cent)				
Proportion of total energy intake	1990–91	33.3	1993–94	33.3
Contribution of saturated fat as a proportion of total energy intake among 25–64-year-olds (per cent)				
Men	1983	15.9	n.a.	n.a.
Women	1983	16.3	n.a.	n.a.
Proportion of adults aged 20–69 years with high blood cholesterol (per cent)				
Men	1989	16.0	n.a.	n.a.
Women	1989	15.4	n.a.	n.a.
Proportion of adults who are overweight (per cent)				
Men	1989–90	44.4	1995	51.3
Women	1989–90	30.9	1995	36.2
Proportion of adults aged 20–69 years with high blood pressure (per cent)				
Men	1989	12.9	1995	8.3
Women	1989	6.3	1995	4.1

n.a. not available.

Sources: AIHW & DHFS 1997; AIHW Mortality Database; AIHW Hospital Morbidity Database.

Table S54: Status of indicators for cancer control

	Baseline		Most recent data	
Descriptor	**Year**	**Value**	**Year**	**Value**
Incidence of cancer of the trachea, bronchus and lung (new cases per 100,000 population)				
Males	1983	74.8	1994	63.1
Females	1983	17.1	1994	21.1
Death rate for cancer of the trachea, bronchus and lung (deaths per 100,000 population)				
Males	1986	64.4	1996	55.4
Females	1986	16.1	1996	19.4
Incidence of melanoma of the skin (new cases per 100,000 population)				
Males	1988	40.1	1994	42.9
Females	1988	32.9	1994	32.4
Death rate for melanoma of the skin (deaths per 100,000 population)				
Males	1991	6.5	1996	6.7
Females	1991	3.2	1996	3.0
Incidence of (treated) non-melanocytic skin cancer (new cases per 100,000 population)				
Males	1990	1,187	n.a.	n.a.
Females	1990	769	n.a.	n.a.
Death rate for non-melanocytic skin cancer (deaths per 100,000 population)				
Males	1991	2.8	1996	3.1
Females	1991	0.6	1996	1.0
Incidence of cancer of the cervix among women aged 20–74 years (new cases per 100,000 population)				
Women aged 20–74 years	1988	17.6	1994	16.5
Death rate for cancer of the cervix among women aged 20–74 years (deaths per 100,000 population)				
Women aged 20–74 years	1991	4.3	1996	3.4
Incidence of breast cancer among women aged 50–74 years (new cases per 100,000 population)				
Women aged 50–74 years	1988	202.4	1994	297.2
Death rate for breast cancer among women aged 50–74 years (deaths per 100,000 population)				
Women aged 20–74 years	1992	68.7	1996	69.0
Incidence of colorectal cancer (new cases per 100,000 population)				
Males	1988	60.2	1994	65.6
Females	1988	42.0	1994	44.9
Death rate for colorectal cancer (deaths per 100,000 population)				
Males	1992	29.7	1996	29.2
Females	1992	19.7	1996	18.9
Incidence of prostate cancer (new cases per 100,000 population)				
Males	1988	68.4	1994	158.7
Death rate for prostate cancer (deaths per 100,000 population)				
Males	1992	33.7	1996	33.1

n.a. not available.

Sources: AIHW & DHFS 1997; AIHW Mortality Database; AIHW Hospital Morbidity Database.

Table S55: Status of indicators for injury prevention and control

Descriptor	Baseline		Most recent data	
	Year	Value	Year	Value
Death rate for injury and poisoning in the total population (deaths per 100,000 population)				
Total population	1992	42.0	1996	40.1
Hospital separation rate for injury and poisoning in the total population (separations per 100,000 population)				
Total population	1991–92	1,714	1995–96	2,078
Death rate ratio comparing the injury status of Indigenous and other populations				
Males	1989–91	3.6	1993–95	3.4
Females	1989–91	4.6	1993–95	3.9
Death rate ratio comparing the injury status of males and females				
Male:Female	1992	2.6	1996	3.0
Death rate for road transport-related injury in the total population, and among males aged 15–24 years (deaths per 100,000 population)				
Total population	1992	12.0	1996	10.8
Males aged 15–24 years	1992	31.5	1996	32.2
Hospital separation rate for road transport-related injury in the total population, and among males aged 15–24 years (separations per 100,000 population)				
Total population	1990	232	1995–96	235
Males aged 15–24 years	1990	658	1995–96	665
Death rate due to falls among people aged 65 years and over (deaths per 100,000 population)				
Aged 65 years and over	1992	39.3	1996	38.2
Hospital separation rate due to falls among people aged 65 years and over (separations per 100,000 population)				
Men aged 65–74 years	1991–92	668	1995–96	886
Women aged 65–74 years	1991–92	1,225	1995–96	1,456
Men aged 75 years and over	1991–92	2,242	1995–96	3,059
Women aged 75 years and over	1991–92	4,554	1995–96	5,871
Hospital separation rate due to falls among children aged 0–4 and 5–9 years (separations per 100,000 population)				
Aged 0–4 years	1991–92	502	1995–96	578
Aged 5–9 years	1991–92	668	1995–96	777
Death rate for homicide among people aged 20–39 years (deaths per 100,00 population)				
Men	1992	3.4	1996	4.1
Women	1992	2.4	1996	1.4
Death rate for homicide among children aged 0–9 years (deaths per 100,000 population)				
Aged 0–9 years	1992	0.6	1996	0.9
Death rate for injury resulting from fire, burns and scalds among people aged 55 years and over (deaths per 100,000 population)				
Aged 55 years and over	1992	2.4	1996	1.4
Hospital separation rate for injury resulting from fire, burns and scalds among children aged 0–4 years (separations per 100,000 population)				
Boys	1991–92	167	1995–96	143
Girls	1991–92	127	1995–96	99

(continued)

Table S55 (continued): Status of indicators for injury prevention and control

	Baseline		Most recent data	
Descriptor	**Year**	**Value**	**Year**	**Value**
Hospital separation rate due to poisoning among children aged 0–4 years (separations per 100,000 population)				
Aged 0–4 years	1991–92	302	1995–96	301
Death rate for drowning in the total population and among children aged 0–4 years (deaths per 100,000 population)				
Total population	1992	1.7	1996	1.4
Children aged 0–4 years	1992	5.9	1996	4.6
Hospital separation rate for near-drowning among children aged 0–4 years (separations per 100,000 population)				
Aged 0–4 years	1991–92	29.5	1995–96	25.1
Incidence rate for persistent spinal cord injury from traumatic causes (incidence per 100,000 population)				
Total population	1995–96	1.34	n.a.	n.a.
Death rate ratio comparing the injury status among people living in rural and remote areas and the general population				
Male, Capital	n.a.	n.a.	1991–95	0.89
Male, Other metropolitan	n.a.	n.a.	1991–95	0.98
Male, Large rural	n.a.	n.a.	1991–95	1.10
Male, Small rural	n.a.	n.a.	1991–95	1.08
Male, Other rural	n.a.	n.a.	1991–95	1.28
Male, Remote centre	n.a.	n.a.	1991–95	1.51
Male, Other remote	n.a.	n.a.	1991–95	1.90
Female, Capital	n.a.	n.a.	1991–95	0.94
Female, Other metropolitan	n.a.	n.a.	1991–95	0.98
Female, Large rural	n.a.	n.a.	1991–95	0.98
Female, Small rural	n.a.	n.a.	1991–95	1.03
Female, Other rural	n.a.	n.a.	1991–95	1.19
Female, Remote centre	n.a.	n.a.	1991–95	1.33
Female, Other remote	n.a.	n.a.	1991–95	1.96

n.a. not available.

Sources: AIHW & DHFS 1997; AIHW Mortality Database; AIHW Hospital Morbidity Database.

Table S56: Status of indicators for mental health

	Baseline		Most recent data	
Descriptor	**Year**	**Value**	**Year**	**Value**
Death rate for suicide (deaths per 100,000 population)				
Total population	1990	12.7	1996	13.0
Males aged 15–34 years	1990	28.2	1996	29.0
Men aged 65 years and over	1990	29.1	1996	26.1

n.a. not available.

Sources: AIHW & DHFS 1997; AIHW Mortality Database; AIHW Hospital Morbidity Database.

References

Australian Bureau of Statistics (ABS). Australian demographic statistics. Cat. No. 3101.0. Canberra: ABS.

Australian Bureau of Statistics (ABS). Births Australia. Cat. No. 3301.0. Canberra: ABS.

Australian Bureau of Statistics (ABS). Deaths Australia. Cat. No. 3302.0. Canberra: ABS.

Australian Bureau of Statistics (ABS). Estimated resident population by sex and age, States and Territories of Australia. Cat. No. 3201.0. Canberra: ABS.

Australian Bureau of Statistics (ABS). Labour force Australia. Cat. No. 6203.0. Canberra: ABS.

Australian Bureau of Statistics (ABS). Perinatal deaths Australia. Cat. No. 3304.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1977. Births 1975. Cat. No. 4.4. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1997a. Births Australia, 1996. Cat. No. 3301.0. Canberra: ABS.

Australian Bureau of Statistics (ABS) 1997b. Deaths Australia, 1996. Cat. No. 3302.0. Canberra: ABS.

Australian Institute of Health and Welfare (AIHW) 1997. Australian hospital statistics 1995–96. Health Services Series No. 10. AIHW Cat. No. HSE 3. Canberra: AIHW.

AIHW National Perinatal Statitistics Unit 1997. Australia's mothers and babies 1995. Perinatal Statistics Series No. 6. Sydney: AIHW National Perinatal Statistics Unit.

Australian Institute of Health and Welfare (AIHW) & (Commonwealth) Department of Health and Family Services (DHFS) 1997. First report on national health priority areas 1996. AIHW Cat. No. PHE 1. Canberra: AIHW & DHFS.

Australian Institute of Health and Welfare (AIHW) & Australasian Association of Cancer Registries (AACR) 1998. Cancer in Australia 1991–1994 (with projections to 1999). Cancer Series No. 7. Canberra: AIHW (in press).

Commonwealth Statistician 1925. Census of the Commonwealth of Australia taken for the night between the 3rd and 4th April, 1921. Part 1—Ages. Melbourne: Government Printer.

Commonwealth Bureau of Census and Statistics (CBCS) 1943. Demography 1941. Bulletin No. 59. Canberra: Government Printer.

Commonwealth Bureau of Census and Statistics (CBCS) 1963. Demography 1962. Bulletin No. 80. Canberra: Government Printer.

Commonwealth Bureau of Census and Statistics (CBCS) 1970a. Census of population and housing, 30 June 1966. Volume 1, Part 1—Age. Canberra: Government Printer.

Commonwealth Bureau of Census and Statistics (CBCS) 1970b. Demography 1967 and 1968. Bulletin no. 85. Canberra: Government Printer.

(Commonwealth) Department of Health, Housing, Local Government and Community Services (DHHLGCS) 1993. Annual report 1992–93. Canberra: AGPS.

(Commonwealth) Department of Human Services and Health (DHSH) 1994. Communicable Diseases Intelligence 18(23), 14 November 1994. Canberra: DHSH.

(Commonwealth) Department of Human Services and Health (DHSH) 1995a. Communicable Diseases Intelligence 19(22), 30 October 1995. Canberra: DHSH.

(Commonwealth) Department of Human Services and Health (DHSH) 1995b. Communicable Diseases Intelligence 19(23), 13 November 1995. Canberra: DHSH.

(Commonwealth) Department of Health and Family Services (DHFS) 1996. Communicable Diseases Intelligence 20(21), 14 October 1996. Canberra: DHFS.

(Commonwealth) Department of Health and Family Services (DHFS) 1997. Communicable Diseases Intelligence 21(20), 2 October 1997. Canberra: DHFS.

(Commonwealth) Department of Health and Family Services (DHFS) 1998. Medicare statistics, December quarter 1997. Canberra: DHFS.

d'Espaignet ET, van Ommeren M, Taylor F, Briscoe N & Pentony P 1991. Trends in Australian mortality 1921–1988. Australian Institute of Health and Welfare, Mortality Series No. 2. Canberra: AGPS.

Health Insurance Commission (HIC) 1992. Annual report 1991–92. Canberra: HIC.

Health Insurance Commission (HIC) 1993. Annual report 1992–93. Canberra: HIC.

Health Insurance Commission (HIC) 1994. Annual report 1993–94. Canberra: HIC.

Health Insurance Commission (HIC) 1995. Annual report 1994–95. Canberra: HIC.

Health Insurance Commission (HIC) 1996. Annual report 1995–96. Canberra: HIC.

Health Insurance Commission (HIC) 1997. Annual report 1996–97. Canberra: HIC.

Hill DJ & White VM 1995. Australian adult smoking prevalence in 1992. Aust J Public Health 19:305–8.

Hill DJ, White VM & Gray NJ 1988. Measures of tobacco smoking in Australia 1974–1986 by means of a standard method. Med J Aust 149:10–12.

Hill DJ, White VM & Gray NJ 1991. Australian patterns of tobacco smoking in 1989. Med J Aust 154:797–801.

Hill DJ, White VM & Scollo MM 1998. Smoking behaviours of Australian adults in 1995: trends and concerns. Med J Aust 168:209–13.

Jelfs P, Coates M, Giles G, Shugg D et al. 1996. Cancer in Australia 1989–90 (with projections to 1995). Cancer Series No. 5. Canberra: AIHW.

Lancaster P, Huang J & Lin M 1996. Australia's mothers and babies 1993. AIHW Perinatal Statistics Series No. 3. Sydney: AIHW National Perinatal Statistics Unit.

National Centre in HIV Epidemiology and Clinical Research (NCHECR) 1997. HIV/AIDS and related diseases in Australia: annual surveillance report 1997. Sydney: NCHECR.

Office of the Australian Government Actuary 1985. Australian life tables 1980–82. Canberra: AGPS.

Parkin DM, Whelan SL, Ferlay J, Raymond L & Young J, eds 1997. Cancer incidence in five continents, Volume 7. IARC Scientific Publications No. 143. Lyon: International Agency for Research on Cancer.

United Nations (UN) 1995. 1993 demographic yearbook. New York: Department for Economic and Social Information and Policy Analysis.

United Nations (UN) 1997. 1995 demographic yearbook. New York: Department for Economic and Social Information and Policy Analysis.

World Health Organization (WHO) 1994. World health statistics annual, 1993. Geneva: WHO.

World Health Organization (WHO) 1995. World health statistics annual, 1994. Geneva: WHO.

World Health Organization (WHO) 1996. World health statistics annual, 1995. Geneva: WHO.

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 = $((Pn/Po)^{1/N} - 1) \times 100$

where P_n = value in later time period

P_o = value in earlier time period

N = number of years between the two time periods.

The classification of diseases follows the Ninth Revision of the International Classification of Diseases (WHO 1977), and as adapted for hospital indexing by the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (CPHA 1991).

Symbols

$	Australian dollars, unless otherwise specified
–	zero
%	per cent
g	gram
kcal	kilocalorie
kg	kilogram
kJ	kilojoule
km^2	square kilometres
mm Hg	millimetres of mercury
mmol/L	millimoles per litre
n.a.	not applicable, not available
nec	not elsewhere classified
wk	week

References

Australian Bureau of Statistics (ABS) 1993. Estimated resident population by sex and age. States and Territories of Australia. June 1991 and preliminary June 1992. Cat. No. 3201.0. Canberra: ABS.

Commission on Professional and Hospital Activities (CPHA) 1991. The international classification of diseases, 9th revision, clinical modification, 8th edition. Ann Arbor, Michigan: CPHA.

World Health Organization (WHO) 1977. Manual of the international statistical classification of diseases, injuries and causes of death. Ninth revision, volumes 1 and 2. Geneva: WHO.

World Health Organization (WHO) 1996. World health statistics annual, 1995. Geneva: WHO.

Abbreviations

AACR	Australian Association of Cancer Registries
ABS	Australian Bureau of Statistics
ACCSIS	Aged and Community Care Strategic Information System
ACHS	Australian Council on Healthcare Standards
ACIR	Australian Childhood Immunisation Register
AGPS	Australian Government Publishing Service
AHMAC	Australian Health Ministers' Advisory Council
AHMC	Australian Health Ministers' Conference
AIDS	Acquired immune deficiency syndrome
AIHW	Australian Institute of Health and Welfare
ALOS	Average length of stay
AMTS	Australian Morbidity and Treatment Survey
AMWAC	Australian Medical Workforce Advisory Committee
AN-DRG	Australian National Diagnosis Related Group
ASCIR	Australian Spinal Cord Injury Register
ASCCSS	Australian Standard Classification of Countries for Social Statistics
ASR	Age-standardised rate
BEACH	Bettering the Evaluation and Care for Health
BMI	Body mass index
CBCS	Commonwealth Bureau of Census and Statistics
CDC	Centers for Disease Control
CGC	Commonwealth Grants Commission
CHD	Coronary heart disease
CIDI	Composite International Diagnostic Interview
COAG	Council of Australian Governments
COPD	Chronic obstructive pulmonary disease
CPHA	Commission on Professional and Hospital Activities
CVD	Cardiovascular disease

DALY	Disability-adjusted life year
DCSH	Department of Community Services and Health
DEETYA	Department of Employment, Education, Training and Youth Affairs
DHFS	Department of Health and Family Services
DHHLGCS	Department of Health, Housing, Local Government and Community Services
DHSH	Department of Human Services and Health
dmfs	Decayed, missing or filled primary teeth surfaces
DMFS	Decayed, missing or filled permanent teeth surfaces
dmft	Decayed, missing or filled primary teeth
DMFT	Decayed, missing or filled permanent teeth
DPIE	Department of Primary Industries and Energy
DRG	Diagnosis Related Group
DSRU	AIHW Dental Statistics and Research Unit
DTP	Diptheria, tetanus, pertussis (Triple Antigen vaccine)
FAP	Familial adenomatous polyposis
FDI	Federation Dentaire Internationale
FORS	Federal Office of Road Safety
FTE	Full-time equivalent
GDM	Gestational diabetes mellitus
GDP	Gross domestic product
GIFT	Gamete intra-fallopian transfer
GP	General practitioner
Hib	Haemophilus influenzae type b
HIC	Health Insurance Commission
HIV	Human immunodeficiency virus
ICD	International Classification of Diseases
ICD-9	International Classification of Diseases, 9th Revision
ICD-9-CM	International Classification of Diseases, 9th Revision, Clinical Modification
ICD-10	International Classification of Diseases, 10th Revision
ICD-10-AM	International Classification of Diseases, 10th Revision, Australian Modification
ICIDH	International Classification of Impairments, Disabilities and Handicaps

ID	Intravenous drug
IDDM	Insulin-dependent diabetes mellitus
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
ITDM	Insulin-treated diabetes mellitus
IVF	In-vitro fertilisation
MBS	Medicare Benefits Schedule
MCS	Mental component summary (of the SF-36)
MDC	Major Diagnostic Category
MET	Metabolic rate
MONICA	Multinational monitoring of trends and determinants in cardiovascular disease
MTI	Morbidity and Therapeutic Index
MTS	Morbidity and Treatment Survey
NATSEM	National Centre for Social and Economic Modelling
NATSIS	National Aboriginal and Torres Strait Islander Survey
NCC	National Coding Centre
NCCH	National Centre for Classification in Health
NCEPH	National Centre for Epidemiology and Population Health
NCHECR	National Centre in HIV Epidemiology and Clinical Research
NCIS	National Coronial Information System
NCSDD	National Community Services Data Dictionary
NDARC	National Drug and Alcohol Research Centre
NHDC	National Health Data Committee
NHDD	National Health Data Dictionary
NHF	National Heart Foundation
NHIA	National Health Information Agreement
NHIDP	National Health Information Development Plan
NHIM	National Health Information Model
NHIMG	National Health Information Management Group
NHIWP	National Health Information Work Program
NHL	non-Hodgkin's lymphoma
NHMBWG	National Health Ministers' Benchmarking Working Group

NHMRC	National Health and Medical Research Council
NHPA	National Health Priority Areas
NHPC	National Health Priority Committee
NHS	National Health Survey
NIDDM	Non-insulin-dependent diabetes mellitus
NISU	AIHW National Injury Surveillance Unit
NMSC	Non-melanocytic skin cancer
NNS	National Nutrition Survey
NPHP	National Public Health Partnership
NTD	Neural tube defect
OATSIHS	Office for Aboriginal and Torres Strait Islander Health Services
OECD	Organisation for Economic Co-operation and Development
OMP	Other medical practitioner
Pap	Papanicolaou
PBS	Pharmaceutical Benefits Scheme
PEI	Patient episode initiation
PHIAC	Private Health Insurance Advisory Council
PSA	Prostate-specific antigen
PYLL	Potential years of life lost
RACGP	Royal Australian College of General Practitioners
RDI	Recommended Dietary Intake
RFE	Reasons for encounter
RRMA	Rural, Remote and Metropolitan Areas classification
SAAP	Supported Accommodation Assistance Program
SCEU	Single contributor equivalent unit
SCI	Spinal cord injury
SCRCSSP	Steering Committee for the Review of Commonwealth/State Service Provision
SF-36	Medical Outcomes Study Short-Form 36
SIDS	Sudden infant death syndrome
SLA	Statistical local area
SMR	Standardised mortality ratio
UN	United Nations

VRGP	Vocationally Registered General Practitioner
WHO	World Health Organization

Abbreviations of places

ACT	Australian Capital Territory
Aust	Australia
Can	Canada
Fra	France
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: Having a short and relatively severe course.

acute hospitals: Public, Department of Veterans' Affairs (repatriation) and private hospitals which provide services predominantly to admitted patients with acute or temporary ailments; the average length of stay is relatively short.

admission: Admission to hospital. In this report, the number of separations (q.v.) 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 7.1, page 198.

affective disorders: A mood disturbance. Includes mania, hypomania, bipolar affective disorder, depression and dysthymia.

age-specific death rate: See Box 2.1, page 8.

age-specific rate: A rate for a specific age group. The numerator and denominator relate to the same age group.

age-standardised death rate: See Box 2.1, page 8.

age-standardised rate: Weighted average of age-specific rates according to a standard distribution of age to eliminate the effect of different age distributions and thus facilitate valid comparison of groups with differing age compositions.

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.

angina: Temporary chest pain or discomfort caused by a reduced blood supply to the heart muscle.

anxiety disorders: Feelings of tension, distress or nervousness. Includes agoraphobia, social phobia, panic disorder, generalised anxiety disorder, obsessive–compulsive disorder and post-traumatic stress disorder.

atherosclerosis: A process that gradually clogs arteries, with fatty deposits building up on the inner walls of the arteries.

available beds: Beds immediately available for use by admitted patients as required.

average length of stay (ALOS): The average of the length of stay for admitted patient episodes.

bipolar affective disorder: Characterised by repeated episodes in which the person's mood and activity levels are significantly disturbed by occasions of both depression and mania.

blood cholesterol: Fatty substance produced by the liver and carried by the blood to supply the rest of the body.

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.

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 number and type of acute admitted patients treated in a hospital.

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 ninth revision of the International Classification of Diseases (q.v.). The underlying cause is defined as the disease which 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: A procedure using drugs (chemicals) to prevent or treat disease, the term being most often applied to treatment for cancer rather than for other conditions.

chronic: Persisting over a long period.

chronic bronchitis: Long-term lung condition with inflammation of the main air passages causing frequent coughing attacks and coughing up of mucus.

chronic obstructive pulmonary disease: A combination of emphysema and chronic bronchitis-related conditions, where damage to the lungs tends to obstruct their oxygen intake.

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).

co-morbidity: The occurrence of two or more diseases or health problems at the same time.

confidence interval: A range determined by variability in data, within which there is a specified (usually 95%) chance that the true value of a calculated parameter (e.g. relative risk) lies.

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 an environmental factor.

coronary heart disease: Diseases such as heart attack and angina, caused by blockages in the coronary arteries that supply blood to the heart muscle.

crude death rate: See Box 2.1, page 8.

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 food-borne.

dentate: Have one or more natural teeth.

dementia: Loss or impairment of intellectual faculties, reasoning power and memory due to a disease of the brain.

depression: A state of gloom, despondency or sadness lasting at least 2 weeks.

diagnosis related groups (DRGs): DRGs are a means of classifying hospital patients to provide a common basis for comparing factors such as cost-effectiveness and quality of care across hospitals. Each DRG represents a class of patients with similar clinical conditions requiring similar hospital services. See Box 7.2, page 202.

diphtheria: A bacterial infection that usually starts with sore 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: The presence of one or more of fifteen restrictions, limitations or impairments (see Box 2.3, page 22).

disability-adjusted life year (DALY): Years of healthy life lost through premature death or living with disability due to illness or injury.

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.

employed: Employed people are those aged 15 years and over who, during the reference week: worked for 1 hour or more for pay; worked for 1 hour or more without pay in a family business; or had a job but were not at work because of leave or other reasons. Unemployed are those aged 15 years and over who were not employed in the reference week and: had actively looked for work; were available for work; or were waiting to start a new job or be called back to a job from which they had been stood down for less than 4 weeks. The labour force comprises employed and unemployed; others are described as not in the labour force (ABS Cat. No. 6203.0).

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.

enterohaemorrhagic* E. coli *infection: a disease marked by diarrhoea that can be mild, or severe and bloody, and sometimes also the haemolytic-ureamic 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.

epidemiology: The study of the distribution and determinants of health-related states and events in populations, and the application of this study to control of health problems.

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.

foetal death: Birth of a foetus weighing at least 500 grams (or, where birthweight is unavailable, of at least 22 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 disorder characterised by unrealistic or excessive anxiety and worry about life circumstances over an extended period.

handicap: A disadvantage resulting from impairment or disability that limits or prevents the fulfilment of a role that is normal (see Box 2.3, page 22).

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 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: Emergency illness that occurs when a vessel supplying blood to the heart muscle is suddenly blocked by a blood clot.

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.

Hodgkin's lymphoma: A particular cancer of the lymphatic system (lymph glands and the channels they are linked to), named after the English physician who described it.

hostels: Establishments providing board, lodging or accommodation for the aged, distressed, or disabled who cannot live independently but who do not need nursing care in a hospital or nursing home. Residents are generally responsible for their own provisions, but may be provided with domestic assistance (meals, laundry, personal care). Only hostels subsidised by the Commonwealth are included in statistics.

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 elevation of mood and increased activity lasting at least 4 days.

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 instances of illness commencing, or of persons falling ill, during a given period.

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.

International Classification of Diseases: WHO's internationally accepted classification of death and disease. The Ninth Revision (ICD-9) is currently in use. In this report, causes of death classified before 1979 under previous revisions have been reclassified to ICD-9 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.

ischaemic heart disease: Disease due to a disturbed blood supply to the heart; basically another term for 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: Average 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 food-borne. 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.

mania: A disorder in which mood is happy, elevated, expansive or irritable out of keeping with the person's circumstances lasting at least 7 days.

Major Diagnostic Categories (MDCs): A high level of groupings of patients used in the AN-DRG classification.

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.

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 disorder: The existence of a clinically recognisable set of symptoms or behaviour associated in most cases with distress and with interference with personal functions.

morbidity: Any departure, subjective or objective, from a state of physiological or psychological wellbeing.

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.

neonatal death: Death of an infant within 28 days of birth.

neonatal mortality rate: Number of neonatal deaths per 1,000 live births.

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.

occasion of service: Occurs when a patient attends a functional unit of the hospital for the purpose of receiving some form of service, but is not admitted.

obsessive–compulsive disorder: A disorder characterised by recurrent, persistent ideas, thoughts, images or impulses that intrude into the consciousness against a person's will.

ophthalmology: A medical specialty dealing with eye diseases.

Organisation for Economic Co-operation and Development (OECD): An organisation of 24 developed countries, including Australia.

panic disorder: Characterised by panic attacks (discrete episodes of intense fear or discomfort) that occur suddenly and unpredictably.

Pap smear: Papanicolaou smear, a procedure for the detection of cancer and pre-cancerous conditions of the female genital tract.

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 the provision of 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: Reduced blood supply to the legs, causing pain when walking.

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.

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: A delayed and/or protracted response to a psychologically distressing event, usually associated with fear, terror and helplessness.

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 of instances of a given disease or other condition in a given population at a designated time.

principal diagnosis: The diagnosis established after study to be chiefly responsible for occasioning 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 6.3, page 174.

private hospitals: Privately owned and operated institutions, 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: Eligible persons who, on admission, elect to be treated by the medical practitioner of their own choice and who are charged fees for accommodation and other services provided by the hospital and relevant medical practitioners, or elect to be accommodated in a single room in a public hospital.

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, mental or behavioural disorders.

public health: Health activities which aim to benefit a population. Prevention, protection and promotion of health are emphasised, 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 hospitals: Establishments controlled by State and Territory health authorities which provide acute care. They provide free shared-ward accommodation and treatment by a hospital-appointed doctor. In addition, they provide, to those who choose to be private patients, private ward accommodation and/or doctor of choice.

public patients: Eligible persons who, on admission to a public hospital, elect to be public patients and who are not charged for the care and treatment provided by the hospital.

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.

rheumatic heart disease: Disease from damaged heart valves caused by childhood attack of rheumatic fever.

risk factor: An attribute or exposure that is associated with an increased probability of a specified outcome, such as the occurrence of a disease. Risk factors are not necessarily causes of disease.

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 disorder characterised by fundamental distortions of thinking and perception, marked by a tendency to withdraw from reality and inappropriate responses and mood.

separation: The formal process by which a hospital records the completion of treatment and/or care for an admitted patient. See Box 7.1, page 198.

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.

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.

stillbirth: See *foetal death*.

stroke: 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.

substance use disorders: Result from harmful use and/or dependence on drugs and/or alcohol.

symptom: Any evidence of disease apparent to the patient.

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.

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.

tuberculosis: A bacterial disease that affects the lungs especially, with serious fever-like symptoms and destruction of tissue; can spread to other parts of the body, causing secondary problems and often death if not treated.

vaccination: The process of administering a vaccine to a person to produce immunity against infection. See *immunisation*.

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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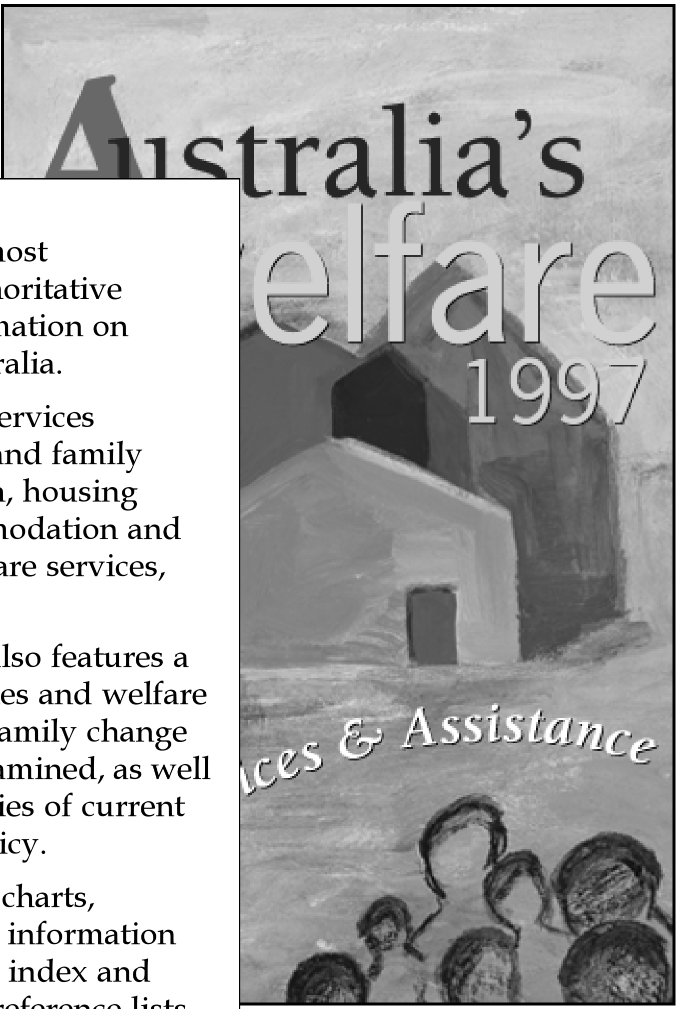
Australia's Welfare 1997



Australia's welfare 1997 is the most comprehensive and authoritative source of national information on welfare services in Australia.

Topics include welfare services expenditure, children's and family services, child protection, housing assistance, crisis accommodation and support services, aged care services, and disability services.

Australia's Welfare 1997 also features a special chapter on families and welfare services. The impact of family change on welfare services is examined, as well as implications for families of current directions in welfare policy.

The text is backed by 33 charts, 213 tables and 29 special information boxes. A comprehensive index and glossary, and extensive reference lists, are also included.

Australia's Welfare 1997 (AIHW Cat. No. AUS 8) is available from Government Info Shops or AusInfo Mail Order Sales, toll-free on 132 447, or from ABS bookshops.

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