Australia's children: their health and wellbeing 1998

The first report on children's health by the Australian Institute of Health and Welfare

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Preface

Australia's Children: Their Health and Wellbeing 1998 is the first national report on the health status of Australian children. Included in this report is information on important diseases and injuries, major risk factors and wider determinants of health and wellbeing. Separate sections are presented on the health status of particular priority groups (Indigenous children, children living in rural and remote locations, overseas-born children, and children from socioeconomically disadvantaged groups). International comparisons are also included. Much of the information has not previously been published.

This report is the first in a series of biennial reports on the health of Australian children and youth to be published by the Institute. The first youth health report in the series will be published in 1999.

Initial input on the structure and content of this report was provided by participants at the Workshop on the National Child Health Information Framework, held in March 1998. The newly formed National Child Health Information Advisory Committee also provided valued contributions to the structure of the report. Individual members of the Advisory Committee and others have commented on specific areas of the report. However, the content of the report remains the responsibility of the Australian Institute of Health and Welfare.

This report was funded by the Commonwealth Department of Health and Aged Care.

Richard Madden
Director

Part I: Background information

Chapter 1: Introduction

Chapter 2: Population characteristics

1 Introduction

Compared with many parts of the world, Australian children enjoy relatively high levels of health. However within Australia, some groups of children are disadvantaged in their health status compared with others. Indigenous children are one such group.

The health status of children, as measured by the more widely used health indicators, is also relatively high compared with other age groups in the community. Childhood mortality rates are generally lower than for older people (AIHW 1998a). The exception is for very young children—mortality rates experienced in early life are exceeded only by people aged older than approximately 40 years. In terms of morbidity, children generally have lower rates of disease than older Australians. This is largely a reflection of the fact that many of the most prevalent diseases in Australia today are diseases related to age—the longer people live, the more likely they are to develop these diseases. Obvious examples include cardiovascular disease and most types of cancer. However, there are a number of conditions that are particularly important in childhood, including conditions specific to early infancy (for example, those associated with low birthweight and short gestation), injury, asthma, sudden infant death syndrome and mental health problems.

This report—the first national statistical report on the health of Australian children—presents information on both the health status of Australian children and on determinants of health. This reflects the importance of factors and behaviours that affect health status, both in childhood and into adulthood (for example, sun protection and diet). The significance of healthy children and healthy behaviours in children for future generations of healthy adults is recognised (Barker 1992). A previous report (Mathers 1995) included detailed information on health differentials of children from different sub-population groups.

In the national monitoring of child health, a broad definition of health which also includes concepts of wellbeing is used. This is consistent with the World Health Organization's definition of health (WHO 1946):

> a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity.

This definition identifies health as a positive entity. Departures from 'complete' health, such as disease, are important to measure when examining health status. However, the absence of disease does not necessarily mean that the person (or child) is 'healthy'.

Despite the desire to measure health as defined above, the majority of information on the health and wellbeing of children (at least currently) mainly relates to mortality, morbidity, or determinants of health. This is at least in part due to difficulties in measuring such a broad concept as 'wellbeing' (AIHW 1998a).

Probably more so than at any other stage of life, children's health is very much influenced by the family and by the wider community. For this reason, information is included in this report on the interaction between children's health and family and social environmental factors. Note, however, that information in these areas in particular needs to be developed further to allow comprehensive reporting at the national level.

In general, information presented in this report is about young Australians under the age of 15 years. This is related more to the availability of some data only in 5-year age groups, rather than to a desire to define childhood as finishing at age 15. The transition from childhood to young adulthood is a gradual process, beginning and ending at different ages for different individuals.

This report provides a comprehensive picture of the health status of Australian children based on available information. There is currently work under way to identify: the most appropriate means for reporting national child health information; the availability of corresponding data; and how best to collect the data not currently available (further details are outlined below). It is hoped that data on further aspects of child health will be available for subsequent reports.

There have been a number of health policy documents relating to children published in Australia in recent years. This report concentrates on child health information, but these documents provide valuable contextual background. The main health policy documents relevant to this report are outlined briefly below.

- *The Health of Young Australians: A National Health Policy for Children and Young People* (DHSH 1995) is a joint statement by the Health Ministers of the Commonwealth, States and Territories of Australia. Its stated intention is to set a clear direction for the future development of health and health-related services for children and young people in Australia.

  The document lists seven 'key action areas', one of which is 'research, information and monitoring'. Strategic directions particularly relevant to the national monitoring of child health in this key action area include:
  - collections of data including measures of changes over time in the health status of children and young people, together with regular public reporting and dissemination of results;
  - use of this data to: guide priorities within health care delivery; evaluate health services and programs; feed into mechanisms aimed at improving the standards of health care delivery and health outcomes for children and young people; refocus research towards population-based needs and priorities; and inform communities, health providers and customers;
  - particular monitoring of the health status of disadvantaged young Australians to help shape planning and service delivery.

- The *National Health Plan for Young Australians* (DHFS 1997b) was prepared by the Australian Health Ministers' Advisory Council Working Party on Child and Youth Health to cover the seven key action areas identified in *The Health of Young Australians* (outline above). The Australian Health Ministers' Conference endorsed the plan in July 1996. The plan indicates a need to move towards an evidence-based approach to monitoring the health of children and young people.

- A project report—*Health Goals and Targets for Australian Children and Youth*—was released in 1992 (Child, Adolescent and Family Health Service 1992). The five goals identified are:
  1. Reduce the frequency of preventable premature mortality.
  2. Reduce the impact of disability.
  3. Reduce the incidence of vaccine-preventable disease.
  4. Reduce the impact of conditions occurring in adulthood, but which have their origins or early manifestations in childhood or adolescence.
  5. Enhance family and social functioning.

The structure of this report (*Australia's Children: Their Health and Wellbeing 1998*) allows identification of information presented against these five goals. To enhance this process, a table is included in the appendix showing the overlap between the chapters presented here and each of the five goals outlined above. In addition, relevant goals are listed on the title page at the start of each part of the report.

As mentioned above, work has begun to identify an appropriate means of reporting national child health information. The Australian Institute of Health and Welfare (AIHW) convened a workshop in March 1998—the Workshop on the National Child Health Information Framework—to examine a number of issues relating to the national monitoring and reporting of child health. The workshop was organised under the auspices of the National Public Health Information Working Group (established by the National Public Health Partnership), and was attended by over 80 participants with particular expertise in areas related to child health information. Workshop participants endorsed a conceptual 'framework' for organisation of national child health information (AIHW 1998e). The framework and the discussions at the workshop provided valuable input into the content and structure of this report. However, many of these issues involve data development and/or analysis requiring longer lead times than were available for the production of this first edition of the national report on the health of Australian children. These, along with other issues relating to child health information (including the development of a set of indicators of child health), are being examined by the National Child Health Information Advisory Committee, formed subsequent to the workshop held in March.

While this report recognises the 1992 Health Goals and Targets for Australian Children and Youth, recent developments in public health information infrastructure will influence child health information. These developments, many driven by the National Public Health Partnership, include a National Public Health Information Development Plan and a Public Health Planning and Practice Framework that focuses on determinants and outcomes. These are changing the way public health issues are viewed.

Main data sources

Mortality data

Information on childhood deaths included in this report has been sourced mainly from the AIHW Mortality Database. This database includes a record of all deaths in Australia, as collected from registration of deaths provided by Registrars of Births, Deaths and Marriages in each State and Territory. The main information extracted from the database for this report includes the age, sex, cause of death and age at death for children less than 15 years old. The cause of death is classified according to the International Classification of Diseases (ICD-9) codes (WHO 1977).

Hospital morbidity data

Hospitalisation data included in this report have come from the AIHW National Hospital Morbidity Database. This database includes information on virtually all hospital admissions in Australia, in both public and private hospitals. Information is not available on hospitalisations in the one private hospital in the Northern Territory, and from some private same-day facilities in Tasmania and the Australian Capital Territory (AIHW 1998b).

Data on hospitalisations are collated on a financial year basis—information is included in the financial year of separation (that is, at the completion of the episode of care). Therefore, separations for a particular year may include episodes of care for which the admission was in the previous financial year. It is important to note that the database includes a record for *each* hospitalisation. Therefore, hospitalisation rates may include multiple admissions for individual patients.

For each hospitalisation, the database includes demographic information, administrative information about the hospital episode and clinical information. The main data items used for this report include age, sex, diagnosis (using the Australian version of the International Classification of Diseases, 9th revision, Clinical Modification—ICD-9-CM—codes (NCC 1996)), procedure (ICD-9-CM), sector (public or private hospital), length of stay, and State and Territory of hospitalisation. Definitions for these data items are included in the *National Health Data Dictionary Version 5.0* (NHDC 1996).

National Health Survey

The National Health Survey is a large-scale population survey conducted approximately every 5 years by the Australian Bureau of Statistics (ABS 1996c). Survey information is collected from face-to-face interviews. Responses for children under the age of 15 years are collected from a parent or guardian. Information included in this report comes from the National Health Survey conducted in 1995. In that year, information was collected from about 23,800 households across Australia, encompassing around 12,400 children under the age of 15 years.

The main pieces of information from the survey used in the report include:

- recent illnesses (experienced in the 2 weeks prior to the interview)
- long-term conditions (illness, injury or disability present, or expected to be present, for 6 months or more)
- type of condition (using a classification developed for the survey based on ICD-9 codes (see appendix for list of these conditions); the conditions are not necessarily medically diagnosed conditions)
- health service use (hospital use, doctor visits, other visits to health professionals)
- some health determinants (breastfeeding, sun protection).

Further details on definitions used in the National Health Survey can be found in the *National Health Survey: User's Guide* (ABS 1996c).

Western Australian Child Health Survey

This survey was conducted in 1993 jointly by the Western Australia Institute for Child Health Research and the Australian Bureau of Statistics, and included a representative sample of Western Australian children. Information was collected from a parent or guardian, teachers and from the young people themselves aged 12 years or older (Zubrick et al. 1995).

Although covering only Western Australia, the survey provides information on some aspects of child health not currently available at the national level. The main areas from the survey included in this report are:

- mental health
- families and child health
- academic performance
- some health determinants.

Report structure

As already mentioned, the structure of this report is guided by the National Child Health Information Framework, endorsed at the March 1998 workshop (see above for discussion). However, given availability of information, it is not currently possible to report on all aspects of the framework. Therefore, this report is based on currently available information that nonetheless covers the majority of areas included in the framework.

The first part of the report provides background information rather than information directly related to health status. Parts II and III cover mortality, morbidity and chronic conditions manifesting in childhood, and Part IV includes information on infectious diseases. Part V covers determinants of health, many of which will have their greatest impact later in life. Part VI—family and social environment—also covers determinants of health, but includes those that affect children from their wider environment. Part VII includes information on health and welfare services for children. For easier identification of relevant information, we have chosen to include information on the health status of particular population groups in a separate part —Part VIII—rather than to include this information throughout the report. This final part includes some relevant international comparisons.

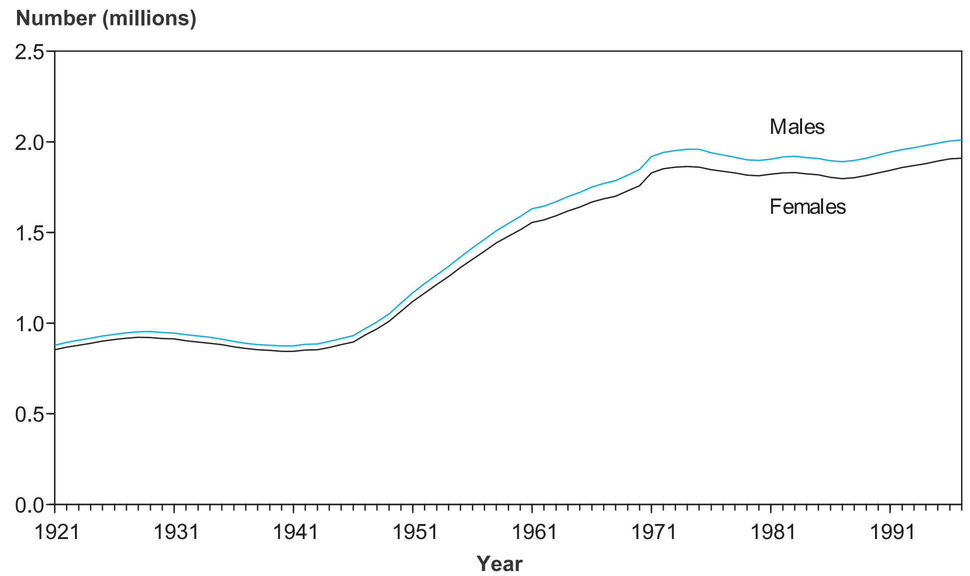
The majority of information in this report covers the health of Australian children at the national level. However, where available, the main measures of child health status are given at the State and Territory level in the tables in the appendix.

2 Population characteristics

This chapter presents demographic information about children aged under 15 years, and children in relation to other sections of the population. This provides background information on the child population. In addition, many of these demographic factors are important determinants of health and are consequently examined throughout this report in conjunction with health status measures. Overall, the figures show a decline over time in the proportion of children in the population, and that children form a higher proportion of the Indigenous population and populations in rural and remote areas.

Demographic information about Australian families with children is included in Chapter 22 of this report.

Number of children

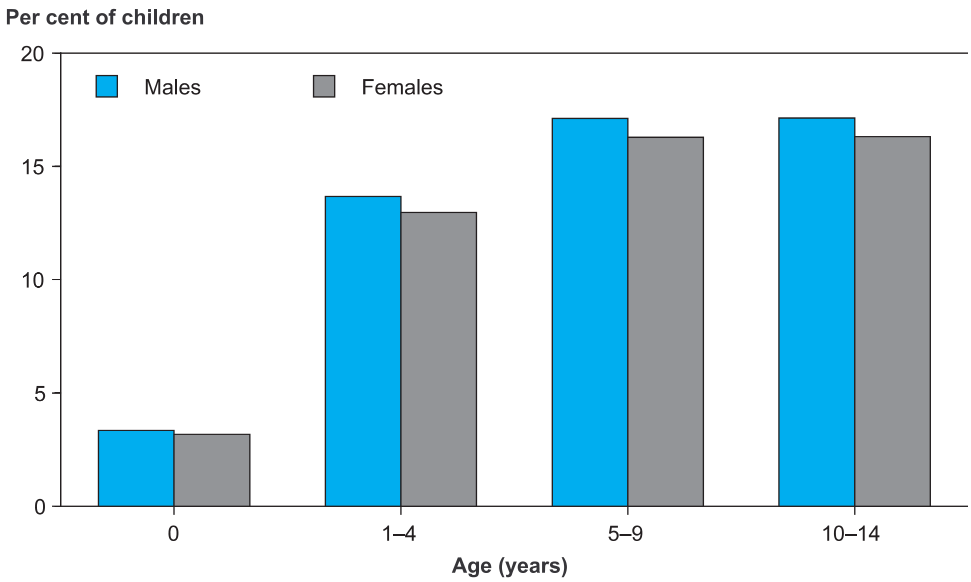


Source: ABS 1998a.

Figure 2.1: Australian population, 0–14 year olds, 1921 to 1997

- In 1997, there were around 3.9 million children under 15 years living in Australia.
- The total number of children had approximately doubled since 1921. The majority of the increase occurred in the 1950s and 1960s. In recent years, there have been only relatively small increases in the number of children.
- There have been more boys than girls in this age group during the period 1921 to 1997 reflecting the higher number of male births. The ratio of boys to girls in 1997 was 1.05. In 1921, the ratio was 1.03. It then increased steadily, reaching 1.05 in the mid- to late 1950s.

Age structure

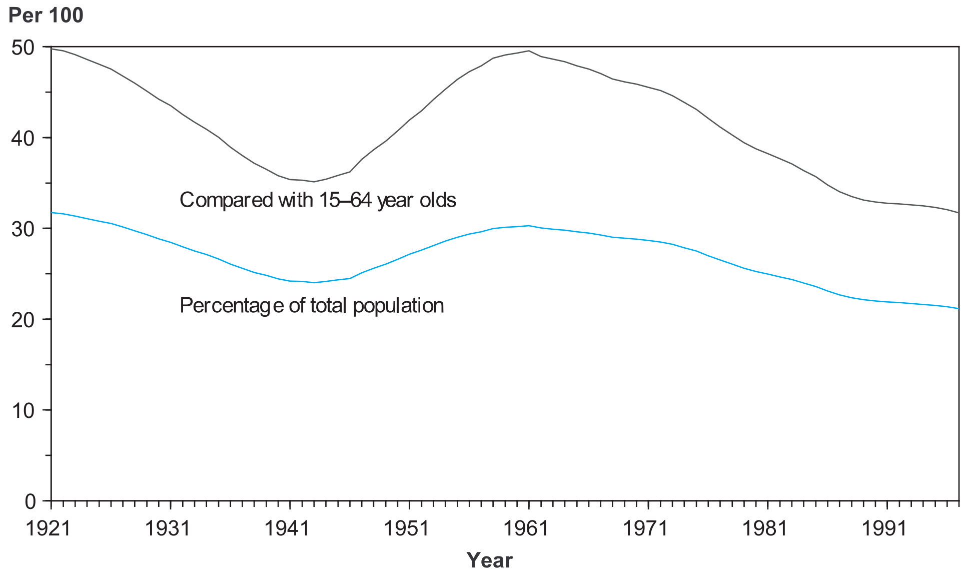


Source: ABS 1998a.

Figure 2.2: Age structure of the Australian child population, 1996

- The age structure of the child population was relatively uniform in 1996—there were approximately one-third of children in each of the three 5-year age groups 0–4, 5–9 and 10–14.
- In many chapters of this report, information is presented for four age groups: <1, 1–4, 5–9 and 10–14 years. In 1996, approximately 6.5% of children were aged under 1 year and around 27% aged 1–4 years.
- The uniform age structure of the child population also applied to both sexes in 1996.

Proportion of population



Source: ABS 1998a.

Figure 2.3: Children as a proportion of the Australian population, 1921 to 1997

- In 1997, children under 15 years accounted for a little over 20% of the total Australian population, the lowest proportion since at least 1921.
- The child dependency ratio—the ratio of children under 15 to the working age population 15 to 64 years—was 32 per 100 in 1997. Again this was the lowest rate since 1921.

Indigenous children

Table 2.1: Structure of Indigenous child population, 1996

	Age (years)			
Demographic variable	**0–4**	**5–9**	**10–14**	**Total**
Number of Indigenous children	55,581	52,363	46,445	154,389
Proportion of total child population (per cent)	4.29	4.01	3.55	3.95
Proportion of Indigenous population (per cent)	14.4	13.6	12.0	40.0
Child dependency ratio (per 100)	25.1	23.6	21.0	70.0

Source: ABS 1997e.

- In 1996, there were estimated to be around 150,000 Indigenous children in Australia—almost 4% of the child population.
- Indigenous children accounted for 40% of the Indigenous population, almost double that for the total Australian population (Figure 2.3).
- The child dependency ratio (see definition under Figure 2.3) for the Indigenous population was 70 per 100 in 1996, more than double that for the total population.

Residence area

By State and Territory

Table 2.2: Residence area of child population[(a)] by State and Territory, 1996

State or Territory	Number of children	Proportion of Australian child population (per cent)	Proportion of State/ Territory population (per cent)
New South Wales	1,311,888	33.5	21.1
Victoria	947,358	24.2	20.8
Queensland	735,691	18.8	22.0
Western Australia	392,858	10.0	22.3
South Australia	299,515	7.7	20.3
Tasmania	105,914	2.7	22.3
Australian Capital Territory	67,806	1.7	22.0
Northern Territory	49,330	1.3	27.1
Australia	**3,911,315**	**100.0**	**21.4**

(a) For 0–14 year olds.

Source: ABS 1998a.

- In 1996, well over half of Australian children lived in the two largest States—New South Wales and Victoria. In fact, over a third lived in New South Wales. This reflected the geographic distribution of the total population.
- In all jurisdictions except the Northern Territory, children accounted for between 20% and 22% of the population. South Australia had the lowest proportion of its population under 15 years—20.3%. In contrast, 27.1% of Northern Territory residents were under 15 years, markedly higher than for other States and Territories. This is likely to be related to the large Indigenous population in the Northern Territory. As reported under Table 2.1, the Indigenous population has a younger age structure than the non-Indigenous population.

Rural, remote and metropolitan areas

Table 2.3: Residence area of child population[(a)] by rural, remote and metropolitan area (RRMA), 1996

RRMA category		Number	Proportion of total child population (per cent)	Proportion of RRMA population (per cent)	Child dependency ratio (per 100)
Metropolitan areas	Capital cities	2,371,064	60.6	20.4	29.9
	Other metropolitan centres	284,251	7.3	20.7	31.4
Rural zones	Large rural centres	247,572	6.3	22.6	34.9
	Small rural centres	273,679	7.0	22.9	36.6
	Other rural areas	584,453	14.9	23.9	37.9
Remote zones	Remote centres	57,990	1.5	26.6	38.9
	Other remote areas	91,351	2.3	27.2	41.5
Total		**3,910,360**	**100.0**	**21.4**	**32.1**

(a) For 0–14 year olds; excludes residents of ‘other Territories’.

Sources: AIHW Population Database, based on SLA resident population estimates compiled by ABS.

- Table 2.3 presents population information on children for each of the seven ‘Rural, Remote and Metropolitan Areas’ (the RRMA classification). These areas divide Australia into areas based primarily on population size and an index of remoteness (AIHW 1998a). There are two metropolitan areas, three rural zones and two remote zones. The sub-categories within each of these are differentiated by population size.
- Over two-thirds of Australian children lived in metropolitan areas of Australia in 1996—the vast majority (61%) in the larger metropolitan areas.
- Another 28% of children lived in rural areas. The largest proportion of children in these three zones were in the ‘other rural areas’ group (urban centres with a population < 10,000).
- Less than 5% of children lived in remote areas of Australia in 1996.
- In 1996, children as a proportion of the total population increased across RRMA groups. That is, the more remote areas of Australia had higher proportions of their population aged under 15 years than less remote areas. This is likely to be at least partly due to higher proportions of Indigenous people living in more remote areas (higher proportions of the Indigenous population being under 15 years; see Table 2.1).
- The child dependency ratio also increased across RRMA groups.

Country of birth

Table 2.4: Country of birth, 0–14 year olds, 1996

Country of birth	Number	Proportion of child population (per cent)
Australia	3,664,743	93.7
UK/Ireland	36,061	0.9
Other Europe	29,486	0.8
Asia	92,750	2.4
Other	88,275	2.3
Total	**3,911,315**	**100.0**

Source: ABS 1998e.

- In 1996, 94% of children under 15 years resident in Australia were born in Australia.
- The other countries of birth correspond to those used in Chapter 31 of this report (using the Australian Standard Classification of Countries for Social Statistics). Of these four groups, Asian born children formed the largest group—2.4% of the child population.

Part II: Mortality and morbidity in children

Chapter 3: Mortality overview

Chapter 4: Morbidity overview

Chapter 5: Maternal and infant conditions

Chapter 6: Sudden infant death syndrome

Chapter 7: Injury

Chapter 8: Mental health problems

Chapter 9: Dental disease

Primary goal

- *Reduce the frequency of preventable premature mortality.*

Other relevant goals

- *Reduce the impact of disability.*
- *Reduce the impact of conditions occurring in adulthood, but which have their origins or early manifestations in childhood or adolescence.*
- *Enhance family and social functioning.*

3 Mortality overview

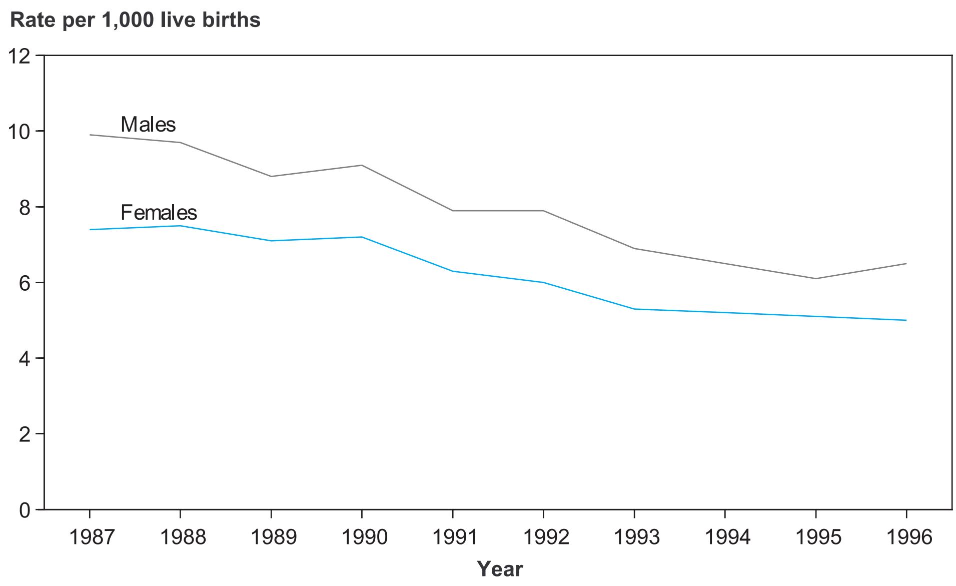
Death rates are one of the most widely used measures of health in a population. For children, infant mortality rates (death rate for children under 1 year) in particular have been widely used as a means of comparing the health of different populations or of monitoring the health of a population over time. Identifying the factors or causes of mortality provides a basis for setting priorities for public health action, providing health services and for research.

This chapter provides an overview on childhood mortality, covering mortality time-trends, age distribution and principal causes of death. Analyses are based on data extracted from the AIHW Mortality Database (see Chapter 1).

In 1996, 2,252 children between the ages of 0 and 14 years died, of whom 1,310 (58%) were males and 942 (42%) were females (ABS 1997d). The majority of these childhood deaths occurred in the first year of life, and of these infant deaths slightly over half (52%) were of babies under 28 days old. Results presented below show an increase in recent foetal (and perinatal) death rates, despite continuing declines in the overall infant mortality rate.

Infant mortality

Infant deaths include deaths up to 1 year of age, which accounted for 65% of childhood deaths in 1996.



Source: AIHW Mortality Database.

Figure 3.1: Infant mortality rates, 1987 to 1996

- In 1996, 1,460 children died before they were 1 year old, 58% of whom were male and 42% female (ABS 1997d). This corresponds to an infant mortality rate of 5.8 deaths per 1,000 live births compared with 5.9 in 1994. This fall continues the steady downward trend witnessed over the last 10 years
- The decrease results in a low of 5.0 female deaths per 1,000 live births in 1996 and 6.1 male deaths per 1,000 live births in 1995. The male rate increased slightly in 1996 to 6.5 per 1,000 live births.
- The difference between the male and female death rates has also narrowed somewhat during this period.

Table 3.1: Main causes of infant mortality, 1996

	Deaths	
Cause of death	**Number**	**Per cent**
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 death, cause unknown[(a)]	210	14.4
Other causes	185	12.7
All causes	**1,460**	**100.0**

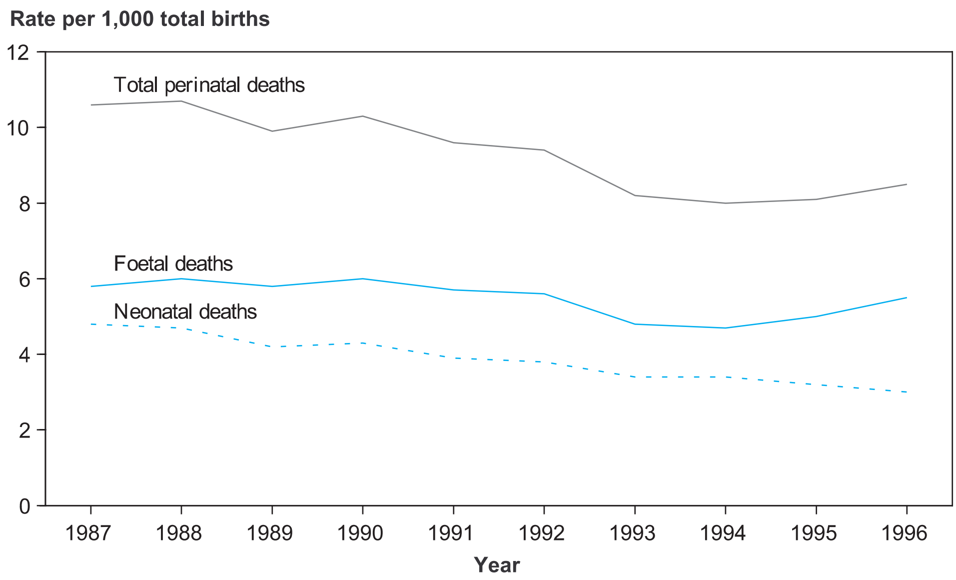
(a) Includes sudden infant death syndrome (SIDS).

Source: ABS 1997b.

- In 1996, the principal causes of death among children under 1 year were certain conditions originating in the perinatal period, accounting for nearly 48% of deaths. Among these, disorders relating to short gestation and unspecified low birthweight caused 16% of all infant deaths; hypoxia, birth asphyxia and other respiratory conditions were responsible for 14% of infant deaths.
- Other leading causes of death were congenital anomalies (26%), and sudden death of unknown cause (14%—almost all classified as sudden infant death syndrome).

Perinatal deaths

About half of the deaths in the first year occur in the first week of life, and many of those early deaths occur on the first day. Also, foetal deaths (stillbirths) are not included in child death rates. It is therefore useful to look at what are known as perinatal death rates. Perinatal deaths consist of both foetal deaths and neonatal deaths (deaths of infants within the first 28 days of life).



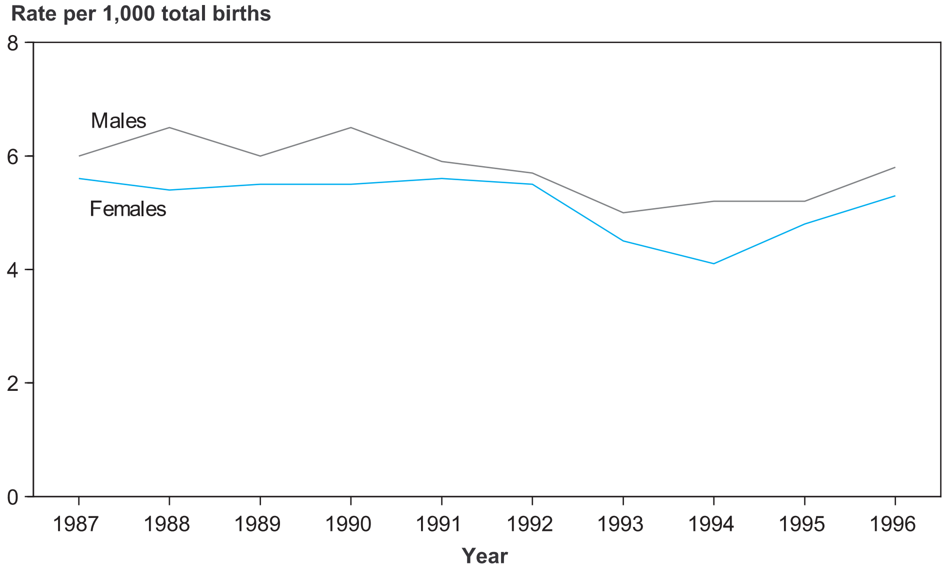
Sources: ABS 1993b, 1994, 1997b.

Figure 3.2: Perinatal, foetal and neonatal deaths, 1987 to 1996

- There were 2,170 perinatal deaths in 1996, resulting in an overall perinatal death rate of 8.5 deaths per 1,000 total births (live births and stillbirths).
- Of the perinatal deaths, 65% were foetal deaths and 35% were neonatal deaths.
- There has been a decline in the total perinatal death rate from 1987 through to 1994, but from this time onwards the rates have increased slightly.

Several conditions are responsible for perinatal deaths. Hypoxia, birth asphyxia and other respiratory conditions caused 29% of all perinatal deaths in 1996, followed by congenital anomalies (18%), and slow foetal growth, foetal malnutrition and immaturity (11%) (ABS 1997b).

Foetal deaths



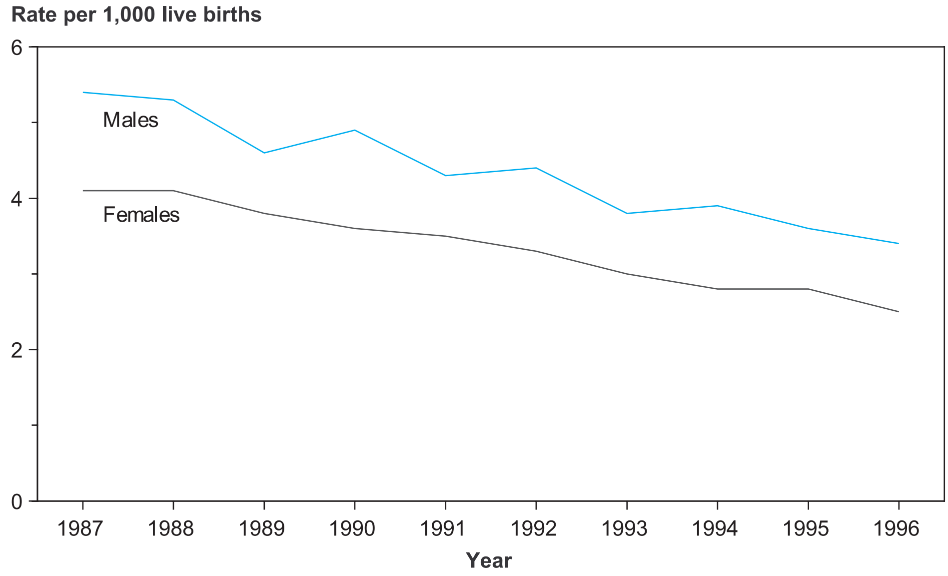
Sources: ABS 1993b, 1994, 1997b.

Figure 3.3: Foetal deaths by sex, 1987 to 1996

- There were 1,411 stillbirths or foetal deaths in 1996 (a foetal death rate of 5.5 per 1,000 total births).
- Both male and female foetal death rates have increased in recent years. The male rate increased to 5.8 deaths per 1,000 births from a low of 4.8 deaths recorded in 1993, while the female rate has moved closer to the male rate, increasing to 5.3 deaths per 1,000 births from the low of 4.1 recorded in 1994.
- During the period 1993 to 1996, the main reasons for the increase in foetal deaths were 'conditions originating in the perinatal period' (169 more foetal deaths in 1996 than in 1993) and 'conditions unrelated to the present pregnancy' (54 more foetal deaths in 1996 than 1993).

The main causes of foetal deaths in 1996 were hypoxia, birth asphyxia and other respiratory conditions (33%). The conditions of pregnancy also contributed to some foetal deaths of which complications of placenta, cord and membranes (36%) were the most prominent (ABS 1997b).

Neonatal deaths



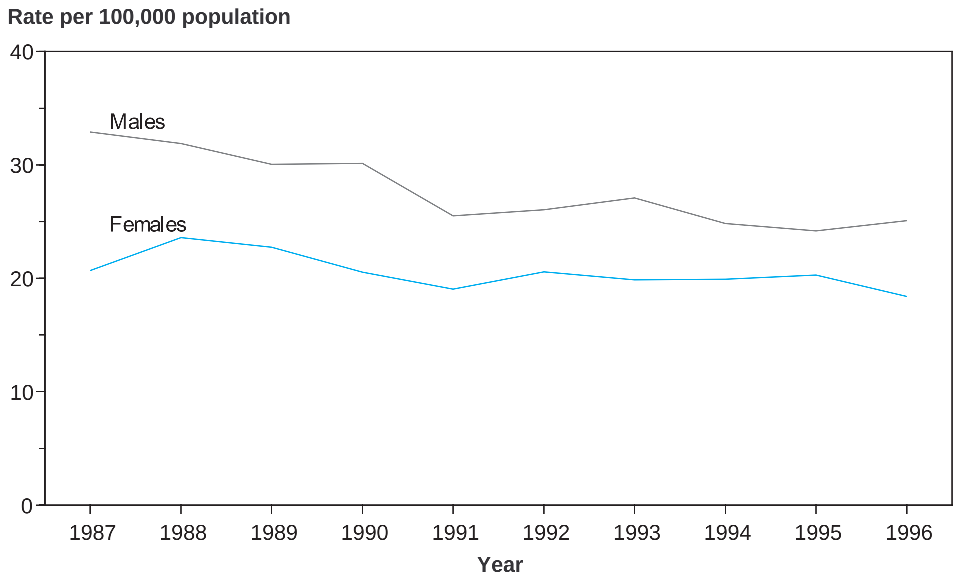
Sources: ABS 1993b, 1994, 1997b.

Figure 3.4: Neonatal deaths by sex, 1987 to 1996

- Babies under 28 days old accounted for 52% of infant deaths in 1996 (a neonatal death rate of 3.0 per 1,000 live births, or 759 deaths).
- The neonatal death rate has shown a continued downward trend from 1988 to 1996. The main reasons for the fall in neonatal death rates between 1992 and 1996 were due to declines in deaths due to congenital anomalies, and hypoxia and birth asphyxia.
- Throughout the period the male death rate remained higher than the female rate.

The main causes of neonatal deaths in 1996 were congenital anomalies (31%), hypoxia, birth asphyxia and other respiratory conditions (20%), and slow foetal growth (14%). Maternal complications of pregnancy also accounted for 25% of neonatal deaths (ABS 1997b).

Mortality among children aged 1–14 years

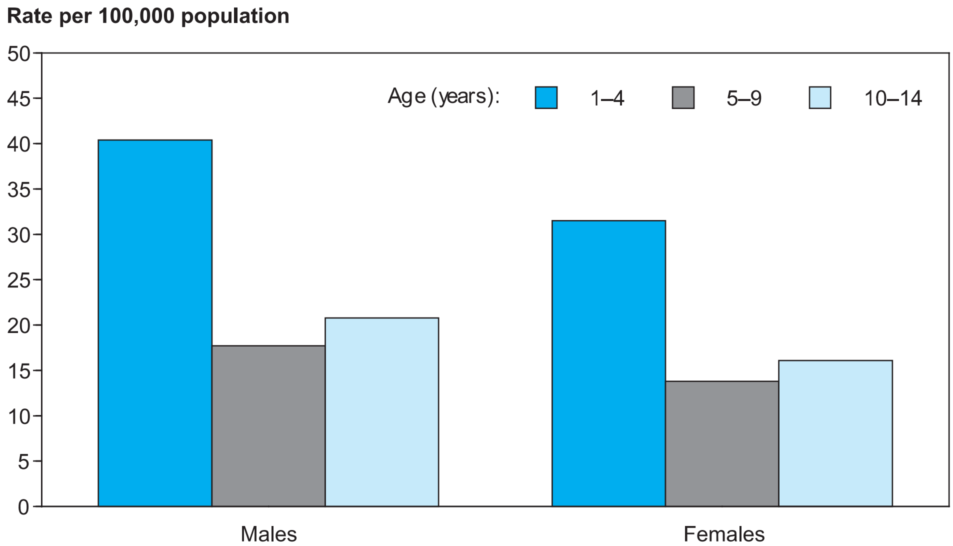


Source: AIHW Mortality Database.

Figure 3.5: Deaths of children aged 1–14 years, 1987 to 1996

- The death rate for 1–14 year olds generally demonstrates a downward trend among both males and females over the 10-year period.
- The male death rate has remained consistently higher than the female rate during the period.
- The death rate for males in this age group fell 25% between 1987 and 1996, and the female death rate fell 15% during the same period.
- Between 1992 and 1996, the main reasons for the decline in death rates for 1–14 year olds were reductions in deaths due to accidents, poisoning and violence, (particularly deaths from road accidents).

Figure 3.6 provides more detail on the death rates for specific age groups of children for the period 1992 to 1996.



Source: AIHW Mortality Database.

Figure 3.6: Age-specific death rates among children aged 1–14 years, 1992–96

- The death rates differ across age groups, with the highest rates occurring during the early years of life (age 1–4 years).
- There was a decline in death rates for 5–9 year olds but the rate increased again slightly for both boys and girls.
- Boys experienced higher death rates than girls in all three age groups.

Table 3.2: Main causes of deaths among children aged 1–14 years, 1996

	Deaths	
Cause of death	**Number**	**Per cent**
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 1997b.

- After the first year of life, injuries (including accidents, poisonings and violence) become the largest single cause of death for children. In 1996, injury was responsible for 43% of deaths.

- Motor vehicle accidents were the main cause of injury deaths, causing over 17% of all deaths to children aged 1–14 years.
- Malignant neoplasms also accounted for 17% of deaths in 1–14 year olds.

Drowning accounted for the greatest number of injury deaths to toddlers and preschoolers (ages 1–4), with road accidents second followed by homicide and burns. The leading causes of injury deaths for children aged 5–9 years were motor vehicle accidents, fire/burns and drowning. For children aged 10–14 years, the major causes of injury-related deaths were motor vehicle accidents and homicide, closely followed by suicide and drowning (AIHW Mortality Database).

4 Morbidity overview

Morbidity can be defined as 'any departure, subjective or objective, from a state of physiological or psychological well-being' (Last 1995). Childhood morbidity is the level of disease or illness in children—that is, illnesses manifesting in childhood. Many adult illnesses also have their origins in childhood, though these conditions are not reported in this chapter.

This chapter provides a summary of childhood morbidity to show the relative importance of different illnesses in children. More detail on specific conditions is given in later chapters of this report. Childhood disability levels, though related to morbidity, are summarised in Chapter 10.

The main conclusions of this chapter are that boys consistently have higher morbidity rates than girls, and that respiratory illnesses form the largest group of illnesses in children.

National information available on childhood morbidity includes data on current conditions (from a population-based cross-sectional survey), data on hospitalisations and data on health-related actions. The reports of current conditions include both minor and more serious conditions, whereas the hospital admission data generally relate only to serious conditions.

The data sources used for this chapter are the National Health Survey 1995 and the National Hospital Morbidity Database. These data sources are outlined in Chapter 1 of this report. Further issues particularly relevant to this chapter include:

- **National Health Survey**
  This survey, last conducted in 1995, enables the level of illness in the Australian childhood population to be estimated. It includes information on both minor and serious illnesses present at the time of the survey as reported by parents. In this chapter we divide these illnesses into recent and long-term conditions. We have not, however, attempted to report on minor conditions separately from more serious conditions. We have, however, included some information that helps determine severity of illnesses.
- **National Hospital Morbidity Database**
  This information provides a proxy indicator of the level of more serious illness in the population that require hospitalisation. Note, however, that admission to hospital is also related to factors other than health status, including service availability, access for different groups, differing admission practices and treatment. The data are collected for each hospital episode. Currently it is not possible to determine whether one child has been admitted a number of times for the same condition. Therefore, measures relate to the number of hospitalisations, rather than to the number of individuals hospitalised for particular conditions.

The following results show that over 70% of 0–14 year olds had a reported condition at the time of the National Health Survey in 1995. More than half of these children had a current long-term condition. The main conditions, both reported in the National Health Survey and requiring admission to hospital, were respiratory illnesses and injuries. There were also a large number of hospitalisations for conditions originating in the perinatal period (see later sections in this chapter for more detail). Allergy-related conditions were also commonly reported.

Prevalence of illnesses

Information in this section comes from the National Health Survey conducted in 1995, which included information on current conditions at the time of the survey. These included many minor and temporary conditions and others that were under control, as well as chronic or more serious conditions. We have separately reported recent illnesses (experienced in the 2 weeks prior to interview) and long-term conditions (current conditions having lasted, or expected to last, for 6 months or more) below.

Table 4.1: Proportion of children with reported current conditions, 1995 (per cent)

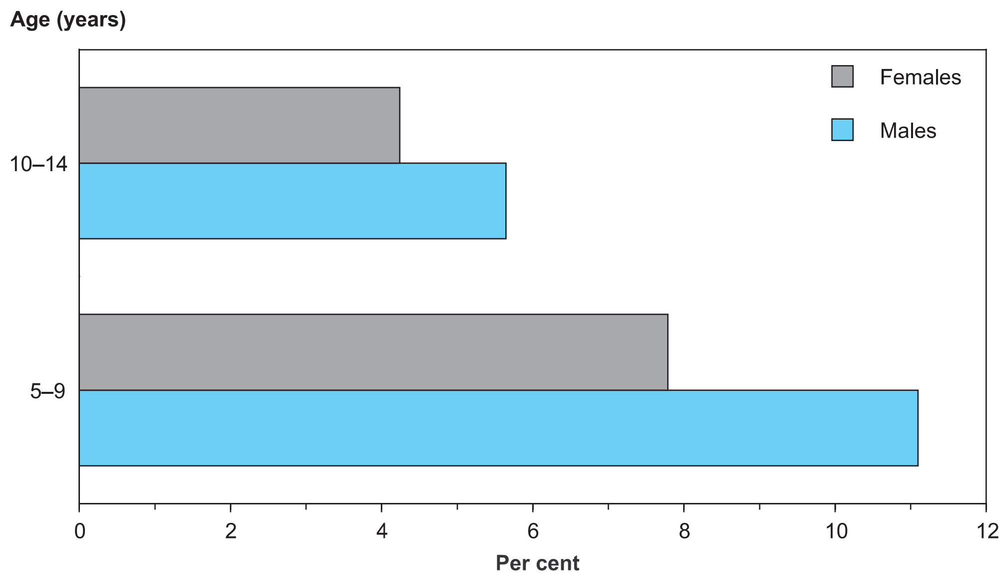
	Recent conditions		Long-term conditions		Recent or long-term conditions	
Age (years)	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**
< 1	69	68	17	16	71	71
1–4	57	54	39	29	66	61
5–9	53	55	48	47	67	67
10–14	53	56	52	53	70	72
Total	**55**	**56**	**45**	**42**	**68**	**67**

Source: AIHW, from ABS NHS data, 1995.

- Around two-thirds of children had a reported current condition—around 55% recent illnesses, and over 40% long-term conditions.
- The proportion of children with recent conditions tended to decrease with age while the proportion with long-term conditions increased with age, to over 50% for 10–14 year olds.
- Overall, slightly more girls than boys were reported as having had recent conditions, and more boys than girls were reported to have long-term conditions.

Extra supervision

Figure 4.1 indicates the proportion of children who require extra help or supervision because of a current or long-term condition. This provides an indication of the level of more serious conditions, as well as the impact of illnesses on families.



Source: AIHW, from ABS NHS data, 1995.

Figure 4.1: Children with a current condition requiring extra supervision because of a condition, 1995

- More younger children required extra supervision due to illness compared with older children.
- Around 11% of boys and 8% of girls aged 5–9 years with a current condition required extra supervision because of the condition.
- The corresponding figures for 10–14 year olds were nearly 6% for boys and 4% for girls.
- This may indicate that the conditions reported for boys are more serious. However, from the data it is not possible to determine whether boys experience more serious illnesses or whether parents are less likely to report minor conditions for them.

School absences

Another indication of the severity of illnesses, at least for school-age children, is the impact on school attendance.

Table 4.2 shows the proportion of children who were absent from school because of illness in the 2 weeks prior to the survey.

Table 4.2: Absences from school due to illness or injury in a 2-week period, 1995

Age (years)	Per cent away from school	Mean absence (days)[(a)]
5–9	17.3	2.0
10–14	14.3	2.1

(a) For those reporting an absence.

Source: AIHW, from ABS NHS data, 1995.

- A little over 17% of 5–9 year olds and 14% of 10–14 year olds were absent from school because of illness in the 2-week period.
- On average, these absences were for 2 days.

Type of illness

Information on the type of conditions, including both recent and long-term conditions, has been reported elsewhere (AIHW 1998a). Respiratory conditions were the most common conditions reported. Overall, 37% of children were reported to have a respiratory condition, with asthma, influenza, coughs and colds and hay fever the most common. Other commonly reported conditions were skin disorders (9%), sight disorders of refraction and accommodation (8%), dental problems (7%), and injuries (6%). Further detail on both recent and long-term conditions is shown in Tables 4.3 and 4.4.

Table 4.3: Ten most frequently reported recent conditions, 1995 (per cent)

	Age (years)				
Recent illness[a]	**< 1**	**1–4**	**5–9**	**10–14**	**Total**
Common cold	13.0	14.0	9.1	6.4	9.8
Asthma	1.5	6.6	10.3	9.9	8.6
Dental problems	17.6	6.4	3.9	6.9	6.5
Cough or sore throat	3.6	6.9	4.8	3.3	4.8
Headache[b]	0.0	1.1	3.7	9.3	4.6
Eczema, dermatitis	6.4	5.2	2.5	1.7	3.2
Other diseases of the respiratory system	2.2	4.5	3.0	1.6	2.9
Influenza	1.7	2.8	3.0	2.9	2.8
Other infections and parasitic infections	2.7	2.7	2.7	1.9	2.4
Otitis media	3.0	3.8	2.1	0.8	2.2

(a) The full list of illnesses as coded in the National Health Survey is included in the appendix.

(b) Includes headaches due to stress or tension, and headaches due to unspecified or trivial cause.

Source: AIHW, from ABS NHS data, 1995.

- Respiratory illnesses and infections dominate this list, with the common cold being the most commonly reported condition—nearly 10% of children reported having had a cold in the 2 weeks prior to the survey.
- Asthma was the second most commonly reported recent condition, with the highest proportion reported for 5–9 year olds.
- Headaches were frequently reported for 10–14 year olds, with over 9% of this group having a reported headache in the previous 2 weeks.
- Dental problems and eczema were common in the younger age groups.

Table 4.4 shows the prevalence of long-term or chronic conditions as reported by parents.

Table 4.4: Ten most frequently reported long-term conditions, 1995 (per cent)

	Age (years)				
Long-term condition[(a)]	**< 1**	**1–4**	**5–9**	**10–14**	**Total**
Asthma	3.1	12.3	19.2	18.7	16.1
Hay fever	0.6	2.2	6.7	10.8	6.4
Allergy, nec	0.9	4.3	6.4	6.0	5.3
Sinusitis	1.4	0.9	3.7	5.9	3.5
Eczema, dermatitis	3.1	4.8	3.8	2.1	3.5
Hypermetropia/far-sighted	0.0	0.3	3.4	6.6	3.4
Myopia/short-sighted	0.0	0.2	2.0	7.0	3.1
Bronchitis/emphysema	1.2	2.9	3.0	2.2	2.6
Other conditions	1.2	2.7	3.1	2.0	2.5
Mental retardation, specific delays in development	0.3	0.8	2.5	2.7	2.0

(a) See list of coded illnesses in the appendix.

nec not elsewhere classified

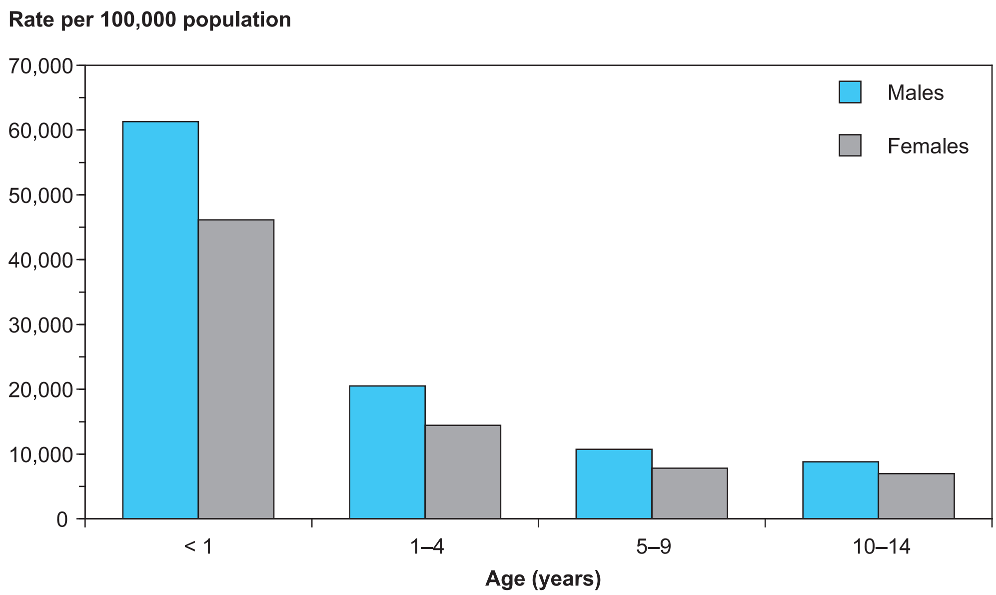
Source: AIHW, from ABS NHS data, 1995.

- Asthma was the most common long-term condition reported for 16% of children. As was the case for recent conditions, the peak was in the 5–9 year age group (see Chapter 13 for more information on asthma).
- Hay fever and allergies not elsewhere classified were the next most frequently reported conditions.
- Conditions related or possibly related to allergies were common long-term (and recent) conditions. These included asthma, hay fever, allergy not elsewhere classified, and eczema.

Hospitalisations

As mentioned in the introduction to this chapter, data on hospitalisations may be a proxy indicator of the level of more serious illness in the community, though hospitalisation rates may also be affected by access and admission practices. Hospitalisations for healthy newborns have been excluded from the following data.

Hospitalisation rates are shown in Figure 4.2.



Source: AIHW National Hospital Morbidity Database.

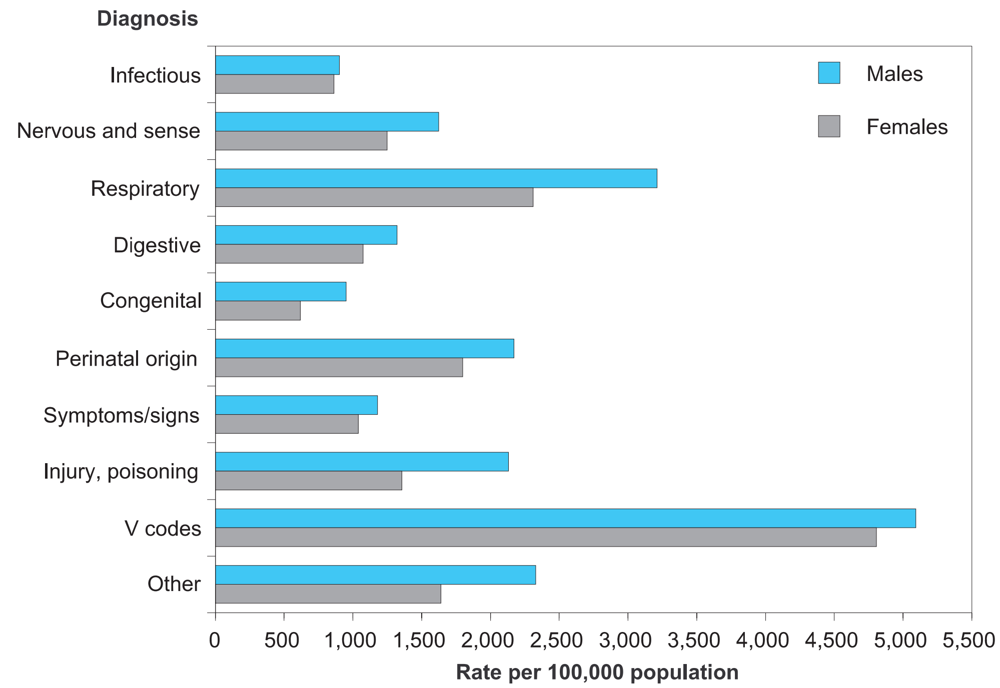
Figure 4.2: Hospitalisations for children aged 0–14 years, 1996–97

- The highest admission rates were for babies under 1 year—for this group there were around 60,000 hospitalisations for every 100,000 babies, a hospitalisation rate similar to that for older Australians aged 65 years and over (AIHW 1998b).
- Hospitalisation at the time of birth for healthy babies is not generally included in these data, though in some States and Territories a number of these cases are included. These, however, do not have a large effect on the calculated rates shown in Figure 4.2.
- The hospitalisation rate is significantly lower for older children, the age group with lowest hospitalisation rate in Australia, down to less than 10,000 per 100,000.
- The hospitalisation rate for males was greater than for females throughout the childhood years.

Diagnoses

The information presented here relates to the principal diagnosis for each hospital episode. This is defined as the diagnosis chiefly responsible for the hospitalisation (NHDC 1996). Other diagnoses may also be listed for each hospital episode, although information relating to those has not been included in this chapter.

Figure 4.3 shows the hospitalisation rate for each of the diagnosis 'chapters' of the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (NCC 1996).



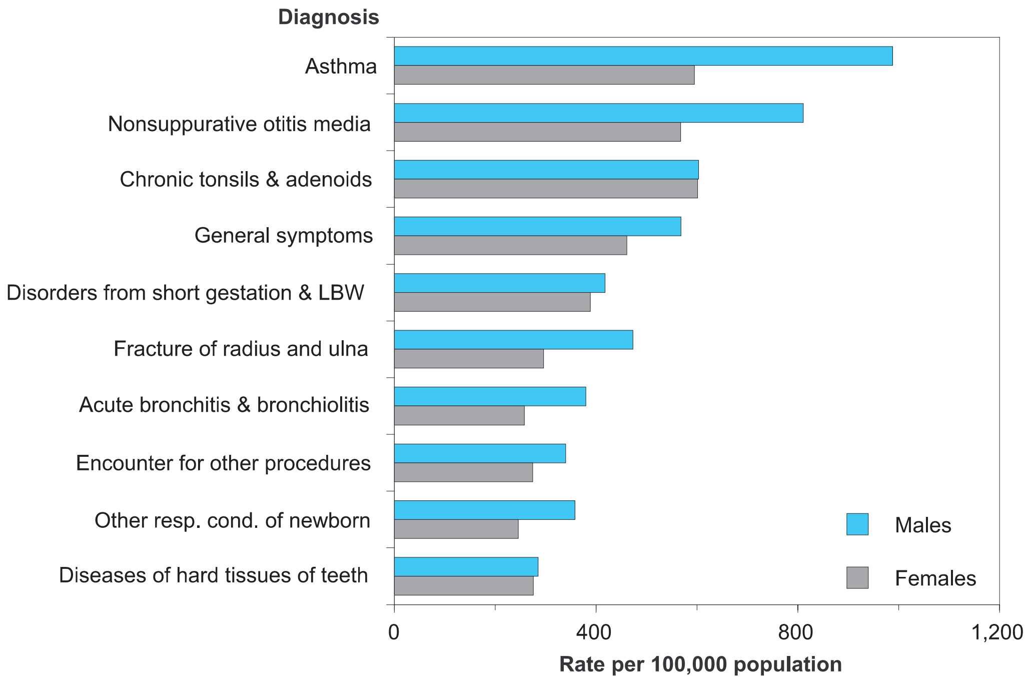
Note: ICD-9-CM chapters grouped by principal diagnosis.

Source: AIHW National Hospital Morbidity Database.

Figure 4.3: Hospitalisations by ICD-9-CM diagnosis chapter, 0–14 year olds, 1996–97

- Boys had higher hospitalisation rates for all diagnosis groups relevant to both boys and girls.
- The highest hospitalisation rates were for respiratory conditions—over 3,000 per 100,000 for boys and 2,000 per 100,000 for girls.
- Other groups of diagnoses with high hospitalisation rates include injuries, conditions originating in the perinatal period (for example, low birthweight and birth trauma), and conditions of the nervous system (including diseases of the sense organs).

Figure 4.4 shows the hospitalisation rate for the ten most frequent principal diagnoses (at the 'four-digit' level using ICD-9-CM codes) for children in 1996–97.



Source: AIHW National Hospital Morbidity Database.

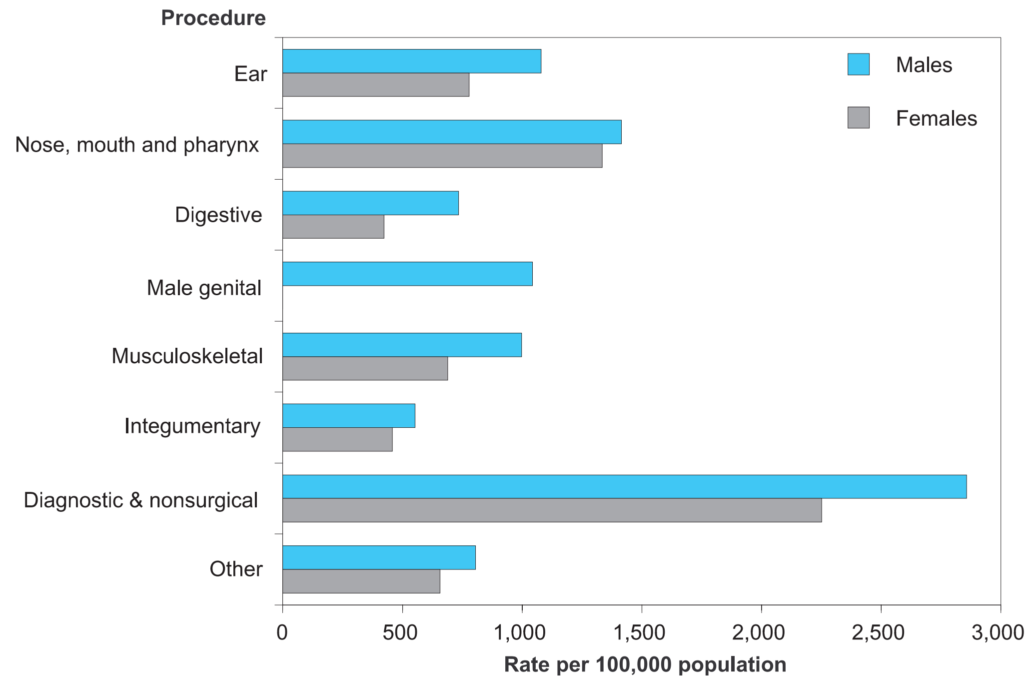
Figure 4.4: Hospitalisations for ten most frequent principal diagnoses, 0–14 year olds, 1996–97

- The top ten conditions reflect the results in Figure 4.3, with respiratory, injury and perinatal conditions dominating.
- For all these diagnoses, the hospitalisation rate for boys was higher than for girls.
- Asthma was the most frequent reason for hospitalisation, with over 1,000 hospitalisations per 100,000 boys, and around half that rate for girls.
- There were four other respiratory-related diagnoses in the top ten group, as well as an injury- and perinatal-related diagnosis.
- The 'general symptoms' diagnosis includes sleep disturbances, blackouts and fainting, and convulsions.

Procedures

This subsection presents information on any principal procedures recorded for hospital episodes. The principal procedure is defined as the most significant procedure performed for the treatment of the principal diagnosis, or another procedure if there is not a procedure to treat a principal diagnosis (NHDC 1996). It includes both operations and non-operative procedures. A number of other procedures may also be recorded for each hospitalisation, although this information has not been included here.

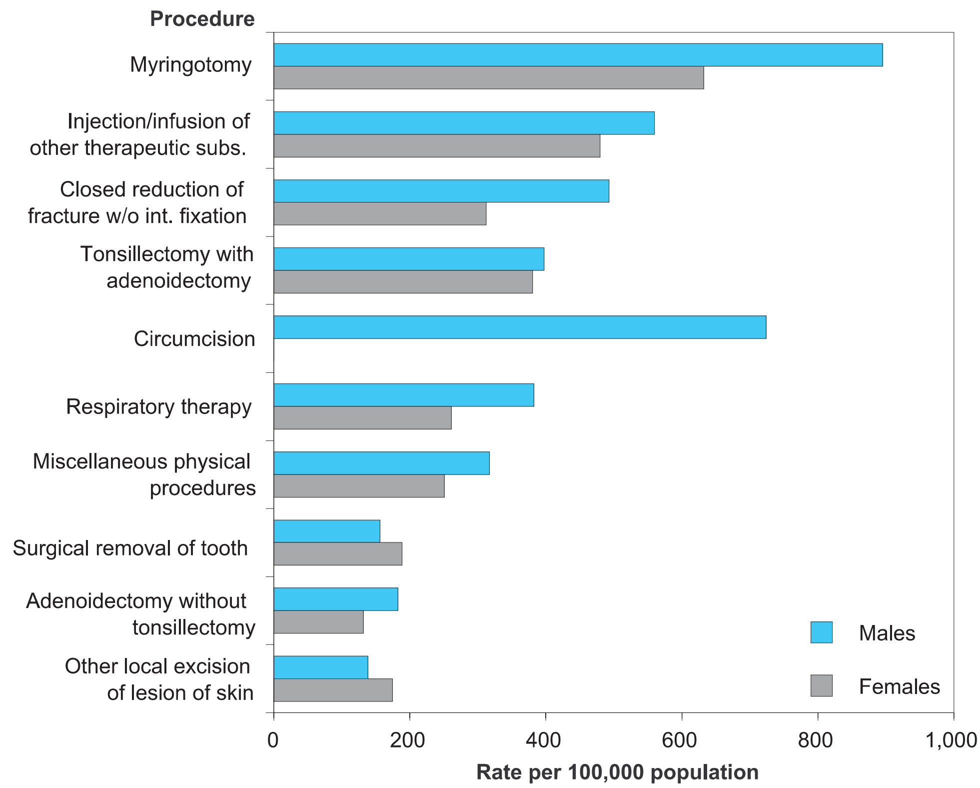
Figure 4.5 indicates the hospitalisation rate for the ICD-9-CM chapters (NCC 1996). Each chapter includes operations on a particular body system. The exception is the last chapter, which includes non-operative diagnostic and therapeutic procedures.



Source: AIHW National Hospital Morbidity Database.

Figure 4.5: Hospitalisations by procedure chapter, 0–14 year olds, 1996–97

- Diagnostic and non-surgical procedures had the highest rates (mostly X-rays, respiratory therapy and injections), followed by ear, nose and throat procedures.
- Procedures on the male genital organs were also common, mostly circumcisions. Also common were procedures on the musculoskeletal system (mostly injury-related).



Source: AIHW National Hospital Morbidity Database.

Figure 4.6: Hospitalisations for ten most frequent principal procedures, 0–14 year olds, 1996–97

- These procedures again reflect the dominance of respiratory conditions and injuries as reasons for hospitalisation, as well as the number of circumcisions being performed.
- Injection and infusion of other substances includes injections of antibiotics and vaccines.

Health-related actions, 1995

Table 4.5 indicates the proportion of children visiting health professionals in the 2 weeks prior to the National Health Survey in 1995. These visits may not necessarily be illness-related but can also include visits for preventive reasons. Nevertheless, children with poorer health (including those with illnesses) are more likely to visit health professionals (Zubrick et al. 1995).

Table 4.5: Proportion of 0–14 year olds using health services in 2-week period, 1995 (per cent)

Health service	Males	Females
Hospitalised	0.8	0.2
Attended emergency/outpatients	2.7	1.6
Total hospital	*2.9*	*1.8*
Day clinics	0.6	0.4
Medical consultation	19.9	17.7
Other health professionals consulted	8.4	8.0

Source: AIHW, from ABS NHS data, 1995.

- Over the 2-week period, nearly 3% of boys and 2% of girls visited hospitals.
- The largest group of health professionals consulted were general practitioners—seen by 20% of boys and 18% of girls.

5 Maternal and infant conditions

This chapter presents a summary of the main health problems for children in the first year of life. Information on the health of the pregnant mother has been included because maternal factors influence the health of the baby. The last two sections of the chapter include information the health of the baby at the time of birth and mortality and morbidity in the first year of life.

Much of the information related to maternal factors and the birth of the baby has come directly from the detailed reports published by the AIHW National Perinatal Statistics Unit. These reports include more detail on many of the areas presented here, plus statistics on other areas (such as maternal parity and type of delivery). In this chapter, the main indicators of a newborn baby's health drawn from these reports include:

- birthweight: the first weight of the baby obtained after birth (infants with lower birthweight are more likely to be in poorer health)
- duration of pregnancy: babies born before term (that is, those born before 37 weeks' gestation) are more likely to be in poorer health.

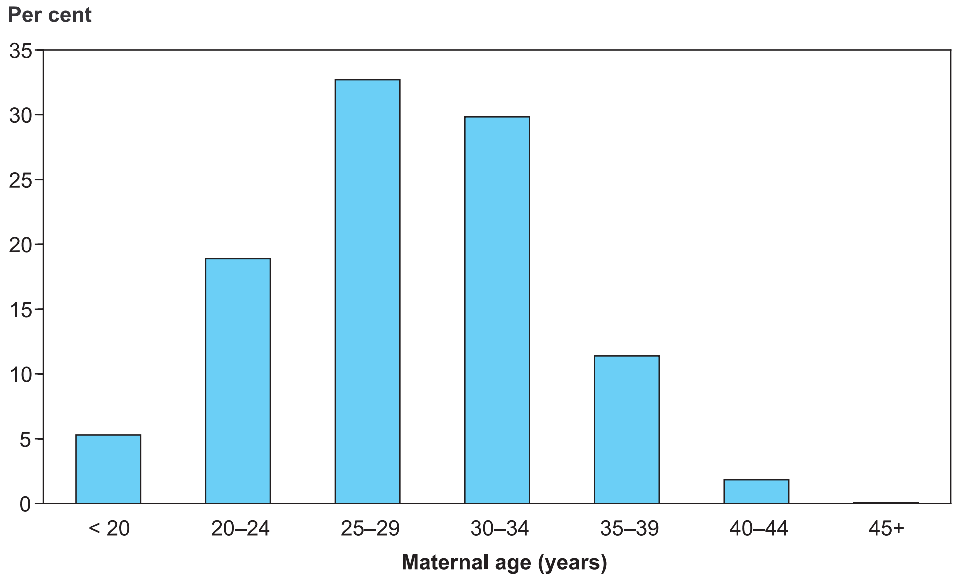
Other information in this chapter comes from the Mortality Database and the National Hospital Morbidity Database. More details on these data sources are contained in Chapter 1 of this report.

Factors associated with pregnancy

The health of the mother during pregnancy and the maternal environment (such as nutrition and the presence of noxious substances) have a direct effect on the health of the baby. Information is presented here on the age of the mother, smoking and alcohol use during pregnancy, antenatal care and pregnancy complications. Only limited information is available on antenatal care, and no national information has recently been published on the nutrient intake of pregnant women.

Age of mother

Babies born to mothers at each extreme of the reproductive age group have greater risks of adverse outcomes (Day et al. 1997). The mean maternal age has increased gradually from 27.9 years in 1991 to 28.4 in 1995, reflecting the greater proportion of older mothers. However, there still remains a significant number of births to teenage mothers.



Source: Day et al. 1997.

Figure 5.1: Confinements by maternal age, 1995

- The majority of babies (63%) were born to mothers aged 25 to 34 in 1995.
- At the extremes of the maternal age distribution, 5% of births were to mothers under 20 and 2% to mothers 40 years and over.

Younger and older mothers were more likely to have babies born pre-term (prior to 37 weeks' gestation), low-birthweight babies (weighing less than 2,500 g at birth) and foetal deaths (stillbirths). The following relate to 1995 births derived from Day et al. (1997):

- 8.6% of births to mothers aged under 20 years and 9.4% of births to mothers 40 years and over were pre-term, compared with 6.4% for all births
- 14.9% of births to mothers under 15 years, 8.6% of births to mothers 15–19 years and 8.7% of births to mothers 40 and over were low-birthweight babies

- the foetal death rate was 10.6 per 1,000 live births for mothers under 20 years old and 13.0 for mothers 40 years and older, compared with 7.0 for all ages.

Teenage pregnancies are important in the context of this report, which generally deals with the health and wellbeing of children under 15 years of age, both in terms of the health of the baby and the health of pregnant teenage girls. The physical, psychological and social effects of pregnancy and childbirth at a young age are likely to be substantial. In 1995, there were 121 births to girls aged less than 15 years (Day et al. 1997). However, the number of pregnancies in this age group across Australia is unknown as national data on terminations of pregnancy are not available. South Australia and the Northern Territory are the only two jurisdictions that collect population-based information on terminations of pregnancy (AIHW 1998a). In South Australia in 1996, 87% of pregnancies in this age group were terminated (Chan et al. 1997).

Smoking during pregnancy

Smoking during pregnancy has a number of potential ill-effects on the foetus, including low birthweight, spontaneous abortion and stillbirth (DHFS 1997a). In 1989–90, 25.1% of pregnant women reported being current smokers and 29.2% reported being ex-smokers. In 1995 the reported proportion of pregnant women who were current smokers fell to 13.7% with 38.3% being ex-smokers (DHFS 1997a, sourced from the ABS National Health Survey, 1995).

Alcohol use during pregnancy

The National Health and Medical Research Council (NHMRC) recommends that pregnant women abstain from alcohol. Effects on the foetus include increased heart rate, dilation of the small blood vessels and, in extreme cases, foetal alcohol syndrome (DHFS 1997a). From National Health Survey data, the proportion of pregnant women consuming alcohol during pregnancy fell from a reported 30.5% in 1989–90 to 18.6% in 1995. In both years, almost all of these women consuming alcohol reported doing so only at a low risk level (DHFS 1997a).

Antenatal care

Early antenatal care has been shown to improve the health of the baby. Although there is currently no national information available, data from New South Wales show that, in 1996, 13% of mothers did not attend for their first antenatal visit until after 20 weeks of pregnancy (NSW Health 1998). Information available from South Australia shows that for at least 8.7% of confinements women received less than seven antenatal visits (Chan et al. 1997). The timing of these visits is not reported.

Pregnancy complications

Many complications of pregnancy can have a detrimental effect on the health of the baby. Examples include hypertension, diabetes and pre-term labour. Data are presented below on the hospitalisations for severe complications of pregnancy (Table 5.1). The definition used here is based on that used in the Healthy People 2000 program in the United States (Centers for Disease Control and Prevention & the National Center for Health Statistics 1997). Severe complications are defined as the number of hospital-isations due to maternal causes (ICD-9 codes 630–676, excluding 635 and 650) as a proportion of the number of deliveries in hospitals (ICD-9 code V27). They note, however that this outcome may vary with changes in criteria for hospitalisation.

Currently in Australia, it is not possible to identify the number of *pregnancies* requiring hospitalisation due to complications, only the number of *hospitalisations* for pregnancy complications. For this reason, data are presented on the total number of hospitalisations to avoid presenting rates that may be misleading.

Table 5.1 presents the number of hospitalisations for severe pregnancy complications by main ICD-9-CM groups of diagnoses. The categories used in Table 5.1 were broken down using more specific diagnoses. Hospitalisations for those conditions with higher numbers are presented in Table 5.2. Note that these figures may include multiple hospitalisations for one pregnancy.

Table 5.1: Hospitalisations for severe complications of pregnancy by diagnosis group, 1996–97

Principal diagnosis	Number ('000)
Ectopic and molar pregnancy	19.5
Other pregnancy with abortive outcome	19.6
Complications mainly related to pregnancy	130.3
Other indications for care in pregnancy, labour and delivery	83.0
Complications occurring mainly in the course of labour and delivery	99.8
Complications of the puerperium	8.7
Total	**361.0**

Source: AIHW National Hospital Morbidity Database.

- In 1996–97, there were a little over 360,000 hospitalisations for severe complications of pregnancy (including abortive outcomes). Some pregnancies are likely to have resulted in more than one hospitalisation, whereas many pregnancies would be free of complications.
- There were nearly 170,000 hospitalisations for severe complications mainly related to pregnancy (that is, excluding those relating to labour, delivery and the puerperium) in 1996–97.

Table 5.2: Hospitalisations for severe complications of pregnancy, main diagnoses, 1996–97

Principal diagnosis	Number ('000)
Spontaneous abortion	17.9
Hypertension complicating pregnancy, childbirth and the puerperium	27.0
Early or threatened labour	27.7
Other current conditions complicating pregnancy[(a)]	21.6
Other foetal/ placental problems affecting management of mother	25.3
Trauma to perineum and vulva during delivery	50.1

(a) Includes gestational diabetes.

Source: AIHW National Hospital Morbidity Database.

- The more detailed diagnoses (four-digit ICD-9-CM codes) with the highest hospitalisation rates are presented in Table 5.2.
- Hypertension and early/threatened labour (both with over 27,000 hospitalisations) were the largest specific causes for pregnancy-related complications requiring hospitalisation.
- There were around 21,600 hospitalisations for 'Other current conditions complicating pregnancy'. A subset of this group is hospitalisations for gestational diabetes, for which there were nearly 1,400 hospitalisations in 1996–97.

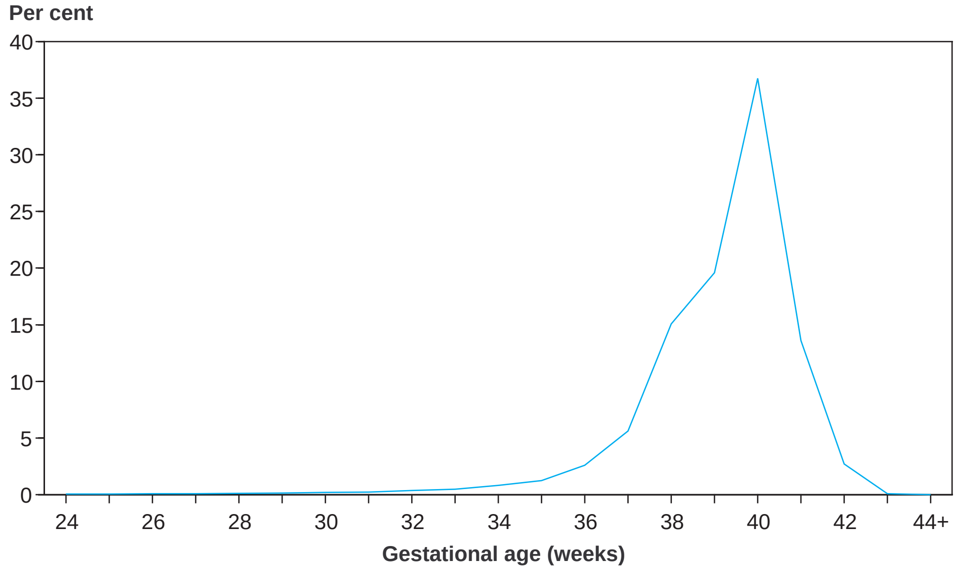
Factors associated with birth and baby

This section includes information on the health of liveborn babies, as well as information on perinatal deaths.

Live births

As outlined earlier, better outcomes for the baby are more likely to occur in full-term births and in babies with a birthweight over 2,500 g. Information on these indicators of newborn health status, as well as a direct measure of the health of newborns—the Apgar score—is included below.

Gestational age

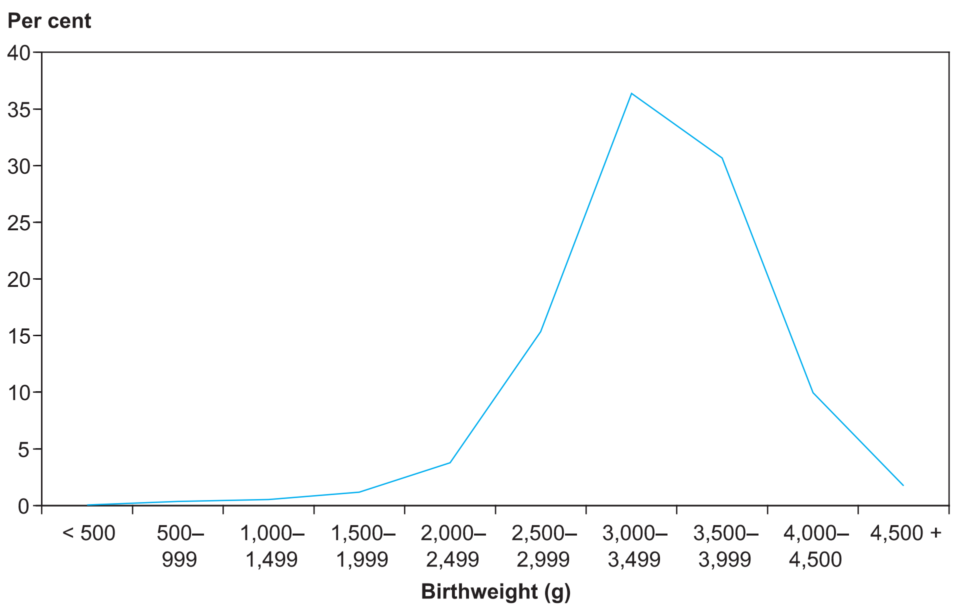


Source: Day et al. 1997.

Figure 5.2: Distribution of live births by gestational age, 1995

- Figure 5.2 shows that the vast majority of live births in 1995 were from full-term pregnancies.
- 6.6% of births were pre-term (prior to 37 weeks' gestation), and only 1% occurred prior to 32 weeks' gestation.
- Less than 0.1% of live births occurred after 42 weeks' gestation.

Birthweight



Source: Day et al. 1997.

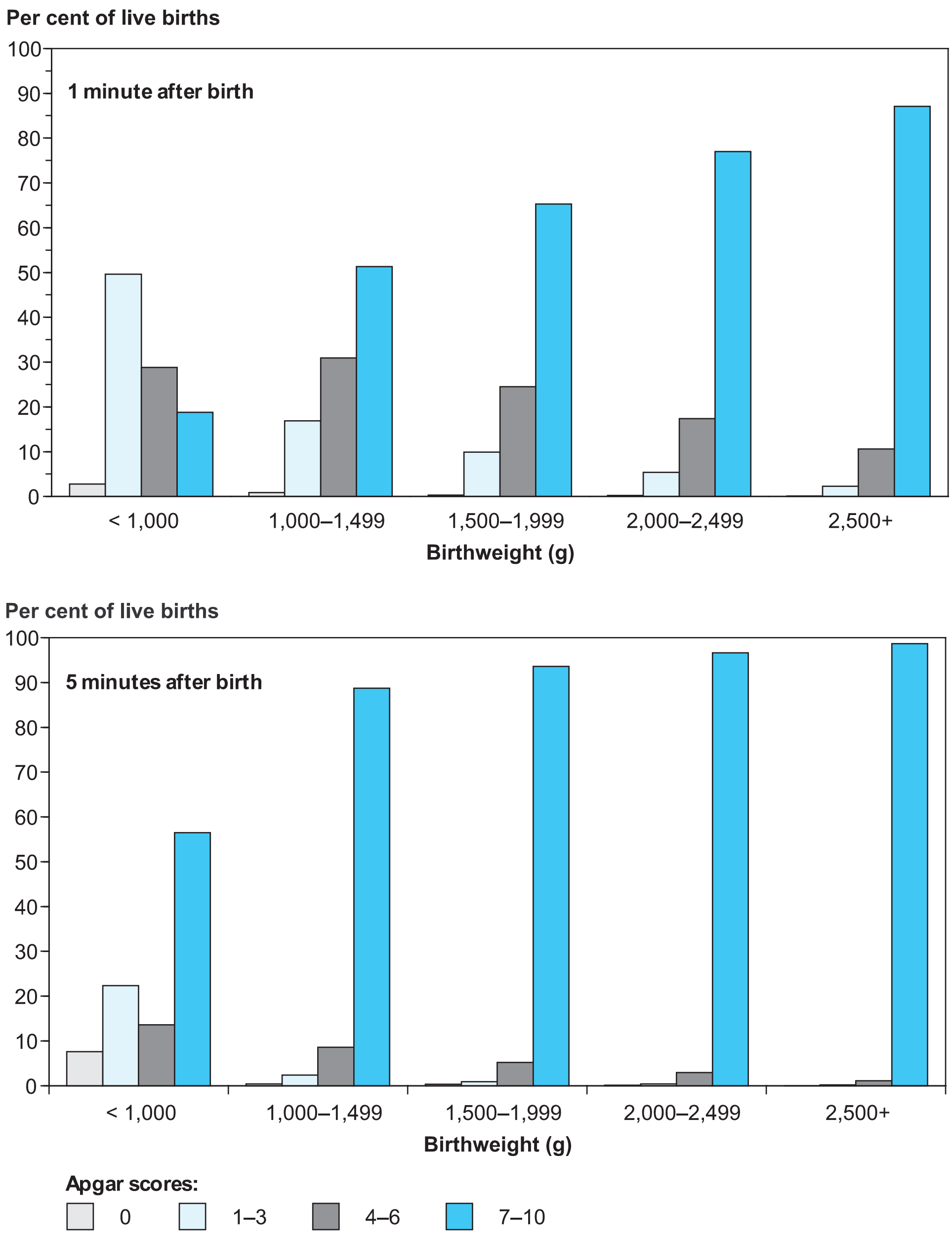
Figure 5.3: Distribution of live births by birthweight, 1995

- Two-thirds of liveborn babies in 1995 weighed between 3,000 and 4,000 g. The mean birthweight was 3,371 g.
- 5.9% of live births were low-birthweight babies (< 2,500 g), 1% were of very low birthweight (< 1,500 g) and 0.4% were of extremely low birthweight (< 1,000 g).

Figure 5.3 presents information on the birthweight of liveborn infants. For comparison, 6.4% of *all* births (live births and stillbirths) in 1995 were of low birthweight, 1.4% were of very low birthweight and 0.7% were of extremely low birthweight. The mean birthweight of all births was 3,358 g (Day et al. 1997). The proportion of low-birthweight babies has remained steady since 1991, ranging between 6.3% and 6.4%.

Apgar scores

The Apgar score is a numerical score used to evaluate the infant's condition at 1 and 5 minutes after birth. The score ranges between 0 and 10, with between 0 and 2 points given for each of five characteristics (heart rate, breathing, colour, muscle tone and reflex irritability). Apgar scores of less than 4 are strongly associated with the infant's birthweight (Day et al. 1997).



Note: Apgar scores at 1 minute were not recorded in Victoria in 1995.

Source: Day et al. 1997.

Figure 5.4: Apgar scores at 1 and 5 minutes after birth, by birthweight, 1995

- The majority (86%) of liveborn babies in 1995 had Apgar scores between 7 and 10 at 1 minute after birth (Day et al. 1997). However, for low-birthweight babies (6% of births), lower Apgar scores were more common, particularly for the small number of extremely low birthweight babies.

By 5 minutes after birth, nearly all babies (98%) had Apgar scores between 7 and 10 (Day et al. 1997). The extremely low birthweight group is the exception although nearly 60% of these babies had Apgar scores in the highest range.

Perinatal mortality

As outlined in Chapter 3, perinatal deaths include both foetal and neonatal deaths. Foetal deaths (or stillbirths) are defined for this report as deaths occurring prior to delivery (at over 500 g in birthweight or after 22 weeks' gestation). Neonatal deaths are deaths of liveborn babies within 28 days of birth.

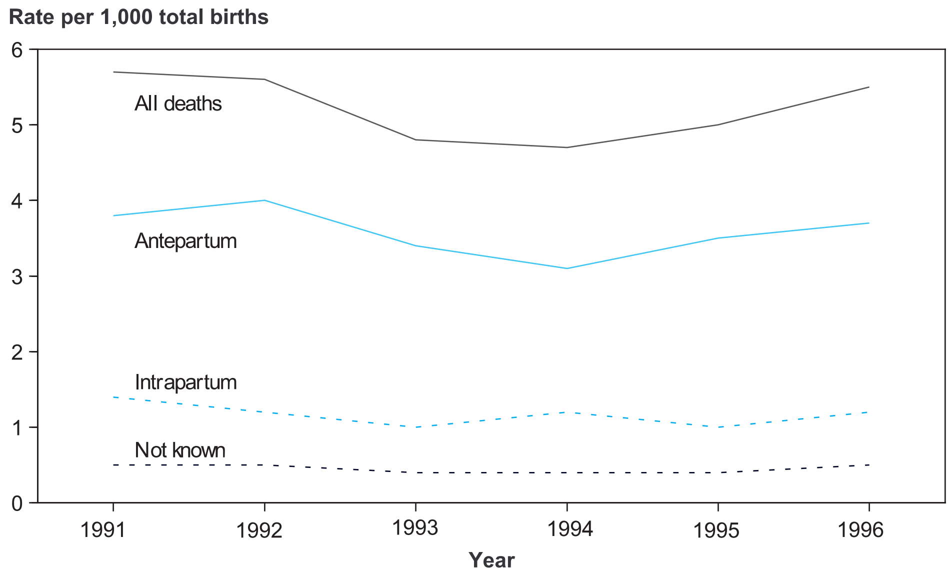
Perinatal death rates in 1996 were as follows (ABS 1997b):

- total perinatal death rate of 8.5 per 1,000 births
- foetal death rate of 5.5 per 1,000 births
- neonatal death rate of 3.0 per 1,000 live births.

Some information on perinatal death rates is given in Chapter 3. Other details are presented below.

Foetal deaths

As outlined in Chapter 3, the foetal death rate fell from 5.7 per 1,000 births in 1991 to 4.7 per 1,000 births in 1994, continuing the decline over at least the last 2 decades. In 1973, the foetal death rate was 10.5 per 1,000 births. Despite these long-term declines, the latest 2 years of data have shown an increase in the foetal death rate. The rates per 1,000 births in 1995 and 1996 were 5.0 and 5.5 respectively. This increase is mostly related to 'the perinatal period'. Increases were also observed for 'conditions unrelated to pregnancy', 'other complications of labour' and 'slow foetal growth and malnutrition' (ABS 1997b).



Sources: Day et al. 1997; ABS 1997b.

Figure 5.5: Foetal deaths by type, 1991 to 1996

- Foetal deaths can be divided into those occurring before labour (antepartum), those occurring during labour (intrapartum) and those where the timing of the death is unknown.
- The majority of foetal deaths over the period between 1991 and 1996 occurred prior to labour. The recent increases in the overall foetal death rate have been largely due to corresponding increases in the antepartum foetal death rate.
- The proportion of other foetal deaths has remained relatively steady during this period.

In 1995, over 60% of foetal deaths were of babies born prior to 37 weeks' gestation—63% of these occurred prior to 28 weeks' gestation (Day et al. 1997). As expected, the proportion of foetal deaths decreases with increasing gestational age—just over 20% born before 28 weeks' gestation were stillborn. This proportion fell to 9% for babies born between 28 and 31 weeks' gestation, and to 2% for babies born between 32 and 36 weeks' gestation.

Also, 60% of foetal deaths in 1995 were of babies with low weight for gestational age. Many, but not necessarily all, of these babies would also have been pre-term babies, as discussed above.

Neonatal deaths

The neonatal death rate fell by 23% between 1991 and 1996, from 3.9 to 3.0 per 1,000 live births (ABS 1997b). There has been a large decline in neonatal deaths since 1973 when the rate was 11.3 per 1,000 live births. As is the case for foetal deaths, there are links between neonatal deaths and gestational age and birthweight. Of neonatal deaths in 1995, 63% were infants born prior to 37 weeks' gestation, and 42% were infants born prior to 28 weeks' gestation; 66% of neonatal deaths in 1995 were of low-birthweight babies.

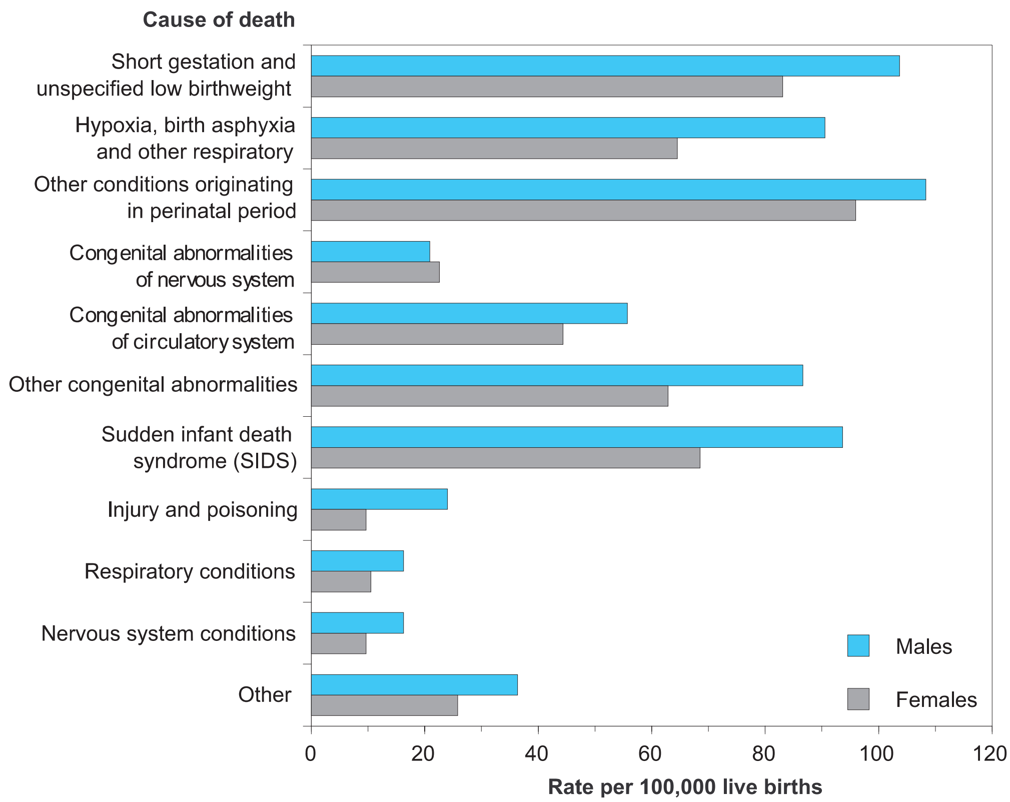
The proportion of births at different gestational ages resulting in neonatal death decreases with gestational age. In 1995, 21% of babies born prior to 28 weeks' gestation died in the first 28 days of life. The corresponding proportions for babies born between 28 and 31 weeks was 5%, and for those born between 32 and 36 weeks, less than 1% (Day et al. 1997).

Infant conditions

Mortality

Chapter 3 contains information on childhood mortality, including detail on infant mortality (deaths to babies aged less than 1 year). In summary, over the last 10 years infant mortality has continued its long-term decline, falling from 8.7 per 1,000 live births in 1987 to 5.8 per 1,000 live births in 1996. The male rate has remained higher than the female rate throughout the period.

In 1996, the major causes of death in babies under 1 year of age were conditions originating in the perinatal period, congenital anomalies and sudden infant death syndrome (SIDS) (see Table 3.1). Further details on the causes of infant mortality are given below.



Source: AIHW Mortality Database.

Figure 5.6: Infant mortality rates by cause of death, 1996

- Figure 5.6 shows infant mortality rates for the most common causes of death in infants.
- The male death rate was higher than the female death rate for nearly all causes of death shown.
- The three most frequent causes of death (on the top of the graph) cover deaths from conditions originating in the perinatal period, with short gestation/low birthweight and respiratory conditions accounting for well over half of this group.

- The next three most frequent causes of death are from congenital abnormalities, with nearly half of these deaths caused by circulatory and nervous system abnormalities. Further detail on these is given in Chapter 11.
- SIDS accounted for 14% of infant deaths in 1996. Further detail on SIDS is given in Chapter 6.

Morbidity

As discussed in Chapter 4, over 70% of infants were reported to have had an illness in the 2 weeks prior to the National Health Survey in 1995. Over 15% were reported to have had a long-term condition (expected to last at least 6 months). Commonly reported recent illnesses included dental problems and the common cold, and for long-term conditions, asthma and eczema.

The data source for the remainder of this subsection is the AIHW National Hospital Morbidity Database (see background information provided in Chapter 1 of this report). In 1996–97, there were around 60,000 hospitalisations per 100,000 infants under the age of 1 year.

Table 5.3: Proportion of hospitalisations to infants under 1 year of age by diagnosis group, 1996–97

Principal diagnosis	Per cent
Infectious diseases	6.3
Respiratory diseases	15.2
Congenital abnormalities	6.4
Conditions originating in the perinatal period	33.3
Symptoms and signs	10.8
V codes	12.5
Other	15.5

Source: AIHW National Hospital Morbidity Database.

- The main group of diagnoses accounting for hospitalisation of infants under 1 year old in 1996–97 was conditions originating in the perinatal period. These hospitalisations included both babies remaining in hospital after birth and babies admitted any time up to the age of 1 year.
- Other major causes of hospitalisation were V codes (see below), respiratory conditions, general symptoms and signs, infectious diseases and congenital abnormalities.
- Where identified in the database, unqualified neonates[1] have been excluded from this table. However, accuracy in identifying these newborns varies somewhat between States and Territories. Also, as with all hospitalisation data from the AIHW National Hospital Morbidity Database, these data will include repeat admissions of babies for the same condition.

1. Unqualified neonates are generally healthy newborns being cared for with their mothers. A detailed definition of 'Qualification status' can be found in NHDC 1996.

Conditions originating in perinatal period

This group of conditions accounted for a third of all hospitalisations of infants under 1 year old in 1996–97.

Table 5.4: Hospitalisations for conditions originating in the perinatal period, 1996–97 (rate per 100,000 population)

Principal diagnosis	Males	Females	Total[(a)]
Slow foetal growth and foetal malnutrition	802	1,017	907
Disorders related to short gestation and unspecified low birthweight	5,622	5,224	5,430
Intrauterine hypoxia and birth asphyxia	894	638	771
Respiratory distress syndrome	914	488	708
Other respiratory conditions of foetus and newborn	3,980	2,741	3,378
Infections specific to neonatal period	710	572	644
Other perinatal jaundice	1,748	1,308	1,534
Endocrine and metabolic disturbances specific to the foetus and newborn	1,160	917	1,042
Other and ill-defined conditions originating in the perinatal period	1,828	1,701	1,766
Other conditions	2,033	1,770	1,905
Total	**19,691**	**16,376**	**18,085**

(a) Includes a small number of cases where the sex was unknown.

Source: AIHW National Hospital Morbidity Database.

- The hospitalisation rate for these conditions was a little over 18,000 per 100,000 babies aged less than 1 year in 1996–97 (19,700 and 16,400 per 100,000 for boys and girls respectively).
- Within this group, the largest subgroup of diagnoses was disorders related to short gestation and unspecified low birthweight.
- Respiratory conditions and jaundice were also relatively common.
- Nearly all the hospitalisations in the subgroup 'other and ill-defined conditions' were for feeding problems in the newborn.
- The only diagnosis subgroup with a higher rate for girls than for boys was slow foetal growth and foetal malnutrition.

In 1996–97, over 3% of hospitalisations of infants under 1 year were directly related to the mother's health, having principal diagnoses of newborns affected by maternal conditions or complications of pregnancy/delivery. These hospitalisations are included in the 'Other conditions' group in Table 5.4 above.

There were only 158 hospitalisations with a recorded principal diagnosis of 'noxious influences affecting foetus via placenta or breast milk'. Narcotics accounted for over half of these hospitalisations. Only 8 cases were coded as foetal alcohol syndrome (which is characterised by neurological and physical damage including malformation). It has, however, been suggested that, at least in the United States, the number of hospitalisations for this condition is likely to be an underestimate (Centers for Disease Control and Prevention, & the National Center for Health Statistics 1997) due to difficulties in detecting the syndrome at birth.

Respiratory conditions

Respiratory conditions accounted for over 15% of hospitalisations of infants in 1996–97. The largest subgroup was acute respiratory conditions, accounting for 74% of these hospitalisations. Another 10% were for chronic obstructive disease (including asthma), and 10% for pneumonia and influenza. Boys had higher rates of hospitalisation than girls in all these subgroups.

Infectious diseases

In 1996–97, over 6% of hospitalisations of infants under 1 year old were for infectious diseases. The largest subgroups of infectious diseases were intestinal infections (58%) and other diseases due to viruses/chlamydia (24%—nearly all 'unspecified viral infections').

V codes

This group of conditions covers factors influencing health status and contact with health services. Over 15% of hospitalisations of babies had a principal diagnosis in this group in 1996–97. The largest subgroup (36%) was for 'liveborn infants', likely to include mostly healthy newborns (although these have been excluded where possible—see discussion under Table 5.3. The second largest subgroup (33%) was for 'encountering health services for specific procedures and aftercare', mostly routine circumcisions. The third largest subgroup (20%) was for 'encounters related to reproduction and development' (mostly healthy infants receiving care, including due to maternal illness). The fourth largest subgroup (7%) was for 'encounters in other circumstances', the majority for parent–child problems.

Signs and symptoms

This group of hospitalisations attributed to general signs and symptoms accounted for nearly 11% of hospitalisations of infants in 1996–97. The largest subgroup included general symptoms, with most of these for sleep disturbances and convulsions. The second largest subgroup was for nutrition, metabolism and development symptoms, mostly feeding problems and lack of expected physiological development. The third largest subgroup consisted of respiratory symptoms, mostly dyspnoea/respiratory abnormalities and coughs.

6 Sudden infant death syndrome

Sudden infant death syndrome (SIDS) is the sudden and unexpected death of an infant where the death remains unexplained despite complete post-mortem examination (Abraham et al. 1995). The ICD-9 code used to list these cases is 798.0.

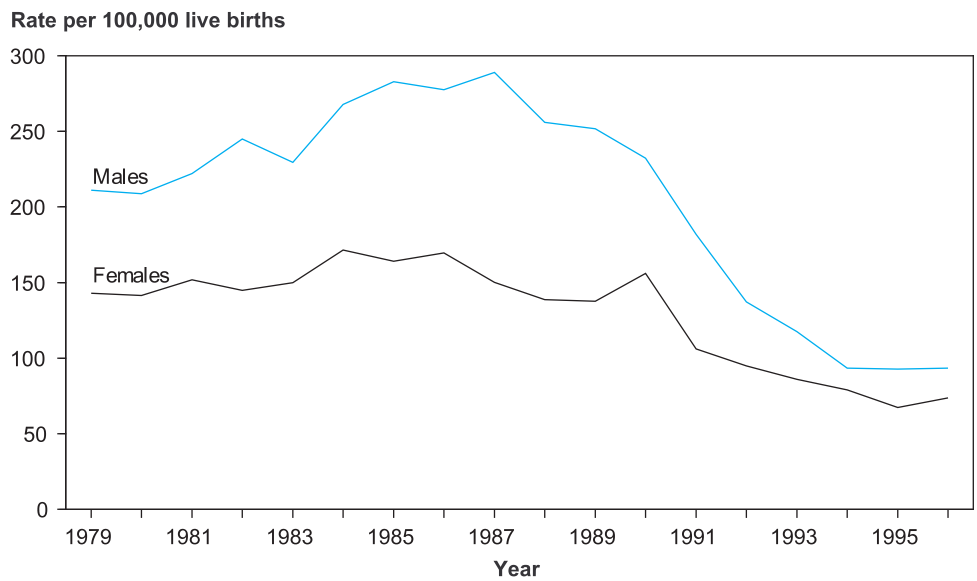
This chapter presents additional detail on SIDS to that presented in Chapter 3. SIDS remains by far the most common specific cause of death to babies aged between 1 and 12 months. In 1996, there were 180 SIDS deaths in this age group. The next most common cause of death was 'unspecified anomaly of heart' with 19 deaths (AIHW Mortality Database).

There was a dramatic reduction in the SIDS death rate in Australia during the early to mid 1990s, coinciding with a public health program targeting SIDS risk factors. Similar reductions occurred in other countries, including New Zealand (New Zealand Ministry of Health 1998). Analysis in New Zealand has demonstrated a link between SIDS deaths, and gestation and birthweight. Higher SIDS death rates were found both for pre-term and low-birthweight infants (New Zealand Ministry of Health 1998).

Trends

There has been a substantial decrease in SIDS deaths since the early 1990s. The role played by a national prevention campaign begun in the early 1990s has been stressed by many as a likely contributor to this decrease (Abraham et al. 1995). The total number of deaths from SIDS between 1979 and 1996 was 7,372, an average of 410 deaths per year. The highest number of deaths in any one year was in 1985, with 549 deaths. However, during this period, deaths from SIDS declined by more than 46% to 83.9 per 100,000 live births in 1996. For infants under 1 year old, there was also a 46% decline in the number of SIDS deaths over the period 1979 to 1996, compared with just 5% for all other causes of death.

Year-specific mortality rates from SIDS over the period 1979 to 1996 are examined below.

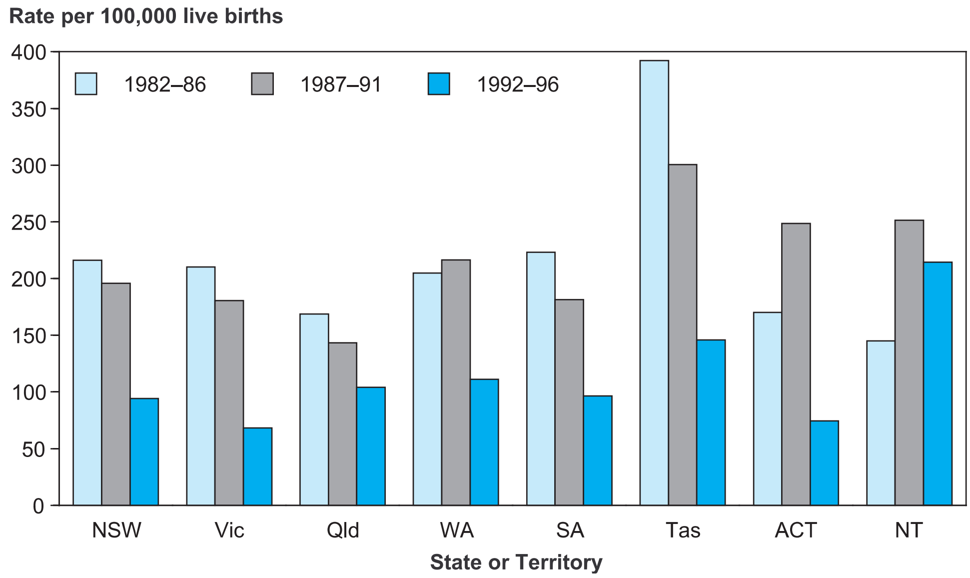


Source: Derived from AIHW Mortality Database.

Figure 6.1: SIDS death rates, 1979 to 1996

- The death rate from SIDS dropped dramatically from a peak in the mid-1980s, particularly for boys. The 1996 rate was nearly three times lower than the highest rate for boys, and almost 2.5 times lower for girls.
- The male death rate has remained higher than the female rate throughout the period examined. However, the sex differential (boys:girls) has decreased from a high of 1.9 in 1987 to 1.3 in 1996.

State and Territory comparisons



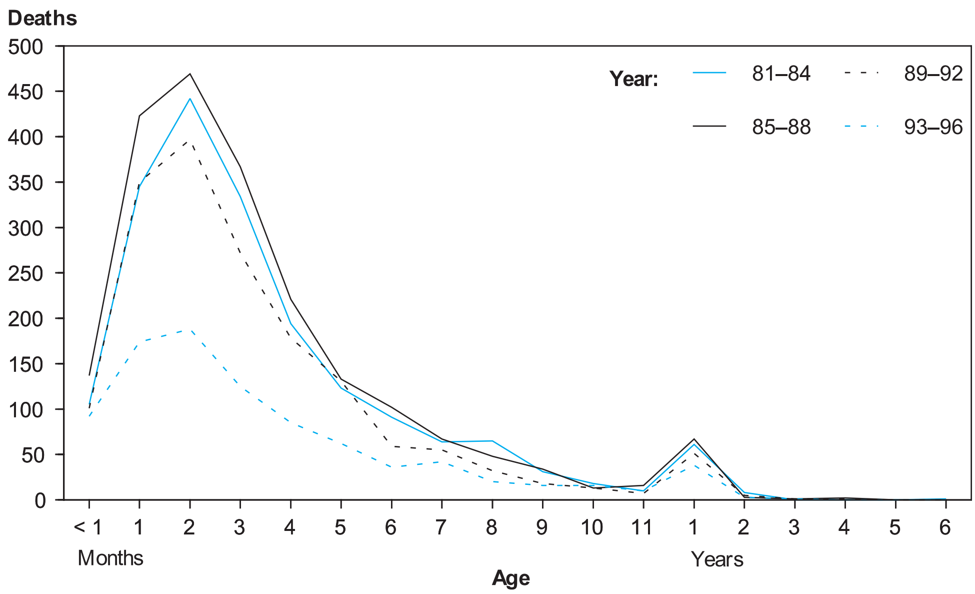
Source: Derived from AIHW Mortality Database.

Figure 6.2: Average rate of SIDS deaths over 5-year periods

- There have been declines in the death rate from SIDS in nearly all States and Territories between 1982–86 and 1992–96. The exception to this is in the Northern Territory. The Northern Territory also had the highest SIDS death rate in the 5-year period 1992–96 at 214 per 100,000 live births.
- The largest declines occurred in Victoria (declined by 68%) and in Tasmania (declined by 63%).
- As noted in Chapter 28, the mortality rate from SIDS is over 5 times higher for Indigenous children compared with other children (based on data from the three jurisdictions with Indigenous identification for deaths recorded sufficiently accurately). In addition, the States and Territories with increases or lower declines in the number of SIDS deaths in Figure 6.2 are the States and Territories with higher proportions of Indigenous babies (Northern Territory and Queensland).[1]

1. In 1996, the States and Territories with the highest estimated proportions of the population under one year being Indigenous were Northern Territory (38.4%) and Queensland (6.8%) (ABS 1997e).

Age distribution



Source: AIHW Mortality Database.

Figure 6.3: Number of SIDS deaths by age

- As shown in Figure 6.3, the majority of SIDS deaths occurred in babies under 3 months of age over the period 1981 to 1996. SIDS deaths, however, continued to occur in children aged over 1 year. The number of SIDS deaths to babies under 3 months of age decreased from 892 and 1,029 in 1981–84 and 1985–88 respectively, to 454 in 1993–96.
- The decline in SIDS deaths discussed earlier appears to have resulted in a lower number of deaths across all ages shown above. Examination of the percentage change in the number of SIDS deaths between 1989–92 and 1993–96 shows that the largest decreases were for babies aged between 1 and 5 months inclusive (AIHW Mortality Database). For these age groups, there was a reduction of over 50%. The only age groups that showed an increase in the number of SIDS deaths were for babies aged 10 and 11 months of age, although the number of SIDS deaths for these ages was very much lower than for younger babies.

7 Injury

Injury is the leading cause of death in children aged 1–4, 5–9 and 10–14 years in Australia (see Chapter 3). It is also the second most common reason for admission to hospital, after diseases of the respiratory system (see Chapter 4). Many more injuries are treated in hospital accident and emergency departments and by private medical practitioners. Most children recover well from their injuries, but a proportion of non-fatal injuries result in long-term disability. The possibility of prevention makes injury an area where there is potential for improvement in child health.

Injury prevention and control is one of the five National Health Priority Areas, recognising that this is one area 'where a concerted effort could achieve significant gains in health status' (AIHW & DHFS 1997). A report on this priority area has recently been released (DHFS & AIHW 1998b).

Injuries result in diverse conditions and occur in many different circumstances. Injuries can be classified as conditions directly resulting from a physical or chemical object or substance external to the body of the person concerned (AIHW & DHFS 1997). Under this definition, poisoning is also classified as an injury.

A major characteristic of childhood injuries is the changing pattern at different ages, with causes of injury varying in significance at different ages (Moller & Kreisfeld 1997). Drowning, for example, is a major cause of injury death for children under 5 years of age, but it becomes less of a problem for older children. Burns and scalds are also a particular risk for under 5 year olds. In this chapter, we present information by age groups for a range of injuries. An extension of this analysis would be to examine childhood injuries by single year age groups.

Most of the currently available national information on injury relates to more serious injuries: deaths and hospitalisations. A large number of childhood injuries are also likely to be treated in accident and emergency departments of hospitals, although national information on injuries not requiring admission to hospital is not currently available. Some information was also collected in the last National Health Survey (1995) on injuries. These data allow estimation of the prevalence of all childhood injuries including minor and more serious injuries.

Lyle (1995) outlines five key areas of information on injury surveillance. These areas are:

- external cause of the injury
- place of occurrence of the injury
- type of activity being undertaken at the time of the injury
- type of trauma resulting from the injury
- severity of the injury.

Information presented in this chapter covers all these areas. The area with least available national data on childhood injury is on the activity undertaken at the time of injury, although some relevant information can be obtained from 'external cause' data. External cause codes are used to identify environmental events, circumstances and conditions as the cause of an injury or poisoning for both deaths and hospitalisations. Table 7.1 summarises the information presented in this chapter under each of these five areas.

Table 7.1: Availability of national information on childhood injury

	Data source		
Information area	**Deaths**	**Hospitalisations**	**All injuries**[(a)]
External cause	✓	✓	✓
Place of occurrence	for drowning only	✓[(b)]	✓
Type of activity	related to external cause	related to external cause	related to external cause
Type of trauma	not available	✓	✓
Severity[(c)]	all severe	related to length of stay and type of trauma	days off school

(a) Parent-reported data on the prevalence of injuries collected as part of the 1995 National Health Survey: includes less detailed groupings compared with the other data sources listed in this table.

(b) Not fully reported in all cases.

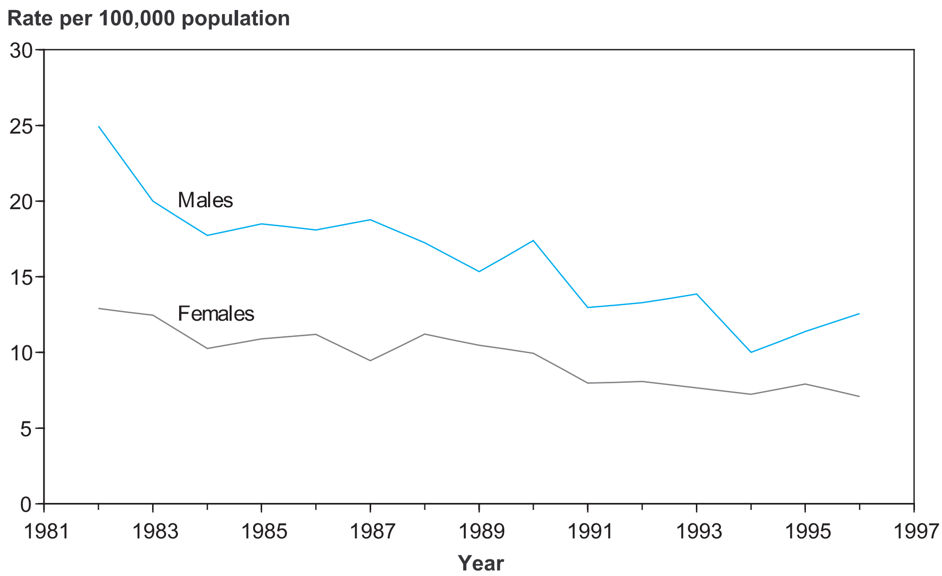
(c) Severity is also related to data source: deaths and hospitalisations are the more severe cases of injury.

The framework outlined above focuses on injury surveillance, but does not explicitly include injury prevention surveillance. This includes information on risk factors, knowledge and attitudes, as well as prevention. Such information is an important aspect of injury information, but is not currently collected in a systematic manner at the national level.

Harrison (1995) notes that injury information is more useful when it includes information on the population at risk (such as children who ride bikes, for pedal injuries) and exposure to injury (the amount of time riding bikes, or the amount of time cycling on roads). Such information is not readily available at the national level for childhood injuries. Related to this, it would also be of use to know the impact of preventive measures on the risk of injury and the severity of injury (for example, cyclists who wore helmets).

Overview

Data on deaths from injuries are available over many years. Population rates over the last 15 years are shown below. Comparable national data on hospitalisations is available from 1993–94 until 1996–97. For the analysis of hospitalisations presented in this chapter, data were included where the principal diagnosis was an injury or poisoning (ICD-9-CM codes 800–999). The diagnosis relates to the type of injury, rather than to the cause of the injury. Despite this initial selection based on diagnosis, many of the results are grouped using external cause codes. The detail of this external cause coding has increased over the 4-year period, both in the detail of each code and in the use of multiple codes. For this reason, care needs to be taken when examining trends in hospitalisations, and consequently the majority of hospitalisation information presented in this chapter relates only to the year 1996–97.



Source: AIHW Mortality Database.

Figure 7.1: Injury deaths, 0–14 year olds, 1982 to 1996

- There has been an overall decline in the childhood death rate from injuries over the last 15 years (Figure 7.1), largely due to a fall in transport-related deaths.
- The death rate for boys has been higher than for girls throughout the 15-year period, although the gap has narrowed.

Table 7.2: Injury deaths and hospitalisations by age and sex (average annual rate per 100,000 population)

Sex	Age (years)	Deaths 1994–96	Hospitalisations 1994–95 to 1996–97
Males	< 1	16.2	123
	1–4	17.4	900
	5–9	6.5	933
	10–14	9.7	1,186
Females	< 1	11.5	99
	1–4	11.0	675
	5–9	5.2	644
	10–14	5.9	589

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

- The highest death rate from childhood injuries occurred in children aged under 5 years.
- In contrast, hospitalisation rates increased with age for boys, but peaked for girls at the 1–4 age group.
- Boys experienced higher death rates than girls in all age groups presented here.
- Boys also experienced higher hospitalisation rates than girls, particularly in the 10–14 age group, for which the rate for boys was double that for girls.

- During the period with available data (1993–94 to 1996–97), the hospitalisation rate for childhood injuries has remained reasonably steady.

External cause

Table 7.3 summarises injury rates using the latest available data by the cause of the injury.

Table 7.3: Injury and poisoning occurrences, 0–14 year olds (rate per 100,000 population)

Cause of injury/poisoning	Deaths 1996	Hospitalisations 1996–97	All injuries 1995[(a)]
Motor vehicle accident	1.94	38	392
Motor cycle accident	0.15	26	n.a.
Pedal cycle accident	0.43	99	n.a.
Pedestrian accident	1.41	34	n.a.
Other transport accident	0.33	60	n.a.
Accidental poisoning	0.15	110	n.a.
Misadventure during medical care	0.00	105	n.a.
Accidental falls	0.20	695	2,453
Fire and flames	0.59	13	n.a.
Natural and environmental factors	0.10	64	n.a.
Accidental drowning	1.92	10	n.a.
Other threats to breathing	0.77	65	n.a.
Accidentally struck	0.05	109	1,031
Accidents caused by cutting and piercing objects	0.03	98	n.a.
Accidents caused by hot substance[(b)]	0.00	48	n.a.
Overexertion and strenuous movements	0.00	12	n.a.
Drugs in therapeutic use	0.03	9	n.a.
Suicide and self-inflicted injury	0.36	11	n.a.
Purposely inflicted by other person	0.64	22	236
Other causes	0.79	124	1,599
Not reported	0.00	2	1,823
Total	**9.89**	**1,752**	**7,534**

(a) Parent-reported prevalence of current conditions caused by an injury. If more than one current injury, the most recent injury is reported.

(b) Includes burns and scalds.

n.a. not available.

Sources: AIHW Mortality Database; AIHW National Hospital Morbidity Database; AIHW from ABS NHS data, 1995.

- The prevalence of injuries in children (that is, children with current conditions caused by an injury) was estimated to be a little over 7,500 per 100,000 at the time of the National Health Survey in 1995. The most common category of injury was accidental falls.

- During 1996–97, injuries caused over 68,000 hospitalisations (1,800 hospitalisations for every 100,000 children). By far the most common reason for these admissions was accidental falls, followed by accidental poisoning.
- In 1996, there were nearly 400 injury-related childhood deaths, a rate of nearly 10 per 100,000. Motor vehicle accidents accounted for the highest number of these deaths, followed by drowning and pedestrian accidents. More than a third of these injury deaths were from transport-related accidents (3.9 per 100,000).
- In summary, important causes of injury mortality were motor vehicle accidents, drowning and pedestrian accidents. Accidental falls resulted in a large number of hospitalisations and more minor injuries, although relatively few deaths.

Table 7.4: Injury deaths and hospitalisations, by State and Territory, for 0–14 year olds

	Deaths 1996		
State or Territory	Number	Rate per 100,000	Hospitalisations 1996–97 (rate per 100,000)
New South Wales	114	8.7	1,643
Victoria	62	6.5	1,395
Queensland	109	14.8	2,359
Western Australia	56	14.3	1,840
South Australia	26	8.7	2,004
Tasmania	3	2.8	1,404
Australian Capital Territory	6	8.8	1,288
Northern Territory	11	22.3	1,613

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

- Queensland and Western Australia had the highest childhood death rates from injury in 1996 with over 14 deaths per 100,000 population.
- Queensland also had the highest hospitalisation rate (in 1996–97), followed by South Australia and Western Australia.

Place of occurrence

Information on the place of occurrence of injuries is important in determining possible preventive measures for particular causes. Information on the place of occurrence of injury deaths is not readily available at the national level. The exception is for drownings, details of which are given later in this chapter. Information on the place of occurrence of hospitalised injuries is partly available (based on ICD-9-CM codes). Data were also collected on the place of injury in the National Health Survey. Information from both these sources is summarised below.

Table 7.5: Place of occurrence of injuries resulting in hospitalisation, 0–14 year olds, 1996–97 (per cent)

Place of occurrence	Proportion of injury hospitalisations
Home	28.6
Farm	1.5
Mine and quarry	0.0
Industrial place	0.2
Place of recreation and sport	10.1
Street and highway	5.7
Public building	6.5
Residential Institution	1.9
Other	3.3
Not reported	42.2

Source: AIHW National Hospital Morbidity Database.

- Over 40% of injuries to children requiring hospitalisation did not have a place of occurrence recorded.
- Of those injuries with a recorded place of occurrence, the highest groups were injuries occurring in the home, and those occurring in recreational facilities.

Table 7.6: Place of occurrence for injuries[(a)] to 0–14 year olds, 1995

Place of occurrence	Per cent
At work	0.0
School	15.2
Inside house	16.2
Outside house	26.4
While travelling	3.1
Other	14.8
Not stated	24.2

(a) As reported by parents in the National Health Survey.

Source: AIHW, from ABS NHS data, 1995.

- For injuries reported in the National Health Survey (including minor injuries), inside (16%) or outside (26%) a house were the most common reported locations of injuries.
- Another 15% of injuries occurred at school.
- These proportions are likely to be related to the amount of time spent by children in these locations, but nevertheless indicates locations where precautions need to be taken to prevent or at least minimise injuries.

Type of trauma

Information on the type of injury sustained is available both for hospitalised injuries and for injuries as reported in the National Health Survey. Comparable national information is not available for injury deaths.

Table 7.7: Type of injury for 0–14 year olds (per cent)

Type of injury or poisoning	Hospitalisations 1996–97[(a)]	All injuries 1995[(b)]
Fractures	40.7	9
Dislocations, sprains, strains	1.9	18
Internal injuries	10.9	3
Open wounds	16.6	25
Bruising and crushing	2.7	19
Foreign bodies	3.7	2
Burns and scalds	3.7	8
Poisoning	5.0	1
Other	14.8	28

(a) Principal diagnosis of admission.

(b) Reported prevalence of current conditions caused by an injury. If more than one current injury, the most recent injury is reported. More than one type of injury from the current injury may be reported.

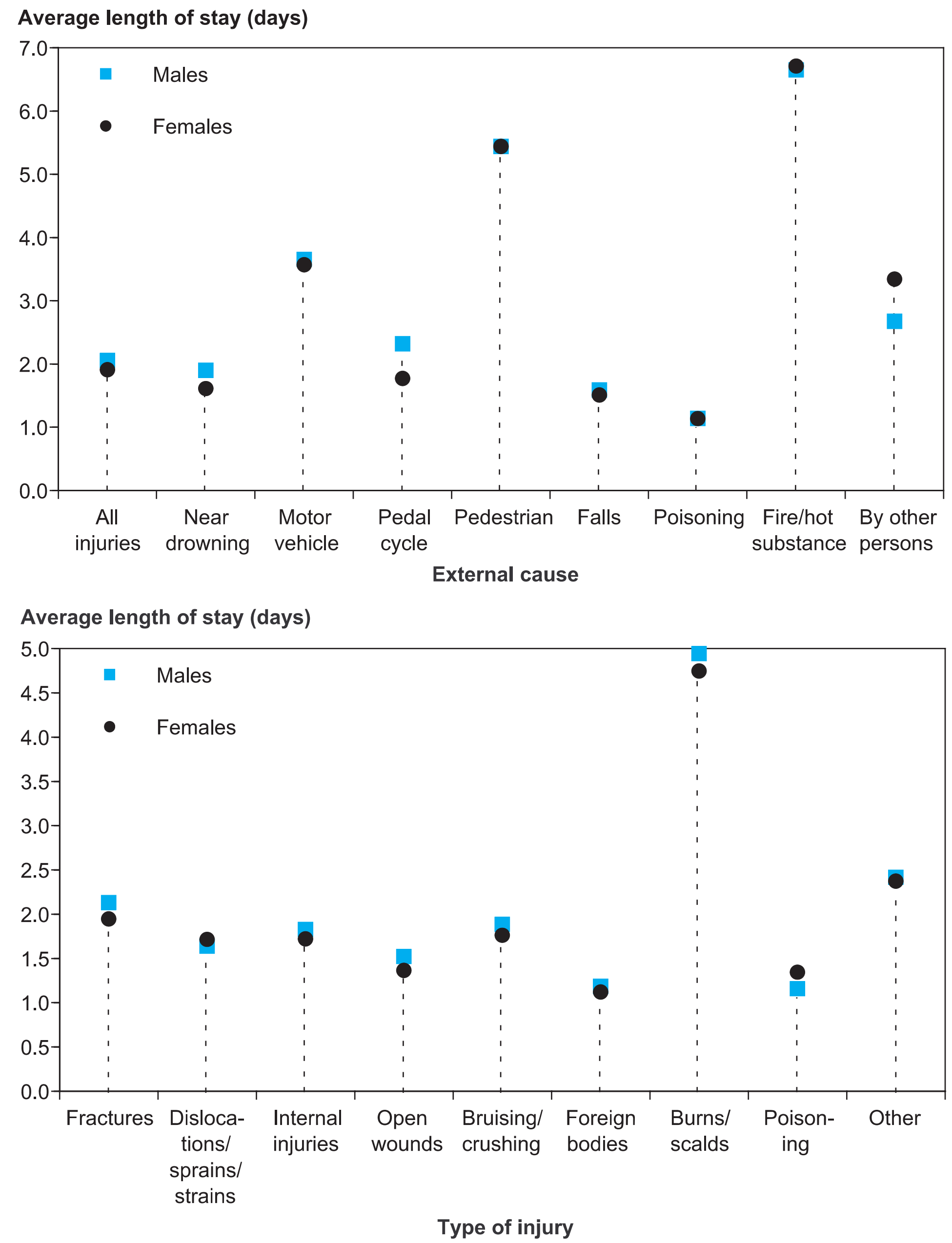
Sources: AIHW National Hospital Morbidity Database; AIHW, from ABS NHS data, 1995.

- The most common type of injury (as a principal diagnosis) requiring hospitalisation was fractures, followed by open wounds and internal injuries. Fractures accounted for 41% of all hospitalised injuries.
- The most common types of current injury at the time of the National Health Survey were open wounds, bruising/crushing and dislocations/sprains/strains.

Severity

Injuries are considered to be a natural part of childhood and learning. However, there are major health problems arising from more serious injuries. Obviously, the most serious injuries are those resulting in death, on which information has been presented earlier. In addition, more serious non-fatal injuries will require hospitalisation, the total number of these being outlined earlier. Measuring injury severity is not straightforward. Technology is not currently available to measure 'severity', including threat to life, short-term effects and long-term effects. Information is presented below on an indication of severity for injuries requiring hospitalisation: length of stay. This is only an indicator of severity, in the absence of other measures.

Average (mean) length of stay is calculated as the total bed-days divided by the number of hospitalisations. This does not account for multiple hospitalisations that may occur from one injury. A better measure, as an indicator of severity, would be total bed-days divided by the number of injuries requiring hospitalisation, thus removing the effect of multiple admissions. This calculation is not currently possible at the national level. A further refinement would be to use the number of injuries as the denominator, not just those requiring hospitalisation.



Source: AIHW National Hospital Morbidity Database.

Figure 7.2: Average length of stay for injury hospitalisation, by cause and by type of injury, 1996–97

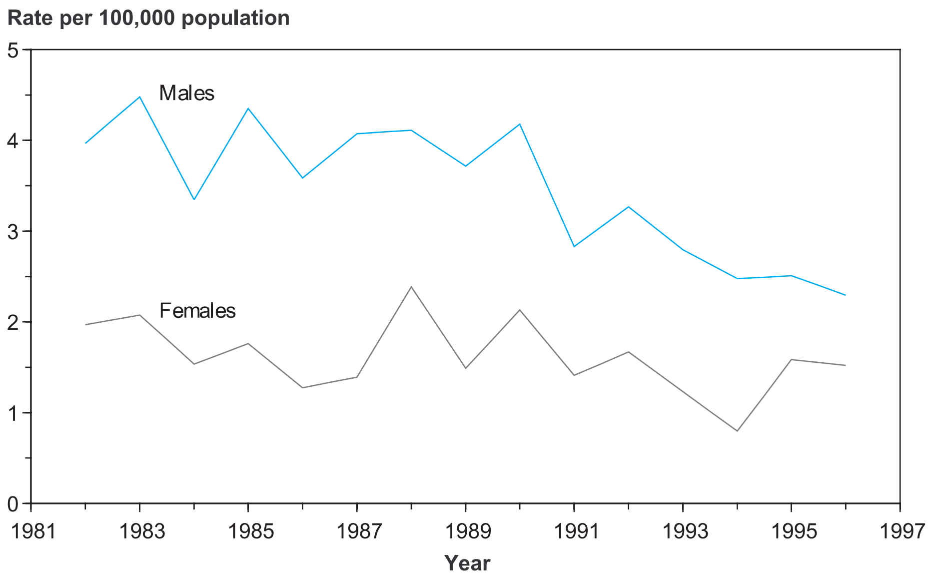
- Fire/hot substances, pedestrian accidents and motor vehicle accidents caused the most severe hospitalised injuries as indicated by length of stay.
- Using this indicator for severity, the most severe types of injuries noted among children were burns and scalds.
- There were also some subgroups within the groups indicated in Figure 7.2 with relatively long average lengths of stay. These included fractures of the spine, neck and trunk, and internal injuries.

Specific injuries

This section presents more detailed information on a number of specific causes of childhood injury. These were selected because of their high mortality and/or morbidity rates. Each subsection includes information on trends over time, age and sex differences, State and Territory differences, and place of occurrence of injuries.

Drowning

Nearly 80 children died by drowning in 1996—almost as many deaths as in motor vehicle accidents. There were also just over 350 hospitalisations for near drownings in 1996–97, a relatively small number of hospital admissions compared with other childhood injuries.



Source: AIHW Mortality Database.

Figure 7.3: Drowning deaths, 0–14 year olds, 1982 to 1996

- During the 1990s, there has been a decline in the number of childhood drownings, particularly for boys.
- Boys have consistently experienced a higher death rate from drowning than girls.

Table 7.8: Drowning and near drowning occurrences for 0–14 year olds

			Hospitalisations 1996–97	
Sex	Age (years)	Deaths 1996 (rate per 100,000 population)	Rate per 100,000 population	Average length of stay (days)
Males	< 1	3.1	16.1	2.0
	1–4	5.6	29.7	1.8
	5–9	1.6	6.4	2.0
	10–14	0.4	4.3	1.9
Females	< 1	2.4	11.3	1.3
	1–4	4.5	17.4	1.6
	5–9	0.3	3.4	1.3
	10–14	0.5	1.6	2.9

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

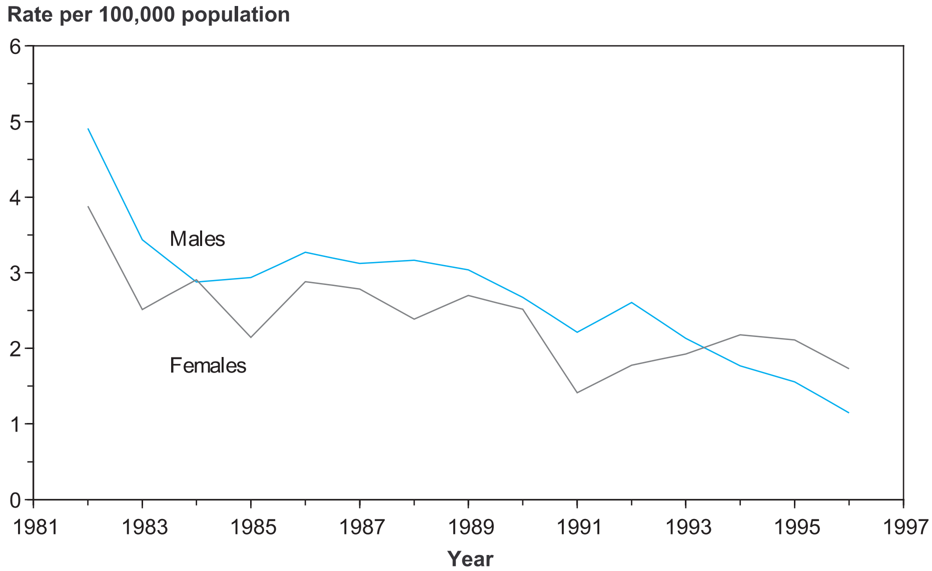
- The highest childhood drowning death rates in 1996 were for 1–4 year olds followed by babies under 1 year.
- Children under 5 years also experienced the highest hospitalisation rate for near drownings.
- Boys generally experienced higher death and hospitalisation rates related to drowning and immersion.
- The hospitalisation rate for boys has remained consistently higher than for girls during the period 1993–94 to 1996–97.

The States and Territories with warmer climates—Queensland, Western Australia and the Northern Territory—had the highest drowning death rates (in 1996) and near drowning hospitalisation rates (in 1996–97). The highest death rate occurred in the Northern Territory (4.1 per 100,000) followed by Western Australia (3.8 per 10,000) and Queensland (3.5 per 100,000). The highest hospitalisation rate in 1996–97 was in Queensland (15.7 per 100,000), followed by the Northern Territory (12.1 per 100,000) and Western Australia (11.7 per 100,000).

Unlike other causes of injury deaths, information on the place of occurrence of drowning deaths is available. In 1996, over 37% of childhood drownings occurred in private swimming pools (AIHW Mortality Database). The next largest group occurred in a 'lake, lagoon, dam or waterhole' (24%). Nearly 20% of drownings occurred in a bathtub. The place of occurrence of hospital admissions for near drowning shows that well over half occurred at home (data not shown; AIHW National Hospital Morbidity Database).

Motor vehicle accidents

There were 76 deaths of children under 15 years from motor vehicle accidents in 1996 making it the largest cause of childhood injury deaths. There were nearly 1,500 hospitalisations for injuries to children caused by motor vehicle accidents in 1996–97. By comparison with other causes of childhood injury this was a relatively uncommon cause of hospitalisation.



Source: AIHW Mortality Database.

Figure 7.4: Motor vehicle accident deaths, 0–14 year olds, 1982 to 1996

- In the 15 years to 1996 there was a large decline in the number of childhood fatalities from motor vehicle accidents, from nearly 5 per 100,000 for boys and 4 per 100,000 for girls, to less than 2 per 100,000.

Table 7.9: Occurrence of motor vehicle accident injuries for 0–14 year olds

Sex	Age (years)	Deaths 1996 (rate per 100,000 population)	Hospitalisations 1996–97: Rate per 100,000 population	Hospitalisations 1996–97: Average length of stay (days)	All injuries 1995[(a)] (rate per 100,000 population)
Males	< 1	2.3	18.4	3.8	0
	1–4	2.2	39.8	3.3	193
	5–9	1.5	34.5	4.2	443
	10–14	2.7	48.7	3.5	697
Females	< 1	0.8	10.5	3.7	0
	1–4	1.6	30.6	3.1	98
	5–9	2.2	34.7	3.9	384
	10–14	1.6	44.9	3.6	592

(a) Parent-reported prevalence of current conditions caused by an injury. If more than one current injury, the most recent injury is reported.

Sources: AIHW Mortality Database; AIHW National Hospital Morbidity Database; AIHW, from ABS NHS data.

- The injury rate at the time of the National Health Survey was higher for boys than for girls in all age groups, as was the hospitalisation rate in general. This pattern was not apparent for deaths from motor vehicle accidents.
- There was also an increase in the injury rates with increasing age, both in the prevalence of all injuries and for those injuries requiring hospitalisation.

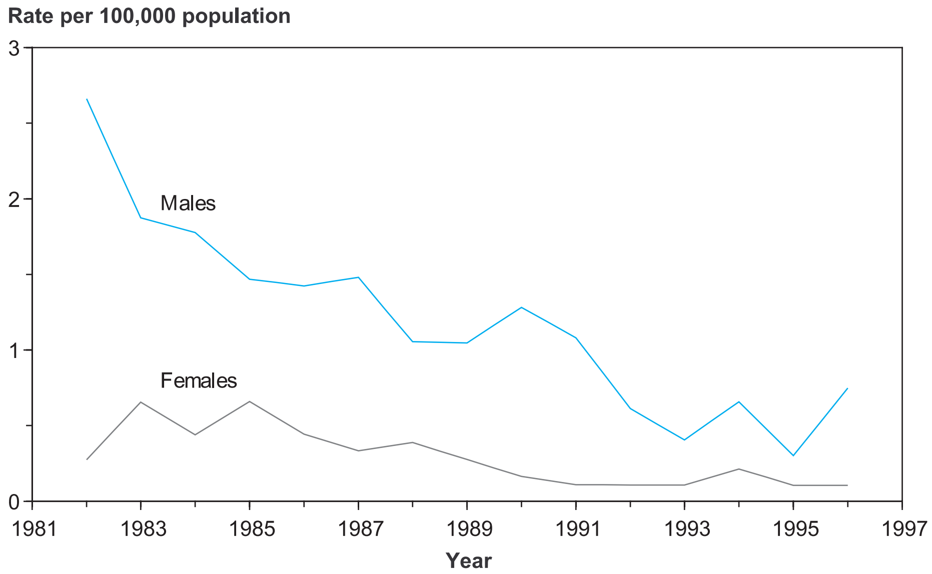
Western Australia, South Australia and Queensland had the highest hospitalisation rates from motor vehicle accidents in 1996–97 (50.0, 48.9 and 48.6 per 100,000 respectively).

Information on the place of occurrence of these injuries is available only for hospitalisations. Not surprisingly, in 1996–97 the majority of these injuries occurred on a street or highway (at least 78%). A further 4% of accidents took place on a farm, and 3% at home. A number of these injuries did not have a reported place of occurrence.

Pedal cycle accidents

There were 17 deaths in 1996 and nearly 4,000 hospitalisations in 1996–97 from pedal cycle accidents for children under 15 years. This makes cycle accidents an infrequent cause of death but a reasonably frequent cause of hospitalisation compared with other causes of childhood injury. In fact, they accounted for the highest hospitalisation rate of all types of transport accidents (see Table 7.3).

When considering prevention of cycle accidents, it is important to take into account the health benefits of cycling. It may be inappropriate to discourage cycling for fear of possible injury at the expense of the potential long-term health benefits of cycling.



Source: AIHW Mortality Database.

Figure 7.5: Deaths from pedal cycle accidents, 0–14 year olds, 1982 to 1996

- Over the 15 years to 1996, the death rate from pedal cycle accidents has decreased substantially, particularly for boys. The death rate for boys has decreased from over 2.5 per 100,000 to around 0.5 per 100,000. However, the male rate increased again in 1996. For girls, the rate has decreased from around 0.5 per 100,000 to around 0.1 per 100,000.
- The sex differential for the death rates has also decreased markedly since the early 1980s.

Table 7.10: Pedal cycle accident injury deaths and hospitalisations for 0–14 year olds

Sex	Age (years)	Deaths 1996 (rate per 100,000 population)	Hospitalisations 1996–97	
			Rate per 100,000 population	Average length of stay (days)
Males	< 1	—	—	—
	1–4	—	73	1.8
	5–9	0.3	347	2.5
	10–14	1.9	595	2.3
Females	< 1	—	1	1.0
	1–4	0.2	21	1.8
	5–9	—	67	1.9
	10–14	0.2	70	1.6

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

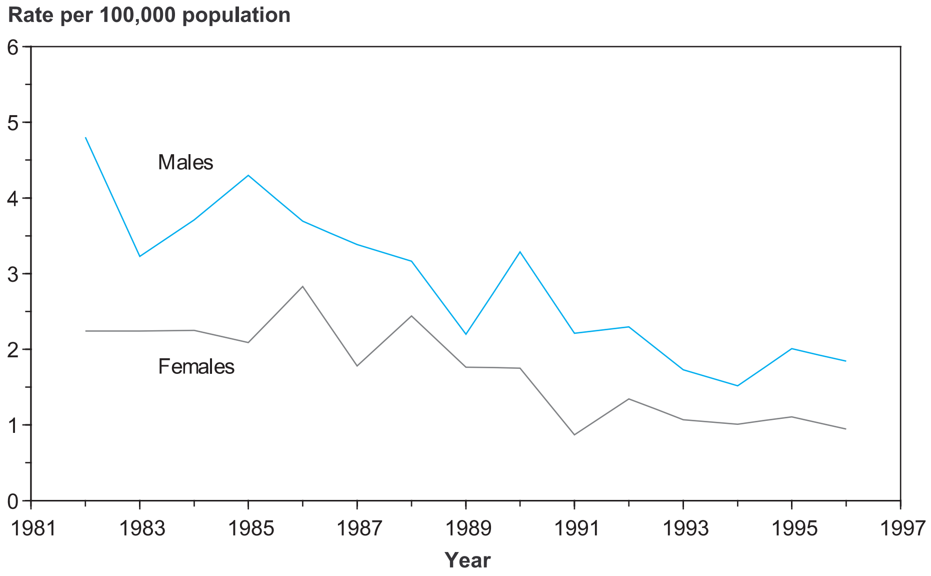
- The death rate from pedal cycle accidents is low compared with other childhood injury accidents. The highest death rate in 1996 was for boys aged 10–14 years.
- Hospitalisations rates were substantially higher for boys, and increased with age.

Western Australia and Queensland had the highest death rates from pedal cycle accidents in 1996 (1.0 and 0.8 per 100,000 respectively). Queensland had the highest hospitalisation rate in 1996–97 with 143 hospitalisations per 100,000. Western Australia had the second highest rate of 115 per 100,000.

National information on the place of occurrence of cycle deaths is not available. For hospitalised injuries, the place of occurrence in the highest proportion of cases was 'street and highway' (33%). There were also 8% of cases occuring at home. In addition, over 50% of cases did not have a place of occurrence recorded.

Pedestrian accidents

In 1996, there were 55 children killed in pedestrian accidents making this the third largest cause of injury death for children. Compared with other causes of childhood injury, there was a relatively small number of hospitalisations as a result of pedestrian accidents (just over 1,300 in 1996–97).



Source: AIHW Mortality Database.

Figure 7.6: Deaths from pedestrian accidents, 0–14 year olds, 1982 to 1996

- As with other transport-related injuries, the death rate from pedestrian accidents has declined steadily over the last 15 years, with the death rate for boys remaining higher than for girls.

Table 7.11: Pedestrian accident injury deaths and hospitalisations for 0–14 year olds

			Hospitalisations 1996–97	
Sex	Age (years)	Deaths 1996 (rate per 100,000 population)	Rate per 100,000 population	Average length of stay (days)
Males	< 1	0.8	0.8	1.0
	1–4	4.5	43.0	3.9
	5–9	1.3	46.0	6.6
	10–14	0.4	47.1	5.5
Females	< 1	0.8	1.6	1.0
	1–4	1.6	20.7	5.1
	5–9	0.6	25.3	6.1
	10–14	0.8	30.5	5.1

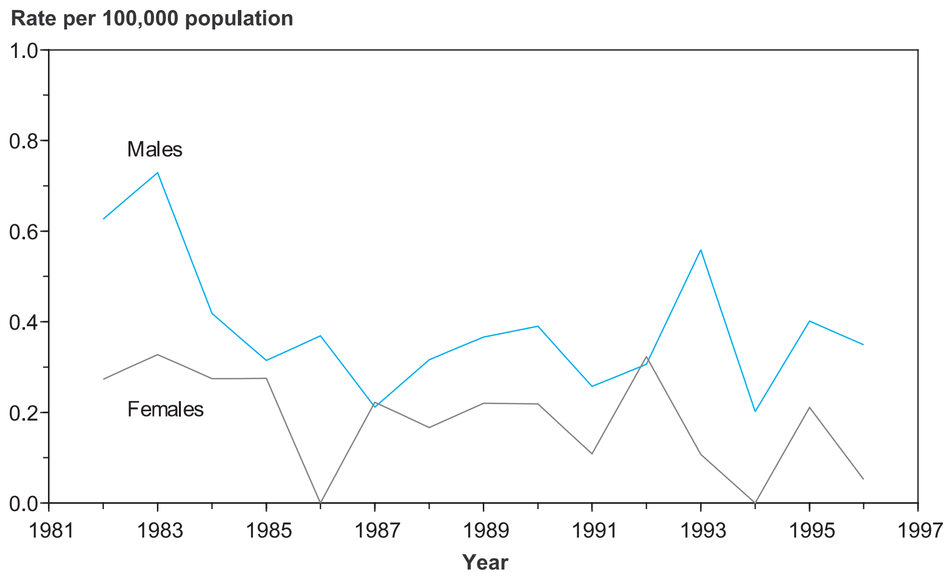
Sources: AIHW Mortality Database; AIHW National Hospital Morbidity Database.

- The sex differential is apparent across nearly all age groups for both hospitalisations and deaths.
- The highest death rates occurred in the 1–4 age group but the hospitalisation rates were higher for older children.
- The average length of stay in hospital for these injuries was longer than for other traffic-related injuries, with 5–9 year old children having the longest average length of stay.

The Northern Territory and Queensland had the highest rate of childhood pedestrian deaths in 1996 (2.0 and 1.9 per 100,000 respectively). Queensland and New South Wales had the highest hospitalisation rates in 1996–97 (43 and 38 per 100,000 respectively). For pedestrian accidents resulting in hospitalisation, at least 62% of accidents occurred in the street or highway. Another 13% occurred at home.

Falls

Accidental falls resulted in the highest hospitalisation rate of all childhood injuries—over 27,000 hospitalisations in 1996–97. There were also 8 childhood deaths from falls in 1996. The death rate from falls is relatively small compared with other injury deaths in children.



Source: AIHW Mortality Database.

Figure 7.7: Deaths from falls, 0–14 year olds, 1982 to 1996

- There was a sharp decline in the death rate from accidental falls in childhood in the early 1980s, with little variation since then.
- Boys have generally experienced a higher death rate than girls over this period.

Table 7.12: Occurrence of fall injuries for 0–14 year olds

Sex	Age (years)	Deaths 1996 (rate per 100,000 population)	Hospitalisations 1996–97: Rate per 100,000 population	Hospitalisations 1996–97: Average length of stay (days)	All injuries 1995[(a)] (rate per 100,000 population)
Males	< 1	0.8	319	1.8	474
	1–4	0.2	719	1.6	2,046
	5–9	0.1	919	1.5	2,446
	10–14	0.6	952	1.6	3,125
Females	< 1	—	273	1.5	979
	1–4	—	568	1.6	1,661
	5–9	0.2	698	1.4	1,964
	10–14	—	431	1.6	3,933

(a) Parent-reported prevalence of current conditions caused by an injury. If more than one current injury, the most recent is reported.

Sources: AIHW Mortality Database; AIHW National Hospital Morbidity Database; AIHW, from ABS NHS data.

- Data on the prevalence of all fall injuries indicate that falls become more common with age (see last column in Table 7.12).
- Hospitalisations are also most common in the older age groups for boys, but in the middle age groups for girls.
- For all age groups presented in the table, boys experienced a higher hospitalisation rate than girls. The magnitude of this differential has been steady over the period 1993–94 to 1996–97.

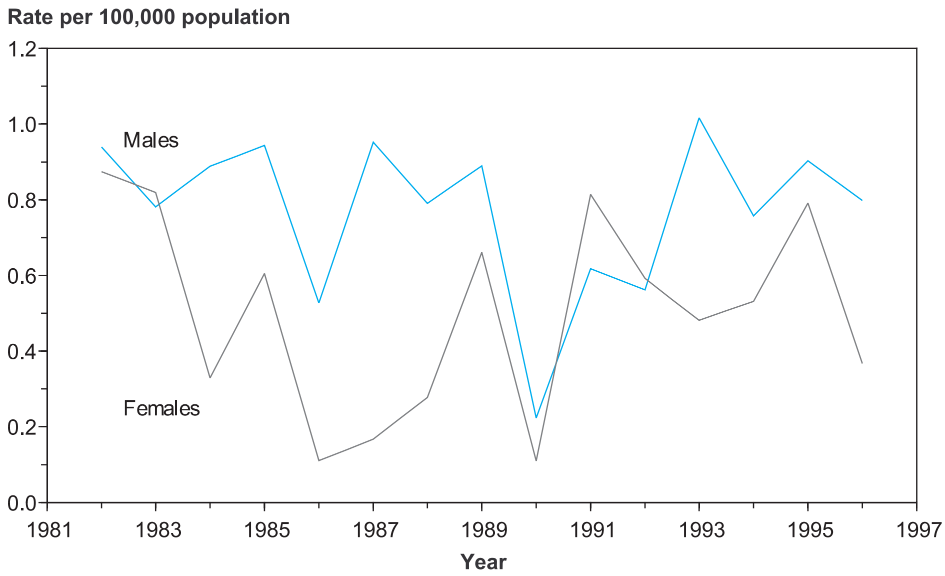
Queensland had the highest hospitalisation rate from falls in 1996–97 (911 per 100,000).

For fall injuries resulting in hospitalisation, the most likely place for the injury to occur was in the home (27%), followed by places of recreation and public places (18%). Over 40% did not have a recorded place of occurrence.

Burns and scalds

This subsection includes injury from fire and flames, as well as burns and scalds from hot food, drink, steam and hot objects (external cause codes E890–E899, E924.0 and E924.8). It does not include self-inflicted injuries. Therefore, the grouping used here is slightly different from that used by the AIHW National Injury Surveillance Unit in its publication (Moller & Kreisfeld 1997).

There were 23 childhood deaths from burns and scalds in 1996, and nearly 2,000 hospitalisations in 1996–97. Although this group is not large in comparison to deaths and hospitalisations from other childhood injuries, the short- and long-term morbidity associated with burns can be very significant.



Source: AIHW Mortality Database.

Figure 7.8: Deaths from burns and scalds, 0–14 year olds, 1982 to 1996

- There were no apparent time-trends in the death rate from accidental burns over the period shown in Figure 7.8.
- Over the last 15 years, boys generally had higher death rates from accidental burns than girls.
- The death rate for both boys and girls was particularly low in 1990.

Table 7.13: Accidental burn deaths and hospitalisations for 0–14 year olds

Sex	Age (years)	Deaths 1996 (rate per 100,000 population)	Hospitalisations 1996–97: Rate per 100,000 population	Hospitalisations 1996–97: Average length of stay (days)
Males	< 1	0.0	117.9	5.5
	1–4	2.4	123.6	5.5
	5–9	0.4	26.0	5.6
	10–14	0.0	36.5	6.4
Females	< 1	0.0	89.0	5.0
	1–4	1.2	83.6	5.2
	5–9	0.2	13.8	6.0
	10–14	0.0	10.8	5.4

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

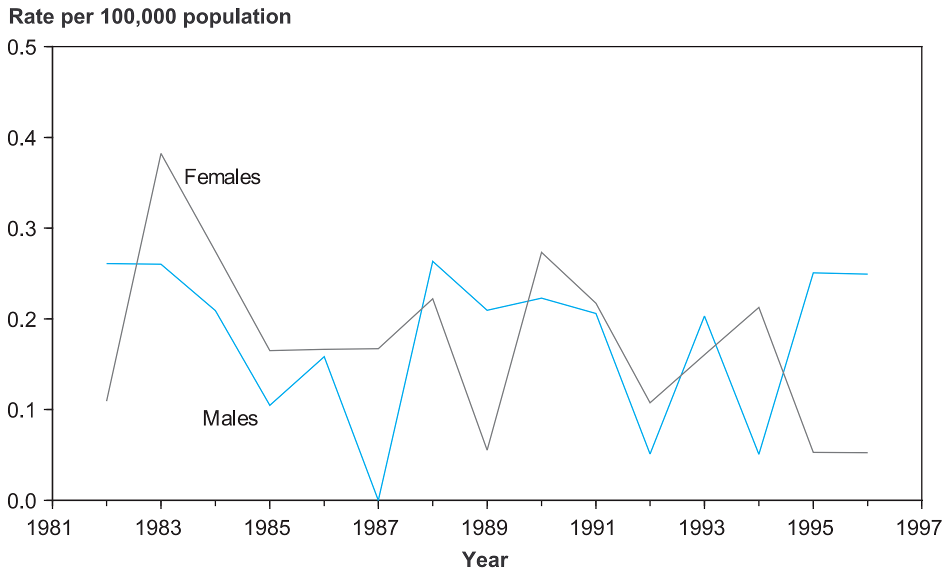
- Most of the deaths from accidental burns occurred in the 1–4 age group.
- The hospitalisation rate was high for children under 5 years, with children under 1 year having the highest hospitalisation rates in total.
- Boys had higher death and hospitalisation rates than girls in all age groups.

- The average length of stay in hospital for burn injuries was the highest of all childhood injury groups.

The majority of burn accidents requiring hospitalisation in 1996–97 occurred in the home —at least 65%.

Poisoning

In 1996, 6 children died from the effects of accidental poisoning, and over 4,000 hospitalisations were for the same reason in 1996–97. Compared with other childhood injuries, this makes poisoning a relatively infrequent cause of death but the second largest cause of injury hospitalisation after accidental falls. The large number of hospitalisations (with short average length of stay—see Table 7.14) may be related to observation following suspected ingestion of harmful substances, rather than because of evidence of toxic effects.



Source: AIHW Mortality Database.

Figure 7.9: Deaths from accidental poisoning, 0–14 year olds, 1982 to 1996

- The death rate from accidental poisoning has remained low compared with other causes of injury deaths since at least the mid-1980s.

Table 7.14: Poisoning deaths and hospitalisations for 0–14 year olds

Sex	Age (years)	Deaths 1996 (rate per 100,000 population)	Hospitalisations 1996–97 Rate per 100,000 population	Hospitalisations 1996–97 Average length of stay (days)
Males	< 1	0.8	101	1.3
	1–4	0.0	352	1.1
	5–9	0.1	20	2.6
	10–14	0.4	26	1.3
Females	< 1	0.8	116	1.3
	1–4	0.0	299	1.1
	5–9	0.0	17	1.1
	10–14	0.0	36	1.5

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

- Most deaths from poisoning occurred in infants under 1 year old in 1996.
- In 1996–97, the highest hospitalisation rates occurred in 1–4 year olds, followed by infants under 1 year old. The hospitalisation rate for boys has been consistently higher than for girls over the period 1993–94 to 1996–97.

Most accidental poisonings resulting in hospitalisation occurred at home (at least 71%).

Injuries inflicted by other persons

In 1996, 25 children died from homicide. Nearly 850 hospitalisations occurred from children with injuries purposely inflicted by others in 1996–97.

Source: AIHW Mortality Database.

Figure 7.10: Deaths from injuries inflicted by other persons, 0–14 year olds, 1982 to 1996

- The death rate from injuries purposely inflicted by others has remained reasonably steady over the last 15 years, with year-to-year variation.

Table 7.15: Occurrence of injuries inflicted by other persons, 0–14 year olds

Sex	Age (years)	Deaths 1996 (rate per 100,000 population)	Hospitalisations 1996–97: Rate per 100,000 population	Hospitalisations 1996–97: Average length of stay (days)	All injuries 1995[(a)] (rate per 100,000)
Males	< 1	5.3	57	5.4	—
	1–4	0.4	20	3.5	198
	5–9	0.3	12	3.2	370
	10–14	0.1	46	1.6	496
Females	< 1	3.2	62	6.3	—
	1–4	0.6	14	2.8	10
	5–9	0.6	5	3.0	109
	10–14	0.3	14	1.4	257

(a) Parent-reported prevalence of current conditions caused by an injury. If more than one current injury, the most recent is reported.

Sources: AIHW Mortality Database; AIHW National Hospital Morbidity Database; AIHW, from ABS NHS data, 1995.

- Infants under 1 year old had the highest rate of deaths from homicide in 1996.
- Hospitalisation rates were also highest for infants under 1 year old, and for 10–14 year old boys in 1996–97. The hospitalisation rate has also remained steady since 1993–94, although the rate for boys has been double that for girls.
- The largest average length of stay was for hospitalisations of infants under 1 year. It is not known whether this is related to the severity of the injury, differences in the treatment of injuries or to child-protection issues.
- The highest reported prevalence of all injuries inflicted by others (from the 1995 National Health Survey) was for 10–14 year olds. In these data there is possible under-reporting of injuries to younger children, particularly for injuries inflicted by families (since the National Health Survey information on children is collected from parents).

The highest hospitalisation rates from injuries inflicted by others occurred in the Northern Territory and Queensland in 1996–97 (46 and 28 per 100,000 respectively).

For injuries inflicted by others resulting in hospitalisation of children under 15 years, at least 36% of injuries occurred at home.

8 Mental health problems

This chapter presents available data on mental health problems experienced by children. These problems may manifest as disturbances of feelings, behaviours and thoughts. If these disturbances are distressing to the child or others, or if social functioning (including coping, competency and mastery) are affected, a mental health problem may be identified (AIHW 1998a, Zubrick et al. 1995). More severe forms of mental health problems (in terms of duration of the problem and/or impact on daily activities) are often termed 'mental disorders' (Disley 1997).

Information on self-inflicted injuries and suicides is also included in this chapter. Suicide is strongly associated with psychological distress and disorders (Skegg 1997). It has also been noted that suicide is one of the main causes of death attributed to mental illness (AIHW & DHFS 1997).

Mental health is one of the five National Health Priority Areas in 'recognition of its enormous social and public health importance' (AIHW & DHFS 1997). Reference is also made to the pain and suffering experienced by families of those with mental illness, as well as that experienced by the individual with the illness.

Information presented in this chapter is restricted by data availability. Currently, national information is available on hospitalisations and deaths related to mental disorders, and summaries of that information are included. There is, however, currently only limited information on the prevalence of mental health conditions among children. Very limited results are available from the 1995 National Health Survey. Although only covering Western Australia, more detailed information is available from the 1993 Western Australian Child Health Survey. Results from both these sources are included below.

The limited information currently available in this area will be augmented by the child and adolescent component of the National Survey of Mental Health and Wellbeing of Australia being conducted in 1998. Information is being collected on young people aged 4–17 years, including the prevalence of mental disorders, measures of mental health, functional impairment, service utilisation and exposure to risk (including social factors, physical health, mental health of parents and self-harm behaviours) (Rahman & Moon 1998).

It is worth noting that although this chapter focuses on problems and disorders (due to data availability), risk factors are also important. Table 8.1 presents a range of risk factors for different types of mental health problems. These suggest direct links between this and other chapters of this report, including those on the family environment, child abuse and the socioeconomically disadvantaged.

Table 8.1: Risk factors for childhood mental health disorders

Generic risk factors	Risk factors for internalising disorders	Protective factors
Conduct problems and substance abuse behaviours	Depression and affective disorders	Intelligence and problem solving abilities
• sociodemographic factors	• social disadvantage	External interests and affiliations
• family functioning	• family history	Parental attachment and bonding
• individual factors	• exposure to childhood adversity	Early temperament and behaviour
• school factors	• exposure to adverse life events	
• peer factors	• individual factors	
• the media	Anxiety disorders	
	• sex	
	• genetic factors	
	• familial risks including social disadvantage and stressful life events	

Source: Derived from Fergusson et al. 1997.

Prevalence of mental health problems

As outlined above, there is only limited national information available on the prevalence of mental health problems in Australian children, although this situation will change with the release of results from the child and adolescent component of the National Survey of Mental Health and Wellbeing. Parent-reported information is available from the ABS National Health Survey conducted in 1995. In this survey, 2.6% of children aged under 15 years were reported to have a mental health condition either as a recent or long-term condition. The sample of children in the survey was not sufficiently large to allow more detailed analysis.

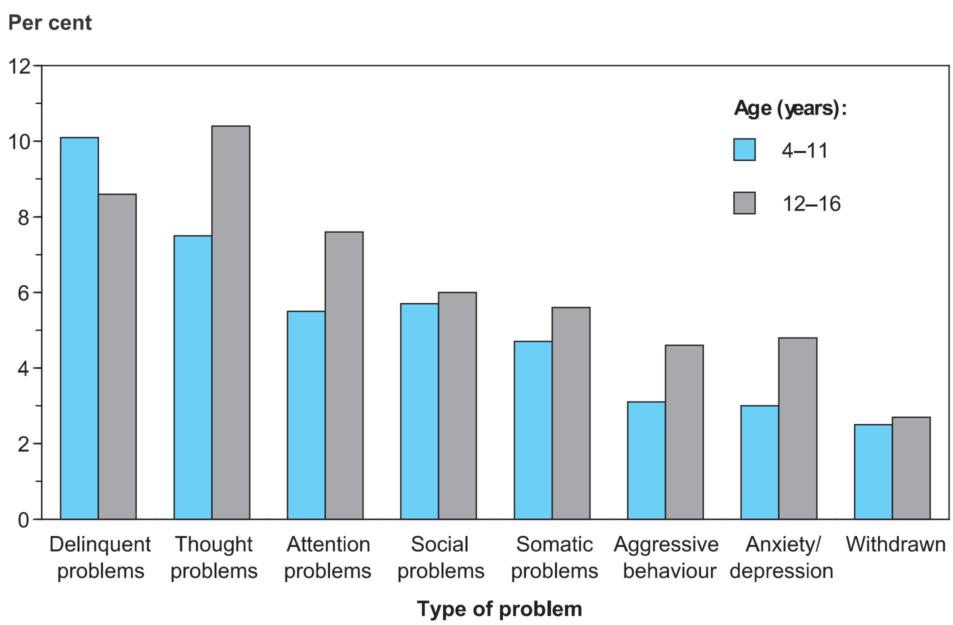
Western Australian Child Health Survey

Further information is available from the Western Australian Child Health Survey conducted in 1993. In the absence of similar national data, a summary of the results from the Western Australian survey is presented here. The survey was conducted jointly by the Western Australia Institute for Child Health Research and the ABS, and included a representative sample of over 2,500 Western Australian children aged 4–16 years. Information was collected from caregivers, teachers and from the young people themselves who were aged 12 years or older. Information was collected using a variety of survey instruments including, for information on mental health, the Child Behaviour Checklist (Zubrick et al. 1995). Note that the information presented below from this survey does not exactly correspond to the age groups used elsewhere in this report. In some cases, information is available for the 4–11 and 12–16 age groups separately, but in other cases information is available only for children under 17 years.

From the survey, an estimated 16% of children in Western Australia aged from 4 to 11 years had a mental health problem. For 12–16 year olds, the proportion was 21%. Boys were more likely to have mental health problems than girls.

Several different types of mental health problems were identified in the survey. Following is a list of the main types of problems, and a brief description of the problem as presented in Zubrick et al. (1995):

- delinquent behaviour: breaking rules and norms, may involve cheating, major transgressions, lying, cheating, stealing, truancy
- thought problems: strange behaviour, ideas or obsessions that impede normal activity and development
- attention problems: may act young for age, have difficulty concentrating or sitting still, suffer from clumsiness, or poor school work; attention deficit disorder is included in this group
- social problems: persistent or severe problems getting on with other people resulting in a breakdown in normal social development
- somatic complaints: chronic physical complaints without known and medically verified basis
- aggressive behaviour: bullying, teasing, tantrums, arguing, fighting, threatening
- anxiety/depression: feeling lonely, fearful, unloved or worthless are some of the indicators of anxiety or depression
- withdrawn: shy, sad, withdrawn, sulking.



Source: Zubrick et al. 1995.

Figure 8.1: Children in Western Australia with mental health problems, 1993

- Among 4–11 year olds in Western Australia in 1993, the most prevalent type of mental health problem was delinquent behaviour, with over 10% of children having the problem. Thought problems were the next most common type of problem, with a prevalence of over 7%.
- The situation for 12–16 year olds was slightly different, with thought problems the most prevalent (over 10%) and delinquent problems second (over 8%).

The Western Australian survey also included information on the severity of these mental health problems, although the information is available only for all children up to and including 16 years of age. Of those children with a mental health problem, 37% were identified as requiring professional help with their problem. For 28% of children with a mental health problem, the problem was restricting the child from doing things normally expected of children of the same age.

Some results are also available regarding suicidal thoughts and self-harm behaviours from the Western Australian Child Health Survey. In 1993, 11.5% of 12–14 year olds reported that they had suicidal thoughts sometimes or often; 6.8% reported that they had deliberately tried to harm or kill themselves.

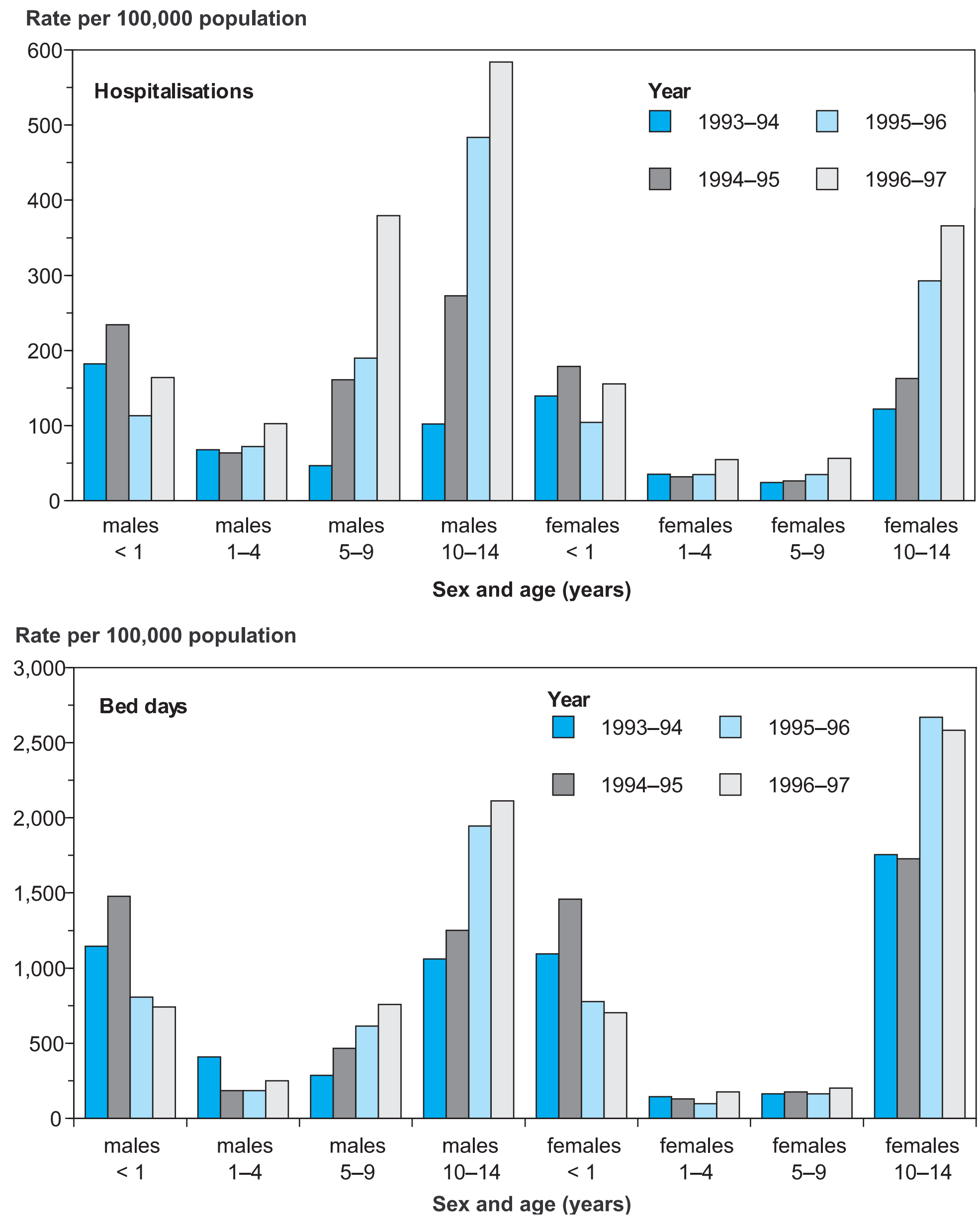
Hospitalisations

Data for this section comes from the AIHW National Hospital Morbidity Database. The scope of the database has expanded further in the last 2 reporting years, with public psychiatric hospitals included fully from 1996–97. This substantial broadening of the scope of the database requires that considerable care be taken in analysis and interpretation of the data. However there were only a small number of hospitalisations of children in public psychiatric hospitals, so information for these establishments has not been separately identified from information from acute public and private hospitals. Importantly, the changing structure of mental health care delivery and the integration of some of these services with acute care services will require careful interpretation of the data.

The ICD-9-CM codes 290–316 are used to identify hospitalisations include codes for all conditions listed in the mental disorders chapter, except for the mental retardation codes. Some information is also separately presented for hospitalisations resulting from self-inflicted injuries, identified using external cause ICD-9-CM codes of E950–E959.

Mental disorders

In 1996–97, there were over 10,000 hospitalisations of children under 15 years with a principal diagnosis of a mental disorder, and nearly another 13,000 hospitalisations with an additional diagnosis (a complication or co-morbidity) of a mental disorder.



Note: Excludes hospitalisations for mental retardation. Hospitalisations with bed days >1,000 have been excluded from the bed day rates.

Source: AIHW National Hospital Morbidity Database.

Figure 8.2: Hospitalisations with a principal diagnosis of mental disorder

- The children with the highest hospitalisation rates for mental disorders were 10–14 year olds. Boys had higher hospitalisation rates than girls. However, 10–14 year old girls had higher bed day rates than 10–14 year old boys.
- There has been an increase in the hospitalisation rates for mental disorders over the 4-year period included in the Figure 8.2. This increase is most marked for older age groups and for boys.
- The increases in the hospitalisation rates may reflect differing admission practices over time. That is, children may be being admitted more frequently for shorter

hospitalisations, rather than for one long stay. Information presented on bed-day rates removes this effect, and indicates the total number of hospital days for children with a mental disorder principal diagnosis, expressed as a rate per 100,000 children.

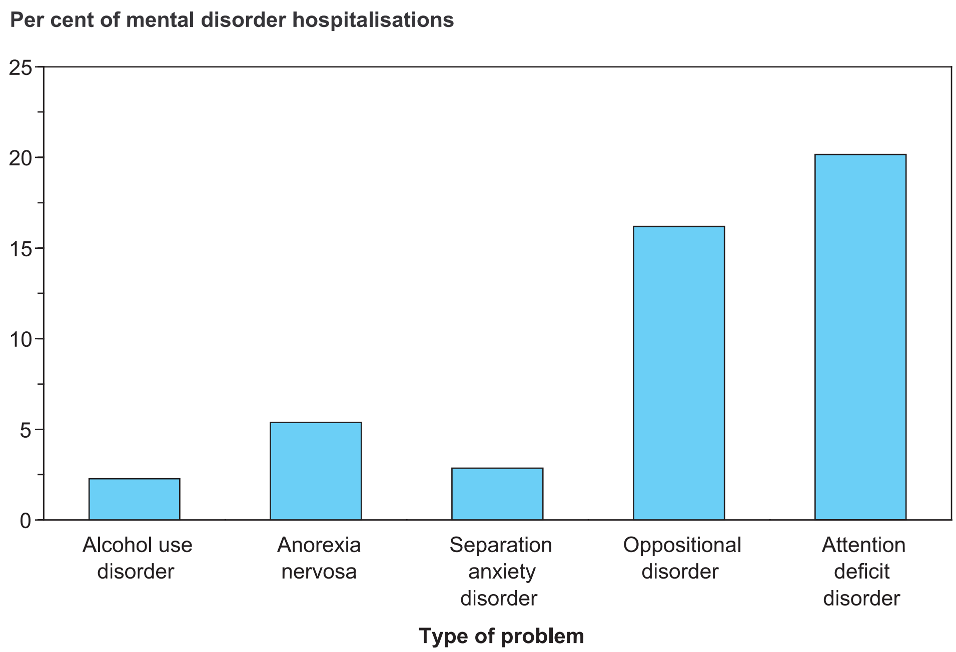
- The bed day rate has increased over the 4-year period for both 10–14 year old boys and girls, and for 5–9 year old boys. Bed day rates for under 1 year olds have fallen over the period examined.
- Note the cautions, outlined in the introductory section of this chapter, required in the interpretation of these results.

Table 8.2: Hospitalisations with principal diagnosis of mental disorder, by diagnosis group, 0–14 year olds, 1996–97

Main diagnosis group	Per cent of mental disorder hospitalisations
Neurotic disorders, personality disorders, and other non-psychotic mental disorders	9.0
Non-dependant drug use disorder	2.5
Special symptoms or syndromes, not elsewhere classified	9.9
Adjustment reaction	9.2
Disturbance of conduct, not elsewhere classified	8.5
Disturbance of emotions specific to childhood and adolescence	21.4
Hyperkinetic syndrome of childhood	20.3
Specific delays in development	6.3
Other	12.7

Source: AIHW National Hospital Morbidity Database.

- Over a fifth of hospitalisations of children with a mental health disorder were classified as disturbances of emotions specific to childhood and adolescence. This group includes anxiety disorders, withdrawal and ‘oppositional’ disorders.
- Another 20% of these hospitalisations were classified as ‘hyperkinetic syndrome’. The majority of these cases were classified as attention deficit disorder.
- The largest group in the ‘special symptoms or syndromes’ category listed above was hospital care for anorexia nervosa.



Source: AIHW National Hospital Morbidity Database.

Figure 8.3: Hospitalisations for mental disorders, principal diagnosis subgroups, 0–14 year olds, 1996–97

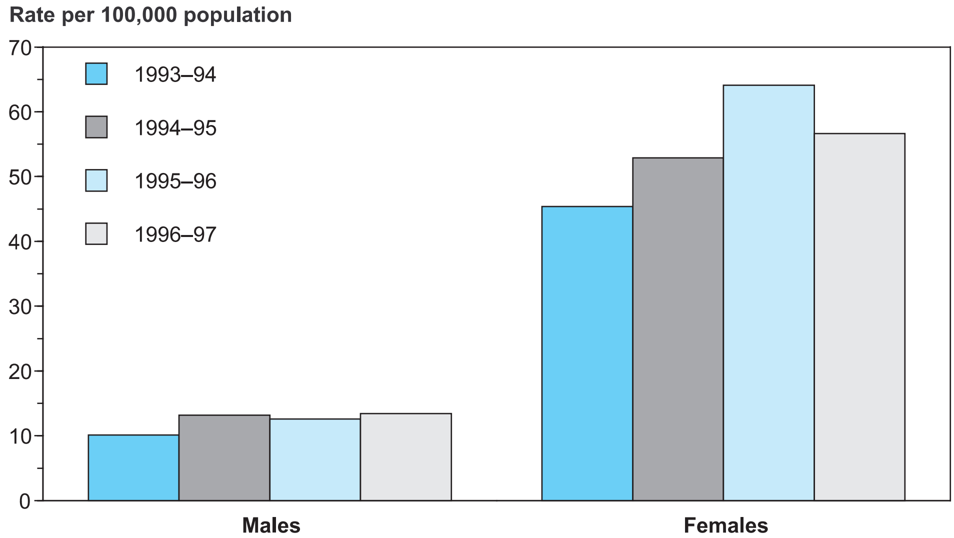
- Figure 8.3 shows the five most common diagnosis subgroups for children hospitalised with a principal diagnosis of mental disorder.
- The highest hospitalisation rates were for attention deficit disorder (20%), followed by 'oppositional disorders' (16%).

Females accounted for 90% of hospitalisations of children under 15 years for eating disorders (including anorexia nervosa, bulimia and other eating disorders) during the period July 1993 to June 1996. Further, 92% of these hospitalisations were for girls aged between 10 and 14 years.

Self-inflicted injuries

The hospital morbidity data can also be used as a source of the number of hospitalisations resulting from self-inflicted injury (using 'external cause' codes). Only 45% of these hospitalisations had a diagnosis in the mental disorders chapter. However, it is possible that, for a high proportion of the other 55% of hospitalisations, there could be an association between self-inflicted injury and mental illness of some degree.

For children, these hospitalisations were mainly concentrated in the 10–14 year age group. In 1996–97, there were over 13 hospitalisation per 100,000 population for boys in this age group, and over 56 hospitalisations per 100,000 for girls.



Source: AIHW National Hospital Morbidity Database.

Figure 8.4: Hospitalisations for self-inflicted injury, 10–14 year olds

- Girls had higher hospitalisation rates for self-inflicted injuries than boys—over 4 times higher.
- The hospitalisation rate for girls aged 10–14 years increased steadily until 1995–96, but then decreased in 1996-97.
- There were a small number of hospitalisations for self-inflicted injury among children aged less than 10 years. These admissions are not included in Figure 8.4.

The average length of stay for these hospitalisations was a little over 3 days for 10–14 year olds. Over 90% of hospitalisations for self-inflicted injuries for children under 15 years were caused by poisoning with solids or liquids ('overdoses').

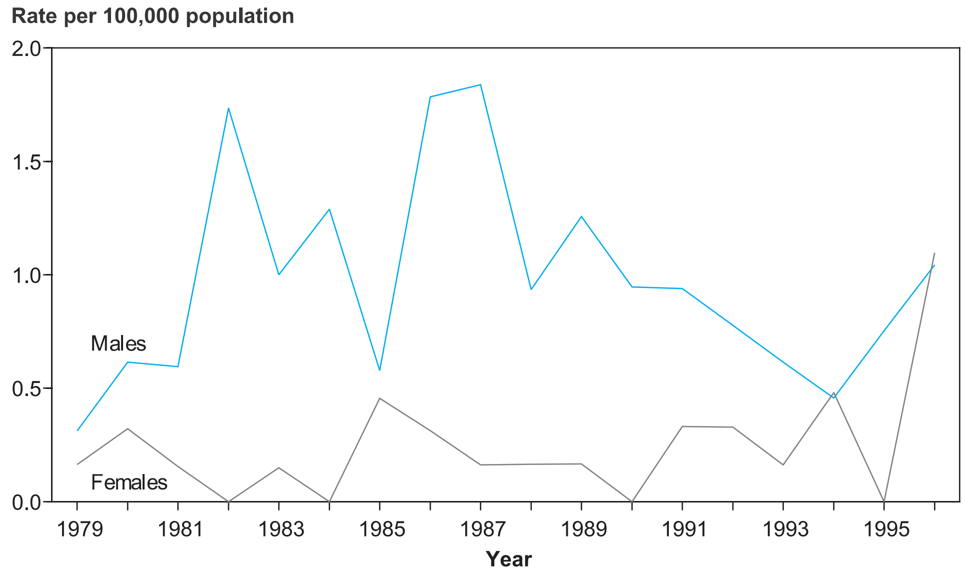
Deaths

Mental disorders

As for the general population, the number of deaths classified as being caused by mental disorders is very low. Since 1990, there have been four childhood deaths classified as being caused by a mental disorder. Three of these were related to substance abuse, including glue sniffing and alcohol use.

Suicide

Death rates from suicide are also relevant to mental illness (AIHW & DHFS 1997). The suicide rate for the 0–14 year age group has ranged between 0.8 and 0.4 per 100,000 during the period 1979 to 1996 (AIHW Mortality Database). The highest rates occurred in the mid- to late 1980s, and again in the year with the latest available data, 1996.



Source: AIHW Mortality Database.

Figure 8.5: Death rates from suicide, 10–14 year olds, 1979 to 1996

- For most of the period covered in Figure 8.5, boys aged 10–14 years had higher suicide rates than girls of the same age group. This is in contrast to the hospitalisation rate for self-inflicted injuries.
- Children dying from suicide between 1979 and 1995 were all aged between 10 and 14 years.

The most common means of suicide in children in the 10 years to 1996 was hanging (53%), followed by death from firearms (31%). For these firearm deaths, at least 44% used hunting rifles and at least 16% with shotguns. For a number of the firearm deaths, the type of firearm was not specified.

9 Dental disease

Australian children enjoy good oral health. In 1995, the average DMFT score (number of decayed, missing and filled permanent teeth) for 12 year old children was 1.01, less than one-third the rate in Japan (de Looper and Bhatia in press). The decay-free rate for permanent teeth stood at 59.1% at that age.

The School Dental Scheme was introduced in 1977. Since that time the dental health of Australian children has improved, with declines in the average number of caries experienced and an increase in the proportion of children with no dental caries (AIHW 1996). Introduction of fluoridated water supplies in the 1960s and 1970s and fluoride toothpaste are also likely to have contributed to the reduction in dental caries in Australia.

National information on the dental health status of children is available from a variety of sources. Prominent among these are the Child Dental Health Surveys and National Dental Telephone Interview Surveys conducted by the Dental Statistics and Research Unit of the Australian Institute of Health and Welfare. Additional sources of information include the National Health Surveys and Child Health Screening Surveys conducted by the Australian Bureau of Statistics.

Dental health of school children

The Child Dental Health Surveys monitor the dental health of children enrolled in School Dental Services operated by health departments or authorities of States and Territories. The school dental services provide dental care principally to primary school children. In 1995, some 47% of primary school children used the School Dental Service. The care provided includes dental examinations, preventive services and restorative treatment as required.

The index of choice for recording dental decay is dmft/DMFT score. The dmft score relates to the number of deciduous teeth that are affected by decay, missing due to decay. The DMFT score is an equivalent measure for permanent teeth. The other commonly used statistic is the percentage of individuals who are decay-free. The immediate treatment needs are also recorded in all States and Territories except Victoria, Western Australia and Tasmania.

Table 9.1: Mean dmft/DMFT scores and decay free rates in children aged 5–12 years, 1995

	Deciduous teeth		Permanent teeth	
Age (years)	Mean dmft score	Decay-free rate (per cent)	Mean DMFT score	Decay-free rate (per cent)
5	1.49	61.1	0.02	99.1
6	1.73	55.3	0.10	94.4
7	1.87	50.8	0.20	88.0
8	2.05	45.5	0.36	79.9
9	1.97	45.0	0.46	75.5
10	1.61	50.5	0.57	70.8
11	n.a.	n.a.	0.79	64.7
12	n.a.	n.a.	1.01	59.1

Notes

1. dmft/DMFT score refers to the number of deciduous/permanent teeth affected by decay, missing due to decay, or filled following decay.
2. Decay-free rates refers to the proportion of children with a dmft/DMFT score of zero.

n.a. not applicable.

Source: Davies & Spencer 1997.

- The mean dmft score for deciduous teeth among children aged 5–10 years increases with age but peaks among 8 year old children.
- The mean DMFT scores for permanent teeth are smaller than the corresponding means for deciduous teeth.
- The percentage of children without decayed permanent teeth in general decreases with age. In 1995, an estimated 59% of 12 year old children had no decayed teeth.

Table 9.2: Children in need of immediate treatment and the state of their dental health, 1995

Age (years)	Proportion of children examined needing immediate treatment (per cent)	Mean dmft	Mean DMFT	Proportion of children having 4 or more decayed teeth (per cent)
5	12.6	4.16	0.03	42.4
6	13.3	3.62	0.25	29.8
7	13.5	3.54	0.43	27.8
8	13.6	3.56	0.66	24.2
9	11.1	3.30	0.85	24.8
10	10.0	2.39	0.91	14.9
11	9.50	1.57	1.35	12.8
12	9.50	0.68	2.25	17.6

Note: Excludes Victoria and Western Australia.

Source: Davies & Spencer 1997.

- More than one out of ten children were assessed to be in need of immediate treatment during the 1995 survey. A large proportion of these children had four or more decayed teeth.

- A higher proportion of younger children were in need of immediate treatment compared with those in the older age groups.

Dental consultations by children

The data obtained from the School Dental Services have some limitations as only those children enrolled with School Dental Services are represented in the sample. The School Dental Service is not accessible to all school children and there is some variation among State and Territory programs with respect to priority age groups and nature of services. Some States/Territories serve 80% of primary school children, and others serve smaller proportions.

The AIHW Dental Statistics and Research Unit conducted three National Dental Telephone Interview Surveys (NDTIS) from January to April in 1994, 1995 and 1996. Each survey comprised a stratified random sample of persons aged 5 years or more. Interviews with children were conducted with an adult present. The NDTIS collects a wide range of information, and includes data on oral health status, visit details (such as time and place of, and reason for, last dental visit, and waiting time), perceived needs, social impact of dental health, hardship and affordability difficulties associated with dental care, and sociodemographic and economic details.

There were 8,292 participants across Australia in the 1996 survey. The sample included 532 and 485 children in the age groups 5–9 years and 10–14 years respectively. Table 9.3 provides some information on dental visits by these children.

Actions taken

Additional information on actions taken for dental problems among children was obtained during the 1995 National Health Survey and the 1995 Child Health Screening Survey.

The 1995 National Health Survey collected information on oral health in the following areas: whether the respondent visited a dentist in the 2 weeks prior to interview, the number of dental consultations, the reason for consultation and type of treatment received.

According to this survey, 7% of children aged 0–14 years consulted a dentist in the 2 weeks prior to the interview. More than 6% of those children visited the dentist once, and 0.8% twice. The main reason for the most recent consultation was dental problems (48%). Of children who had dental problems, 18% had braces fitted, 14% had fillings and 3% had teeth extracted.

The Child Health Screening Survey was conducted by the ABS in April 1995 and collected information on how many children in Australia undergo selected sight, hearing and dental screening tests at some stage in their life. Data relating to dental visits refer to children aged 2–14 years. According to this survey, in April 1995, 75% of children aged 2–14 years were reported to have consulted a dentist. Of these, 45% had last visited a dentist within the previous 6 months, and a further 34% had also visited a dentist between 6 and 12 months previously. The main reason for the most recent dental consultation was a check-up (73%), suspected dental problem (16%), orthodontics (7%) and preventive treatment (4%).

Table 9.3: Dental consultations by 5–14 year olds, 1996

	Age group	
Question	**5–9 years**	**10–14 years**
Time since last dental visit		
Never	12.9%	0.6%
< 12 months	76.8%	87.3%
1– < 2 years	7.5%	9.3%
2– < 5 years	2.8%	2.5%
5+ years	0.0%	0.3%
Place of last dental visit		
Private	40.1%	51.4%
Public clinic	8.6%	4.4%
School dental service	51.3%	44.2%
Reason for last dental visit[(a)]		
Problem	30.9%	28.7%
Check-up	69.1%	71.3%
Mean number of:[(a)]		
Visits	2.03	2.56
Extractions	0.15	0.20
Fillings	0.70	0.39
Scale and clean services	0.64	0.87
Social impact		
Toothache[(b)]	6.5%	5.9%
Food avoidance[(c)]	9.1%	7.5%

(a) Among children who made at least one dental visit in the previous 12 months.

(b) Percentage reporting experience of toothache as ‘very often’, ‘often’, or ‘sometimes’ during the last 12 months.

(c) Percentage reporting avoidance of eating some foods because of problems with their teeth or mouth as ‘very often’, ‘often’, or ‘sometimes’ during the last 12 months.

Source: 1996 National Dental Telephone Interview Survey (AIHW Dental Statistics and Research Unit).

- Of the children aged 5–14 years who visited a dentist or dental professional, over 80% had last visited a dentist less than 12 months previously.
- A majority of children had used the school dental service. The main reason for the most recent dental consultation was a check-up.
- Toothache during the last 12 months was reported by more than 6% of children. Slightly higher proportions were reported to have avoided eating some foods because of problems with their teeth or mouth.

Analysis in *Australia’s Health 1998* shows that the rate of new dental disease experience is decreasing for successive birth cohorts born between 1971 and 1986 (AIHW 1998a, p. 129).

Part III: Disability and chronic conditions

Chapter 10: Disability overview

Chapter 11: Congenital malformations

Chapter 12: Childhood cancer

Chapter 13: Asthma

Chapter 14: Other chronic diseases

Primary goal

- *Reduce the impact of disability.*

Other relevant goals

- *Reduce the prevalence of preventable mortality.*
- *Reduce the impact of conditions occurring in adulthood, but which have their origins or early manifestations in childhood or adolescence.*

10 Disability overview

Estimates of the prevalence of disability and handicap in children vary. The statistics presented here are based on data from the 1993 Survey of Disability, Ageing and Carers, conducted by the Australian Bureau of Statistics (ABS). Disability was defined as the presence of one or more of a list of limitations, restrictions or impairments which had lasted, or was likely to last, for a period of 6 months or more. Handicap was identified if a person's disability limited them to some degree in their ability to perform tasks in relation to self-care, mobility, verbal communication, schooling and/or employment (ABS 1993a).

Prevalence of disability and handicap

In 1993, the prevalence of disability in Australia was estimated to be about 70 per 1,000 children aged 0–14. Almost 44 per 1,000 children in the 0–4 age group, 88 per 1,000 children in the 5–9 year age group, and 78 per 1,000 children in the 10–14 age group were reported to have one or more disabilities.

Table 10.1: Children with disability and handicap, 1993 (rate per 1,000 population)

Sex	Age (years)	Disability	Handicap	Profound/severe handicap
Males	0–4	47.8	47.8	n.a.
	5–9	106.8	85.6	33.4
	10–14	94.6	73.2	23.5
Females	0–4	39.3	39.3	n.a.
	5–9	68.9	58.0	27.2
	10–14	60.4	44.3	13.5

Source: AIHW from ABS Disability, Ageing and Carers Survey, 1993.

- Overall more boys were reported to have a disability than girls. Further, in all age groups, boys had higher rates of disability and handicap than girls.
- All children aged 0–4 years with a disability were classified as having a handicap. Severity of handicap was not assessed for this age group.
- Children in the 5–9 age group had the highest rates of disability, handicap and profound/severe handicap. Around 30 per 1,000 children in this age group were classified as having a profound or severe handicap.

Main disabling conditions

Several major disabling conditions were reported for children aged 0–14 years during the 1993 Survey. These conditions are given in Table 10.2.

Table 10.2: Main disabling condition, 1993 (rate per 1,000 population)

	Age 0–4			Age 5–9			Age 10–14			Total		
Disabling conditions	**M**	**F**	**P**	**M**	**F**	**P**	**M**	**F**	**P**	**M**	**F**	**P**
Psychiatric	0	0	0	0	0.1	0.1	0.2	0	0.1	0.1	0	0.1
Intellectual	1.6	3.5	2.6	29.5	13.4	21.6	36.1	13.1	24.9	22.2	9.9	16.3
Disorders of eye	1.2	2.2	1.7	2.6	2.8	2.7	2.3	1.6	2.0	2.1	2.2	2.1
Disorders of ear	2.8	4.4	3.6	12.9	11.1	12.1	7.4	7.1	7.2	7.6	7.5	7.6
Nervous system diseases	4.3	2.9	3.6	5.1	5.5	5.3	4.6	6.0	5.3	4.7	4.8	4.7
Circulatory diseases	0	0	0	1.4	0.5	1.1	1.7	0	0.9	1.0	0.2	0.6
Respiratory diseases	14.1	8.9	11.5	24.6	23.1	24.0	22.0	17.9	20.1	20.2	16.6	18.5
Arthritis	0	0	0	0	0	0	0	0.2	0.1	0	0.1	0
Other musculoskeletal disorders	0.1	3.2	1.6	2.4	0.9	1.7	4.8	3.3	4.0	2.4	2.5	2.4
Head injury, stroke, other brain damage	1.8	0	0.9	0.6	0	0.3	0	2.8	1.3	0.8	0.9	0.8
All other diseases and conditions	21.9	14.2	18.1	27.8	11.4	19.8	15.7	8.4	12.1	21.8	11.4	16.7
Total	**47.8**	**39.3**	**44.0**	**107**	**69.1**	**88.4**	**94.6**	**60.4**	**78.1**	**82.9**	**56.2**	**69.9**

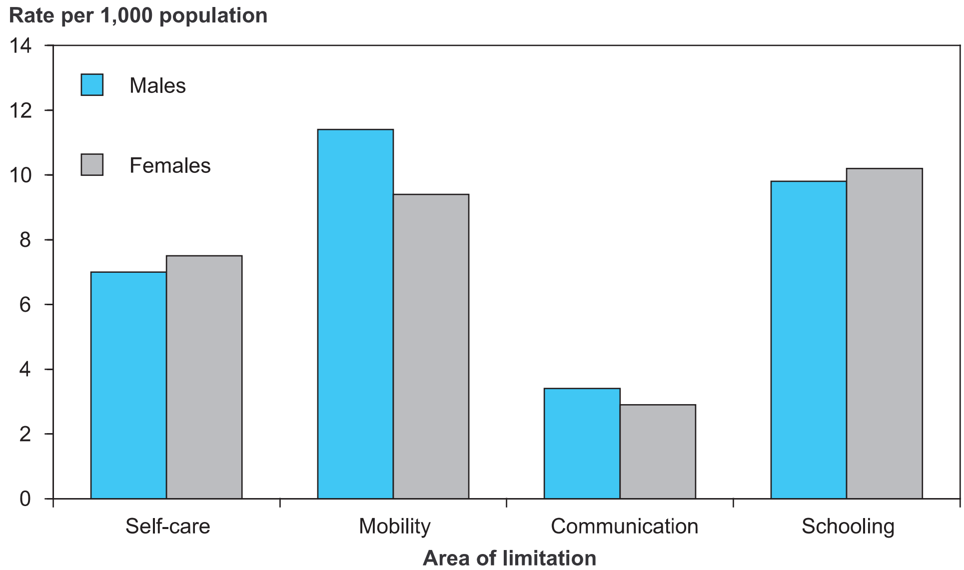
Note: M = males; F = females; P = persons.

Source: AIHW from ABS Disability, Ageing and Carers Survey, 1993.

- For children aged 0–14 years, respiratory diseases were the most commonly reported main disabling condition. It was more frequently reported for boys than for girls.
- 'Other diseases and conditions' were the second most frequently reported main disabling condition, with intellectual disability third. This condition was highest among 10–14 year old children and more frequently reported for boys than for girls.
- Disorders of the ear and disorders of the nervous system were also frequently reported.

Activity limitation

Children were regarded as having activity limitation due to their disability if they needed help with self-care, mobility and communication. Information on activity limitation in 0–4 year old children was not collected in the survey. In 1993, 11.2 per 1,000 children between the ages of 5 and 14 years were reported to be restricted in their daily activities.



Source: AIHW from ABS, Disability, Ageing and Carers Survey, 1993.

Figure 10.1: Area of activity limitation among 5–14 year old children, 1993

- The most commonly reported activity limitation in this age group was mobility limitation, particularly for boys.
- Schooling limitation was the second highest reported form of activity limitation.

Sight and hearing impairments

Eye/sight and hearing problems were reported as long-term conditions by 0–14 year old children (see Chapter 4). In recognition of the importance of these conditions in child health and development, further analysis is presented here on children with sight and hearing disabilities.

Visual impairment

Visual impairments are quite common among children but do not necessarily result in functional limitation. In 1993, 3.7 per 1,000 children aged 0–14 years with a disability had some form of visual impairment: 0.3 per 1,000 children aged 0–14 years were reported to have a total loss of sight, and 3.5 per 1,000 children a partial loss of sight.

Table 10.3: Children with visual impairment by age and sex, 1993 (rate per 1,000 population)

			Level of visual impairment	
Sex	**Age (years)**	**Visual impairment**	**Total loss of sight**	**Partial loss of sight**
Males	0–4	3.4	0	3.4
	5–9	2.8	0.1	2.7
	10–14	4.8	0.5	4.3
	Total	*3.6*	*0.2*	*3.4*
Females	0–4	3.6	0	3.6
	5–9	4.2	1.0	3.2
	10–14	3.6	0	3.6
	Total	*3.8*	*0.3*	*3.5*

Source: AIHW from ABS Disability, Ageing and Carers Survey, 1993.

- Similar levels of visual impairment were reported for boys and girls.
- Visual impairment was highest among 10–14 year old boys (4.8 per 1,000) and 5–9 year old girls (4.2 per 1,000).

Visual impairment was reported to be present at birth for 1.4 per 1,000 girls and 1.0 per 1,000 boys aged 0–14 years. Accident and injury were other common causes of sight impairment among 5–9 year old boys (1.0 per 1,000).

Hearing impairment

Of 0–14 year old children with a disability, 10.0 per 1,000 children were reported to have some form of hearing impairment—0.9 per 1,000 children with a total loss of hearing and 9.1 per 1,000 children with a partial loss of hearing.

Table 10.4: Children with hearing impairments by age and sex, 1993 (rate per 1,000 population)

			Level of hearing impairment	
Sex	**Age (years)**	**Hearing impairment**	**Total loss of hearing**	**Partial loss of hearing**
Males	0–4	5.4	0.5	4.9
	5–9	14.3	0.8	13.5
	10–14	11.4	0	11.4
	Total	*10.3*	*0.5*	*9.8*
Females	0–4	5.2	0	5.2
	5–9	15.1	1.7	13.5
	10–14	8.7	2.3	6.4
	Total	*9.7*	*1.3*	*8.4*

Source: AIHW, from ABS Disability, Ageing and Carers Survey, 1993.

- Slightly more boys than girls were reported to have a hearing impairment (10.3 per 1,000 compared with 9.7 per 1,000).
- Hearing impairment was reported to be present at birth for 2.5 per 1,000 girls and 2.2 per 1,000 boys aged 0–14 years.
- The highest hearing impairment rates were reported for 5–9 year olds.

Effect of disability at school

Children with disabilities are, where possible, enrolled in mainstream schools. Although the total number of students with a disability has risen over the past two decades, enrolments in special schools have fallen substantially. In 1993, students with only one disability were more likely than students with two or more disabilities to attend regular classes (AIHW 1997b). Of all children with a disability, 92.3% attended ordinary schools (either in an ordinary class or a special class) (ABS 1993a). Information from school records indicated intellectual disability to be the most common form of disability for these children, followed by physical disabilities and hearing impairment (de Lemos 1994).

Table 10.5: Characteristics of schooling for children with a disability, 1993 (per cent)

	Males	Females	Persons
Attend school	98.3	95.1	97.1
Type of school			
Special school	3.6	6.4	4.7
Special class	30.1	15.1	24.4
Problems at school	53.3	48.1	51.4
Fitting in socially	31.1	27.5	29.7
Hearing problem	6.0	7.9	6.8
Sight problem	2.7	5.5	3.7
Other problems	31.4	20.7	27.4
Required time off school	3.2	6.1	4.3

Source: AIHW from ABS Disability, Ageing and Carers Survey, 1993.

- Only 3% of disabled children were reported not to attend school.
- Of those attending school, 5% were attending a special school, and 24% were attending a special class. The remaining attended ordinary school classes.
- A higher proportion of disabled boys attended a special class, whereas a higher proportion of disabled girls attended a special school.
- Just over 50% of all children with a disability were reported to have difficulties at school because of their disability (53% of boys and 48% of girls).
- The most frequently reported problem was fitting in socially, more so for boys than for girls.
- Over 4% of children needed time off from school because of their disability. More girls than boys were reported to need time off school.

11 Congenital malformations

Congenital malformations/defects are structural or anatomical abnormalities that are present at birth. These abnormalities may be inherited or originate during pregnancy. Information is presented here from three data sources: reports of congenital defects ('notifications'), deaths from congenital defects and hospitalisations due to congenital defects. Although congenital malformations occur in only a small number of babies, the long-term morbidity associated with major malformations can be significant.

A major group of congenital malformation is neural tube defects. The incidence of this group of malformations has declined steadily in recent years. This has not been the case for other major malformations.

Notifications

The information for this section comes mainly from notifications of congenital defects compiled into a national data collection by the AIHW National Perinatal Statistics Unit (NPSU). More information on this data collection, as well as more detailed results than are presented here, can be found in publications from the NPSU (Lancaster et al. 1997). *Australia's Health 1998* (AIHW 1998a) contains some information on congenital malformations for the year 1995. These figures are provided where applicable. The figures include only physical malformations or syndromes present at birth.

Overview

In 1994, 164.4 infants per 10,000 births had major congenital malformations notified to the NPSU (Lancaster et al. 1997). These include both live births and stillbirths. Of these infants, 75.7% had malformations affecting a single body system, 7.4% had malformations affecting more than one system, and 16.9% had an identifiable chromosomal abnormality or other syndrome. There has been a slight decline in the reported rates of congenital malformations from 177.4 per 10,000 births in 1991 to 164.4 per 10,000 births in 1994.

During the period 1992–1994, malformation rates were generally higher for mothers 40 years and over (305.9 per 10,000 births). In particular, there was a pronounced association between maternal age and rate of chromosomal abnormality. The rate of chromosomal abnormality increased with increasing maternal age, ranging from 9.5 per 10,000 births for infants of mothers aged less than 20 years to 146.0 per 10,000 births for infants whose mothers were 40 years and over (Lancaster et al. 1997).

In 1995, malformations of the musculoskeletal system had the highest rate (50.6 per 10,000 births), followed by malformations of the heart and circulatory system (44.4 per 10,000 births), genital malformations (26.2 per 10,000 births), and chromosomal abnormalities (26.1 per 10,000 births) (AIHW 1998a).

Table 11.1: Selected congenital malformations, 1995

Congenital malformation	Number	Rate per 10,000 births
Anencephalus	37	1.4
Spina bifida	94	3.6
Hydrocephalus	103	4.0
Transportation of great vessels	95	3.7
Ventricular septal defect	446	17.2
Cleft lip and/or cleft palate	462	17.8
Tracheo-oesophageal fistula, oesophageal atresia and stenosis	74	2.8
Atresia and stenosis of large intestine, rectum and anus	86	3.3
Hypospadias	604	23.2
Renal agenesis and dysgenesis	97	3.7
Congenital dislocation of hip	478	18.4
Diaphragmatic hernia	86	3.3
Down syndrome	374	14.4

Source: AIHW 1998a.

- In 1995, hypospadias (a defect of the male genital organs) was the most commonly reported congenital defect (23.2 per 10,000 births).
- The next most commonly reported congenital malformations were congenital dislocation of hip (18.4 per 10,000 births), cleft lip and/ or cleft palate (17.8 per 10,000 births), ventricular septal defect (17.2 per 10,000 births) and Down syndrome (14.4 per 10,000 births).

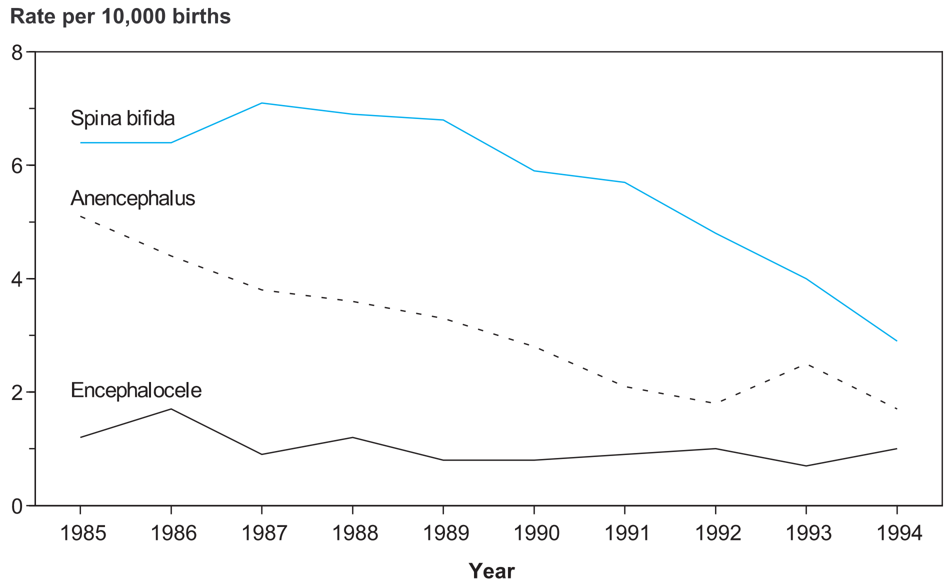
Neural tube defects

Spina bifida

In 1995, the reported rate of spina bifida was 3.6 infants per 10,000 births. Spina bifida is characterised by herniation or exposure of the spinal cord and/or meninges through an incompletely closed spine. In 1994, 147 children were born with neural tube defects of which 52.4% (77) children were diagnosed as having spina bifida. Of the 75 infants with spina bifida and known outcome, 18.7% were stillborn, and a further 13.1% of liveborn infants died in the neonatal period. Induced abortions were reported for 47.6% of all recorded notifications of spina bifida. The results of randomised trials, non-randomised trials and observational studies have shown that the vitamin folate, taken by the mother in adequate quantity in the preconceptional period, will prevent the majority of neural tube defects (Bower & Wald 1997).

Other neural tube defects

Other types of neural tube defects include anencephalus and encephalocele. In 1994, of children born with neural tube defects, 30.0% had a diagnosis of anencephalus and 17.6% a diagnosis of encephalocele. Anencephalus is characterised by total or partial absence of the cranial vault, the covering skin and the brain. Encephalocele is characterised by herniation of the brain and/or meninges through a defect in the skull.



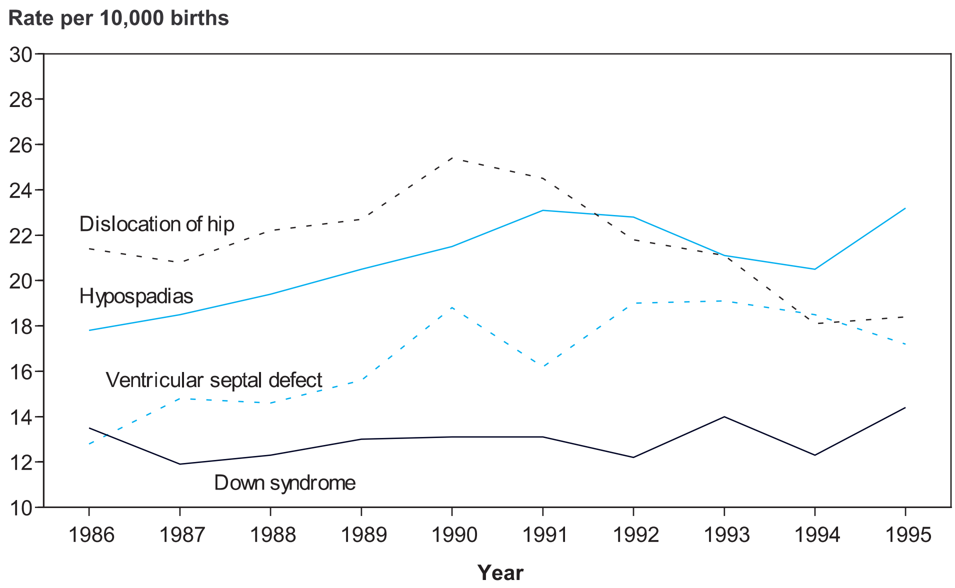
Source: Lancaster et al. 1997.

Figure 11.1: Rates of neural tube defects in infants, 1985 to 1994

- The number of infants born with neural tube defects per 10,000 births has declined in recent years.
- The greatest decline in percentage terms was for anencephalus which fell from 5.1 per 10,000 births in 1985 to 1.7 per 10,000 births in 1994.
- The rate of births with spina bifida showed a gradual but substantial decline from 7.1 per 10,000 births in 1987 to 3.6 per 10,000 births in 1995.

Other major congenital defects

Other major congenital defects reported in 1995 included: hypospadias (23.2 per 10,000 births), congenital dislocation of the hip (18.4 per 10,000 births), ventricular septal defect (17.2 per 10,000 births) and Down syndrome (14.4 per 10,000 births).



Source: Lancaster et al. 1997.

Figure 11.2: Birth rates for selected congenital malformations, 1986 to 1995

- In the period from 1985 to 1995, the birth rate (per 10,000 births) of infants notified with hypospadias increased from 15.1 in 1986 to 23.2 in 1995.
- Birth rates of infants notified with ventricular septal defects showed a gradual increase from 12.8 per 10,000 births in 1986 to 19.1 per 10,000 births in 1993, and fell to 17.2 in 1995.
- There was an increase in the reported birth rates of congenital dislocation of the hip from 20.8 per 10,000 births in 1987 to 25.4 per 10,000 births in 1990. It then declined to 18.4 per 10,000 births in 1995.
- The births rates for infants notified with Down syndrome was relatively constant between 1986 and 1995, ranging between a low of 11.9 per 10,000 births in 1987 and a high of 14.4 per 10,000 births in 1995. Each of these congenital defects is discussed briefly below.

Hypospadias

Hypospadias is a congenital malformation of the male genital organs. It is characterised by an opening of the urethra on the ventral surface of the penis, irrespective of the degree of severity. In 1994, 537 infants were diagnosed as having hypospadias, of whom 90.1% had isolated hypospadias, 8.4% had associated malformations with the hypospadias, and only 1.5% had a chromosomal abnormality. Of 535 births with known outcomes, 0.4% were stillborn and 1.5% of liveborn infants died in the neonatal period. The rate of hypospadias was 23.2 per 10,000 births in 1995.

Ventricular septal defect

A ventricular septal defects is an abnormal communication between the ventricles of the heart. This is usually characterised by a heart murmur and sometimes by spontaneous closure in early childhood. In 1994, 481 infants were notified with a ventricular septal defect. Birth outcomes were known for 480 births, of which 6.1% were stillbirths and 5.9% of liveborn infants died in the neonatal period. In 29.7% of the cases, infants had other associated major malformations and 14.6% had a chromosomal abnormality. Ventricular septal defect was notified in 17.2 per 10,000 births in 1995.

Dislocation of the hip

Dislocation of the hip is one of the major congenital malformations of the musculo-skeletal system. It is a condition in which the femoral head is either displaced or displaceable from the acetabulum of the pelvis. A total of 474 infants born in 1994 were notified with this defect. Almost 4% of infants with dislocation of the hip had other associated major malformations and only 0.2% had a chromosomal abnormality. In 1995, the rate of dislocation of the hip was 18.4 per 10,000 live births.

Down syndrome (Trisomy 21)

Down syndrome is a major chromosomal abnormality affecting infants. It is characterised by a specific pattern of abnormalities including hypotonia, flat faces, slanted palpebral fissures, small ears, intellectual disability and variable occurrence of other minor and major congenital malformations. In 1994, 320 infants were born with Down syndrome. Induced abortions were reported in 28.6% of all recorded notifications. Among 302 infants with Down syndrome and known outcome, 13.6% were stillborn and 4.6% of liveborn infants died in the neonatal period. In 1995, the reported incidence of Down syndrome was 14.4 per 10,000 births.

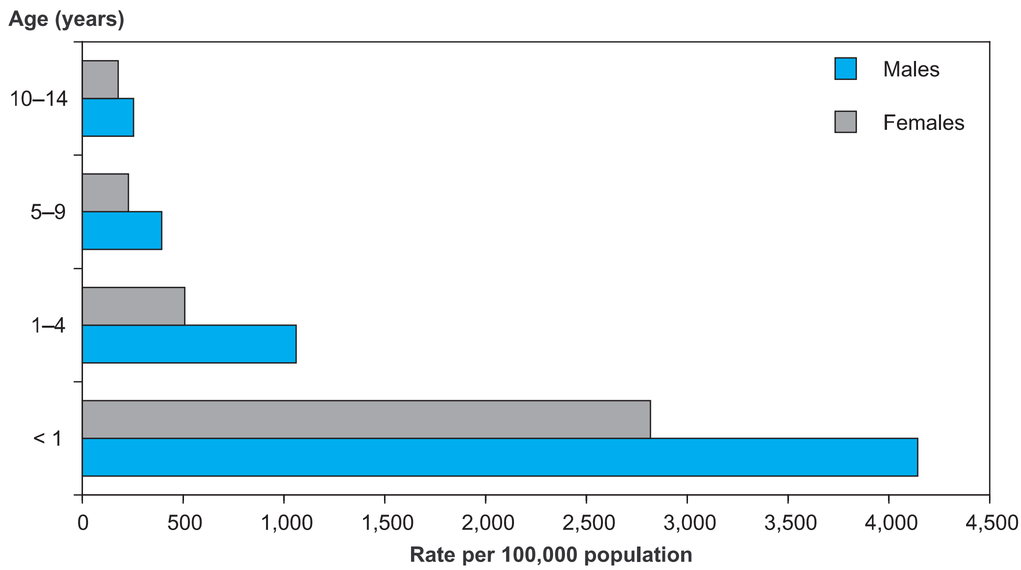
Deaths

Congenital malformations are a major cause of childhood mortality in Australia. They were the cause of 25.5% of infant deaths, and 9.7% of childhood deaths in 1996 (ABS 1997b). The infant mortality rates due to congenital malformations fell by 39% from 28 per 10,000 live births in 1982–86 to 17 per 10,000 live births in 1992–96. Congenital malformations of the circulatory system and of the nervous system were the two largest categories, accounting for 31% and 20% respectively of all infant deaths due to congenital malformation. This was followed by chromosomal abnormalities, which accounted for 13% of deaths.

Between 1982–86 and 1992–96, the average infant mortality rate from congenital malformations of the circulatory system declined by 25%. The death rate from congenital anomalies of the nervous system declined by 50%, from 6 deaths per 10,000 live births in 1982–86 to 3 per 10,000 live births in 1992–96 (ABS 1998c).

Hospitalisations

Information on hospitalisations was obtained from the National Hospital Morbidity Database held at the AIHW. For the analysis of hospitalisations presented in this section, records were included where the principal diagnosis was a congenital malformation (ICD-9-CM codes 740–759). These data may include repeat admissions for the same child.



Note: Hospitalisations based on principal diagnosis.

Source: AIHW National Hospital Morbidity Database.

Figure 11.3: Hospitalisations from congenital malformations, 0–14 year olds, 1996–97

- Children under the age of 1 year had the highest hospitalisation rate in 1996–97 for children with a principal diagnosis of congenital malformations.
- For babies under the age of 1 year, boys had higher hospitalisation rates than girls (4,143 and 2,818 per 100,000 children respectively).

12 Childhood cancer

Cancer is an uncommon disease in childhood but tends to occur more frequently in early childhood. However, little is known of the cause(s) of childhood cancer, apart from the influence of genetic factors, exposure to ionising radiation and certain chemicals (Anti-Cancer Council of Victoria 1993). Nevertheless, in 1996, it was the second most common cause of death after accidents in 1–14 year old children (see Chapter 3).

This chapter presents a summary on childhood cancers. Information on cancer is derived from the cancer data maintained by the National Cancer Statistics Clearing House (NCSCH) at the AIHW. NCSCH compiles statistics on cancer incidence and mortality produced by State and Territory cancer registries. For the analysis of incidence and deaths from cancer, all cases were included using ICD-9 codes 140–208. Non-melanocytic skin cancer (ICD-9: 173) was not included in the analysis. Data for incidence are currently available to 1994 and for mortality to 1996.

Table 12.1: Cancer in 0–14 year old children, average rates per year (per 100,000 population)

Sex	Age (years)	Incidence 1987–94	Mortality 1987–96	Hospitalisations[(a)] 1996–97
Males	0–4	21.1	4.1	202.1
	5–9	11.8	4.2	137.7
	10–14	11.9	3.8	128.4
Females	0–4	17.5	3.7	162.7
	5–9	10.0	3.1	99.5
	10–14	10.6	3.0	122.8

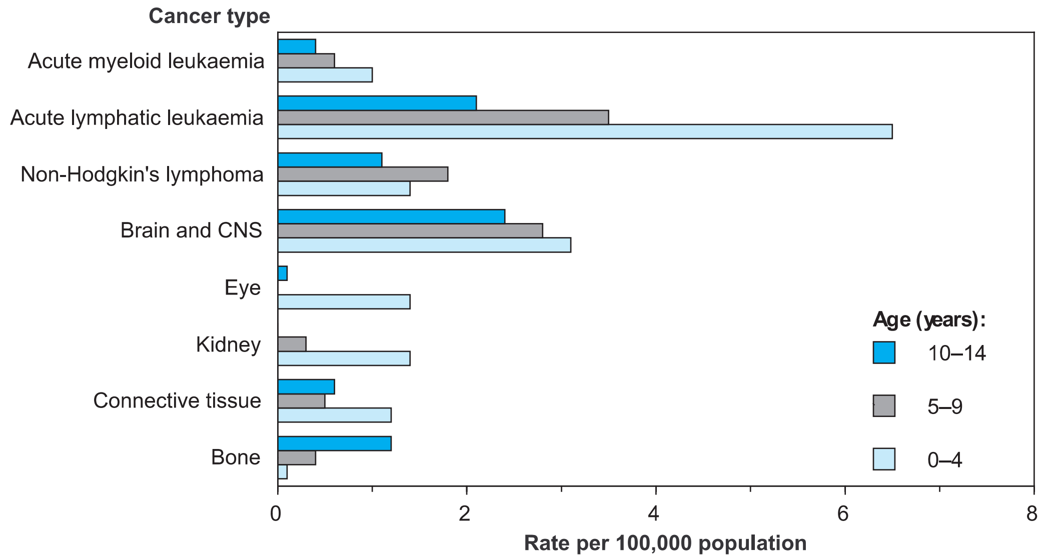
(a) Admission by principal diagnosis.

Sources: AIHW National Cancer Statistics Clearing House; AIHW Mortality Database; AIHW National Hospital Morbidity Database.

- For all age groups, cancer occurred more frequently in boys than in girls, in the years 1987–94.
- The incidence of cancer was highest in children aged 0–4 years.
- Boys generally experienced higher death and hospitalisation rates than girls in all age groups presented. The highest death rate was for boys aged 5–9 years.
- Hospitalisation rates declined with age. The exception was for 10–14 year old girls.

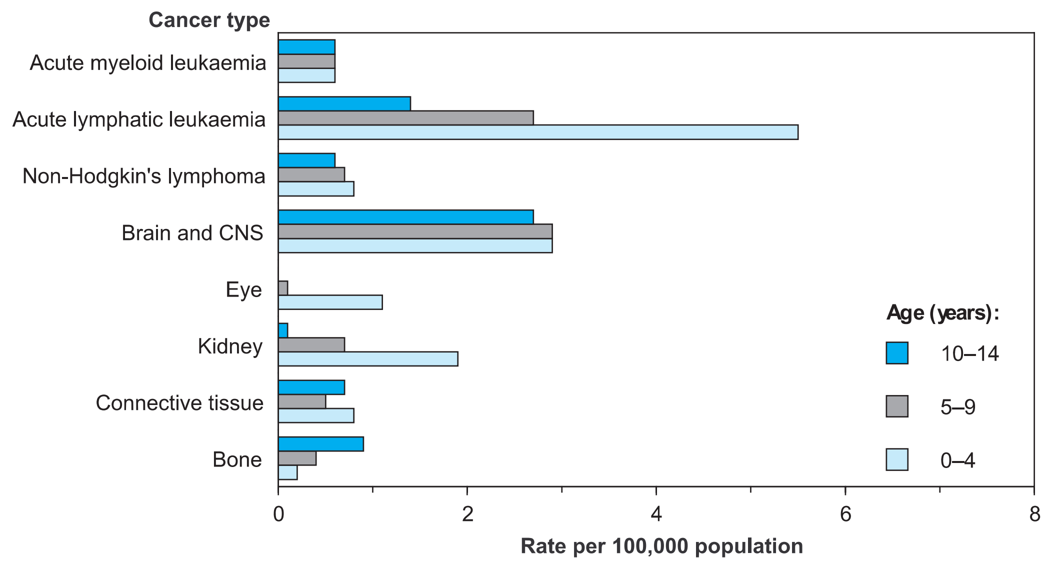
Incidence

The most common types of cancers in children are tumours of the bone, bone marrow and lymphoid system; nervous system; soft tissues and germ cells. Figure 12.1 and 12.2 show the incidence of specific childhood cancers in Australia. Terminology used throughout this chapter is equivalent to that used in the International Classification of Diseases, ninth revision (WHO 1977).



Source: AIHW National Cancer Statistics Clearing House.

Figure 12.1: Incidence of childhood cancer in males, 1987–94



Source: AIHW National Cancer Statistics Clearing House.

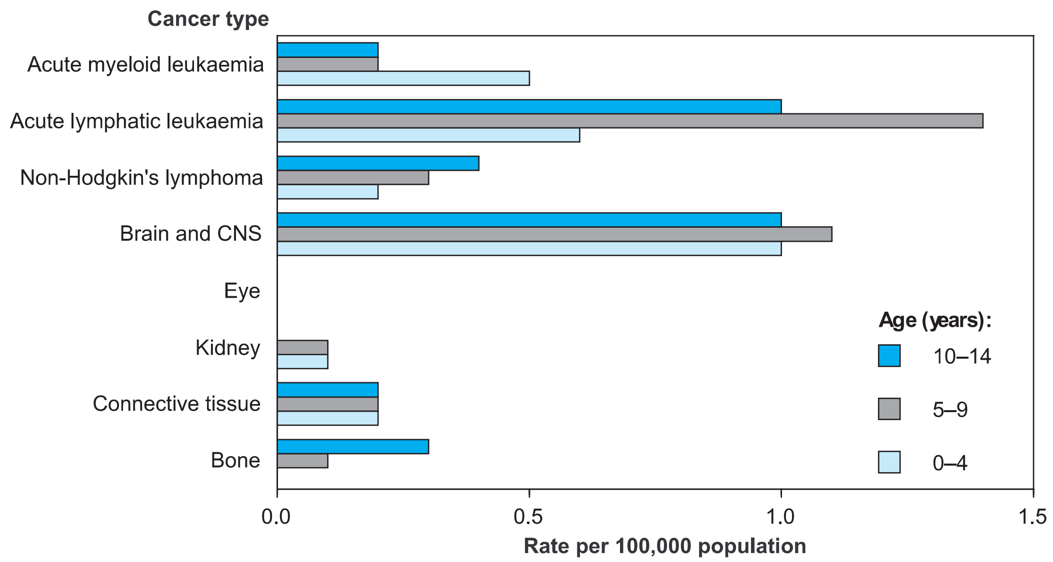
Figure 12.2: Incidence of childhood cancer in females, 1987–94

- For boys under 10 years, the cancer with the highest incidence rate was acute lymphatic leukaemia. For older boys, cancers of the brain and central nervous system had the highest incidence rate.
- For 0–4 year old girls, acute lymphatic leukaemia was the cancer with the highest incidence rate. For girls aged 5–14 years, cancers with the highest incidence rates were cancers of the brain and central nervous system.

Mortality

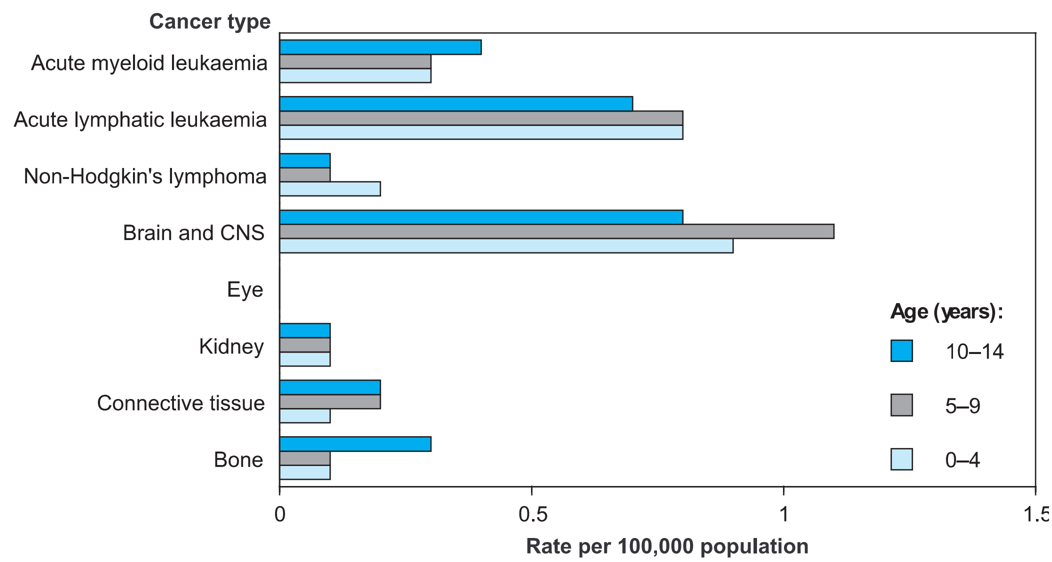
Although the number of deaths is small, in 1996 childhood cancer accounted for 17% of all deaths in children aged over 1 year.

Figures 12.3 and 12.4 show death rates among children aged 0–14 years from specific childhood cancers. The cancers with the highest incidence were not necessarily the ones with the highest death rates, due to differences between cancers in treatment success and survival rates.



Source: AIHW Mortality Database.

Figure 12.3: Death rates from cancers in males, 1987–96



Source: AIHW Mortality Database.

Figure 12.4: Death rates from cancers in females, 1987–96

- For boys over 4 years, the cancer with the highest death rate was acute lymphatic leukaemia. For younger boys, cancers of the brain and central nervous system had the highest death rates.
- For girls, cancers of the brain and central nervous system had the highest death rates in all age groups.

13 Asthma

Asthma is relatively common among children in Australia. Recent international comparison studies, using the same questionnaires, place asthma prevalence rates in Australian children in the top two or three countries in the world (Robertson et al. 1993).

Because of varying definitions of asthma and age and gender differences, a single figure for asthma prevalence is impossible (Phelan 1994). Nevertheless, among primary school children in Australia, 'recent wheeze' (that is, wheeze in the past 12 months) is reported to occur in approximately 25%. Using a broader definition, 'ever wheezed' (wheezed at some stage in the past), occurs in 40% of Australian children (Peat et al. 1994).

There is also good evidence that the prevalence of asthma has increased in the past decade in primary school children (Paterson et al. 1997). Estimated rates of 'doctor-diagnosed asthma' in this age group are now approximately 35%, and rates of measured abnormal bronchial responsiveness (to histamine) are now almost 20% of this age group. This latter figure (bronchial hyperresponsiveness) has almost doubled in the past decade. If these findings are true, they have major implications for the future burden of asthma in our community.

Wheezing in infants is often confused with asthma. Most acute wheeze in infants is due to acute viral bronchiolitis (due to respiratory syncitial virus) and in most cases this has no direct relationship with asthma. Moreover, more than half the infants with persistent or recurrent wheeze are wheezing on the basis of anatomically small airways rather than true asthma. These babies with relatively small airways outgrow the tendency to wheeze and do not have any long-term respiratory morbidity (Landau 1996). There is also a small group of infants with recurrent or persistent wheeze who have severe anatomical malformations in either the airways, lungs or mediastinum. Thus, only a small percentage of those infants with either recurrent or persistent wheeze have genuine asthma and this diagnosis can often be made only after a period of observation, investigation and/or treatment (Martinez et al. 1995).

Information for this chapter has been mainly derived from three sources: parent-reported prevalence from the 1995 National Health Survey; hospitalisation data from the National Hospital Morbidity Database for the year 1996–97; and mortality data from the AIHW Mortality Database for the years 1987 to 1996.

Parent-reported prevalence

The prevalence of asthma among children is based on parents' reports in the 1995 National Health Survey. Information is available both on the prevalence of asthma as a recent illness (present in the 2 weeks prior to interview) or as a long-term condition (conditions that are likely to have been present for at least 6 months). Information is also available on symptoms related to asthma.

Table 13.1: Parent-reported asthma prevalence rates and associated symptoms, 0–14 year olds, 1995 (per cent)

	Age (years)				
Conditions/symptoms	**< 1**	**1–4**	**5–9**	**10–14**	**Total**
Asthma reported as recent illness	1.5	6.6	10.3	9.9	8.6
Asthma reported as long-term condition	3.1	12.3	19.2	18.7	16.0
Other symptoms:					
Woke at night through own coughing	7.1	18.3	22.6	17.8	18.8
Has wheezy chest after physical exertion	n.a.	9.7	14.3	17.7	14.2 (a)
Has bout of coughing during physical exertion	n.a.	11.8	15.1	13.2	13.5 (a)
Has wheezy/ whistly chest	16.7	22.9	26.6	25.9	24.4

(a) For children aged 1–14 years.

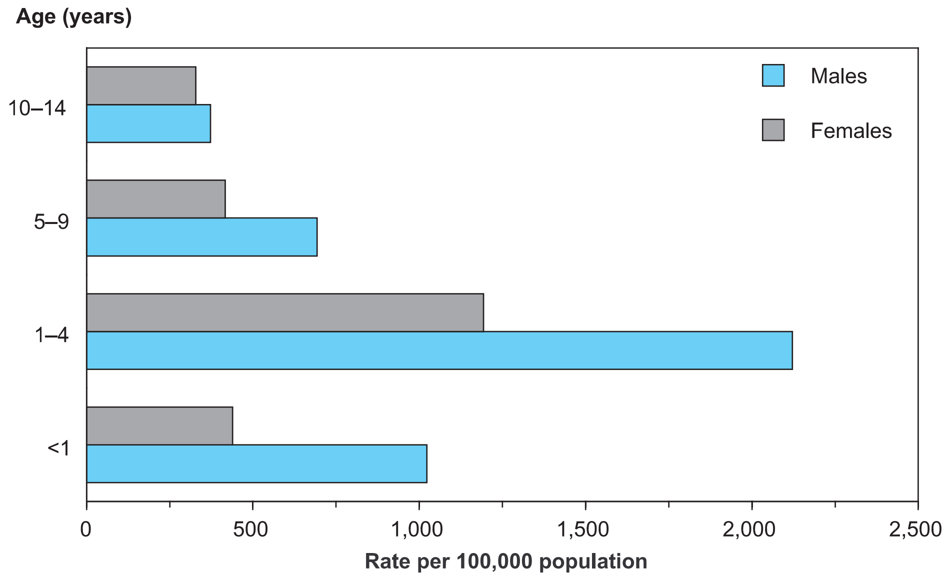
n.a. not applicable.

Source: AIHW, from ABS NHS data, 1995.

- Almost 20% of school-age children were reported to have asthma as a long-term condition during the 1995 National Health Survey. In addition, 10% of school-age children were reported to have asthma as a recent illness.
- The rate of illness generally rose through preschool ages, and peaked in the 5–9 year age group.
- A similar pattern was noted for asthma-related symptoms. A wheezy chest after physical exertion was most common among 10–14 year olds.
- Almost one-quarter of children had a wheezy/whistly chest and 19% of children were reported to wake up due to coughing.

Hospitalisations

Asthma is one of the most frequent reasons for hospitalisation among children (see Chapter 4). Figure 13.1 shows the hospitalisation rate for asthma among 0–14 year old children in 1996–97.



Note: Hospitalisations with a principal diagnosis of asthma.

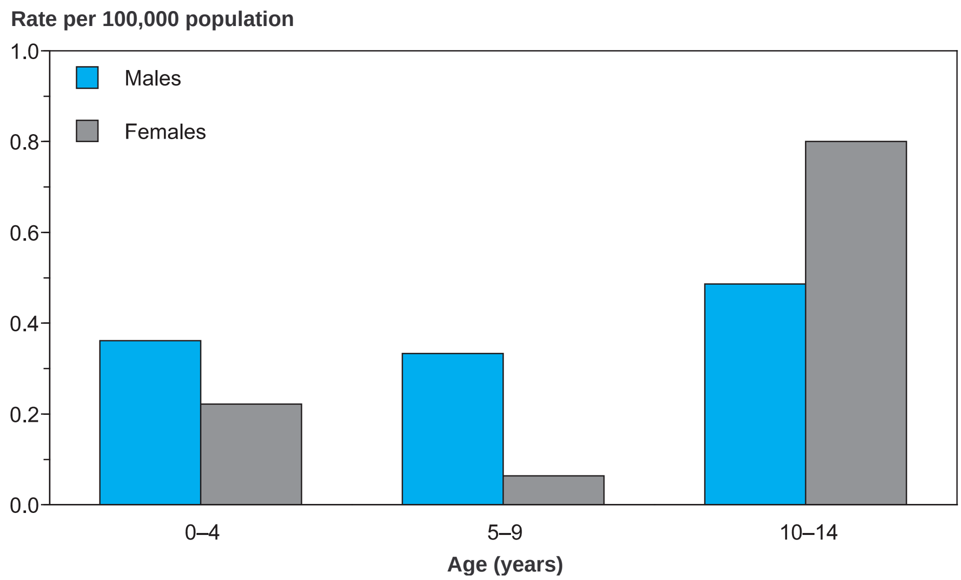
Source: AIHW National Hospital Morbidity Database.

Figure 13.1: Hospitalisations for asthma, 0–14 year olds, 1996–97

- In 1996–97, the rate of hospitalisation with a principal diagnosis of asthma was 796 per 100,000 children.
- The rates were highest in 1–4 year age group, and lowest in the 10–14 year age group, despite the lower asthma prevalence in preschoolers.
- Boys were hospitalised for asthma more often than girls in all age groups, reflecting the sex difference in early childhood asthma.

Mortality

Asthma is not a large contributor to mortality among children. The death rate over the 5-year period 1992–96 was estimated to be 0.4 per 100,000 children.

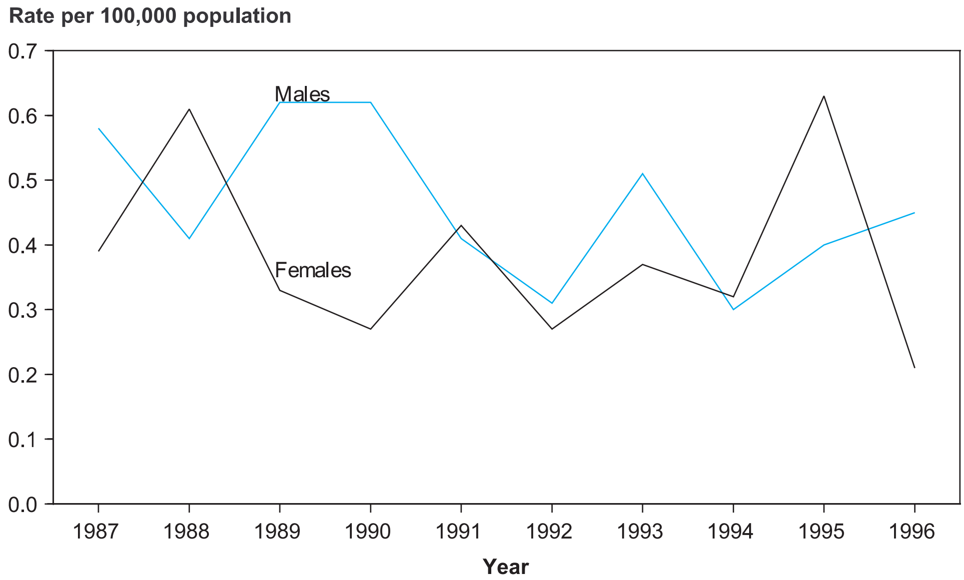


Source: AIHW Mortality Database.

Figure 13.2: Age-specific death rates for asthma, 0–14 year olds, 1992–96

- Death from asthma was uncommon in children in the period 1992–96, especially in the preschool age group.
- Asthma death rates rose with age and were highest among children aged 10–14 years.
- Death rates were higher for boys than girls in the 0–4 and 5–9 age groups, but higher for girls in the 10–14 age group. This may reflect the sex difference in asthma during childhood.

Deaths reported as being caused by asthma have declined for all ages over the past several years (Strong et al. 1998). However, no consistent trend is noted in asthma mortality among children (Figure 13.3).



Source: AIHW Mortality Database.

Figure 13.3: Asthma deaths, 0–14 year olds, 1987 to 1996

- Over the period shown, asthma deaths remained below 0.7 per 100,000 children for both boys and girls.

14 Other chronic diseases

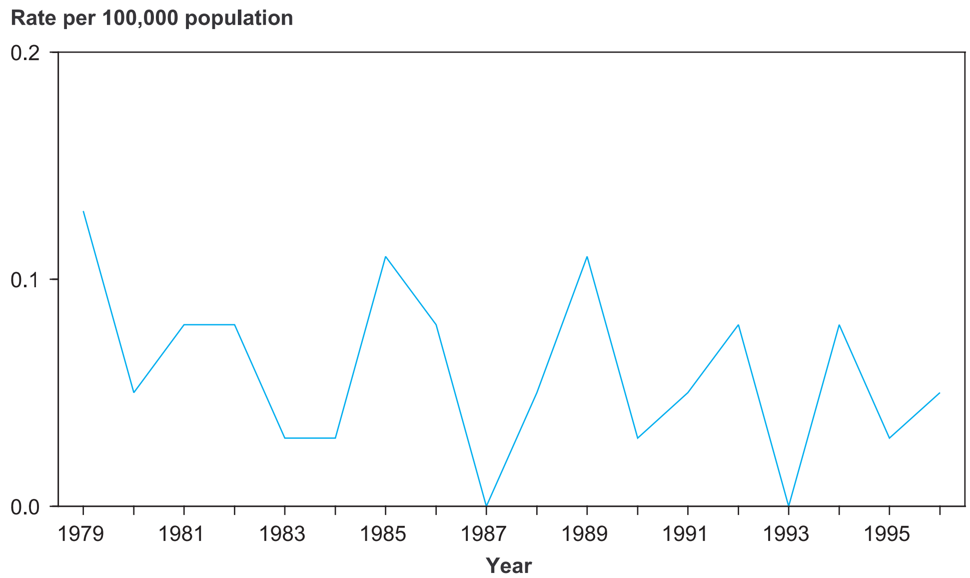
This chapter presents information on four important chronic conditions for children—diabetes, cystic fibrosis, cerebral palsy and epilepsy. Information on asthma is covered in Chapter 13.

Diabetes

Diabetes mellitus (referred to in the remainder of this section as diabetes) is the most common endocrine condition of childhood. Nearly all cases of childhood diabetes are insulin-dependent, Type 1 diabetes.

The prevalence of diabetes in Australian children is estimated to be around 130 per 100,000 (Silink 1994). There are two peaks in the incidence of diabetes, at 4–6 and 10–14 years. It is believed that the incidence of childhood diabetes has increased substantially in developed countries in the last 40 years (Waterson et al. 1997).

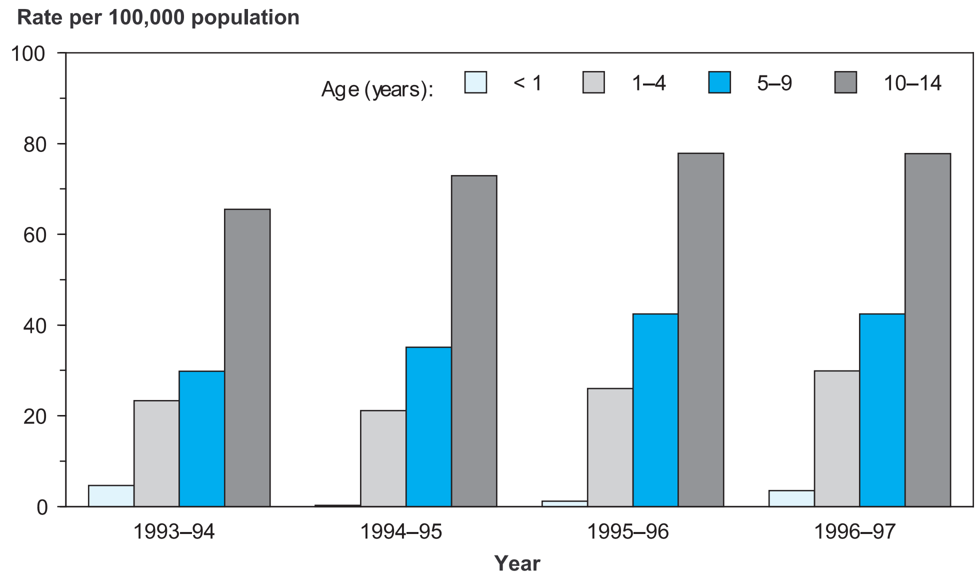
Information is presented below on childhood deaths (Figure 14.1) and hospitalisations (Figure 14.2) directly attributable to diabetes (ICD-9 code 250).



Source: AIHW Mortality Database.

Figure 14.1: Deaths from diabetes, 0–14 year olds, 1979 to 1996

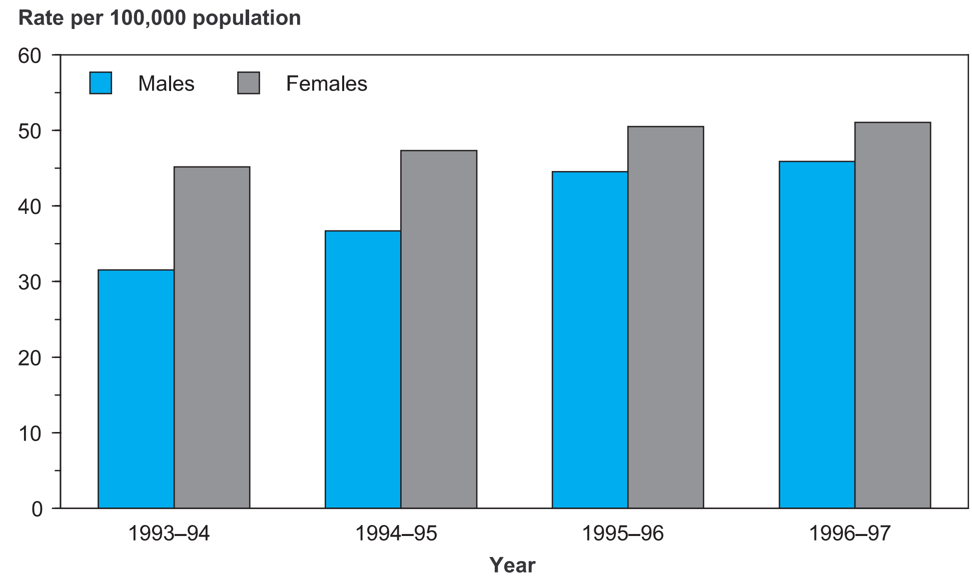
- Over the period 1979 to 1996, there were 40 deaths in children under 15 years due to diabetes (21 girls and 19 boys).
- This translates to a low annual death rate (less than 0.15 per 100,000).
- No time trend is apparent in the death rate from diabetes over this period.



Source: AIHW National Hospital Morbidity Database.

Figure 14.2: Hospitalisations with a principal diagnosis of diabetes, by age

- The hospitalisation rate for children with a principal diagnosis of diabetes is highest in the 10–14 year age group. This is to be expected, as it is a chronic disease and the prevalence becomes progressively higher in older age groups.
- There has been a minimal increase in the hospitalisation rate over the period 1993–94 to 1996–97 (38 per 100,000 to 44 per 100,000).



Source: AIHW National Hospital Morbidity Database.

Figure 14.3: Hospitalisations with a principal diagnosis of diabetes, by sex, 0–14 year olds

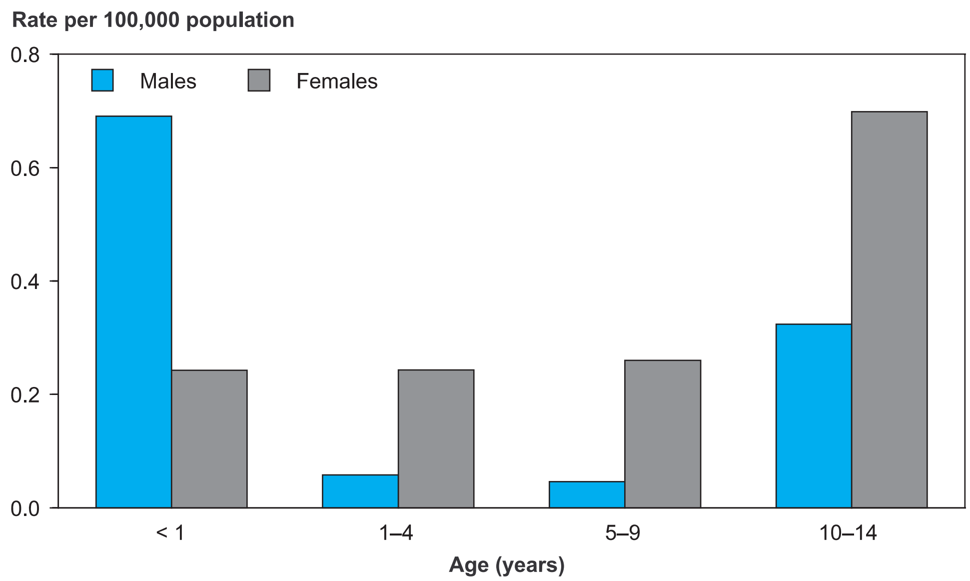
- The hospitalisation rate for children with a principal diagnosis of diabetes was higher for girls than boys over the period 1993–94 to 1996–97.
- Most of the increase in the hospitalisation rate has been due to the male rate increasing. For boys, the rate increased by 45% between 1993–94 and 1996–97, compared with 13% for girls.

Cystic fibrosis

Cystic fibrosis is one of the most common inherited conditions. It has multisystem effects, resulting in recurrent lung infections and failure to thrive (Waterson et al. 1997).

The incidence of cystic fibrosis in Australia is estimated to be 1 in 2,500 live births (Olinsky 1994). Virtually all cases are diagnosed by newborn screening.

Information on the childhood death and hospitalisation rates for cystic fibrosis is presented below. The ICD-9 code used to identify these cases was 277.0.



Source: AIHW National Mortality Database.

Figure 14.4: Deaths from cystic fibrosis, 1987–96

- The overall death rate from cystic fibrosis was higher for girls than for boys in the 10-year period 1987–96 (0.4 per 100,000 for girls and 0.2 per 100,000 for boys).
- For all age groups (except under 1 year), the death rate was higher for girls than for boys.

Table 14.1: Hospitalisations with a principal diagnosis of cystic fibrosis (rate per 100,000 population)

Sex	Age (years)	1993–94	1994–95	1995–96	1996–97
Males	< 1	36.2	59.5	43.8	42.9
	1–4	12.4	10.7	15.1	16.8
	5–9	15.4	15.8	24.9	27.4
	10–14	22.3	24.5	30.1	41.6
	Total	*18.3*	*20.2*	*25.3*	*30.3*
Females	< 1	47.8	35.9	35.8	55.9
	1–4	17.6	15.2	17.3	22.3
	5–9	19.0	17.9	31.4	26.9
	10–14	20.8	27.6	38.7	41.0
	Total	*21.2*	*21.6*	*30.4*	*32.3*

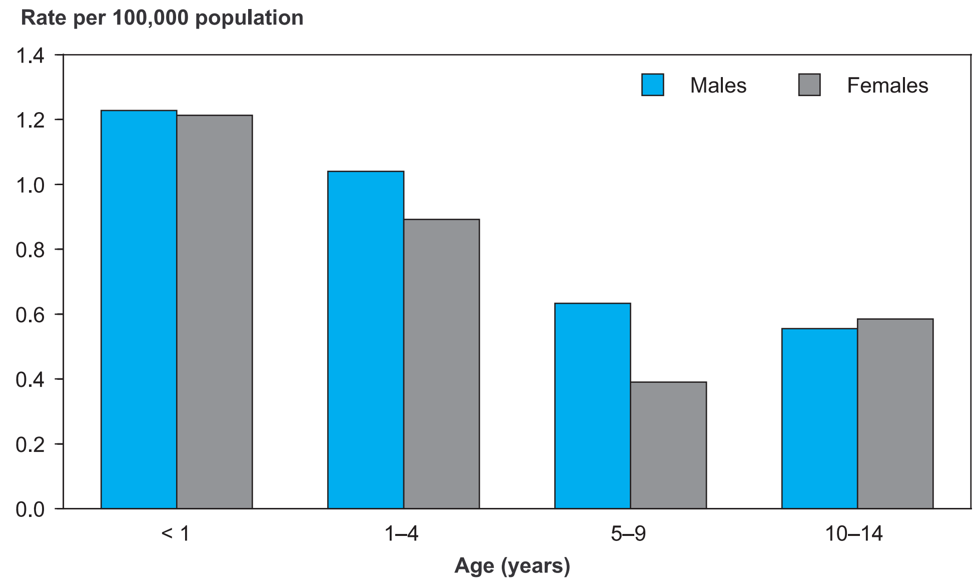
Source: AIHW National Hospital Morbidity Database.

- The hospitalisation rate for cystic fibrosis has increased over the 4 years shown in Table 14.1. There was a 66% increase for boys to a rate of just over 30 per 100,000. The increase for girls was just over 50%, to 32 per 100,000.
- There is a definite pattern in the hospitalisation rates by age. The highest rates are for children under 1 year. This is probably due to the common policy of admitting newly diagnosed infants (following newborn screening) for establishing treatment.
- In all 4 years, the hospitalisation rate was higher for girls than for boys.

Cerebral palsy

Cerebral palsy is a disorder of movement and tone caused by a non-progressive brain lesion (Waterson et al. 1997). It is a permanent disorder manifesting before birth or in early infancy (Collins & Ouvrier 1994). The incidence is estimated to be between 2 and 2.5 per 1,000 live births (Collins & Ouvrier 1994).

The ICD-9 code used to identify these cases was 343.



Source: AIHW Mortality Database.

Figure 14.5: Deaths from cerebral palsy, 1987–96

- The death rate from cerebral palsy for children under 15 years over the period 1987–96 was 0.8 per 100,000 for boys and 0.6 per 100,000 for girls.
- The death rates were higher in the younger age groups, particularly under 1 year.

Table 14.2: Hospitalisations with a principal diagnosis of cerebral palsy (rate per 100,000 population)

Sex	Age (years)	1993–94	1994–95	1995–96	1996–97
Males	< 1	18.1	18.1	19.6	30.6
	1–4	43.6	12.4	24.1	54.4
	5–9	13.4	9.9	20.6	28.6
	10–14	15.9	5.0	11.5	11.9
	Total	*22.7*	*9.5*	*18.4*	*30.0*
Females	< 1	4.8	9.6	9.5	25.9
	1–4	43.3	15.0	14.6	22.9
	5–9	20.6	8.0	25.7	21.6
	10–14	11.5	4.3	5.8	8.1
	Total	*22.7*	*8.7*	*15.0*	*17.7*

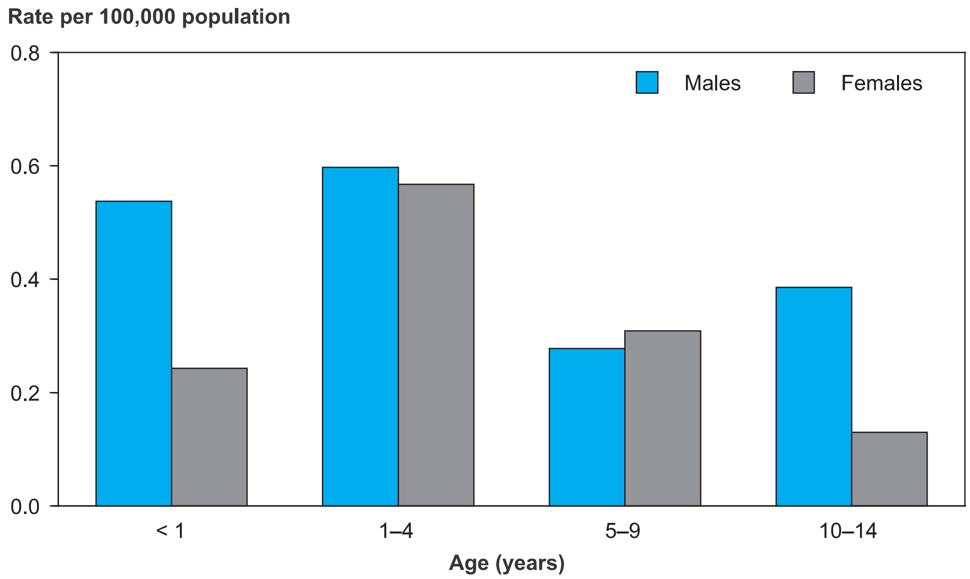
Source: AIHW National Hospital Morbidity Database.

- Over the 4 years 1993–94 to 1996–97, the hospitalisation rates for cerebral palsy for both boys and girls have varied widely.
- The hospitalisation rates for boys and girls were very similar in the first 2 years of the 4-year period. However in the latter 2 years, boys experienced higher rates than girls.

Epilepsy

Epilepsy can be defined as recurring unprovoked afebrile seizures (Hopkins 1994). The prevalence of epilepsy in childhood is estimated to be 5%.

Information on epilepsy deaths and hospitalisations is presented below. The ICD-9 code used to identify these cases was 345.



Source: AIHW Mortality Database.

Figure 14.6: Deaths from epilepsy, 1987–96

- The death rate from epilepsy in childhood is higher in the younger age groups (0–4 years).
- Boys had a higher death rate from epilepsy than girls (0.42 per 100,000 compared with 0.31 per 100,000). For children under 1 year and 10–14 year olds, the death rate for boys was substantially higher than for girls.

Table 14.3: Hospitalisations with a principal diagnosis of epilepsy (rate per 100,000 population)

Sex	Age (years)	1993–94	1994–95	1995–96	1996–97
Males	< 1	155	130	180	170
	1–4	153	140	166	183
	5–9	88	86	100	99
	10–14	75	67	69	76
	Total	*106*	*97*	*113*	*118*
Females	< 1	195	146	145	186
	1–4	146	133	131	146
	5–9	90	86	97	98
	10–14	66	69	67	64
	Total	*104*	*97*	*100*	*105*

Source: AIHW National Hospital Morbidity Database.

- Hospitalisation rates for epilepsy in children under 15 years have remained relatively stable over the period 1993–94 to 1996–97. For both boys and girls, the highest rates were experienced in 1996–97 (118 and 105 per 100,000 population respectively).
- Younger children have the highest hospitalisation rates for epilepsy, with the rates then decreasing with age for both boys and girls.
- Over the 4 years, boys have had slightly higher hospitalisation rates for epilepsy than girls.

Part IV: Infectious diseases

Chapter 15: Vaccine-preventable diseases and immunisation

Chapter 16: Other communicable diseases

Primary goal

- *Reduce the incidence of vaccine-preventable diseases.*

Other relevant goals

- *Reduce the frequency of preventable premature mortality.*

15 Vaccine-preventable diseases and immunisation

There are two main aspects of this topic reported in this chapter: the number and seriousness of recent cases of vaccine-preventable diseases in Australia, and the immunisation status of Australian children. Available sources of information on vaccine-preventable diseases include notifications, hospitalisations and deaths. For immunisation rates there are two main sources: the recently commenced Australian Childhood Immunisation Register, and the most recent national survey of childhood immunisation. Details on these data sources are given below.

Data sources

The main data sources used here to obtain information on vaccine-preventable diseases are:

- the National Notifiable Diseases Surveillance System which includes all cases of vaccine-preventable diseases notified to the relevant State of Territory health authority; health workers and pathology laboratories are required to report all cases of these diseases that come to their attention. This is therefore a measure of the incidence of the disease, assuming that all cases are, indeed, notified.
- the National Hospital Morbidity Database which provides information on hospitalised cases of these diseases; hospitalisations with a principal diagnosis of the relevant disease are the basis of this chapter. This information indicates the level of serious acute cases of the disease, but does not measure any longer term effects.
- the Mortality Database which provides information on the number of deaths directly caused by the disease.

There have been many recent studies measuring the immunisation rates of Australian children. In this report, we have included information available at the national level. The two sources used are:

- the Australian Childhood Immunisation Register which aims to include the immunisation status of all Australian children. It is a fairly new register, having come into operation on 1 January 1996. Results presented here include the immunisation status of 1 year olds born between 1 January and 31 December 1996.
- the ABS Children's Immunisation and Health Screening Survey conducted in April 1995 which includes information on the immunisation status of children aged between 3 months and 6 years. It also provides information on the reasons given by parents for incomplete immunisation.

The first section of this chapter includes information on the levels in the community of the vaccine-preventable diseases on the current NHMRC schedule (NHMRC 1997b). The second section includes information on immunisation rates. The third section presents information on the level of two diseases for which there are currently vaccines in development—varicella and rotavirus.

Vaccine-preventable diseases

This section provides information on the level of vaccine-preventable diseases in the community using notifications of each disease. Information is also presented on the more serious cases of the diseases—those requiring hospitalisation or resulting in death. Information is generally limited to the acute effects of each disease and excludes the long-term effects (such as neurological damage from pertussis, or hearing loss from mumps), although information on one rare long-term effect of measles—subacute sclerosing panencephalitis (SSPE)—is included.

Summary

Despite the reduction in the incidence of vaccine-preventable diseases since the introduction of immunisation, these diseases remain a problem in Australia. While cases of each disease continue in the community, children (and other sections of the population) remain at risk from the disease.

Table 15.1: Average number of cases per year, 0–14 year olds

Disease[(a)]	Notifications[(b)]	Hospitalisations[(c)]	Deaths[(b)]
Pertussis	2,392	628	1.0
Haemophilus influenzae type b	79	103	3.3
Measles	1,438	187	1.0
Rubella	912	34	0.0
Hepatitis B	9	14	0.0
Mumps	76	19	0.0
Tetanus	0	1	0.0
Total	**2,392**	**985**	**1.0**

(a) Details on ICD-9 codes used are given throughout this chapter.

(b) Average over 3 years 1994 to 1996.

(c) Average over 3 years 1994–95 to 1996–97.

Sources: National Notifiable Diseases Surveillance System, AIHW National Hospital Morbidity Database and AIHW Mortality Database.

- Table 15.1 shows the average number of notifications, hospitalisations and deaths per year for children under 15 years. These averages were calculated from the 3 most recent years of data available for deaths and hospitalisations. The notifications average was calculated over the same 3 years as for the deaths data.
- In recent years, on average there were nearly 5,000 notifications, nearly 1,000 hospitalisations and about 5 deaths per year from vaccine-preventable diseases in children under 15 years.
- Both pertussis and measles had large numbers of notifications. For pertussis, there were also over 600 hospitalisations per year, and for measles there was an average of nearly 200 hospitalisations per year.
- *Haemophilus influenzae* type b infection (Hib) had nearly 80 notifications, just over 100 hospitalisations and over 3 deaths on average per year. The reason for the higher hospitalisation rate than notification rate is not known at this time. Further discussion on the relationship between hospitalisations and notifications for Hib is given in the relevant section below.

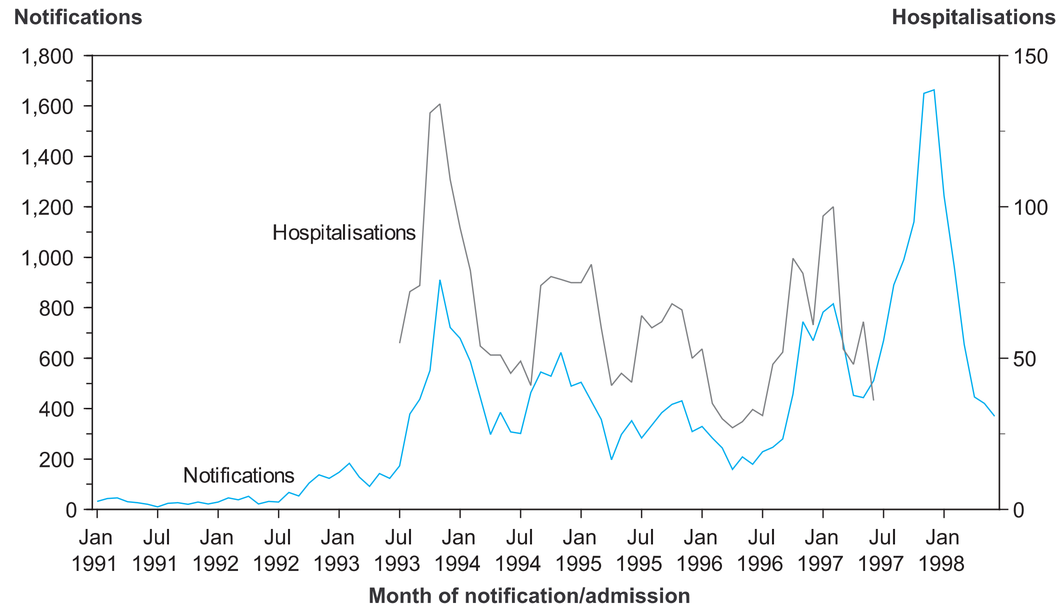
There have been no notified cases of polio in Australia since 1986, and no cases of diphtheria since 1993.

Further details on the diseases included in Table 15.1 (except tetanus) follow. For each disease, information is presented on the level of the disease both in the community as a whole and in children under 15 years.

Pertussis

Pertussis is a highly infectious bacterial respiratory infection caused by *Bordetella pertussis* (NHMRC 1997b). It is believed that most cases occur in school-age children, though recently many cases have been diagnosed in adolescents and adults. Infants are most at risk from the potentially serious consequences of the infection, including during the period before they are old enough to be vaccinated. Mortality in babies under 6 months is 0.5%, including deaths from pneumonia or encephalopathy. Potential long-term effects of the disease include brain damage.

The ICD-9/ICD-9-CM code used to identify pertussis cases on the AIHW Mortality Database and the AIHW National Hospital Morbidity Database was 033.



Sources: National Notifiable Diseases Surveillance System, AIHW National Hospital Morbidity Database.

Figure 15.1: Pertussis notifications and hospitalisations in Australia, all ages, 1991 to 1998

- Following relatively low numbers of pertussis notifications in the early part of this decade (at which time pertussis was not required to be notified in all States and Territories), there have been increasing numbers of notifications in recent years, particularly during 1997 and early 1998. The highest number of notifications received in 1 month was in November 1997 with 1,533 cases notified.
- The monthly number of admissions for pertussis has followed the increases and decreases in notification numbers fairly closely. There has been an average of one hospitalisation per month for every 27 notifications of pertussis over the period July 1993 to June 1997.

- There has been a seasonal pattern in the notification and hospitalisation for pertussis. The peak has occurred in late spring or summer since 1993.
- There were four recorded deaths from pertussis during the years 1991 to 1996.

More serious cases of pertussis tend to occur in children rather than adults, particularly in very young children. Over the period 1991 to 1996, all pertussis deaths were to children under 15 years. During 1993–94 to 1996–97, 91% of pertussis hospitalisations were for children. In contrast, 55% of notifications between 1991 and 1998 were children under 15 years.

Table 15.2: Rates of pertussis in 0–14 year olds, 1991 to 1998 (rate per 100,000)

		Hospitalisations (age in years)					
Year	Notifications	< 1	1–4	5–9	10–14	All	Deaths
1991	3.1						0.03
1991–92		n.a.	n.a.	n.a.	n.a.	n.a.	
1992	5.9						0.00
1992–93		n.a.	n.a.	n.a.	n.a.	n.a.	
1993	19.0						0.00
1993–94		212.5	17.1	7.0	4.5	22.7	
1994	21.2						0.00
1994–95		162.6	12.1	6.9	3.1	17.4	
1995	16.5						0.03
1995–96		134.4	9.4	4.2	1.8	13.4	
1996	12.9						0.05
1996–97		183.4	10.1	6.1	2.7	17.5	
1997	32.2						n.a.
1997–98		n.a.	n.a.	n.a.	n.a.	n.a.	
1998[(a)]	20.4						n.a.

(a) For the 6 months January to June.

Sources: National Notifiable Diseases Surveillance System, AIHW National Hospital Morbidity Database and AIHW Mortality Database.

- Notification rates of pertussis for the age group 0–14 years have been over 10 per 100,000 in each year since 1993. The highest annual rate was in 1997, with over 32 notifications for every 100,000 children. For the 6-month period January–June 1998, the annualised notification rate was over 40 per 100,000, although this high rate may not continue in the second half of the year.
- Hospitalisation rates for children with a principal diagnosis of pertussis have varied between 13 and 23 per 100,000 for each year where data are available. The highest hospitalisation rates for pertussis in children was for infants under 1 year of age.
- The hospitalisation information presented in the Table 15.2 includes only those episodes with a principal diagnosis of pertussis. There were another 91 hospitalisations with an additional diagnosis of pertussis (above the 686 with a principal diagnosis).

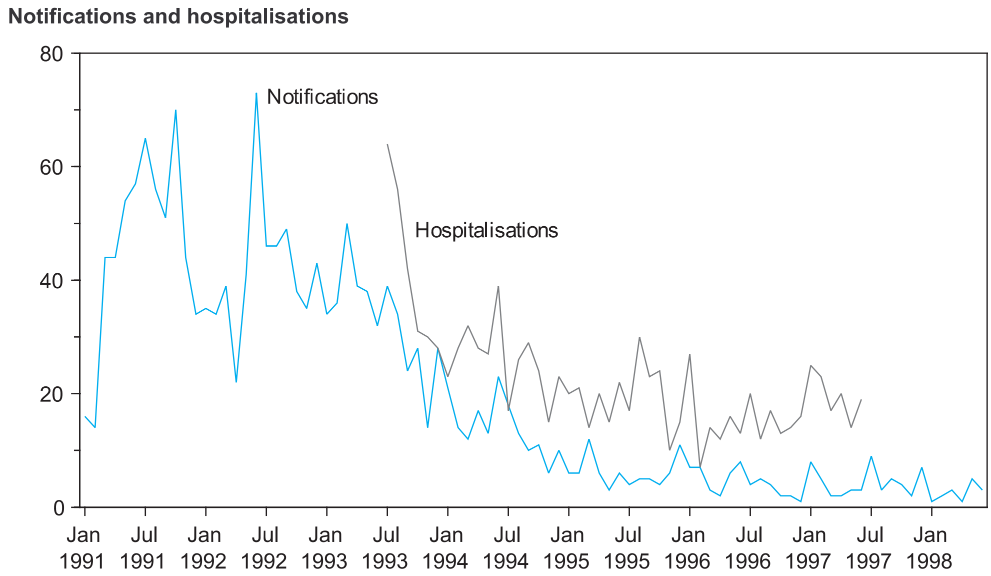
Haemophilus influenzae type b infection (Hib)

Invasive diseases caused by *Haemophilus influenzae* type b may result in serious illness including meningitis, epiglottitis and pneumonia, particularly in young children (NHMRC 1997b). Long-term effects from non-fatal cases may include deafness and intellectual impairment. Prior to the introduction of a vaccine (the national Hib program began in the second half of 1993), Hib infections were an important cause of mortality and morbidity.

In obtaining data from the Mortality Database and the National Hospital Morbidity Database, two ICD-9/ICD-9-CM codes were used to identify Hib cases:

- 320.0 *Haemophilus influenzae* meningitis
- 464.3 Acute epiglottis

Although the epiglottitis code is not specific for the causal agent, Hib causes virtually all cases of epiglottitis in young children (NHMRC 1997b), although this may change as Hib immunisation reduces the incidence of Hib epiglottitis. Similarly, for meningitis cases, only *Haemophilus influenzae* is specified as the causal organism. However, it is likely that the majority of the more serious cases requiring hospitalisation or causing death were type b infections.



Sources: National Notifiable Diseases Surveillance System, AIHW National Hospital Morbidity Database.

Figure 15.2: Hib notifications and Hi hospitalisations in Australia, all ages, 1991 to 1998

- A notable feature in Figure 15.2 is the dramatic decline in the notifications of Hib cases in recent years. This decline corresponds to the introduction of Hib vaccination as part of the standard childhood immunisation schedule.
- The hospitalisation rate also appears to have declined during the period for which data are available, although it is not known what the national hospitalisation rate was prior to the inclusion of Hib on the NHMRC schedule.
- Over the period where data are available on the number of both notifications and hospitalisations, there have been more hospitalisations (with a principal diagnosis

related to *Haemophilus influenzae*) than notifications. The higher number of hospitalisations than notifications occurred in all age groups and over all years for which data are available. The reason for this unexpected result is not currently known, but it may be due to a number of factors. Possible explanations include: some of the conditions hospitalised are caused by types of *Haemophilus influenzae* other than type b; there are multiple admissions for a single case of Hib; or not all cases are being notified.

Hib cases in children under 15 years represent different proportions in the three data sets:

- 88% of notifications
- 58% of hospitalisations
- 72% of deaths.

More detail is presented below on the reports for children under 15 years.

Table 15.3: Hib cases in 0–14 year olds, 1991 to 1998 (rate per 100,000 population)

		Hospitalisations (age in years)					
Year	Notifications	< 1	1–4	5–9	10–14	All	Deaths
1991	12.3						0.34
1991–92		n.a.	n.a.	n.a.	n.a.	n.a.	
1992	12.3						0.37
1992–93		n.a.	n.a.	n.a.	n.a.	n.a.	
1993	9.4						0.16
1993–94		27.9	20.1	5.7	0.8	8.6	
1994	3.5						0.10
1994–95		17.8	7.2	2.3	0.6	3.7	
1995	1.6						0.05
1995–96		7.7	5.5	1.8	0.3	2.4	
1996	1.6						0.05
1996–97		8.7	2.7	1.1	0.9	1.9	
1997	1.0						n.a.
1997–98		n.a.	n.a.	n.a.	n.a.	n.a.	
1998(a)	0.6						n.a.

(a) For the 6 months January to June.

Sources: National Notifiable Diseases Surveillance System, AIHW National Hospital Morbidity Database and AIHW Mortality Database.

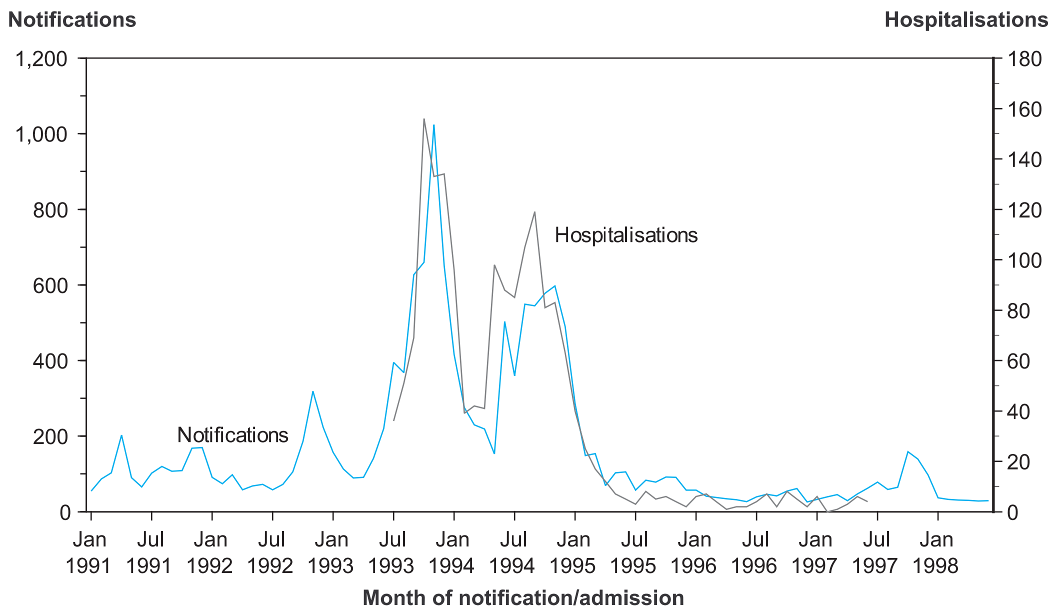
- As the notifications of Hib cases in the community have dropped dramatically in recent years, so has the rate of notification of cases in children. In the last few years the rate appears to have stabilised at around 1 per 100,000.
- In children aged 0–14 years, the hospitalisation rate has fallen during the period with available data. Again, the hospitalisation rate was higher than the notification rate (see discussion above).
- For each year with data available, the highest hospitalisation rates among children were for infants under 1 year of age.
- The hospitalisation rates given above include only those episodes with a principal diagnosis of Hib. There were only a small number of hospitalisations (12) with an additional diagnosis of Hib.

- The death rate has also fallen from around 0.3 to 0.4 per 100,000 in the early 1990s to less than 0.1 per 100,000 in 1996.

Measles

Measles is a highly infectious viral illness. It is often a serious disease which may be complicated by otitis media, bronchopneumonia and encephalitis. Measles encephalitis has a high death rate (10–15% of cases), and a high proportion (15–40%) of survivors have permanent brain damage (NHMRC 1997b). Subacute sclerosing panencephalitis (SSPE) is a late complication that is always fatal (discussed further below).

The ICD-9/ICD-9-CM code used to identify measles cases on the AIHW Mortality and National Hospital Morbidity Databases was 055.



Sources: National Notifiable Diseases Surveillance System, AIHW National Hospital Morbidity Database.

Figure 15.3: Measles cases in Australia, all ages, 1991 to 1998

- The last major outbreak of measles in Australia occurred in 1993 and 1994. At that time there were up to 1,000 notifications of the disease in a month.
- Peaks in the number of hospitalisations have occurred at the same times as peaks in the number of notifications. On average, there was one hospitalisation for every 11 notifications of measles.
- There were 13 deaths attributed to measles from 1991 to 1996.

Of measles notifications during the period 1991 to 1998, 70% were for children under 15 years. Children under 15 years made up 71% of hospitalisations (during 1993–94 to 1996–97) and 54% of deaths (1991 to 1996).

Table 15.4: **Measles cases in 0–14 year olds, 1991 to 1998 (rate per 100,000 population)**

		Hospitalisations (age in years)					
Year	Notifications	< 1	1–4	5–9	10–14	All	Deaths
1991	27.0						0.05
1991–92		n.a.	n.a.	n.a.	n.a.	n.a.	
1992	30.2						0.05
1992–93		n.a.	n.a.	n.a.	n.a.	n.a.	
1993	87.2						0.00
1993–94		53.4	22.8	11.3	10.9	17.1	
1994	80.0						0.03
1994–95		43.8	14.9	7.2	10.2	12.7	
1995	22.5						0.05
1995–96		5.0	1.7	0.2	0.2	0.9	
1996	9.0						0.00
1996–97		3.1	1.2	0.3	0.3	0.7	
1997	14.8						n.a.
1997–98		n.a.	n.a.	n.a.	n.a.	n.a.	
1998[(a)]	7.8						n.a.

(a) For the 6 months January to June.

Sources: National Notifiable Diseases Surveillance System, AIHW National Hospital Morbidity Database and AIHW Mortality Database.

- The notification rate for measles in children under 15 years has been as high as 87 per 100,000 in 1993, and down to 9.0 per 100,000 in 1996.
- The hospitalisation rate was highest in 1993–94 at 17 per 100,000 and lowest in the more recent years at around 1 per 100,000. Among children, infants under 1 year of age had the highest hospitalisation rates.
- Hospitalisation information included in the table above includes only those episodes with a principal diagnosis of measles. In 1996–97, there were two-thirds as many hospitalisations with an additional diagnosis of measles as those with a primary diagnosis of measles.
- It is important to note that these declines do not necessarily indicate that the disease is under control. The epidemic nature of measles (and many other communicable diseases) means that another outbreak can occur when the number of non-immune individuals reaches a level able to support transmission of the disease (Benenson 1990).

Subacute sclerosing panecephalitis (SSPE) is a late complication of measles causing progressive brain damage and finally death. It occurs in about 1 in 25,000 cases of measles (NHMRC 1997b). The ICD-9/ICD-9-CM code used to identify these cases was 046.2.

Table 15.5: Deaths and hospitalisations from subacute sclerosing panencephalitis

	Deaths	Hospitalisations		
Year	Number	Year	Principal diagnosis (number)	Additional diagnosis (number)
1987	6			
1988	8			
1989	0			
1990	5			
1991	2			
1992	3			
1993	2	1993–94	19	16
1994	0	1994–95	19	31
1995	0	1995–96	9	23
1996	2	1996–97	4	16

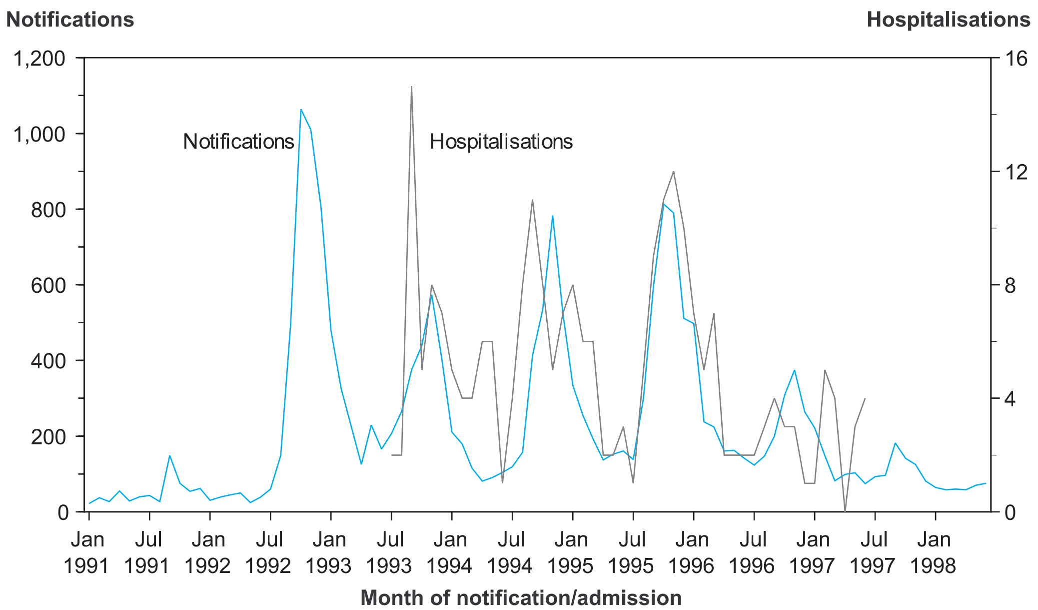
Sources: AIHW National Hospital Morbidity Database and AIHW Mortality Database.

- There were 28 deaths from SSPE in the 10 years to 1996.
- The hospitalisation data include repeat admissions for individuals—that is, these results show the number of hospital episodes for SSPE rather than the number of individuals hospitalised.

Rubella

Rubella is itself a mild infectious disease. However, it has a very high risk of foetal damage if rubella is contracted by pregnant women, particularly in the first 8–10 weeks of pregnancy (NHMRC 1997b). Birth defects occur in up to 90% of cases including multiple defects (congenital rubella syndrome). Foetal defects include mental handicap, cataract, deafness, cardiac abnormalities and intra-uterine growth retardation. Some defects may not be detected at the time of birth, including deafness. While cases of rubella remain in the community, there is a risk that pregnant women could catch the disease, particularly if unimmunised.

The ICD-9/ICD-9-CM code used to identify rubella cases in the AIHW Mortality and National Hospital Morbidity Databases was 056; for congenital rubella syndrome the ICD-9 code used was 771.0.



Sources: National Notifiable Diseases Surveillance System, AIHW National Hospital Morbidity Database.

Figure 15.4: Rubella cases in Australia, all ages, 1991 to 1998

- The last major outbreak of rubella in Australia was in late 1995. During that outbreak, there were up to 800 notifications of rubella in a 1-month period. Note that rubella was not notifiable in all States and Territories in the early 1990s.
- Hospitalisations for rubella have, in general, peaked at the same time as the number of notifications. On average, over the period with both hospitalisation and notification data available, there was one hospitalisation for every 69 notifications of rubella.
- There were no recorded deaths from rubella during 1991 to 1996.

Just over 30% of notifications of rubella were for children under 15 years. In contrast, 62% of hospitalisations with a principal diagnosis of rubella were of children under 15 years. Another 19% of hospitalisations were to young people aged 15–24 years (nearly three-quarters of these were males).

Table 15.6: Rubella cases in 0–14 year olds, 1991 to 1998 (rate per 100,000 population)

		Hospitalisations (age in years)					
Year	**Notifications**	**< 1**	**1–4**	**5–9**	**10–14**	**All**	**Deaths**
1991	8.4						0.05
1991–92		n.a.	n.a.	n.a.	n.a.	n.a.	
1992	40.2						0.05
1992–93		n.a.	n.a.	n.a.	n.a.	n.a.	
1993	87.2						0.00
1993–94		8.9	1.3	0.4	0.6	1.3	
1994	32.1						0.00
1994–95		6.6	1.5	0.4	0.3	1.1	
1995	22.4						0.00
1995–96		8.9	1.1	0.3	0.2	1.1	
1996	29.1						0.00
1996–97		2.0	0.9	0.3	0.1	0.5	
1997	18.9						0.00
1997–98		n.a.	n.a.	n.a.	n.a.	n.a.	
1998[(a)]	9.8						n.a.

(a) For the 6 months January to June.

Sources: National Notifiable Diseases Surveillance System, AIHW National Hospital Morbidity Database and AIHW Mortality Database.

- The notification rate in children under 15 years reflects the outbreaks shown in Figure 15.4. The highest annual notification rate was 40 per 100,000 in 1992.
- The highest hospitalisation rate (for 0–14 year olds) for rubella was 1.3 per 100,000 in 1993–94. Infants under 1 year had the highest hospitalisation rates among children.
- The hospitalisation information above includes only those episodes with a principal diagnosis of rubella. In 1996–97 there were another 10 cases with an additional diagnosis of rubella (above the 19 with a principal diagnosis).

The major burden of rubella on the community is to children born with congenital abnormalities due to maternal rubella during pregnancy. Table 15.7 shows the available data on the cases of congenital rubella syndrome.

Table 15.7: Cases of congenital rubella syndrome, 1991 to 1997

Deaths		On national register		Hospitalisations		
Year	Number	Year	Number	Year	Principal diagnosis (number)	Additional diagnosis (number)
1991	0	1991	1	1991–92	n.a.	n.a.
1992	0	1992	0	1992–93	n.a.	n.a.
1993	1	1993	2	1993–94	7	42
1994	0	1994	2	1994–95	4	54
1995	2	1995	n.a.	1995–96	9	35
1996	1	1996	n.a.	1996–97	14	54

n.a. not available.

Sources: AIHW National Hospital Morbidity Database, Lancaster & Pedisich (1995), Lancaster et al. (1997) and AIHW Mortality Database.

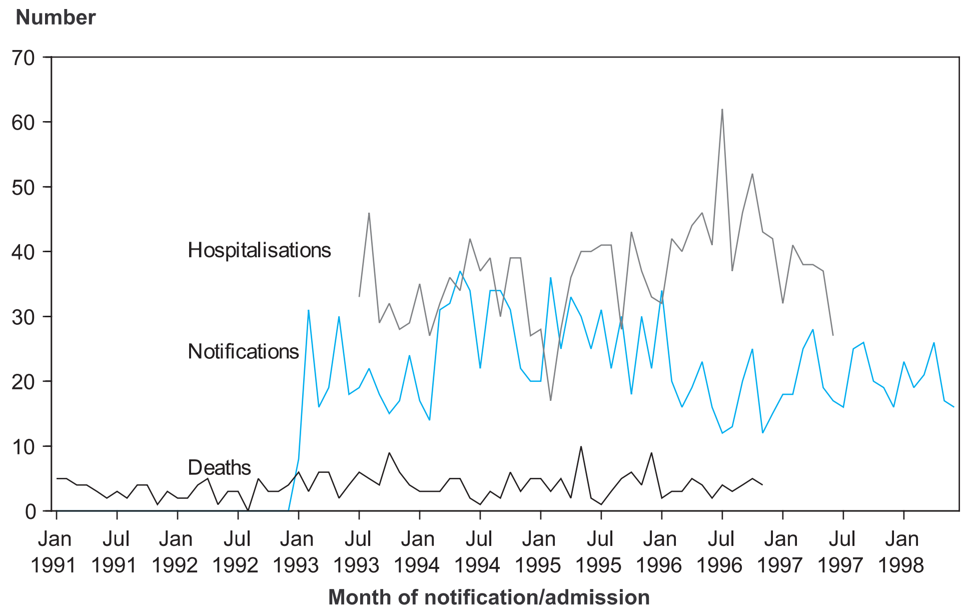
- There were four recorded deaths due to congenital rubella syndrome between 1991 and 1996.
- Data are available on the number of registered cases of congenital rubella syndrome notified to each State and Territory health authorities. The proportion of children with birth defects diagnosed following the perinatal period included in these registers varies between States and Territories. From 1991 to 1994, there were five cases notified to the registers (Lancaster & Pedisich 1995, Lancaster et al. 1997).
- Hospitalisation data indicate that there were over 200 hospitalisations with a diagnosis of congenital rubella syndrome over the 4-year period with data available.
- The majority of the hospitalisations were for individuals (mostly children) with additional diagnoses of congenital rubella syndrome. This indicates the need for hospitalisation for a range of conditions for children with congenital rubella syndrome.

Information on congenital rubella syndrome is also available from the Australian Paediatric Surveillance Unit (APSU, in press). This unit (APSU) collects data from paediatricians and other doctors who see children with the rare and serious conditions monitored by the APSU. In 1996, there were 9 confirmed cases of congenital rubella infection reported to the APSU (one without defects). One of these children was born prior to 1995, one in 1995, and 7 in 1996. In the 5 years 1993 to 1997, 19 babies whose mothers had contracted rubella during the pregnancy were born with defects.

Hepatitis B

Hepatitis B frequently causes symptomatic acute hepatitis in adults, but in young children infection is usually asymptomatic (NHMRC 1997b). Most infants, as well as 2–4% of adults infected, remain chronically infected for many years. As well as being able to infect others, these carriers also have a significantly increased risk of chronic hepatitis and primary liver cancer later in life.

The ICD-9/ICD-9-CM codes used to identify hepatitis B cases in the AIHW Mortality and National Hospital Morbidity Databases are 070.2 and 070.3.



Note: Month and year of notification, admission to hospital or registration of death.

Sources: National Notifiable Diseases Surveillance System, AIHW National Hospital Morbidity Database and AIHW Mortality Database.

Figure 15.5: Hepatitis B cases in Australia, all ages, 1991 to June 1998

- The number of notifications for hepatitis B in the community have remained around 10–30 per month since early 1993, with some fall in more recent years.
- Hospitalisations with a principal diagnosis of hepatitis B have averaged 37 per month over the 4 years 1993–94 to 1996–97. The highest number in any 1 month was 62.
- The number of deaths attributed to hepatitis B has remained relatively steady at around 5 per month (1991 to 1996). Note that this is not likely to include deaths from liver cancer and chronic hepatitis caused by hepatitis B.

The burden of hepatitis B on children under 15 years is small compared with other age groups—only 3% of both notifications and hospitalisations were for children. The risk for serious disease later in life is potentially much greater.

Table 15.8: Hepatitis B cases in 0–14 year olds, 1991 to 1998 (rate per 100,000 population)

Year	Notifications	Hospitalisations	Deaths
1991	0.0		0.00
1991–92		n.a.	
1992	0.0		0.00
1992–93		n.a.	
1993	0.1		0.00
1993–94		0.2	
1994	0.3		0.00
1994–95		0.4	
1995	0.2		0.00
1995–96		0.4	
1996	0.2		0.00
1996–97		0.3	
1997	0.2		n.a.
1997–98		n.a.	
1998[a]	0.2		n.a.

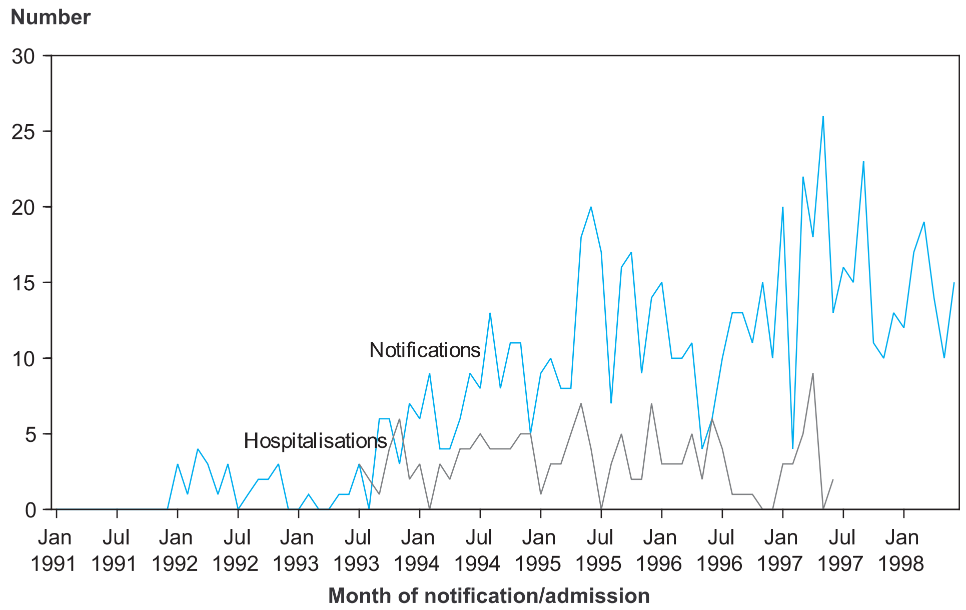
(a) For the 6 months January to June.

Sources: National Notifiable Diseases Surveillance System, AIHW National Hospital Morbidity Database and AIHW Mortality Database.

- The annual notification rate of hepatitis B in children under 15 years has remained relatively steady at around 0.2 per 100,000 over recent years.
- The hospitalisation rate has also remained relatively steady—between 0.2 and 0.4 hospitalisations per 100,000 each year.
- The hospitalisation rates given in Table 15.8 include only those episodes with a principal diagnosis of hepatitis B. As well as there being only a small number of hospitalisations with a principal diagnosis of hepatitis B (11 in 1996–97), there was only a small number of hospitalisations with an additional diagnosis of hepatitis B (7 in 1996–97).
- There were no recorded deaths of children from hepatitis B during the period 1991 to 1996.

Mumps

Mumps is primarily a childhood disease, with the highest number of cases in the 5–9 age group (NHMRC 1997b). Permanent damage is rare but may include nerve deafness, sterility in postpubertal males, meningitis and possibly permanent pancreatic damage. The ICD-9-CM code used to identify mumps cases was 072.



Sources: National Notifiable Diseases Surveillance System, AIHW National Hospital Morbidity Database.

Figure 15.6: Mumps cases in Australia, all ages, 1991 to 1998

- Notifications for mumps have varied from month to month, averaging 13 per month over the period July 1995 to June 1998. Mumps was not notifiable in most States and Territories in the early 1990s.
- There has been an average of 3 hospitalisations per month for mumps during 1993–94 to 1996–97. Over the period with both notifications and hospitalisation data, there was one hospitalisation for every 3.3 notifications of mumps.
- There were three recorded deaths from mumps between 1991 and 1996.

Mumps occurs across all ages. Over the period for which data were available (as shown in Figure 15.6), 55% of notifications and 45% of hospitalisations related to children under 15 years. None of the recorded deaths were to children under 15 years.

Table 15.9: Mumps cases in 0–14 year olds, 1991 to 1998 (rate per 100,000 population)

Year	Notifications	Hospitalisations	Deaths
1991	0.0		0.00
1991–92		n.a.	
1992	0.3		0.00
1992–93		n.a.	
1993	0.4		0.00
1993–94		0.3	
1994	1.3		0.00
1994–95		0.5	
1995	2.6		0.00
1995–96		0.6	
1996	2.0		0.00
1996–97		0.3	
1997	2.7		n.a.
1997–98		n.a.	
1998[(a)]	1.0		n.a.

(a) For the 6 months January to June.

Sources: National Notifiable Diseases Surveillance System, AIHW National Hospital Morbidity Database and AIHW Mortality Database.

- The annual notification rate for mumps for 0–14 year olds has varied over recent years. The highest rate over this period was 2.7 per 100,000 in 1997.
- The hospitalisation rate for mumps in children has ranged between 0.3 and 0.6 per 100,000 over the period 1993–94 to 1996–97.

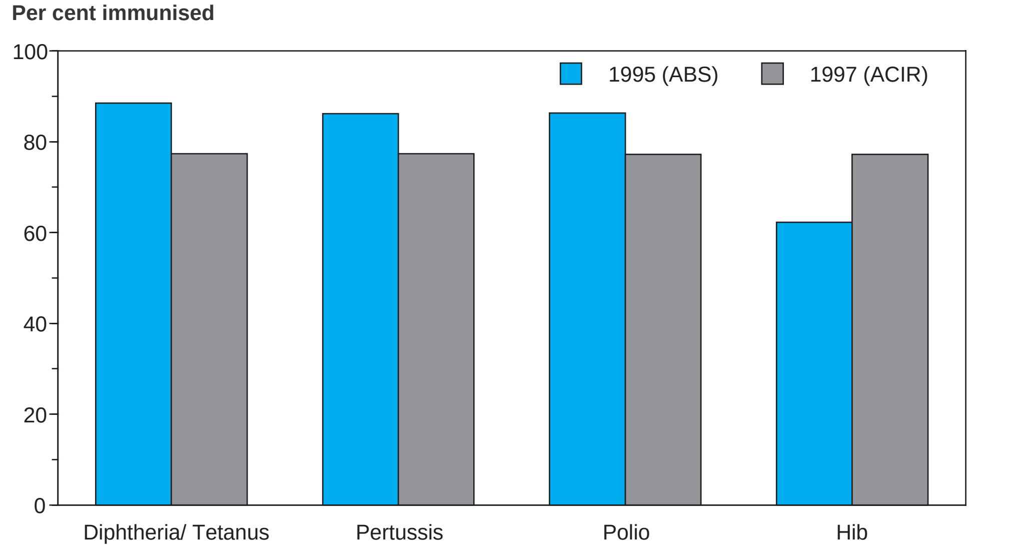
Immunisation

The two main data sources used for this section were collected using different methodologies. The Australian Childhood Immunisation Register (ACIR) aims to become a population register containing immunisation details of all Australian children. This will rely on immunisation providers forwarding details of all immunisations to the register. As mentioned previously, the register is relatively new. It has not yet reached the stage of being a population-level register and is likely to underestimate the immunisation rates.

The ABS Children's Immunisation and Health Screening Survey data were collected from a nationally representative sample of households. Immunisation status was determined from parental reports which may vary in accuracy. Parent-held immunisation records were referred to where possible (for 61% of children covered by the survey).

At this time, neither data source is likely to provide a precise estimate of immunisation status. However, these two data sources together provide the best national estimate of children's immunisation status available.

Immunisation rates

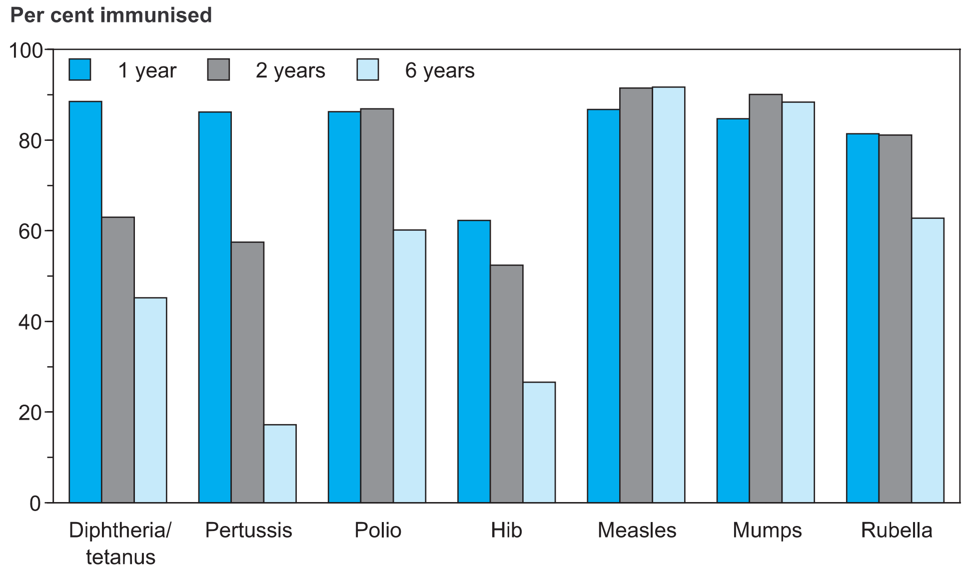


Note: Figures from the Australian Childhood Immunisation Register (ACIR) are based on published results for the four cohorts born in 1996.

Sources: ABS 1996a, O'Brien et al. 1998, CDI 1998a, CDI 1998b.

Figure 15.7: Immunisation rates for 1 year olds

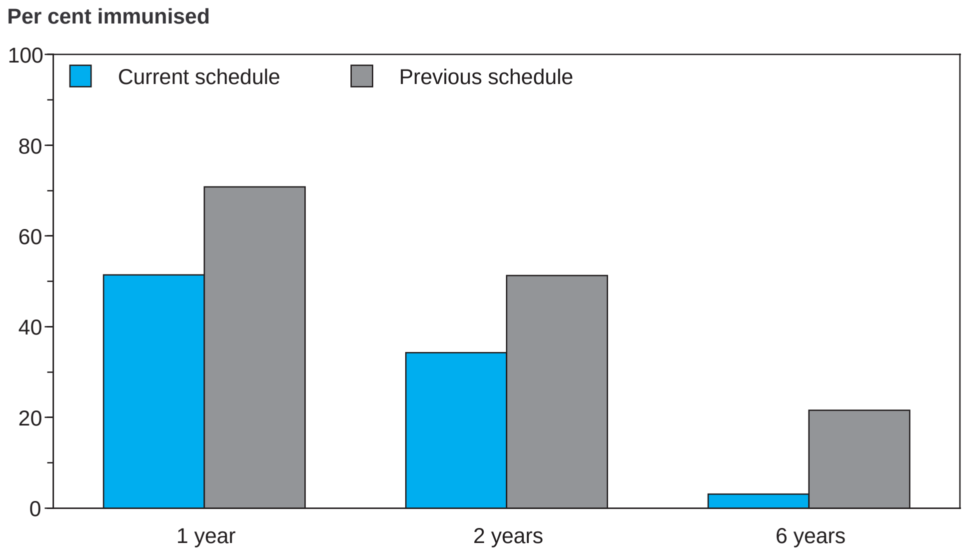
- Figure 15.7 shows the estimated immunisation rates for 1 year old children—based on the NHMRC schedule current at the time of the data collection—against the major diseases.
- The ABS estimates suggest that immunisation rates were close to 90% for diphtheria, tetanus, pertussis and polio. The ACIR results were around 79% for these diseases.
- The ACIR also estimates the immunisation rate for Hib at around 79%. The ABS survey found that only a little over 60% of 1 year old children were immunised against Hib. However, Hib vaccination was only a relatively recent addition to the schedule at the time of the ABS survey. The Hib vaccination rate is likely to have increased since the ABS survey, as is indicated by the ACIR results.



Source: ABS 1996a.

Figure 15.8: Immunisation rates by age, 1995

- Figure 15.8 shows the estimated immunisation rates in 1995 for the diseases covered by the NHMRC schedule at the time. These are rates relating to all vaccines received appropriate to the age of the child. For example, 1 year olds would have required three doses of diphtheria/tetanus/pertussis vaccine to be 'fully immunised', and 6 year olds required five doses if the schedule had been followed.
- For many of the diseases, there were lower immunisation rates in 6 year olds compared with 1 year olds. This may be related to a number of factors including:
  - alterations to the schedule that may take several years to fully implement (for example, Hib vaccination was recommended for inclusion in 1993, meaning that Hib would not have been on the schedule at the time that children aged 6 years in 1995 were 1 or 2 years of age—the age at which Hib vaccinations are given).
  - the number of doses required to be fully immunised (for example, 6 year olds are recommended to have had five doses of pertussis vaccine, but only one dose of measles vaccine).
- The diseases with higher immunisation rates for older children are generally those that require only one immunisation. The exception to this is rubella, with a marked decline for older children (as well as a lower rate for younger children).



Source: ABS 1996a.

Figure 15.9: Proportion of children fully immunised, 1995

- Figure 15.9 shows the proportion of children who were reported to have been fully immunised in 1995 (that is, to have received all the immunisations on the NHMRC schedule). As there were a number of changes made to the schedule that take several years to fully implement, estimates are also shown for the proportion of children fully immunised under the previous schedule.
- A little over 70% of children aged 1 year were reported to be fully immunised using the previous schedule. The estimate for 2 year olds was just over 50% and only 22% for 6 year olds.
- The estimates using the current schedule were substantially lower again.

Reasons for not immunising

The 1995 ABS survey collected information on the main reasons for children not being immunised (ABS 1996a). For pertussis, 25% of parents whose children were not fully immunised claimed that the child was too young. However, children were included in the survey only if they were old enough to have commenced immunisation (as recommended in the NHMRC schedule). Another 18% of parents were opposed to immunisation and 15% hadn't got around to it.

For measles vaccination, 30% of parents claimed the child was too young (again not according to the NHMRC schedule) and 15% hadn't got around to it.

For rubella, 32% of parents said the child was not immunised because he was a boy. However, the NHMRC schedule recommends that all children should be immunised against rubella, not just girls. Another 29% said the child was too young (contrary to the schedule) and 14% hadn't got around to it.

In summary, the major reasons given by parents for not immunising their child were either based on misinformation or because they hadn't got around to it. For particular diseases, there was also a proportion of parents opposed to the immunisation.

Potential future vaccine-preventable diseases

A number of likely developments in vaccine availability in Australia are discussed in The Australian Immunisation Handbook (NHMRC 1997b). Two of these include the possible introduction of varicella and rotavirus vaccines. National monitoring of diseases affecting children needs to consider potential as well as established vaccine-preventable diseases (AIHW in press). Therefore, short summaries of available varicella and rotavirus information are included below.

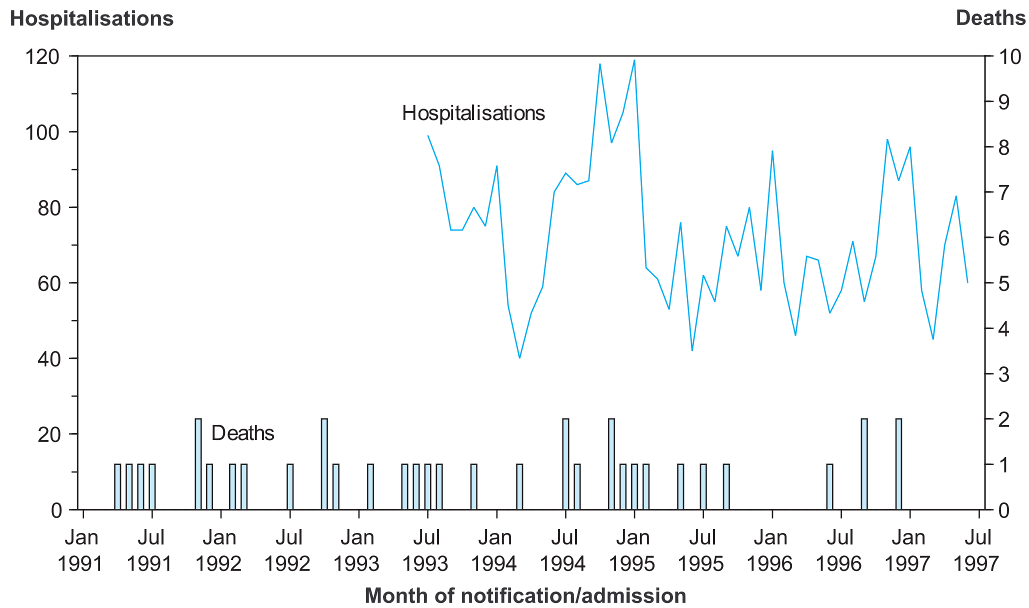
Varicella-zoster

Varicella (chickenpox) is usually a mild disease in healthy children. It is more severe in adults, and can be fatal in immunosuppressed individuals (NHMRC 1997b). Varicella is caused by the varicella-zoster virus. If contracted during pregnancy, varicella may also cause problems for the unborn child.

Herpes zoster results from the reactivation of the latent varicella-zoster virus. Although uncommon prior to age 12, it is often serious in older adults and, again, in immuno-suppressed people.

Varicella vaccines have been licensed in other countries, and are now part of the standard immunisation schedule in the United States.

The ICD-9/ICD-9-CM code used to identify varicella was 052, and to identify herpes zoster was 053.



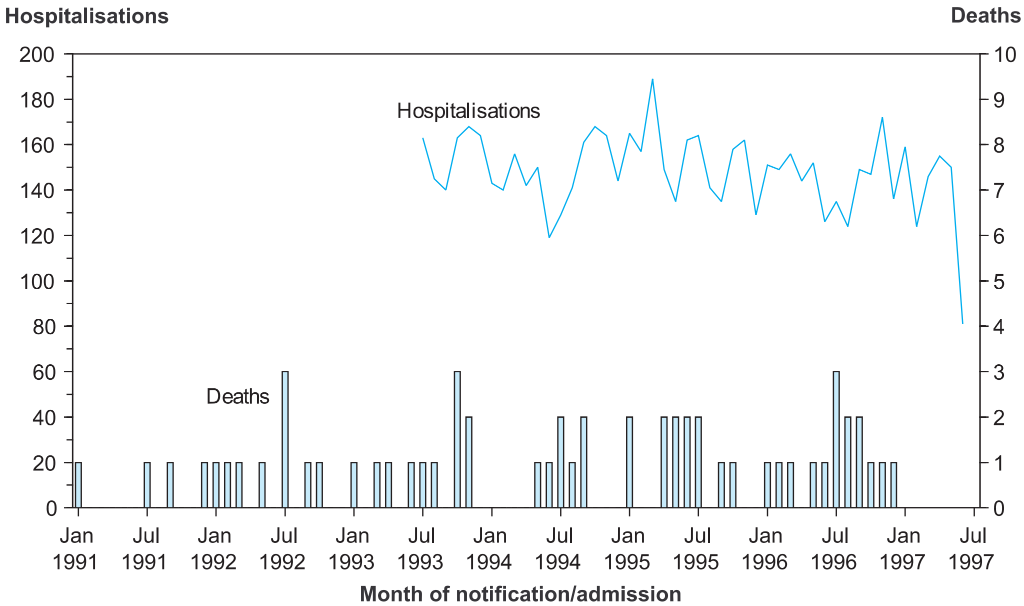
Note: Month and year of admission to hospital or registration of death.

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

Figure 15.10: Varicella cases in Australia, all ages, 1991 to 1997

- Data are available on deaths and hospitalisations for varicella (chicken pox) and are presented in Figure 15.10.

- Over the period 1993–94 to 1996–97, there have been an average of 73 hospital-isations per month with a principal diagnosis of varicella.
- Between 1991 and 1996 there was a total of 36 deaths from varicella in Australia.



Note: Month and year of admission to hospital or registration of death.

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

Figure 15.11: Herpes zoster cases in Australia, all ages, 1991 to 1997

- Hospitalisations and deaths from herpes zoster are more common than from varicella. There was an average of 148 hospitalisations for herpes zoster per month between 1993–94 and 1996–97, and a total of 58 deaths between 1991 and 1996.

Varicella hospitalisations and deaths occur across all ages. Fifty-nine per cent of hospitalisations and 39% of deaths from varicella were of children under 15 years (in the years with data available). As mentioned above, herpes zoster does not usually occur in children. Only 3% of hospitalisations for herpes zoster, and none of the deaths, were of children under 15.

Table 15.10: Varicella cases in 0–14 year olds, 1991 to 1997 (rate per 100,000 population)

	Hospitalisations (age in years)					
Year	< 1	1–4	5–9	10–14	All	Deaths
1991						0.05
1991–92	n.a.	n.a.	n.a.	n.a.	n.a.	
1992						0.05
1992–93	n.a.	n.a.	n.a.	n.a.	n.a.	
1993						0.08
1993–94	36.8	20.7	8.5	5.7	12.8	
1994						0.08
1994–95	55.0	26.0	9.3	6.5	15.9	
1995						0.05
1995–96	36.0	21.0	7.8	2.4	11.4	
1996						0.05
1996–97	48.0	22.3	7.9	3.1	12.7	

Sources: National Notifiable Diseases Surveillance System, AIHW National Hospital Morbidity Database and AIHW Mortality Database.

- The hospitalisation rate for varicella in children has remained consistently over 11 per 100,000 between 1993–94 and 1996–97. None of the diseases on the standard schedule have rates consistently as high as this (the rates for pertussis and measles have been over 12 per 100,000 over this period, but not consistently every year).
- As for other vaccine-preventable diseases presented in this chapter, the highest hospitalisation rates among children were to infants under 1 year of age.
- Death rates from varicella for children have ranged between 0.05 and 0.08 per 100,000 during the period 1991 to 1996.

Table 15.11: Herpes zoster cases in 0–14 year olds, 1991 to 1997 (rate per 100,000 population)

Year	Hospitalisations	Deaths
1991		0.00
1991–92	n.a.	
1992		0.00
1992–93	n.a.	
1993		0.00
1993–94	1.9	
1994		0.00
1994–95	1.8	
1995		0.00
1995–96	1.2	
1996		0.00
1996–97	1.3	
1997		n.a.

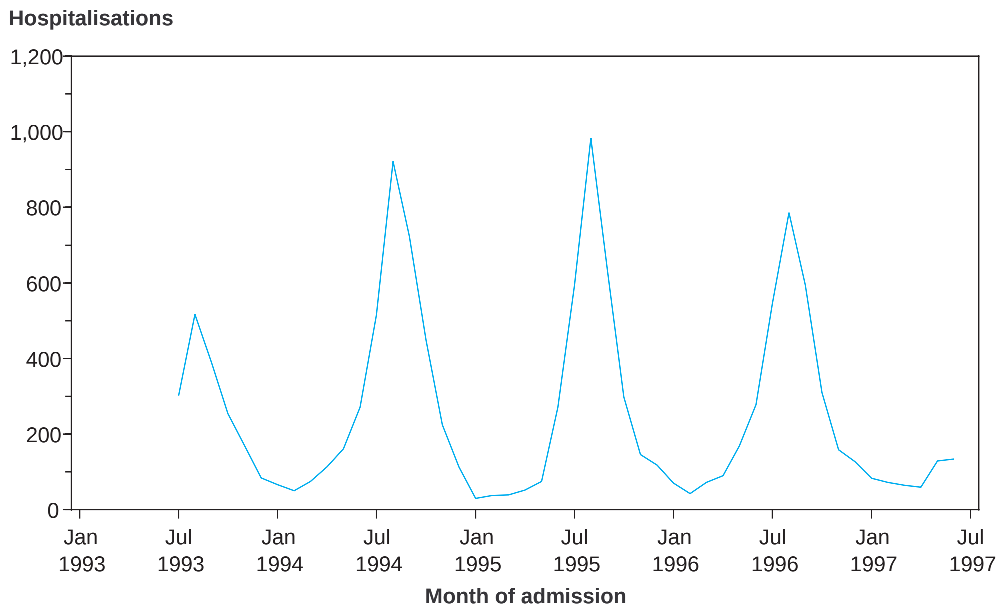
Sources: National Notifiable Diseases Surveillance System, AIHW National Hospital Morbidity Database and AIHW Mortality Database.

- Hospitalisation rates of children aged 0–14 years for herpes zoster have ranged between 1.2 and 1.9 hospitalisations per 100,000 over the period 1993–94 to 1996–97.

Data on congenital or neonatal varicella have been collected by the APSU over the period 1995 to 1997 (APSU in press). There have been between 13 and 15 cases of neonatal varicella reported each year, and 1–3 cases of congenital varicella.

Rotavirus

Rotavirus is the most common cause of dehydrating diarrhoea in children (NHMRC 1997b). Currently there is information on the number of hospitalisations with a principal diagnosis of 'enteritis due to rotavirus'. The corresponding ICD-9/ICD-9-CM code was 008.61. It is not possible to determine the number of deaths due to rotavirus enteritis, because information on deaths is available only for 4-digit ICD-9 codes, and not at the 5-digit level available in the ICD-9-CM classification.



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

Figure 15.12: Rotavirus hospitalisations in Australia, all ages, 1993 to 1997

- Hospitalisations with a principal diagnosis of rotavirus enteritis have accounted for an average of 260 admissions per month over the 4 years shown above.
- The admissions have shown a very seasonal pattern—peaks have occurred in August of each year, with up to 1,000 admissions in these months.

Almost all 99% of hospitalisations for rotavirus enteritis during the period 1993–94 to 1996–97 were of children under 15 years.

Table 15.12: Hospitalisations for rotavirus enteritis, 0–14 year olds, 1993–94 to 1996–97 (rate per 100,000 population)

	Hospitalisations (age in years)				
Year	< 1	1–4	5–9	10–14	All
1993–94	243.1	153.5	7.9	1.3	60.7
1994–95	339.2	220.2	13.5	1.2	86.7
1995–96	394.0	221.1	13.6	2.1	90.3
1996–97	340.8	201.0	11.8	1.3	79.9

Source: AIHW National Hospital Morbidity Database.

- The annual hospitalisation rate for rotavirus enteritis has varied between 61 and 90 per 100,000 over the 4 years with national data available.
- The highest hospital rates were in children under 1 year of age. Children aged 1–4 years also had high hospitalisation rates for rotavirus.

16 Other communicable diseases

This chapter presents information on communicable diseases in children, excluding vaccine-preventable diseases (covered in Chapter 15 of this report). In Australia, communicable diseases were responsible for considerable morbidity and mortality in the early part of this century. The incidence and impact of communicable diseases has been greatly reduced due to improvements in hygiene, the introduction of antibiotics and mass immunisation programs (AIHW 1998a).

Information in this chapter includes notifications, hospitalisations and deaths from four communicable conditions: tuberculosis, meningococcal infection, malaria and haemolytic uraemic syndrome. Information on notifiable communicable diseases is derived from the National Notifiable Diseases Surveillance System (NNDSS) maintained by the Commonwealth Department of Health and Aged Care. Information on deaths and hospitalisations are derived from the AIHW Mortality Database and the AIHW National Hospital Morbidity Database.

Tuberculosis

Tuberculosis is a chronic infectious disease with manifestations primarily involving the lungs but capable of affecting most organs of the body. Clinical manifestations include fatigue, fever, weight loss, cough and chest pain. Treatment is expensive and prolonged, and multiple resistance to therapy is emerging in some parts of the world, making worldwide control of tuberculosis difficult.

In Australia, the annual tuberculosis notification rate has remained stable for the last few years (AIHW 1998a). During the period 1991–97, 6,751 cases of tuberculosis were notified to the NNDSS, of which 399 cases were for children aged 0–14 years.

Table 16.1: Tuberculosis in 0–14 year olds (rate per 100,000 population)

Sex	Age (years)	Notifications 1991–1997	Deaths 1991–1996	Hospitalisations 1996–97
Males	0–4	2.5	0.1	2.6
	5–9	1.1	0.0	0.6
	10–14	1.1	0.0	0.4
	Total	*1.5*	*0.0*	*1.2*
Females	0–4	2.3	0.0	3.0
	5–9	0.8	0.0	0
	10–14	1.1	0.0	0.3
	Total	*1.4*	*0.0*	*1.1*

Sources: National Notifiable Diseases Surveillance System, AIHW Mortality Database and AIHW National Hospital Morbidity Database.

- Over the period 1991–96, the highest notification rate for children was in the 0–4 year age group.
- Similarly, in 1996–97 hospitalisation rates were also highest in the 0–4 year age group for both boys and girls.

Meningococcal infection

Invasive meningococcal disease includes meningococcaemia, meningitis and other less common forms of severe infection due to infection by *Neisseria meningitidis*. Humans are the only reservoir for this organism. Transmission occurs between people through infected droplets from respiratory secretions spread by coughing, sneezing, kissing and sharing utensils or food.

The risk of meningococcal infection is relatively low in Australia. Although it can be prevented through vaccination, routine vaccination is not recommended because:

- many cases are due to serogroup B for which no effective vaccine is available
- it occurs in children too young to be adequately protected with the vaccines available (Communicable Diseases Intelligence 1997)
- it is relatively rare.

There were 2,633 notifications of meningococcal infection made to the NNDSS between 1991 and 1997, of which 1,455 cases were children aged 0–14 years.

Table 16.2: Meningococcal disease in 0–14 year olds (rate per 100,000 population)

Sex	Age (years)	Notifications 1991–1997	Deaths 1991–1996	Hospitalisations 1996–97
Males	0–4	13.4	0.2	20.4
	5–9	2.3	0.1	2.4
	10–14	1.6	0.1	2.2
	Total	*5.7*	*0.1*	*8.3*
Females	0–4	11.3	0.2	16.7
	5–9	2.2	0.0	2.5
	10–14	1.5	0.1	4.1
	Total	*5.0*	*0.1*	*7.7*

Sources: National Notifiable Diseases Surveillance System, AIHW Mortality Database and AIHW National Hospital Morbidity Database.

- The highest notification, death and hospitalisation rates were recorded for children in the 0–4 age group. For both notifications and hospitalisation, the rates for this age group were substantially higher than for other age groups.
- There were higher notification rates for boys than for girls in all age groups.
- Hospitalisation rates were higher for boys than for girls in the 0–4 age group.

Malaria

Malaria is caused by parasites (*Plasmodium* species) transmitted through bites of infected mosquitoes. The disease is characterised by attacks of chills, fever and sweating, occurring at intervals which depend on the time required for development of a new generation of parasites in the body. After recovery from the acute attack, some forms of the disease have a tendency to become chronic, with occasional relapses. Since 1981, Australia has been certified malaria-free (AIHW 1998a). Essentially all cases occur in travellers returning from endemic areas overseas.

In 1991–1997, 5,098 cases were notified to NNDSS, of which 576 were 0–14 year old children.

Table 16.3: Malaria in children aged 0–14 years (rate per 100,000 population)

Sex	Age (years)	Notifications 1991–1997	Deaths 1991–1996	Hospitalisations 1996–97
Males	0–4	1.5	0	2.3
	5–9	2.2	0	1.8
	10–14	3.5	0	1.9
	Total	*2.4*	*0*	*2.1*
Females	0–4	1.4	0	2.4
	5–9	1.7	0	1.7
	10–14	2.2	0	0.5
	Total	*1.8*	*0*	*1.5*

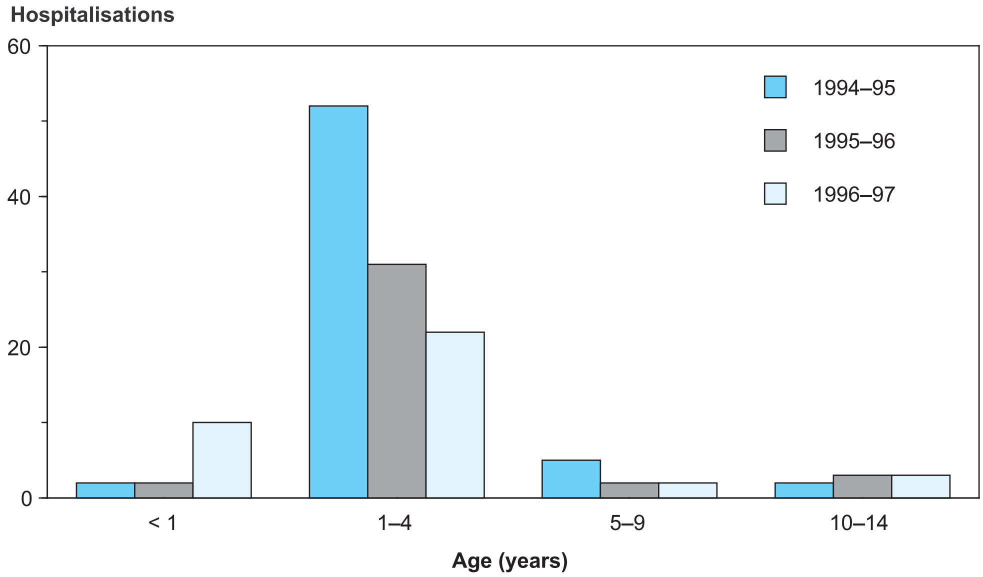
Sources: National Notifiable Diseases Surveillance System, AIHW Mortality Database and AIHW National Hospital Morbidity Database.

- During the period 1991–97, the highest notification rates for malaria in children were for 10–14 year olds. Boys had higher notification rates than girls in all age groups.
- Although hospitalisation rates were low, the highest hospitalisation rates were for 0–4 year old children.

Haemolytic uraemic syndrome

Haemolytic uraemic syndrome (HUS) is a potential complication of gastrointestinal infection with shiga-toxin-producing *Escherichia coli*. Acute renal failure and death are potential consequences of infection. Information has been published on notifications to the Australian Paediatric Surveillance Unit of HUS cases (APSU 1996). Over the period from July 1994 to December 1996 there were 77 confirmed cases of HUS identified, including three deaths.

Further information on HUS has been obtained from the AIHW National Hospital Morbidity Database. Included below are all hospitalisations of children under 15 years with a principal diagnosis of HUS. These hospitalisations may include repeat admissions for the same case. These data are available only since 1994–95. Prior to that time, an ICD-9-CM code was not available to distinguish HUS from all non-autoimmune haemolytic anemias.



Source: AIHW National Hospital Morbidity Database.

Figure 16.1: Hospitalisations for haemolytic uraemic syndrome, 0–14 year olds

- Over the period 1994–95 to 1996–97, there were a little over 130 hospitalisations with a principal diagnosis of haemolytic uraemic syndrome. This represents an average of 45 hospitalisations per year. However, in 1994–95, there were over 60 hospitalisations. This period includes the epidemic of HUS in South Australia in January 1995.
- The majority of the hospitalisations in all years were in the 1–4 age group.

Part V: Biological and behavioural determinants

Chapter 17: Diet and nutrition

Chapter 18: Physical activity

Chapter 19: Healthy weight

Chapter 20: Sun protection

Chapter 21: Drug use by children

Primary goal

- *Reduce the impact of conditions occurring in adulthood, but which have their origins or early manifestations in childhood or adolescence.*

Other relevant goals

- *Enhance family and social functioning.*

17 Diet and nutrition

Nutrition is an important contributor to health. A range of conditions have been linked to diet, including obesity, cardiovascular disease, stroke, hypertension, cancer, diabetes, dental disease and anaemia (AIHW 1998a). Most of these diseases relate to over- rather than under-consumption. Healthy diets in childhood are a likely precursor to healthy diets in adulthood (Child, Adolescent and Family Health Service 1992).

Under-nutrition is rare in Australia, except for some particular population groups, notably Indigenous Australians (Lester 1994). Because of this, there is a need to monitor the nutritional status of Indigenous children, although currently there are limited data available.

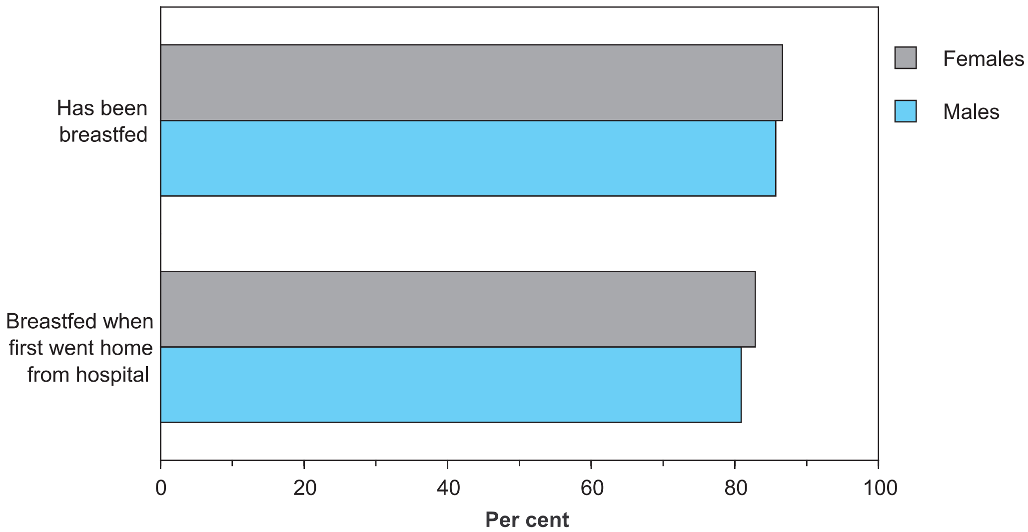
This chapter contains sections on breastfeeding and diet. Data for both these sections have come from ABS surveys conducted in 1995—the National Health Survey and the National Nutrition Survey.

Breastfeeding

Breastfeeding has been shown to have many health benefits (Heinig & Dewey 1996). Links have been demonstrated between the chance of having respiratory illnesses in childhood and whether the child had been breastfed. The probability of having these illnesses is reported to be significantly reduced if the child had been exclusively breastfed for 12 weeks or more (Wilson et al. 1998). Breastfeeding during the first 13 weeks is also associated with protection against gastrointestinal illness that persists beyond the period of breastfeeding (Howie et al. 1990). Other health benefits include lower rates of certain conditions—otitis media, insulin-dependant diabetes mellitus, asthma and food allergies (NHMRC 1995; Stickney & Webb 1995).

Exclusive breastfeeding by healthy mothers is promoted as the optimal method of feeding babies for at least the first 4–6 months of life. Inclusion of this recommendation in the Dietary Guidelines for Australians (NHMRC 1992) recognises the nutritional, health, social and economic benefits of breastfeeding for the community as a whole (Lester 1994). In addition, the World Health Organization recommends that after the initial 4–6 month period of exclusive breastfeeding, children should continue to be breastfed for up to 2 years or beyond while also receiving nutritionally adequate and safe complimentary feeds.

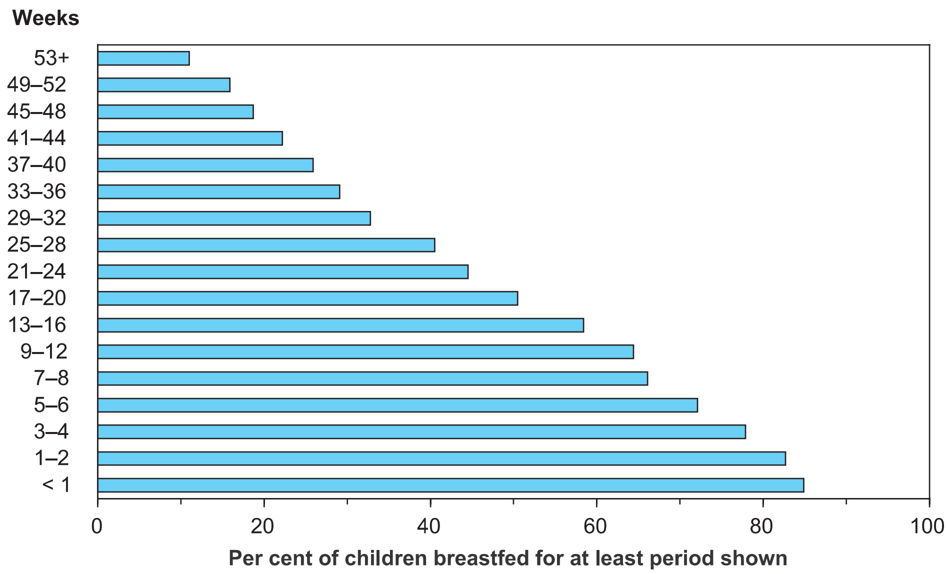
Data for this section come from the 1995 National Health Survey. As part of the survey, information was collected on breastfeeding for children aged up to and including 3 years of age. Information included whether children had ever been breastfed, whether they were currently being breastfed and how long they had been breastfed for (both exclusively and in total). Information on breastfeeding rates by family income is presented in Chapter 31.



Source: AIHW, from ABS NHS data, 1995.

Figure 17.1: Breastfeeding rates, 0–3 year olds, 1995

- Around 86% of children under 4 years of age had been, or were currently being, breastfed. A slightly higher proportion of girls fell into this category than boys.
- Slightly fewer babies (around 82%) were still being breastfed at the time of first being discharged from hospital (excluding the small proportion who had not been in hospital at birth).

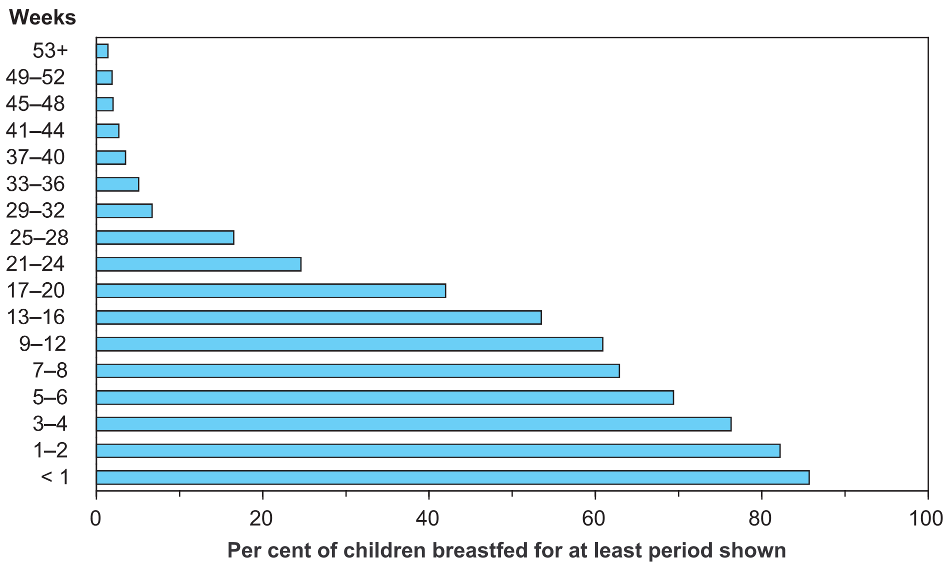


Source: AIHW, from ABS NHS data, 1995.

Figure 17.2: Duration of breastfeeding, 0–3 year olds, 1995

- Figure 17.2 shows the proportion of children under 3 years who were breastfed for at least the periods shown on the vertical axis.
- Around 83% of children were reported to have been breastfed for at least 1–2 weeks. The proportions then dropped steadily as duration increased. Around 58% of babies were reported to have been breastfed for 13–16 weeks or more, and just over 40% for 25–28 weeks or more.

As well as the total duration of breastfeeding being of interest, it is also relevant to examine the duration of exclusive breastfeeding. As mentioned above, the NHMRC dietary guidelines recommend that breastfeeding is the optimal form of feeding for the first 4–6 months of life.



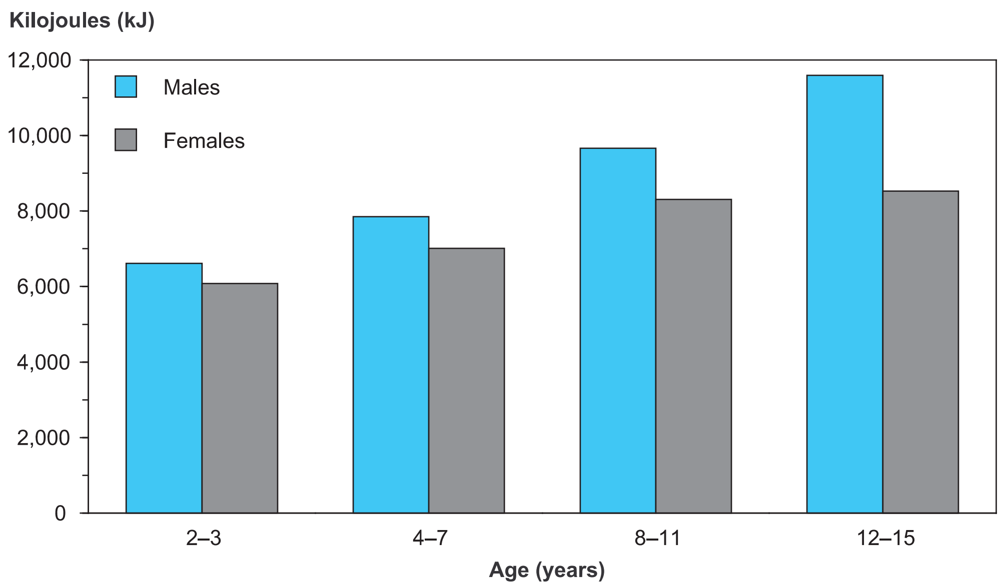
Source: AIHW, from ABS NHS data, 1995.

Figure 17.3: Duration of exclusive breastfeeding, 0–3 year olds, 1995

- In the 1995 National Health Survey, around 82% of children were reported to have been exclusively breastfed for 1–2 weeks or more.
- Two important milestones from this graph are at 13–16 weeks and 17–20 weeks, as these times correspond to the NHMRC recommended 4–6 months of breastfeeding. Around 54% of children were reported to have been exclusively breastfed at 13–16 weeks. By 17–20 weeks, the proportion had fallen to around 42%.

Diet of Australian children

Information on the food intake of Australian children is included in this section. These results come from the ABS National Nutrition Survey, conducted in 1995 (ABS & DHFS 1997).



Source: ABS & DHFS 1997.

Figure 17.4: Total daily energy intake by children, 1995

- Not surprisingly, energy intake increases with age. The reported energy intake of boys steadily increased with age, to around 11,600 kJ per day on average at age 12–15 years.
- Energy intake for girls also increased with age, although the increase between the two highest age groups was only small.

Around a third of children under 12 years old do not eat fruit or fruit products, and more than one in five do not eat vegetables or vegetable products (AIHW 1998a). Further details on consumption of these and other foods are given below.

Table 17.1: Children's consumption[(a)] from major food groups, 1995 (per cent of children)

	Male age group (years)				Female age group (years)			
Major food groups	**2–3**	**4–7**	**8–11**	**12–15**	**2–3**	**4–7**	**8–11**	**12–15**
Cereals and cereal-based products								
Cereals and cereal products	99.4	98.7	98.7	98.1	98.8	98.9	97.0	95.1
Cereal-based products and dishes	80.4	81.3	80.0	73.6	71.5	79.8	77.7	70.0
Fruit products and dishes	77.6	65.6	56.4	49.9	75.4	72.8	62.5	58.0
Vegetables and legumes								
Vegetable products and dishes	68.1	72.7	77.0	78.8	79.2	79.7	77.0	85.9
Legume/pulse products and dishes	8.6	6.7	3.7	7.1	4.0	4.1	2.8	5.8
Milk products and dishes	98.2	95.5	90.9	92.8	98.1	96.0	93.3	90.8
Meat/poultry/game products and dishes	76.7	72.4	77.0	78.8	71.7	73.6	78.3	80.2
Fish and seafood products and dishes	9.6	10.6	11.8	12.8	13.3	16.8	11.5	11.2
Egg products and dishes	12.6	11.1	14.0	12.3	13.9	12.2	10.7	8.7
Snack foods, sugar and confectionery								
Snack foods	23.7	34.1	32.7	28.7	21.5	29.7	36.5	38.4
Sugar products and dishes	68.4	69.7	67.3	58.1	56.2	63.8	56.4	53.2
Confectionery	44.8	53.3	53.4	46.7	52.2	56.3	55.0	51.3
Other foods								
Seed and nut products and dishes	18.2	20.7	15.1	10.9	19.5	20.4	14.4	8.3
Fats and oils	84.2	81.3	80.8	76.5	82.2	83.4	81.7	73.2
Soup	4.3	6.9	9.4	5.7	5.0	6.0	4.9	5.8
Savoury sauces and condiments	42.2	42.4	51.7	56.9	41.8	44.5	52.2	52.8
Beverages								
Non-alcoholic beverages[(b)]	98.5	100.0	99.8	99.6	99.0	99.0	99.7	100.0
Alcoholic beverages[(c)]	0.4	0.2	—	0.5	1.9	0.1	0.4	1.3
Total[(d)]	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Total persons ('000)	**265.4**	**530.6**	**529.2**	**524.1**	**252.1**	**504.0**	**503.5**	**495.8**

(a) Over 24-hour period.

(b) Includes plain drinking water.

(c) Includes all alcoholic beverages containing alcohol (e.g. whisky, reduced alcoholic beer) and does not indicate amount of pure alcohol consumed.

(d) Total includes infant formulae and food, special dietary foods and miscellaneous foods.

Source: ABS & DHFS 1997.

- Nearly all children were reported to eat some sort of cereals or cereal products in 1995. However, there was some decline in the proportion of older girls eating these products.

- Consumption of fruit or fruit products was highest in the younger age groups. However, even in this group, around one-quarter were not eating fruit. By age 12–15 years, only around half of boys and 60% of girls were eating fruit or fruit products.
- Although the proportion of children eating fruit decreased with age, the proportion eating vegetables increased to some extent with age. However, there were still around 20% of boys and 15% of girls at age 12–15 years not eating vegetables.
- Consumption of milk products was over 90% for all age groups, and highest in the younger age groups.
- The proportion of children eating meat, poultry and similar foods remains between 70% and 80% throughout childhood. Only around 10–15% were reported to eat fish or seafood.

Consumption of foods with relatively large amounts of sugar are classified into two main groups: sugar products and dishes, and confectionery. Between 50% and 70% of children were reported to consume foods from the first group, and between 45% and 55% from the confectionery group. The lowest proportions of children eating these foods was in the oldest age group.

Table 17.2: Mean contribution to energy intake, 1995 (per cent)

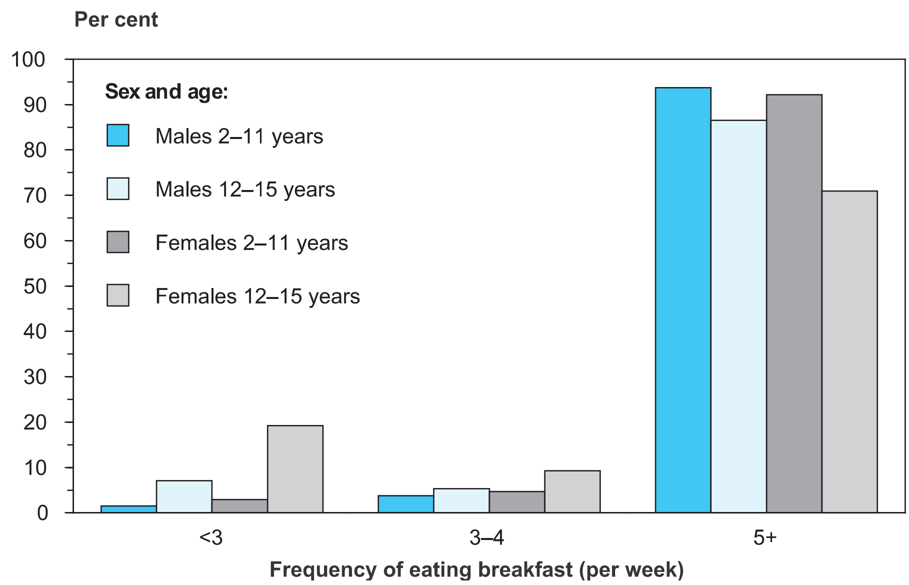
	Males age group (years)				Females age group (years)			
Type of nutrients	**2–3**	**4–7**	**8–11**	**12–15**	**2–3**	**4–7**	**8–11**	**12–15**
Protein	14.2	13.9	14.5	15.1	14.3	13.9	14.2	14.9
Total fat	32.9	32.8	32.9	33.5	33.4	32.4	34.0	33.1
Saturated fat	15.5	14.6	13.9	14.6	15.6	14.3	14.7	13.9
Monounsaturated fat	10.9	11.4	11.6	11.9	11.2	11.2	11.9	11.8
Polyunsaturated fat	4.0	4.3	4.7	4.5	4.0	4.3	4.6	4.7
Carbohydrate	52.1	52.7	52.1	50.9	51.6	52.9	51.3	51.1
Total sugar	30.3	27.3	25.1	24.7	28.4	28.4	25.3	25.6
Total starch	21.8	25.4	27.0	26.2	23.2	24.6	26.0	25.5
Alcohol[(a)]	—	—	—	—	—	—	—	0.2
Total energy[(b)]	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Mean energy (kJ)	**6,606.1**	**7,847.1**	**9,661.6**	**11,589.4**	**6,079.3**	**7,014.3**	**8,305.4**	**8,533.6**

(a) Represents pure alcohol.

(b) Due to the method of calculating percent age contribution to energy intake, components do not add to total.

Source: ABS & DHFS 1997.

- Around a third of children's total energy intake was reported to come from fats, around half from carbohydrates and the remainder from protein sources.
- These proportions were relatively constant both across age groups, and for girls and boys.



Source: ABS & DHFS 1997.

Figure 17.5: Frequency of eating breakfast, 2–15 year olds, 1995

- The majority of Australian children were reported to usually eat breakfast on 5 or more days per week.
- The proportion of children eating breakfast on at least 5 days per week was lower for 12–15 year olds than for 2–11 year olds, particularly for girls. Only 71% of girls aged 12–15 years were reported to eat breakfast 5 or more days a week. Nearly 20% of 12–15 year old girls were eating breakfast less than 3 times a week.
- Around 7% of 12–15 year old boys were also eating breakfast on fewer than 3 days per week.

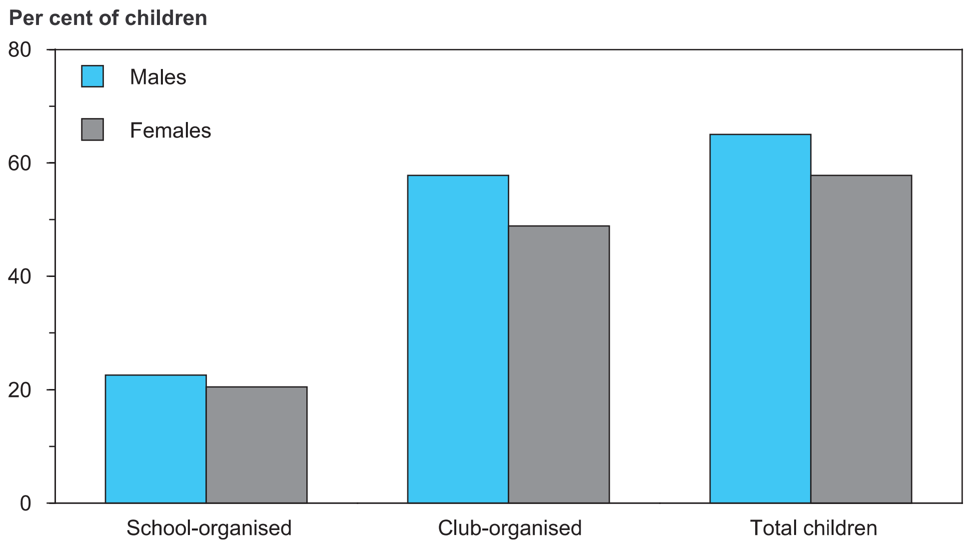
18 Physical activity

The health benefits of physical activity are well documented. Inadequate physical activity has been shown to be a risk factor for many diseases including cardiovascular disease, diabetes, colon cancer, bone diseases, mental illness and obesity (AIHW 1998a). It is considered important to encourage the development of physical activity habits in children and then to reinforce these habits in adolescence, to help establish patterns that will continue into adulthood (Nutbeam et al. 1993; Riddoch 1998). There is some evidence to suggest that inactive children are more likely to become inactive adults (Powell & Dysinger 1987), but also suggestion of a lack of evidence that active children become active adults (Riddoch 1998).

Information from ABS published data is presented in this chapter on the number of children participating in organised sport and physical activities. Some information on the proportion of children undertaking moderate and vigorous physical activity is also presented.

Organised activities

Information for this section comes from a survey conducted by ABS in 1995–96, as part of the Population Survey Monitor (ABS 1997f).

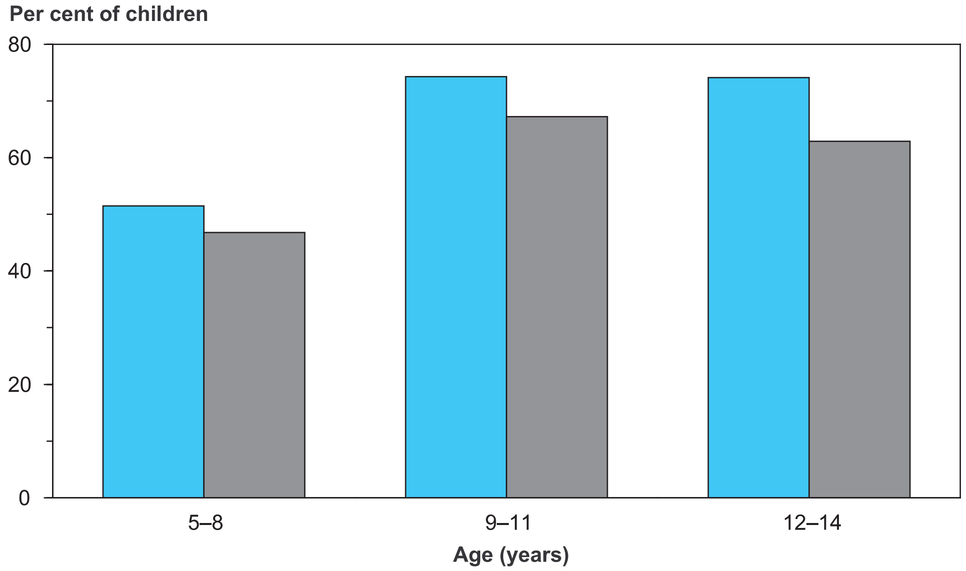


Source: ABS 1997f.

Figure 18.1: Participation in organised sport and physical activities, 5–14 year olds, 1995–96

- A little over 60% of 5–14 year old children were participating in organised sport or physical activities in 1995–96.
- There was a higher participation rate for boys than for girls.

- Participation in club-organised activities was more common than participation in school-organised (after school hours) activities.



Source: ABS 1997f.

Figure 18.2: Participation in organised activities by age, 1995–96

- The highest total participation rates were in the 9–11 year age group, compared with the other age groups shown in Figure 18.2.
- The difference in the participation rate between the middle and older age groups was greater for girls than for boys.
- Participation in club-organised activities decreased between the middle and older age groups, while participation in school-organised sports increased (ABS 1997f).

For boys, the highest participation rates in organised activities were in soccer and basketball. For girls, the highest participation rates were in netball and swimming.

Moderate physical activity

From the 1993 Western Australian Child Health Survey (Zubrick et al. 1995) it was estimated that just over a half of 12–16 year olds exercised to a 'moderate' level on the day before the survey. Moderate physical activity included walking or riding a bike for at least 30 minutes. More boys (54%) than girls (50%) engaged in this sort of activity.

Aerobic activity

Again from the 1993 WA Child Health Survey, vigorous physical activity (termed 'aerobic exercise' in the survey) was classified as exercise or sport that resulted in sweating or breathing hard. Information was collected on the frequency of these activities how many days vigorous physical activity was undertaken in a 7-day period (Zubrick et al. 1995).

Results from the survey include:

- Nine out of ten 12–16 year olds engaged in vigorous physical activity on at least 1 day during the week. The proportion of boys undertaking activity at this level was higher than for girls.
- Thirty-six per cent of 12–16 year olds engaged in vigorous physical activity on 2 or 3 days in the week, and 23% did so on 4 or 5 days; 19% reported this level of activity on 6 or 7 days.

19 Healthy weight

Healthy weight is a protective factor for many adult diseases. Also, unhealthy weight is a risk factor for many adult diseases, including cardiovascular disease, diabetes, breast cancer and degenerative joint disease (AIHW 1998a). There are also dangers in being underweight—for example, extreme underweight can have even fatal consequences in the case of anorexia nervosa.

Although many of these effects of unhealthy weight do not manifest in childhood, a link has been demonstrated between childhood obesity and adult obesity (NHMRC 1997a). The level of obesity in under 3 year olds appears not to be linked to adult obesity, but in older children the link becomes increasingly strong. Children with obese parents have more than double the risk of obesity in adulthood (Whitaker et al. 1997).

A report by the National Health and Medical Research Council (NHMRC 1997a) covers many issues related to overweight and obesity in Australia. Importantly, the NHMRC report recommends that children be involved in physical activity as a means of maintaining healthy weight levels, rather than become involved in diet restrictions. The nutritional focus for children is recommended to be on good eating habits rather than on weight control.

Data presented in this chapter includes the distribution of weight by age for Australian children (from 2 years of age and older) from the ABS 1995 National Nutrition Survey. A section is then included giving some available information on the proportion of children that are overweight.

Weight

This section presents information on the distribution of children's weight in Australia. The first set of results do not take account of the height of the individual, but only present information on the distribution of children by their weight.

Table 19.1: Weight of Australian children, 1995 (per cent)

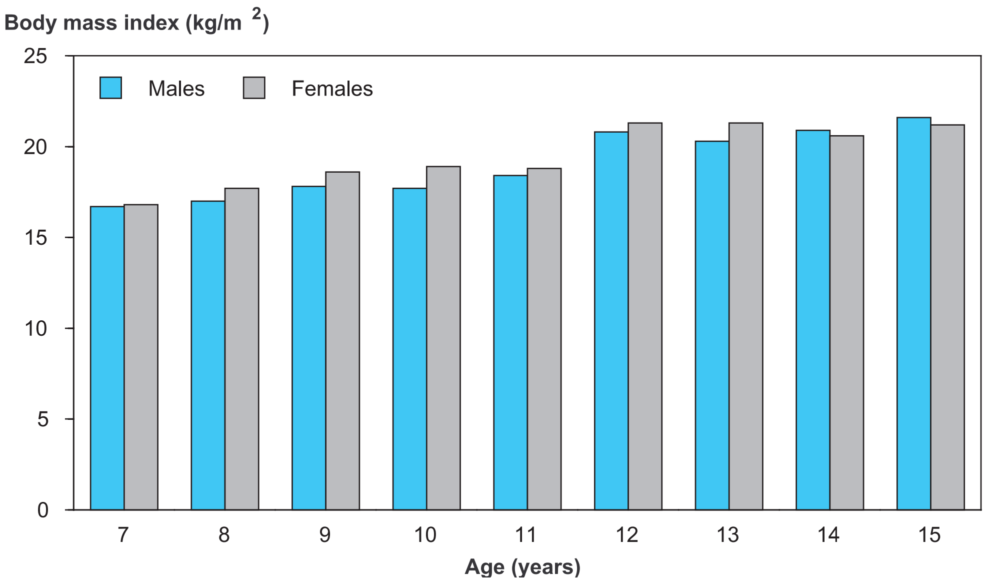
	Male age group (years)				Female age group (years)			
Weight	**2–3**	**4–7**	**8–11**	**12–15**	**2–3**	**4–7**	**8–11**	**12–15**
Less than 15 kg	40.9	1.2	—	—	47.8	2.0	—	—
15–19 kg	53.1	34.2	1.1	—	43.7	34.5	—	—
20–24 kg	2.6	41.8	6.5	0.4	5.7	38.1	6.5	—
25–29 kg	0.1	15.1	21.3	—	—	18.1	13.6	0.3
30–34 kg	—	5.2	28.7	2.9	—	5.0	28.4	0.2
35–39 kg	—	1.4	20.3	7.9	—	1.2	21.9	4.1
40–44 kg	—	0.1	10.8	10.4	—	0.6	12.6	9.7
45–49 kg	—	—	7.9	9.9	—	—	8.3	21.1
50–59 kg	—	0.3	2.4	32.5	—	—	6.0	38.3
60–69 kg	—	—	0.3	23.0	—	—	2.1	18:1
70–79 kg	—	—	0.4	6.7	—	—	0.6	5.1
80–89 kg	—	—	—	2.4	—	—	—	2.2
90–99 kg	—	—	—	2.2	—	—	—	0.3
100–109 kg	—	—	—	1.1	—	—	—	—
110–129 kg	—	—	—	0.3	—	—	—	—
130 kg and over	—	—	—	—	—	—	—	—
Total[(a)]	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Mean weight (kg)	**15.5**	**22.3**	**34.6**	**56.5**	**15.3**	**22.4**	**36.7**	**54.5**

(a) Total includes persons for whom a weight measurement was not obtained.

Source: ABS & DHFS 1997.

- For younger children up to 7 years of age, the mean weight for both boys and girls was very similar.
- For 8 to 11 year olds, the mean weight for girls was higher than that for boys, with the mean weight for girls being 36.7 kg, and the mean for boys being 34.6 kg.
- For 12 to 15 year olds, the pattern is reversed with the mean weight for boys being greater than for girls. The weight variation for girls of this age is less than for boys—there is a higher proportion of boys at the two extremes of the weight distribution compared to girls.

Figure 19.1 below shows the mean body mass index (BMI) derived from the National Nutrition Survey conducted in 1995. BMI is defined as the weight of the child divided by the square of their height.



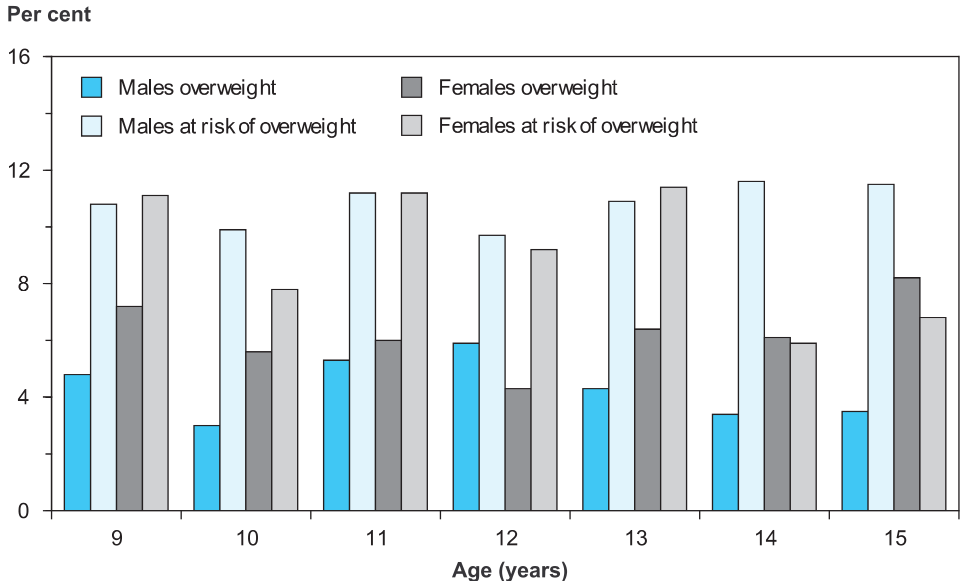
Source: AIHW, from ABS NNS, 1995.

Figure 19.1: Mean body mass index, 1995

- BMI increased with age—the mean for children aged 7 years was under 17kg/m^2. This figure rose to a little over 20 for 15 year olds.
- At younger ages, mean BMI was similar for boys and girls. During the middle age groups, girls had higher mean BMIs than boys. For 14 and 15 year olds, mean BMI was higher for boys than girls.

Overweight

There is general consensus on the measurement of overweight in adults. However this is not the case for measurement of overweight in children (NHMRC 1997a). The NHMRC report recommends the use of percentile cutoff points in the distribution of body mass index (BMI) be used as the indicator of overweight in children. Using this method, percentile cutoff points are determined from smoothed age- and sex-specific distributions of BMI. Children over the 95th percentile are classified as 'overweight', while those over the 85th percentile are classified as being 'at risk of overweight'.



Source: NHMRC 1997a.

Figure 19.2: Overweight children, 1985

- From these 1985 figures, just over 4% of boys and 6% of girls were classified as being overweight. For boys, 11% were classified as being at risk of overweight. The comparable figure for girls was 9%.
- There was variation between ages for these estimates. For boys, those aged 12 years were the age group most likely to be overweight, while for girls those in the oldest age group (15 years) were most likely to be overweight.
- In contrast, the proportions at risk of overweight tended to increase slightly with age for boys, but decreased with age for girls.

From more recent State or regional level studies, it appears that the proportion of school children that are overweight has increased. Two such studies, referred to in the NHMRC report (NHMRC 1997a), have shown increases. Firstly, a Victorian study indicated that twice as many children aged 9 to 15 years were overweight in 1994 compared to 1985. Secondly, a study recently conducted in Sydney showed an increase in the proportion of boys that were overweight, but not in girls.

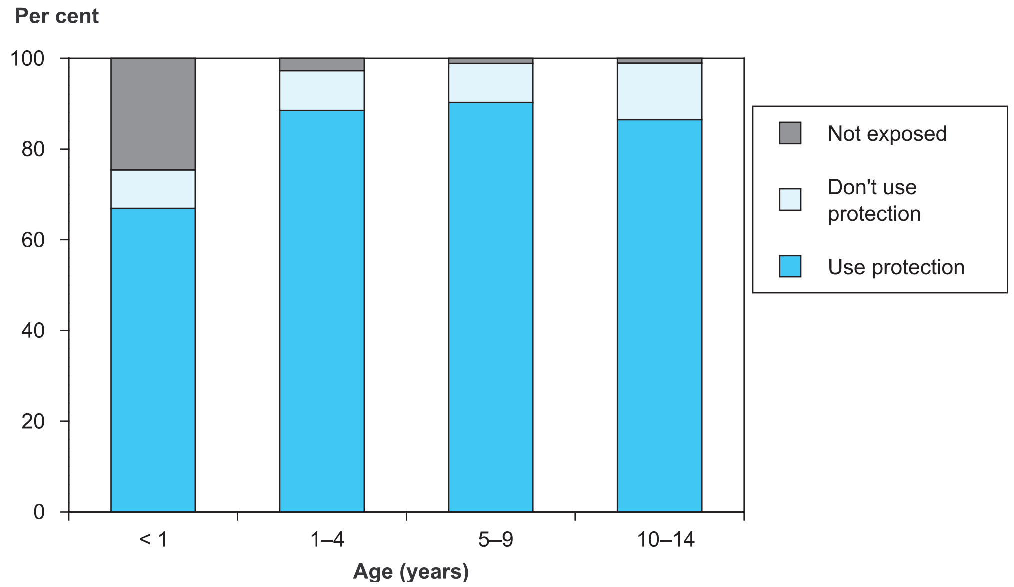
20 Sun protection

Skin cancer is the most common cancer in Australia. Further, Australia has the highest incidence rate in the world (DHFS & AIHW 1998a). Childhood exposure to sunlight has been shown to be an important cause of skin cancer (NHMRC 1996b). The NHMRC report recommends that there be a 'focus on the prevention of ultraviolet exposure in childhood'.

Data used for this chapter come from the ABS National Health Survey conducted in 1995. These results are based on caregiver's reports of sun protection measures taken by, or for, children. None of the measures here indicate the 'dose' of UV exposure of each child.

Whether using sun protection

This section presents information on the proportion of children under 15 years taking measures for protection against the sun over a 1-month period.



Note: Use of sun protection in the previous month.

Source: AIHW, from ABS NHS data, 1995.

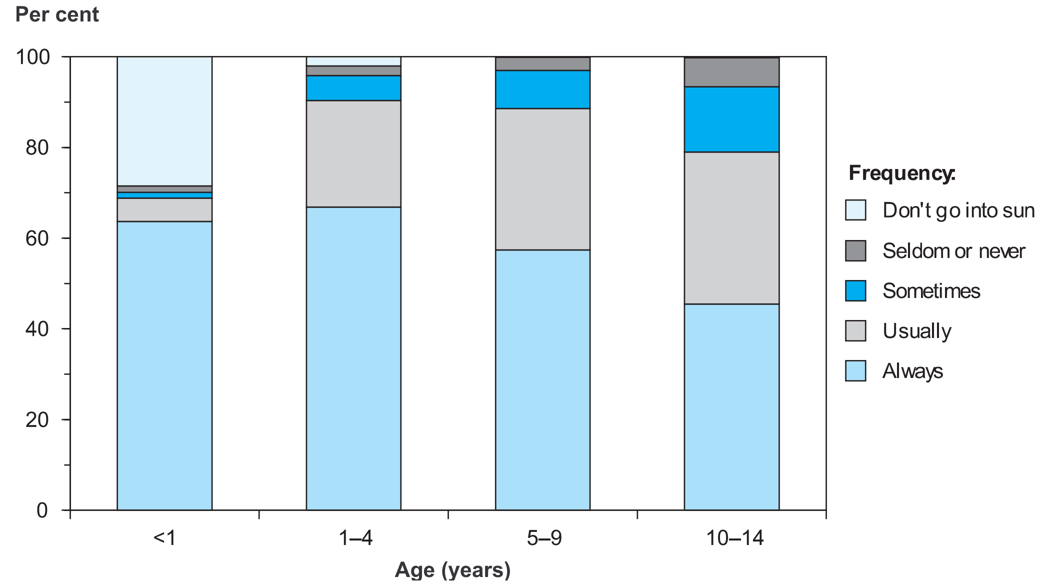
Figure 20.1: Whether used sun protection, 1995

- Most children were reported to have used some sun protection in the month prior to the survey. However, there were still between 9% and 12% of children in all age groups reported to have not used sun protection (excluding those who were not exposed to the sun).
- For infants under 1 year old, a quarter were reported to have not been exposed to the sun. Only very small proportions over the age of 1 year were not exposed to the sun.

- Of infants under 1 year old exposed to the sun, 89% were reported to have used sun protection measures.
- The group with the largest proportion using sun protection (90%) were 5–9 year olds. The proportion using sun protection dropped in the next age group to around 87%.

Frequency of use

Whereas the previous section looks at the number of children using sun protection, this section presents information on the frequency of using sun protection measures.



Source: AIHW, from ABS NHS data, 1995.

Figure 20.2: Frequency of sun protection use, 1995

- As reported above, around a quarter of infants under 1 year old do not go into the sun. Of those who do, nearly 90% were reported to always be protected from the sun.
- For older age groups, the proportion always using sun protection declined as age increased, from 67% for 1–4 year olds to 45% for 10–14 year olds. However, the proportion always or usually using protection remained relatively high—at 80% for 10–14 year olds.

Type of protection

Table 20.1: Type of sun protection used[(a)], 1995 (per cent)

Age (years)	Sunscreen	Umbrella	Hat	Clothing	Avoid sun	Other
< 1	45.7	13.7	75.2	59.2	61.9	8.4
1–4	77.3	7.5	93.0	63.0	36.9	0.7
5–9	74.1	4.2	96.3	57.0	25.4	0.7
10–14	73.3	2.9	88.3	51.3	19.7	0.3

(a) For children who were reported to have used at least one of these sun protection measures. Children may be recorded as using more than one type of protection.

Source: AIHW, from ABS NHS data, 1995.

- For infants under 1 year old, the most common type of protection used was to avoid the sun. Clothing and hats were also commonly used for this group.
- For older children, the most common sun protection methods were use of hats or sunscreen. The proportion of children using any of these particular methods decreased with age. This was particularly the case for ‘avoiding the sun’.

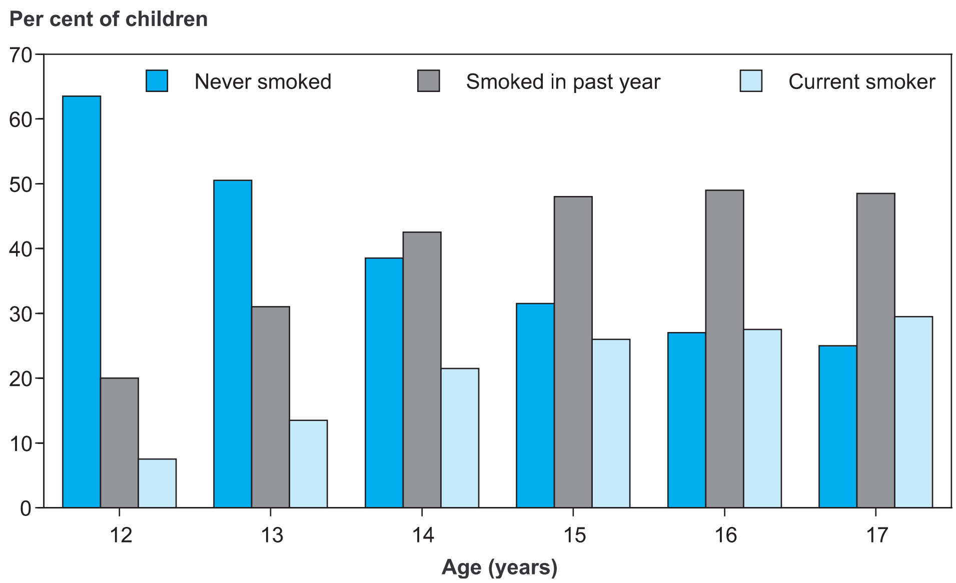
21 Drug use by children

Drug use among children in their early teens is common, and on the rise. Tobacco smoking, binge drinking and even marijuana use have been reported among children as young as 11 or 12 (Donnelly et al. 1992; Hunter 1993). According to the 1995 National Drug Strategy (NDS) Household Survey, some 9% of children had smoked at least one full cigarette before the age of 11 (DHFS 1996). The percentage of 12–14 year olds who know of classmates that use drugs is also high.

Attitudes towards drugs early in childhood presage future use. There is some support for the theory that children who use cigarettes, alcohol and other illegal substances run a greater risk of moving to harder, more addictive drugs. There is also the evidence that peak time for starting tobacco smoking is in early teens.

Tobacco

Two major sources generate national time-series information on tobacco use by children. The NDS Household Surveys, conducted by the Commonwealth Department of Health and Family Services since 1985, obtain self-reported information on tobacco use by 14 year olds (DHFS 1996; Williams 1997; Makkai & McAllister 1998). Questions seeking information on the age when first smoked a full cigarette also provide some insight into the pattern of drug use among younger children (DHFS 1996). The Australian School Students' Alcohol and Drugs (ASSAD) Surveys, conducted triennially by the Anti-Cancer Council of Victoria since 1984, collect information on tobacco use among 12–14 year olds (Hill et al. 1995; White et al. 1997).



Note: Unweighted estimates based on data given in Table 21.1.

Source: HIll et al. 1995.

Figure 21.1: Tobacco smoking status of secondary school students, 1993

Table 21.1: Tobacco smoking pattern of secondary students, by age and sex, 1993 (per cent)

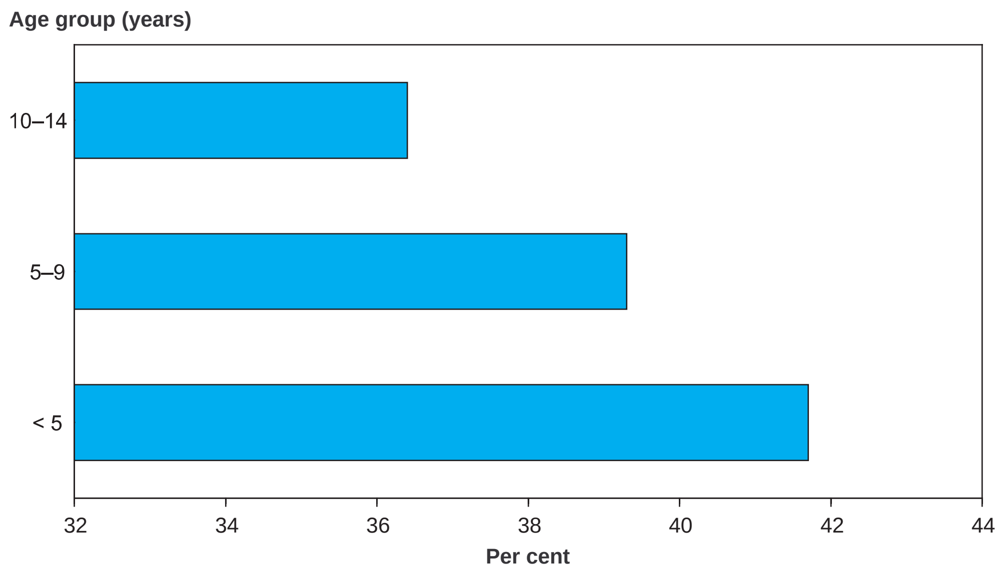
	Never smoked		Smoked in past year		Current smoker[a]	
Age (years)	Male	Female	Male	Female	Male	Female
12	61	66	21	19	8	7
13	48	53	30	32	13	14
14	38	39	40	45	20	23
15	34	29	44	52	24	28
16	27	27	48	50	27	28
17	26	24	46	51	28	31

(a) Figures do not add up to 100.

Source: HIll et al. 1995.

- According to the 1993 ASSAD Survey, more than one-third of 12 year olds had smoked cigarettes in the past. Less than a quarter of these were however current smokers.
- The proportion of children who had smoked cigarettes more than doubled before the age of 15. The rate rise was much higher among girls. The proportion of current smokers also increased to more than one in five students aged 14 years.
- The mean number of cigarettes smoked by 12 year old current smokers was more than 7 per week. The average number increased to almost 19 cigarettes per week among 14 year olds.
- The prevalence of tobacco smoking among children decreased between 1984 and 1987, and again between 1987 and 1990 among 12–15 year old children. No decrease was however noted between 1987 and 1990 among 16–17 year old children. In contrast, the proportion of children smoking currently increased between 1990 and 1993 (Hill et al. 1995).
- No information is available from the 1996 ASSAD survey at the national level. Results from the Queensland and Tasmanian components of the survey indicate that the proportion of smokers increased further between 1993 and 1996 (Stanton et al. 1997; Centre for Behavioural Research in Cancer 1998). However, no change in the prevalence rates was noted between the 1993 and 1996 surveys in Western Australia (Health Department of Western Australia 1997a).

Passive smoking has a harmful effect on the health of people. Passive smoking increases the risk of cancer, cardiovascular disease, bronchitis and pneumonia, irritation of the upper respiratory tract, and increased frequency and severity of asthma symptoms in healthy non-smokers (DHSH 1994). It is also a risk factor for new cases of asthma in children. It has been reported that in Australia, exposure to tobacco smoke in the home contributed to the symptoms of asthma in 46,500 children, and caused lower respiratory illness in 16,300 children (NHMRC 1997c). Figure 21.2 shows the proportion of children who were exposed to tobacco in the home in 1995.



Source: Williams 1997.

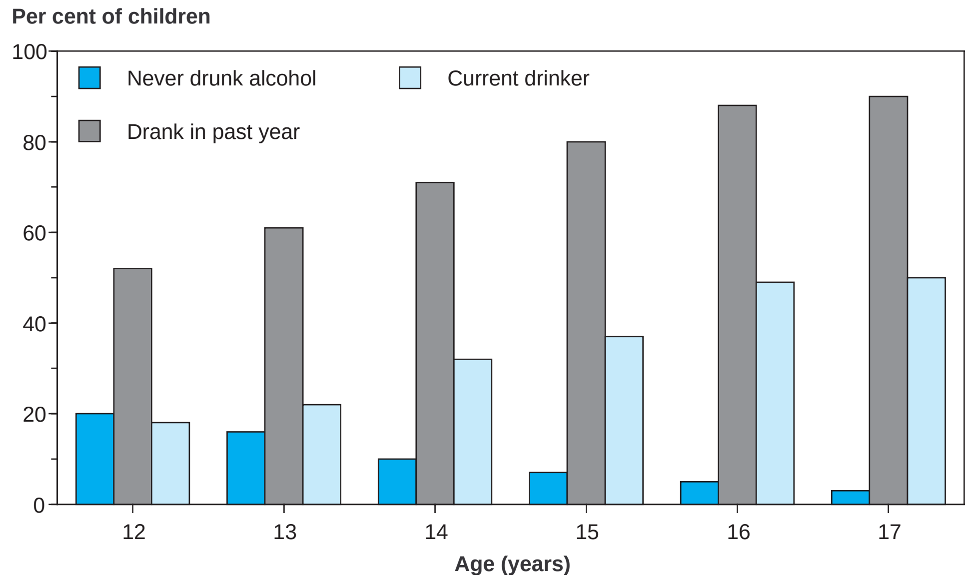
Figure 21.2: 0–14 year olds potentially exposed to tobacco smoke in the home, 1995

- In 1995, children under 5 years were more likely to be exposed to tobacco smoke at home compared to older children.
- Over 40% of under 5 year olds lived with at least one smoker in 1995. Even for older children this proportion was still over 36%.

Alcohol consumption

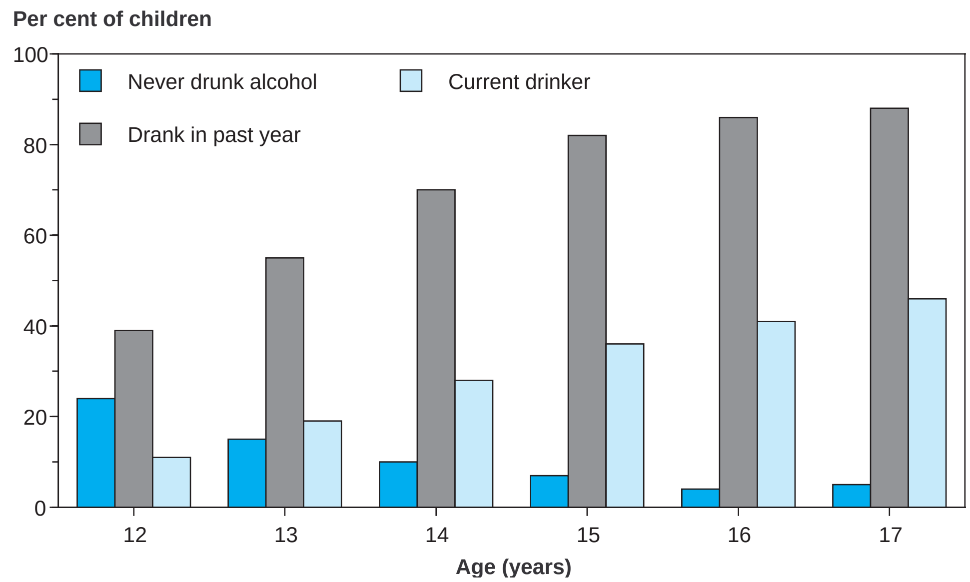
The children are exposed to the use of alcohol much more commonly than smoking because of the ambivalent attitude of the community towards its use. The 1993 ASSAD survey indicated that more than three-quarters of children younger than 13 years of age had drunk alcohol (White et al. 1997). The proportion increased to 90% before the 15th birthday. The 1995 NDS Household Survey indicates that almost one-third of the children had drunk at least one full glass of alcohol before turning 16 (DHFS 1996).

Time series information on alcohol use by children aged 12 to 14 years has been collected through the ASSAD surveys since 1983. Information on past and current drinking habits of 14 year olds has also been obtained through the NDS Household Surveys since 1985.



Source: White et al. 1997.

Figure 21.3: Drinking habits of male secondary students, 1993



Source: White et al. 1997.

Figure 21.4: Drinking habits of female secondary students, 1993

- According to the 1993 ASSAD Survey, 18% of 12 year old boys and 11% of 12 year old girls had drunk alcohol during the week prior to the survey. The survey assigns these children to the category of current drinkers.
- Less than a quarter of 12 year olds had never drunk alcohol to that point. The proportion declined to 10% among 14 year olds. The proportional decline was higher among girls.

- The mean number of drinks per week by 12 year old current male drinkers was 3.5; the figure was 2.3 among the female counterparts. The mean number of drinks per week rose to 5.0 among boys and 3.9 among girls aged 14 years. Almost one in ten of the current drinkers aged 12 to 15 years had binged (White et al. 1997).
- The prevalence of alcohol drinking among children decreased between 1984 and 1987, and again between 1987 and 1990 among 12–15 year old children. Among children aged 16–17 years, fewer were drinking in 1990 than in 1987 (White et al. 1997). In contrast, the proportion of children categorised as current drinkers increased between 1990 and 1993, although the rates in 1993 were still lower than those prevalent in 1984 (White et al. 1995).
- No information on the drinking patterns of children is available from the 1996 survey at the national level. The results from the Queensland component of the survey however indicate that the proportion of current drinkers decreased slightly among the Year 7 students (mostly 12 year olds) between 1993 and 1996 (Stanton et al. 1997). On the other hand, the rates increased between the two surveys for both Year 8 (mostly 13 year olds) and Year 9 (mostly 14 year olds) students.
- Similar changes in the drinking patterns have been noted in Western Australia except for 12 year old girls among whom the rate increased by almost 50% between the 1993 and 1996 surveys (Health Department of Western Australia 1997b).

Illicit drugs

Illicit drug use may be defined as non-prescribed use of opiates, cannabis, hallucinogens, stimulants (cocaine and amphetamines) and anabolic steroids, as well as any form of non-prescribed injecting drug use. Illicit drug use by children is a dominant societal concern, but the use of licit drugs by children also needs to be monitored.

There is currently no national information available on illicit drug use by children. The 1996 ASSAD Survey did include questions regarding licit and illicit drug use by children but national results from this survey have not been released yet. However, some state-level information has become available that provides further insight into drug use by children aged 12 to 14 years (Centre for Behavioural Research in Cancer 1997). New South Wales and Victoria also have been monitoring the use of illicit substances among secondary school students since 1983 and 1986 respectively (Donelly et al. 1992; Roy Morgan Research Centre 1993).

In 1996, the usage of illicit drugs such as amphetamines and ecstacy among Tasmanian secondary school students was found to start early in life. Some 4% of 12 year olds were reported to have used amphetamines in the 12 months prior to the survey; about 3% were found to have used ecstacy. The proportions increased respectively to 6% and 4% among 14 year olds (Center for Behavioural Research in Cancer 1997). Slightly lower rates were observed among secondary school students in Queensland (Stanton et al. 1997).

Part VI: Family and social environment

Primary goal

- *Enhance family and social functioning.*

Other relevant goals

- *Reduce the impact of conditions occurring in adulthood, but which have their origins or early manifestations in childhood or adolescence.*

22 Families and child health

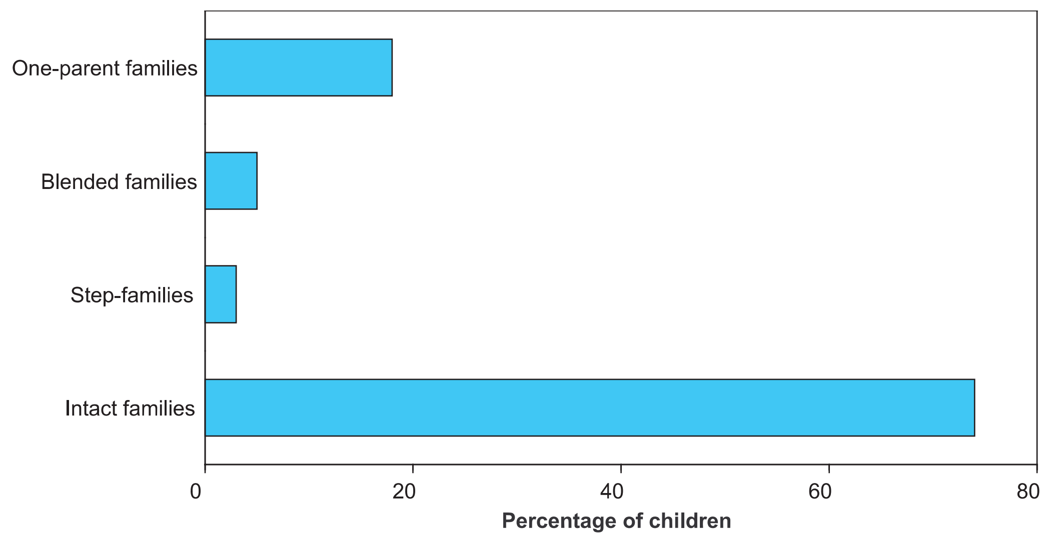
This chapter presents background demographics on Australian families, as well as some information on family functioning and links between families and child health. Although the family has a strong influence on the health of children (including physical, mental and social health), both during childhood and into adulthood, national information on these issues are still developing. Information presented here is limited by current availability of data, and is provided as a starting point for information on child health and families.

Family characteristics

Families considered in this chapter are those with dependant children. This first section includes demographic information about these families.

Family type

This section includes information on the type of families in Australia, and trends in the proportion of these families over time. Intact families are defined by the ABS as couple families with at least one child of both members of the couple and no step-children of either members.

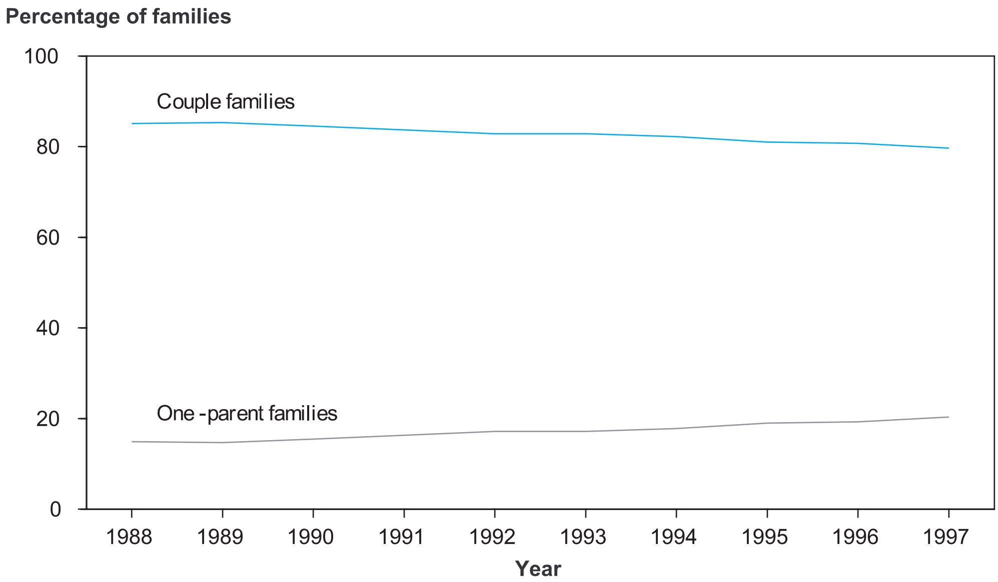


Source: ABS 1998d.

Figure 22.1: Children by type of family, April 1997

- Figure 22.1 shows the proportion of children in different types of families.
- In 1997, 74% of children aged 0–14 years lived in intact families (where all children lived with both natural parents) while 18% lived in one-parent families.

- Of children living in one-parent families, 89% lived with the mother and 11% lived with the father.
- Of all children living in couple families, 92% of the children lived with married couples while the remainder lived with a couple in a defacto relationship.



Source: ABS 1998b.

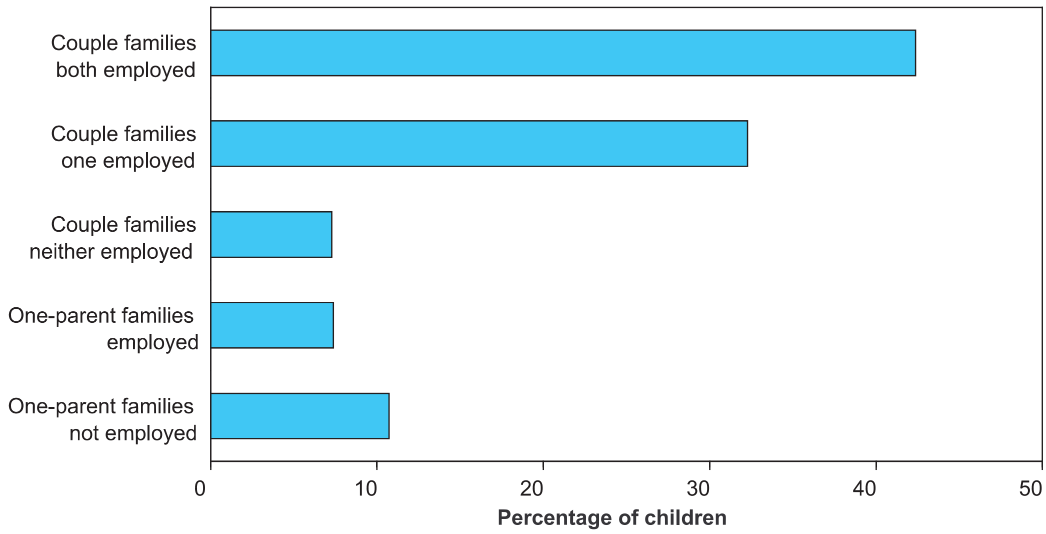
Figure 22.2: Families with dependent children, by type, 1988 to 1997

- Over the last 10 years, the proportion of couple families with children has declined, while the proportion of one-parent families has increased. In 1988, 85% of families with children were couple families. By 1997, the percentage had fallen to 80%.
- Although not shown in Figure 22.2, the proportion of one-parent families with a male parent increased from 12.5% in 1988 to 13.4% in 1996, but decreased again in 1997 to 12.5%.

Families with dependant children (which can include dependant students to age 24) had an average of 1.9 children per family in April 1997 (ABS 1998d). The average number of children for couple families—2.0—was higher than for one-parent families—1.7.

Income and work

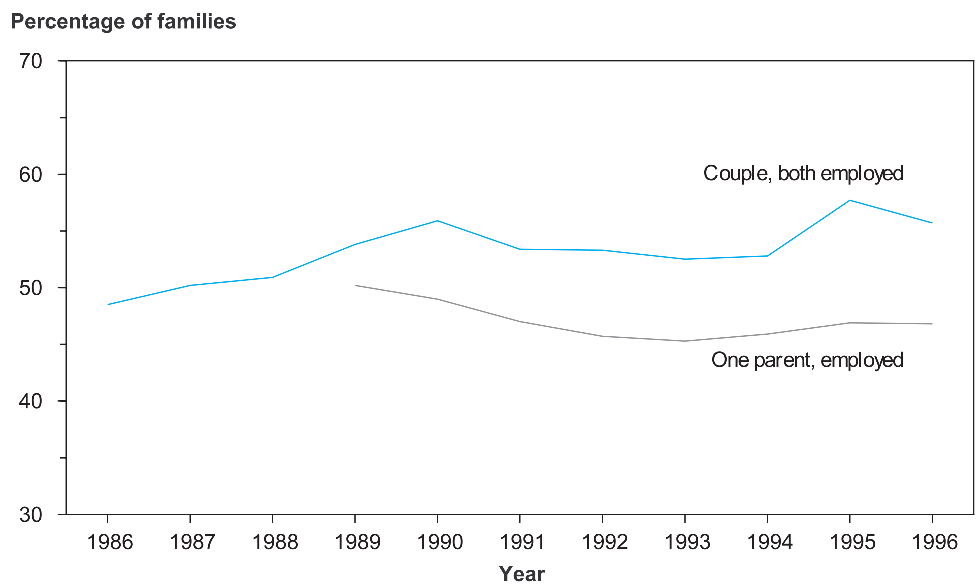
This section presents some background information on family income and employment arrangements of parents.



Source: ABS 1998d.

Figure 22.3: Parental labour force status, 0–14 year old children, April 1997

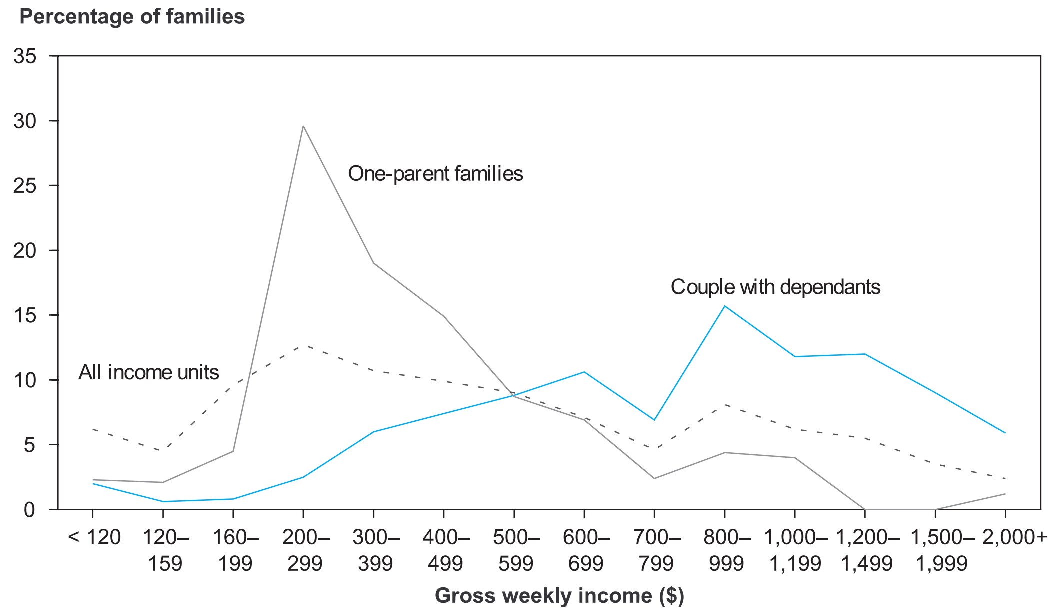
- Figure 22.3 shows the parental labour force status for 0–14 year old children. A labour force status of 'not employed' includes both unemployed parents and parents not in the labour force.
- The largest group of children included in Figure 22.3 are those from couple families where both parents were employed (full or part-time). This group accounted for 42% of children.
- The majority of children had at least one parent employed—18% of children lived in a family where the parent(s) were not employed.
- Although not shown in Figure 22.3, the parents of older children were more likely to be employed than parents of younger children (ABS 1998d). Nearly 21% of 0–2 year olds lived in a family without an employed parent (for couple families with neither parent employed, and for one-parent families with the parent not employed). This figure decreased across age groups, to 16% for 12–14 year olds.



Source: ABS 1997a.

Figure 22.4: Employed parents, by family type, 1986 to 1996

- Figure 22.4 shows the proportion of families with all parents employed, by family type. For two-parent families, the proportion with both parents employed has increased steadily over the last decade.
- For one-parent families, the proportion with the parent employed decreased—from 50% in 1989 to 47% in 1996.
- A higher proportion of couple families have both parents employed, compared to one-parent families that have the parent employed.



Source: ABS 1998b.

Figure 22.5: Family income distributions, 1995–96

- Figure 22.5 shows the gross weekly income for couple families, one-parent families and all income units (as a reference group) in Australia in 1995–96. These weekly incomes have not been adjusted to reflect the number of people in the family.
- In 1995–96, couple families tended to have higher gross weekly incomes than the reference group (all income units)—a higher proportion had greater incomes, and a lower proportion had smaller incomes. This distribution is reflected in the median incomes: couple families had a median income of $849 per week, compared to $457 for the reference group.

The income distribution for one-parent families was sharply different. The vast majority of these families had relatively low incomes—nearly 60% of these families had gross weekly incomes less than $400 per week. The median income for one-parent families was $352 in 1995–96.

Table 22.1: **Number of earners and principal source of income for families, 1995–96 (per cent)**

	Number of earners			Principal source of income[a]			
Income unit type	0	1	2	Wage/ salary	Own business or partnership	Other private	Government benefits
Couple with dependant children							
Eldest child <5	10.2	45.6	44.2	77.2	10.8	1.0	10.7
Eldest child 5–14	9.2	35.8	55.0	73.7	13.0	1.2	11.1
Eldest child 15–24	10.7	25.0	64.2	72.9	12.6	2.5	11.1
Total	*9.9*	*34.8*	*55.3*	*74.2*	*12.4*	*1.5*	*11.0*
One-parent family	53.4	46.6		35.1	2.6	3.0	58.7
All income units	34.3	42.5	23.2	55.5	6.5	7.0	29.0

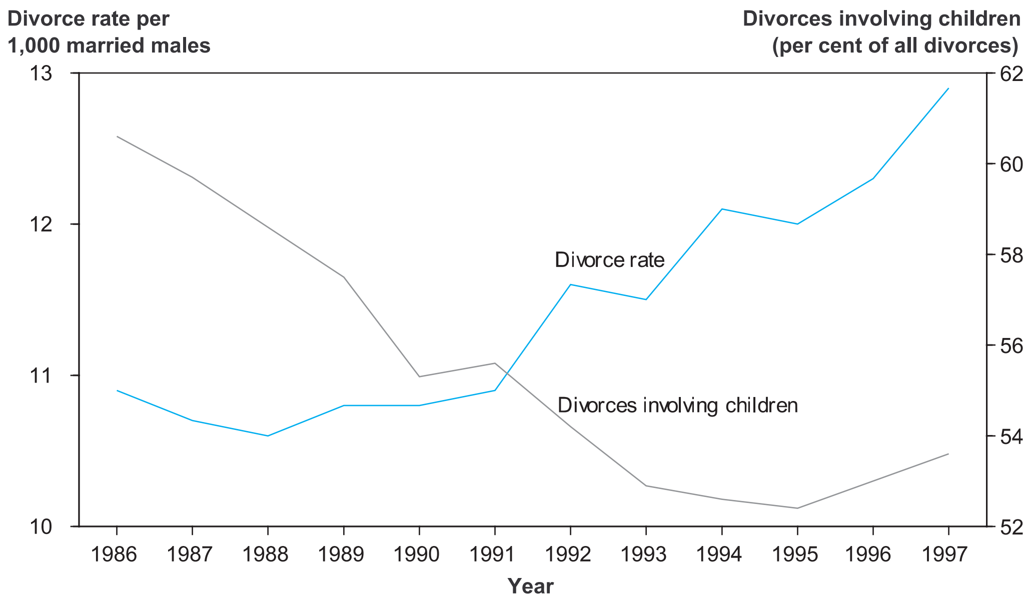
(a) Expressed as a percentage of all income units including those with no income source.

Source: ABS 1998b.

- Information on the number of earners in families reflects information presented in Table 22.1 above. In addition, the proportion of couple families with both parents employed increased with the age of the eldest child.
- Couple families were much more likely to earn their income from wages or salaries compared to both one-parent families and the reference group (all income units).
- Relatively few couple families earned the majority of their income from government benefits. However, for nearly 60% of one-parent families government benefits were their main source of income.

Divorce

This section presents information on divorce rates in Australia, and those divorces with children involved. These figures do not include families with other relationship breakdowns—for example, defacto couple separations, or married couple separations not involving divorce.



Sources: ABS 1997a, ABS 1998b.

Figure 22.6: Divorces in Australia, 1986 to 1996

- Following trends in divorce rates over several decades, the divorce rate in Australia has continued to increase over the last decade.
- However between 1986 and 1997, the proportion of divorces involving children has declined, from 61% to 54%.

Family functioning

The ability of a family to function well affects the health and wellbeing of children in the family. Family functioning includes many aspects of family life including acceptance of individuals, some degree of consensus on decisions, communication and solving day to day problems (Silburn et al. 1996). Family functioning is influenced by many factors, including relationship quality, the health of family members, presence of life stresses, work and finance.

This section presents some results from the 1993 Western Australian Child Health Survey on family functioning, as published in the Family and Community Health volume (Silburn et al. 1996) of the three-volume set resulting from the survey.

Family discord

The Western Australian Child Health Survey used the McMaster Family Assessment Device to measure general family functioning. Using this scale, it was found that over 12% of Western Australian families with children had a high level of family discord. Common family function characteristics for families with high discord levels included: avoided discussing concerns and fears, could not talk about sadness, making decisions was a problem, planning family activities was difficult due to misunderstandings, and were unable to confide in each other (Silburn et al. 1996).

Levels of family discord were higher in families where all parents were not employed. These families were three times more likely to have high level of discord compared to other families.

Parenting styles

In the Western Australian Child Health Survey, parents were asked about methods they used to manage child behavior. Most parents reported a combination of reasoning, reinforcement and punishment (Silburn et al. 1996). The parents of 73% of 4–11 year old children reported the frequent use of reasoning to deal with behavior problems. Other frequently used behavior management techniques included shouting or yelling (32%), sending the child to their room (19%) and removal of privileges (11%). Smacking, shaking or hitting were reported to be used frequently on only a small proportion of children, but on at least one quarter of children sometimes.

Nearly all children (99%) were reported to be rewarded with praise from their parents for achievement or good behaviour.

Four common parenting styles were identified in the Western Australian Child Health Survey (listed here in decreasing order of frequency):

- encouraging—high use of rewards and reinforcements, low frequency of coercion
- inconsistent—high coercion, high rewards
- neutral—low coercion, low rewards
- coercive—high coercion, low rewards.

High rates of mental health problems were found in children whose parents used inconsistent or coercive parenting styles.

Links to child health

This section presents some aspects of family characteristics and the health of children. Although evidence of links between child health and family characteristics have been found in many studies, only evidence from the Western Australian Child Health Survey is presented here (Silburn et al. 1996).

Parental health and child health

Children whose parents had health problems were more likely to have lower levels of general health and/or a mental health problem.

Table 22.2: Parental health factors and proportion of children with health problems, Western Australia, 1993 (per cent)

	Child health status	
Parental health factors	**Lower level of general health**	**Mental health problem**
Lower level of general health		
One or both parents	30.5	20.4
Neither parent	10.4	15.4
Chronic condition		
One or both parents	22.9	18.4
Neither parent	16.3	17.0
Limited in daily functioning		
One or both parents	24.1	21.0
Neither parent	18.3	16.9
Mental health history		
One or both parents	28.7	27.6
Neither parent	17.9	16.1

Source: Silburn et al. 1996.

- In terms of the general health status of children, the strongest links to parental health status were found with lower parental general health status and parental mental illness. Children whose parents had a lower level of general health were nearly three times more likely to have a lower level of general health themselves than other children. Children who had a parent with a history of mental illness were 1.6 times more likely to have a lower level of general health compared to other children.
- In terms of mental health problems in children, again the strongest links were found to parental general health status and parental mental illness. Children who had a parent with a history of mental illness were 1.7 times more likely to have a mental health problem than other children.

Adolescent tobacco and alcohol use

Adolescents (aged 12–16 years) were found to be much more likely to smoke themselves if they had a parent who smoked than if they did not have a parent that smoked (Silburn et al. 1996). Nearly 42% of adolescents with a parent who smoked had smoked at some time, compared to only 20% of children of non-smoking parents. Fifteen percent of adolescents with a parental smoker had smoked the previous day, compared to only 4% of adolescents whose parents did not smoke.

A similar link was found between parental and adolescent alcohol use (Silburn et al. 1996). A higher proportion of adolescents with a parent that drank alcohol daily had drunk alcohol themselves, than adolescents with parents that did not drink (61% compared to 41%). Over 14% of adolescents with a parent who drank alcohol daily had drank alcohol three or more times in the last month, compared to less than 1% of adolescents of non-drinking parents.

Family discord and child health

Links between family discord and the health of the child were identified in the 1993 Western Australian Child Health Survey (Silburn et al. 1996). Families with high levels of discord were twice as likely to have a child with a lower level of general health, and twice as likely to have a child with a mental health problem, than families with a low level of discord.

Parental employment and child health

Links between children's physical and mental health and their parents' employment status were examined as part of the Western Australian Child Health Survey (Silburn et al. 1996). No association was found between parental work arrangements and children's general physical health.

However, an association was found between children's mental health and their parents' employment arrangements. For couple families, a higher proportion of families had at least one child with a mental health problem if both parents were not employed compared to other families. Further, a higher proportion of families with only one parent employed than families with both parents employed had at least one child with a mental health problem.

For one-parent families, those with the parent not employed were more likely to have at least one child with a mental health problem than those families where the parent was employed. However, the couple family group most likely to have a child with a mental health problem—those where both parents were not employed—were still less likely to have a child with a mental health problem than both groups of one-parent families (those with the parent employed and those where the parent was not employed).

Risk factors for mental health problems

As noted in Chapter 8, the determinants of mental health are complex, and include biological, family and wider social factors. Information on risk factors associated with mental health is being collected as part of the child and adolescent component of the National Survey of Mental Health and Wellbeing being conducted in 1998, and results will be included in the next report on child health in this series (to be published in 2000). Comprehensive information on mental health problems is covered in Chapter 8 of this report.

23 Children in need of protection

Much emphasis is now being given to enhancing parenting, and to child and youth wellbeing (Child, Adolescent and Family Health Service 1992). Child protection is the responsibility of the community services department in each State and Territory. There are national data on children who come into contact with the community service departments because they have been the subject of a notification of abuse and neglect, or are on a care and protection order or are in out-of-home care (Broadbent & Bentley 1997a).

Child abuse and neglect

Child abuse and neglect is of concern to health professionals because of the profound negative impact it has on the children and families concerned. These include both physical and emotional impacts.

This subsection provides information on children who were the subject of substantiated notification of child abuse and neglect. Child abuse and neglect is substantiated on the basis of information gathered by the community service departments in each State or Territory. The national data on child abuse and neglect substantiations include only those incidences notified to community service departments and subsequently substantiated by the department. The data do not include reports made to other agencies and not referred to the community service departments, or unreported incidents. The data include reports of each notification rather than each incident of suspected abuse or neglect.

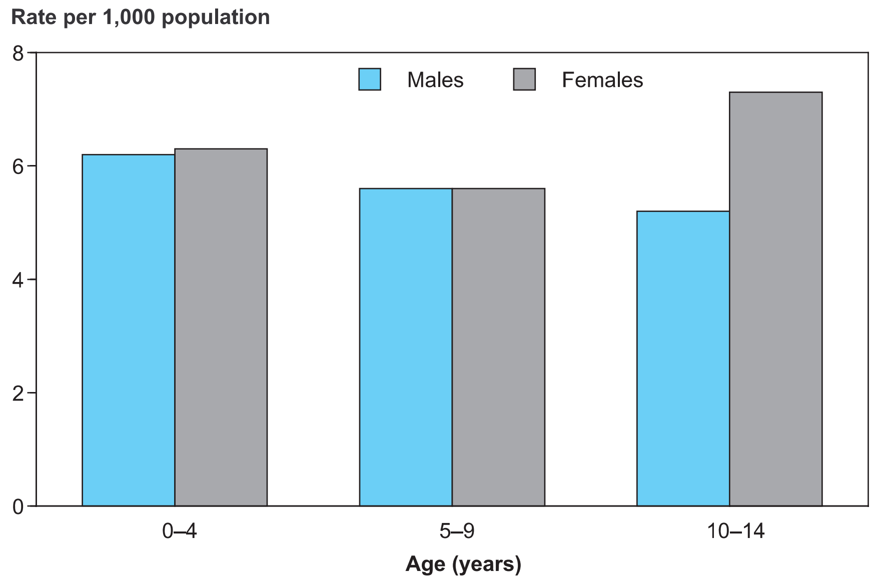
An incident of child abuse and neglect will be substantiated if, in the professional opinion of the officers concerned, there is reasonable cause to believe that the child has been, is being, or is likely to be abused or neglected (Broadbent & Bentley 1997a). The level of information or evidence required for a substantiation is less than that required for a criminal prosecution. The definition as to what constitutes child abuse and neglect is open to interpretation, and different judgements may be made on whether or not a child needs protection.

Substantiated abuse and neglect may be divided into the following four categories:

- physical abuse—a non-accidental physical injury inflicted on the child
- emotional abuse—an act which results in the child suffering any kind of significant emotional deprivation or trauma
- sexual abuse—an act which exposes a child to, or involves a child in, a sexual process beyond his or her understanding and contrary to accepted community standards
- neglect—serious omissions or commissions which, within the boundaries of cultural tradition, constitute a failure to provide conditions that are essential for the physical and emotional development of the child. This includes failure to thrive.

Many children suffer more than one type of abuse or neglect and it is not always easily categorised, particularly when more than one type has occurred. As a result, categorisation according to these four types is somewhat subjective. The type of abuse or neglect that is recorded is the one most likely to be the most severe in the short term, or most likely to place the child at risk in the short term, or the most obvious (Broadbent & Bentley 1997a).

In 1995–96, about 6 children per 1,000 aged 0–14 years were the subject of a substantiation of child abuse and neglect in Australia. Figure 23.1 shows these rates by age group.



Source: Broadbent & Bentley 1997a.

Figure 23.1: Substantiated cases of child abuse and neglect, 1995–96

- The rate of substantiations was slightly higher for children aged 0–4 years and 10–14 years (6.2 per 1,000) compared with those aged 5–9 years (5.6 per 1,000).
- The rate of children who were the subject of a substantiated notifications of abuse and neglect was higher for girls than for boys (6.4 and 5.7 per 1,000 respectively).
- Girls aged 10–14 years had the highest rate of substantiations, and boys aged 10–14 years had the lowest.

There were 23,404 children who were the subject of a substantiated notification of child abuse and neglect in 1995–96. In respect of these children, 30% related to emotional abuse, 29% physical abuse, 17% sexual abuse and 24% neglect. Girls were more likely to be the subject of emotional and sexual abuse, and boys were more likely to be classified as the subject of physical abuse and neglect.

The types of abuse and neglect that were substantiated also varied by the age of the child. Table 23.1 shows the different types of substantiated abuse and neglect.

Table 23.1: Type of abuse and neglect, 0–14 year olds, 1995–96 (rate per 1,000 population)

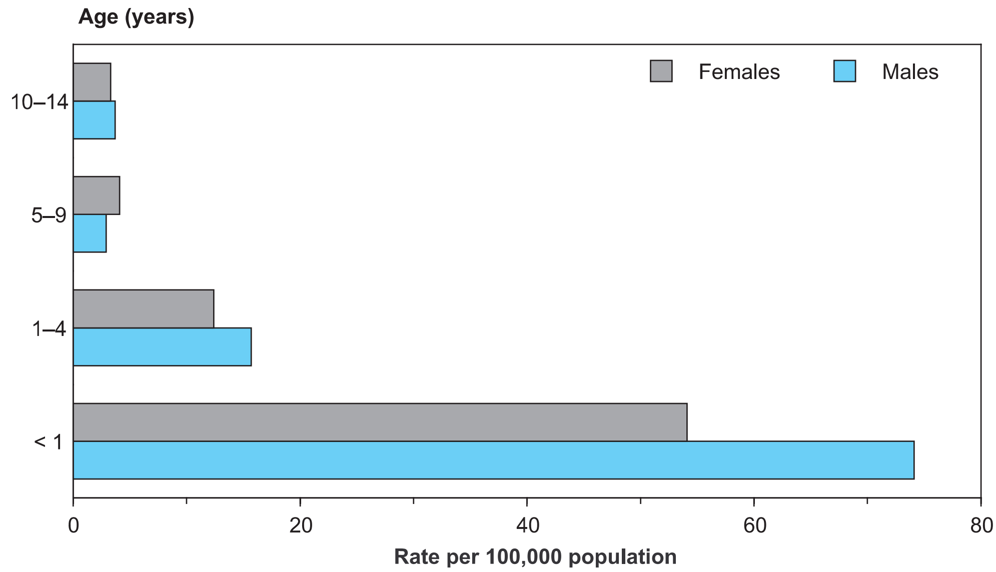
Sex	Age (years)	Physical	Emotional	Sexual	Neglect
Males	0–4	1.6	2.2	0.4	2.0
	5–9	1.9	1.7	0.8	1.3
	10–14	2.0	1.6	0.5	1.1
Females	0–4	1.3	2.3	0.8	1.9
	5–9	1.3	1.6	1.4	1.2
	10–14	2.2	1.8	2.3	0.9

Source: Broadbent and Bentley 1997a.

- Girls aged 10–14 years had relatively high rates of substantiated physical and sexual abuse.
- Boys and girls aged 0–4 years had relatively high rates of substantiated emotional abuse.

Hospitalisation

In some cases abuse may lead to hospitalisation. In the International Classification of Diseases 9th Revision, Clinical Modification (ICD-9-CM) hospitalisations relating to 'child battering and other maltreatment' can be identified using the code for external cause of injury or poisoning of E967. The information presented below is derived from the AIHW National Hospital Morbidity Database. In 1996–97 for children under 15 years, 10.4 hospitalisations per 100,000 had an external cause of child battering or other maltreatment reported. This includes situations where children may have more than one hospitalisation for the same reason. Figure 23.2 shows the hospitalisation rates for 0–14 year old children with an injury caused by child battering or other maltreatment.



Source: AIHW National Hospital Morbidity Database.

Figure 23.2: Hospitalisations for 'child battering and other maltreatment', 1996–97

- For the age groups examined, the highest hospitalisation rates in 1996–97 were for children under the age of 1 year.
- Boys had higher rates of hospitalisations than girls in all the groups, with the exception of the 5–9 year olds.

Children on care and protection orders

Each State and Territory has its own legislation regarding when a child is 'in need of care and protection'. For the purposes of the national data collection, a child may be deemed to be 'in need of care and protection' Broadbent & Bentley 1997b) if:

- the child is being or is likely to be abused or neglected and other ways of working with the family have been exhausted
- the child has been abandoned
- adequate provision is not being made for the child's care
- there is an irretrievable breakdown in the relationship between the child and his or her parent(s)
- there are other particular child-related factors, such as physical or behavioural difficulties or psychiatrically diagnosed emotional problems.

If a child is found to be in need of care and protection, the community services department has the authority to intervene and to apply to the relevant court to place the child on a care and protection order. There are a number of different types of care and protection orders and the types of orders vary across jurisdictions.

In 1995–96, the national data collected on children on care and protection orders were grouped into two categories—those on guardianship orders and those on non-guardianship orders. Guardianship orders involve the transfer of legal guardianship of a child to an authorised department, with the head of the community services department usually becoming the guardian of the child. Non-guardianship orders give the community service department some responsibility for a child's care or for protection of the child, but do not involve the transfer of guardianship.

At 30 June 1996 there were 2.7 children aged 0–14 years per 1,000 on care and protection orders in Australia. Children were more likely to be on guardianship orders than non-guardianship orders (Table 23.1).

Table 23.2: Children on care and protection orders, 30 June 1996 (rate per 1,000 population)

Type of order and age of child	Males	Females	Persons
Guardianship			
0–4 years	1.1	1.0	1.0
5–9 years	1.6	1.7	1.7
10–14 years	2.5	2.4	2.4
Total guardianship	1.7	1.7	1.7
Non-guardianship			
0–4 years	1.0	0.9	0.9
5–9 years	1.0	1.0	1.0
10–14 years	1.0	1.0	1.0
Total non-guardianship	1.0	1.0	1.0
Total care and protection orders	**2.7**	**2.7**	**2.7**

Source: Broadbent & Bentley 1997b.

- There were 1.7 children per 1,000 on guardianship orders and 1.0 child per 1,000 on non-guardianship orders.
- The rates of children on guardianship orders increased with age from 1.0 per 1,000 for children aged 0–4 years to 2.4 per 1,000 for children aged 10–14 years.

24 Schools and education

The link between health and education has been widely reported. In the National Goals and Targets for Children and Youth (Child, Adolescent and Family Health Service 1992), it is stated that 'school progress is a significant indicator of general wellbeing and poor school progress is associated with and perpetuates disadvantage'. A report by the National Health and Medical Research Council (NHMRC 1996a) has also outlined this link. Points made in the report include:

- education of health issues at school contributes substantially to children's health
- health status is a major determinant of educational achievement
- children in good health are more likely to achieve higher education levels.

Schools are a major influence on a child's life. Substantial amounts of a child's time are spent at school. For this reason, schools are a good setting for health promotion activities aimed at children (NHMRC 1996a, Northfield et al. 1997, Nutbeam et al. 1997). As well as spending lots of time at school, it is also compulsory for all children to attend until they are 15 years old, giving an opportunity to reach all children regardless of their social background.

The NHMRC report recommends a strategy for school health promotion known as 'health promoting schools'. This approach changes the health promotion activities of a school from the traditional approach of education about specific issues, to one that enhances the health and wellbeing of the school's students and staff. This includes the incorporation of the health environment of the school (physical and psychosocial) more explicitly into the program. Also, existing links with the community and health sector are incorporated more closely. The main focus of the health promoting school is on the organisation's capacity to promote health.

National information on many of these areas is not currently well developed. Consequently, indicative information presented in this chapter is restricted to school performance and participation, as well as bullying in schools. Data for this chapter have come from two main sources: an ABS publication on schools (ABS 1998f), and the Western Australian Child Health Survey of 1993 (Zubrick et al. 1997). Data from the first covers the whole of Australia, while the second only relates to Western Australian children.

This chapter aims to present information on issues affecting the education or schooling of children in those areas with data currently available. Included is information on academic performance, retention/participation rates, absences from school and bullying in schools. National information is available for some of these issues (sourced from the Australian Bureau of Statistics), while for others results have been presented only for Western Australian children. The Western Australian data come from the 1993 Western Australian Child Health Survey. Background information on the survey is included in the Introduction (Chapter 1).

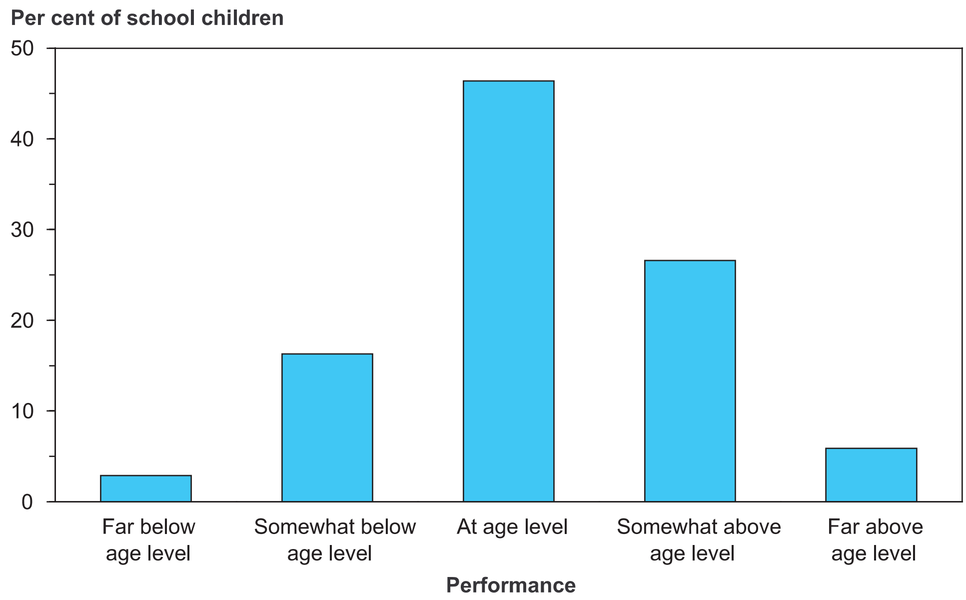
Academic performance

Academic performance is one of the key indicators of a child's success at school. Academic achievement enhances an individual's chances for further education and/or employment. Further, there is a documented link between higher education levels and employment with good health (Valkonen 1989, Jolly 1990).

Academic competence includes a variety of skills including literacy and numeracy, finding and using information, working well with others, valuing themselves, and knowing about the world (Zubrick et al. 1997). The following list of influences on academic performance is a summary from Zubrick et al. 1997, based on results from the 1993 Western Australian Child Health Survey:

- as parental income decreased, rates of poor academic competence increased
- students from one-parent families were more likely to perform at a lower level than those from two-parent families
- students whose parents had lower education levels were more likely to have lower academic competence themselves
- low academic performance was more common in families where the caregivers were not employed
- as the number of life-stress events increased, academic competence decreased. More specifically, higher proportions of children with low academic performance were found if (in the last 12 months): the parents had separated or divorced, the family had struggled to provide necessities, the house was very crowded, or a close family member had a physical handicap
- students with lower general health were more likely to have lower academic competence
- students with mental health problems were more likely to have lower academic competence
- attention problems were found to be one of the main contributing factors to lower academic performance
- children with speech problems were more likely to have lower academic performance.

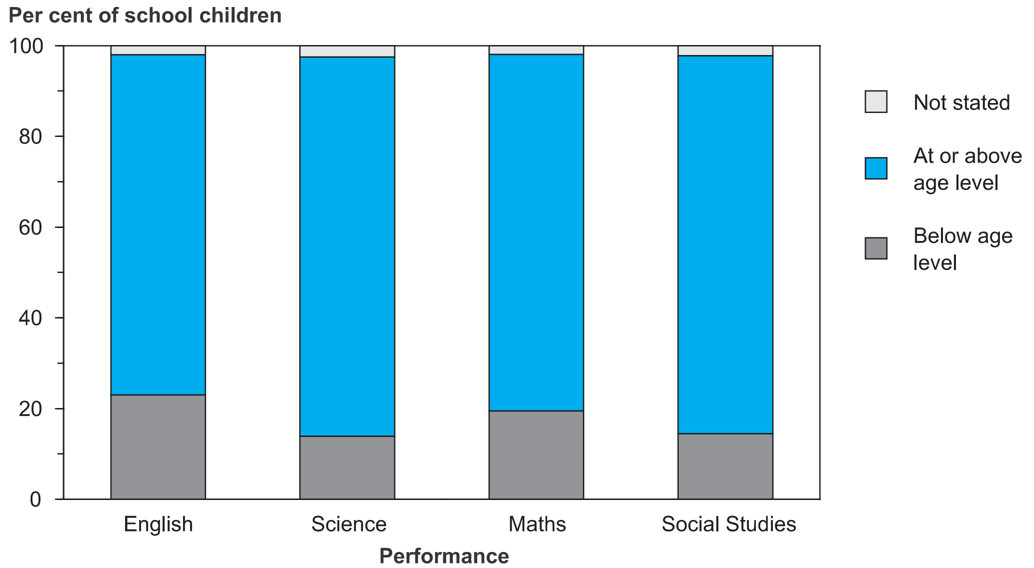
Figures 24.1 and 24.2 present information on academic performance collected in the 1993 Western Australian Child Health Survey.



Source: Zubrick et al. 1997.

Figure 24.1: Overall academic performance, Western Australia, 1993

- The ratings of academic performance included in Figure 24.1 were collected from children's teachers.
- From the 1993 Western Australian Child Health Survey, nearly half of all school children were rated as being 'at age level' in their academic performance.
- Around 6% of school children were rated as being 'far above' their age level, and over a quarter were rated as 'somewhat above' age level.
- Nearly one in five school children was rated as being below the level expected of children of that age. Three per cent were rated as 'far below age level'.



Source: Zubrick et al. 1997.

Figure 24.2: Academic performance in four core subjects, Western Australia, 1993

- As for the ratings shown in Figure 24.1, the ratings presented above in Figure 24.2 were given by the teachers of the school children.
- The majority of students were classified as at or above their age level in all four subjects.
- Around 20% of students were having problems in English. The same proportion (but not necessarily the same children) were rated as being below age level in maths.
- For both science and social studies, lower proportions (around 15%) were rated as having problems.

Information on academic performance was also collected from parents in the survey. Parents tended to be more optimistic than teachers in their assessment of academic performances of their children. Only 5% of parents rated their child's performance as below average or poor.

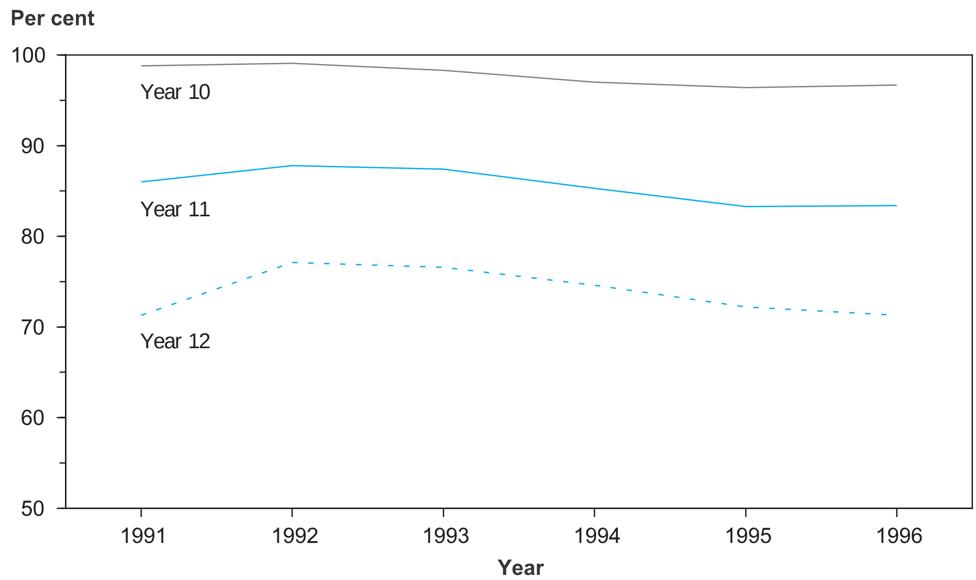
Retention and participation rates

This section presents information on the rates of children attending school full-time. Two measures are available:

- retention rates, which measure the proportion of children reaching particular levels at school
- participation rates, which indicate the proportion of children of particular ages attending school.

The first relies on children moving through the grades, while the second only measures whether they are at school (presented here as age participation rates).

Apparent retention rates are presented below. These rates measure the proportion of children continuing to Years 10, 11 and 12 from respective cohort groups at commencement of secondary schooling. Care needs to be taken with this measure, as it is affected by a range of factors including children repeating years, or migrating. Further details are available in ABS (1998f).



Source: ABS 1998f.

Figure 24.3: Apparent retention rates of full-time students, Australia

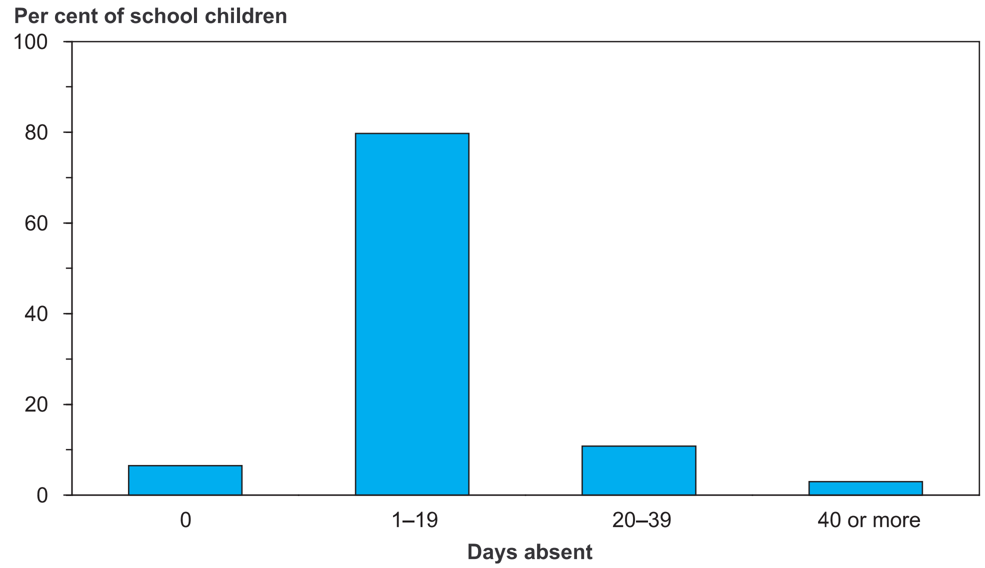
- In recent years there have been some decline in the apparent retention rates at all three levels: Years 10, 11 and 12.
- From these apparent retention rates, it is estimated that a little over 70% of students continued to Year 12 in 1996.

Age participation rates measure the proportion of the population who are full-time school students at different ages. In 1996, 92% of 15 year olds were full-time school students (ABS 1998f). Less than 70% of 17 year olds were attending school full-time (55% males, 63% females), and only 12% of 18 year olds were at school full-time in 1996.

Absences

Attendance at school (regardless of setting) is considered necessary for optimal academic progress. In addition, the many social experiences of school are part of the overall learning experiences of children. Data from the 1993 Western Australian Child Health Survey are available on school progress, and are summarised below.

The majority of children had at least 1 day absent from school in the year. Around 80% of children had between 1 and 19 days absent. Of this group, approximately equal proportion had 1–5, 6–10 and 11–30 days off school. The median number of days absent was 7.7.



Source: Zubrick at al. 1997.

Figure 24.4: Number of school days absent, Western Australia, 1993

- Seven per cent of children were estimated to have had no days absent during the year. As mentioned above, nearly 80% of children had between 1 and 19 days off school.
- The children of concern are those having higher rates of absences. In particular, children averaging more than 1 day absent each week (over 40 days in the year) are classified as experiencing significant disruption to their education (Zubrick et al. 1997). The survey estimated that 3% if children fell into this category.
- Another 11% of children averaged a half a day off per week (between 20 and 39 days off in the year).

The majority (86%) of absences were explained. Most of these were classified as explained but without a medical certificate.

There appears to be no current accepted definition of a 'truant' student (Zubrick et al. 1997). However, data are available from the 1993 Western Australian Child Health Survey on the number of students with unexplained absences. It is important to note, however, that these figures do not necessarily indicate truancy levels, as some 'explained' absences may actually be 'truancy', and some 'unexplained' absences may be genuine absences. From the survey 27% of school students had unexplained absences during the year. A third of these had less than 3 days of unexplained absences. Nineteen per cent had more than 10 days of unexplained absences.

Bullying

Bullying can be defined as 'the intentional, unprovoked use of power by one or more students to inflict pain on or cause distress to another student on repeated occasions' (Zubrick et al. 1997). Information on bullying was collected as part of the 1993 Western Australian Child Health Survey.

From the survey, it was estimated that bullied students had both lower academic competence, and more days absent from school, compared to students who were not bullied. Bullied students were also more likely to have a significant mental health problem.

Information on the proportion of Western Australian school children who had been victims of bullying was collected from three sources: parents, teachers and the students themselves (for those aged 12 to 16 years only). From parent/teacher reports, 11% of school children were reported to have been bullied in the previous 6 months (boys more often than girls). Fourteen per cent of adolescents (12 to 16 years) reported that they had been bullied in the previous 6 months.

Part VII: Children and services

Chapter 25: Health services

Chapter 26: Welfare services

Chapter 27: Medication use

25 Health services

The State and Territory governments are largely responsible for providing public sector health services for children in Australia. A portion of the funding for these services also comes from the Commonwealth government, and local governments provide some services. These public services include hospital services, community services and school based services. Although most medical and dental care and some other professional services are provided by private practitioners, the Commonwealth, through the health insurance scheme, provides a substantial financial contribution (AIHW 1998a).

This chapter provides an overview of health services using currently available national data. The first section deals with health services and costs, including information on specialist services in public hospitals, labour force information, health service costs and private health insurance coverage. The second section provides information on health service use. Information for the section includes hospital use, visits to private medical practitioners and visits to dental professionals. Due to a lack of data (AIHW 1998a), no information on quality of care isable to be included here.

As many health services are administered or overseen by the State and Territories governments, information is provided broken down by States and Territories where possible.

Services and costs

This section provides information on health services provided to children for those areas where information is available. This includes information on:

- specialist services provided for children in public hospitals
- the labour force working in specialised children's services
- costs of health services provided to children
- private health insurance coverage of children.

Information on services provided in well-baby clinics (baby health centres) was also sought for inclusion in this chapter. However, due to a lack of national definitions on items within the scope of these services, comparable information across jurisdictions was not available. The National Health Data Committee is currently developing data definitions for well-baby clinics, along with those for other health services settings.

Specialist services in public hospitals

Information on specialist services for children in public hospitals is available from two national data collections. First, information on the number of certain specialised services is collected as part of the National Public Hospital Establishments Database, collated by AIHW from information provided by each of the States and Territories. Second, information on the number of beds available in public hospitals for mental health services particularly targeting children and adolescents (up to age 18 approximately) is included in the National Survey of Mental Health Services, conducted annually from 1994–95 to 1996–97 by the AIHW.

Table 25.1: Number of public hospitals with certain specialised services, 1996–97

Specialised services	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total[(a)]
Obstetric/maternity services	115	79	67	36	n.a.	6	2	5	310
Specialist paediatric service	41	35	21	12	n.a.	3	2	4	118
Neonatal intensive care unit (level III)	16	5	3	2	n.a.	1	1	2	30

(a) Excludes South Australia.

Source: AIHW 1998b.

- In 1996–97, there were 310 specialised obstetric/gynaecology services in public hospitals across Australia (excluding South Australia). This was a decrease on the 323 reported in 1995–96 (AIHW 1997a).
- Specialist paediatric services were provided in over 100 hospitals in 1996–97, with the majority of these in the larger States and Territories.
- There has been an increase in the number of neonatal intensive care units over recent years. In 1996–97, there were 30 of these units.
- Note that these figures do not include services provided in private hospitals.

Table 25.2: Number of beds[(a)] for specialised child and adolescent mental health services, 1995–96

Service subprogram	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Acute	61	54	10	29	20	0	0	0	174
Extended	0	0	15	0	0	0	0	0	15
Rehabilitation	27	0	0	0	0	0	0	0	27
Total	**88**	**54**	**25**	**29**	**20**	**0**	**0**	**0**	**216**

(a) Immediately available at 30 June.

Source: AIHW National Survey of Mental Health Services.

- There were over 200 beds in total across Australia available for specialised child and adolescent mental health services in 1995–96. The majority of these were for acute care.
- These services were concentrated in the larger States.

Labour force

Information is presented here on both medical practitioners and registered nurses specialising in areas directly relating to child health. This information has come from State and Territory based surveys. The data are then compiled into a national data collection by the Health and Welfare Labour Force Unit of the Australian Institute of Health and Welfare.

Medical practitioners

Data on medical practitioners has come from the national medical labour force survey conducted in conjunction with the annual re-registration of medical practitioners. The scope of the survey is all practitioners registered with the medical board in each State and Territory. The response rate for the survey was around 80%.

Table 25.3: Number of specialist medical practitioners, 1996

Specialised services	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Medical specialists practicing in each specialty									
Paediatric medicine	259	205	134	71	73	17	14	17	790
Paediatric surgery	21	29	19	6	9	1	1	0	86
Obstetrics and gynaecology	322	272	173	98	86	20	25	9	1,005
Main specialty of practice									
Paediatric medicine	242	182	132	63	67	17	11	16	729
Paediatric surgery	16	25	12	6	8	1	1	0	70
Obstetrics and gynaecology	312	264	173	92	82	20	22	9	974
Specialists in training									
Paediatric medicine	148	96	67	37	41	0	7	7	402
Paediatric surgery	5	6	1	0	4	0	0	0	16
Obstetrics and gynaecology	83	57	46	24	31	6	1	5	254

Source: AIHW 1998d.

- In 1996, there were nearly 800 specialist doctors working in the area of paediatric medicine in Australia, and nearly 90 more in paediatric surgery. The vast majority of these doctors also listed these areas as their main specialty (nearly 730 and 70 respectively).
- There were over 400 more doctors training in the specialty of paediatric medicine, and 16 training in paediatric surgery.
- There were nearly 1,000 specialists of obstetrics/gynaecology in 1996. There were over 250 more specialists in training in this field.

As well as specialists in particular areas, general practitioners may also gain further qualifications in certain areas, or have particular interests in these areas. Related to health services for children, information is available from the national medical labour force survey on the number of general practitioners with interests in paediatric medicine, obstetrics/gynaecology and adolescent health.

Table 25.4: Special interest areas of general practitioners, 1996 (number of GPs)

Special interest area	Vocationally registered	RAGCP trainee	Other	Total
Paediatric medicine	39	7	24	70
Obstetrics and gynaecology	55	2	12	69
Adolescent health	17	5	4	27

Source: AIHW 1998d.

- Seventy general practitioners stated they had a special interest in the area of paediatric medicine in 1996. Nearly the same number had a particular interest in obstetrics/gynaecology. A smaller number (27) recorded a special interest in adolescent medicine.
- For all these, the majority of doctors were vocationally registered in these areas.

Registered nurses

The Australian Institute of Health and Welfare compiles the national data on nurses used for this section in a similar manner as for the medical labour force information. The latest published data is for 1995, for which there was a response rate of 80%.

Table 25.5: Number of registered nurses working or with qualifications in child health related areas, 1995

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Area of clinical nursing[(a)]									
Paediatric	n.a.	999	902	531	387	125	81	79	3,105
Obstetrics and gynaecology and midwifery	4,673	3,932	2,480	1,421	1,421	435	376	207	14,838
Developmental disability	1,510	391	99	121	213	51	11	1	2,398
Child health	700	372	403	215	234	94	68	34	2,121
School medical	148	181	107	157	22	21	5	19	661
Work setting of main job									
Developmental disability service	1,364	685	81	67	286	31	11	2	2,526
School/child health service	173	1,018	506	199	31	31	19	27	2,006
Post initial qualifications[(b)]									
Child and family health	n.a.	1,081	738	462	299	182	97	60	2,918
Developmental disability	n.a.	144	29	14	114	33	3	10	347
Midwifery	n.a.	6,678	4,311	2,337	2,255	798	562	444	17,384
Mothercraft	n.a.	0	98	18	15	4	53	0	187
Neonatal intensive care	n.a.	528	301	235	152	42	72	19	1,350
Paediatric	n.a.	352	330	355	234	42	81	19	1,413
Paediatric intensive care	n.a.	156	44	37	25	9	17	3	290

(a) For registered nurses employed as clinicians.

(b) For which skills have been used for at least 12 months in the last 5 years.

Source: AIHW 1998f.

- In 1994, there were over 3,000 (not including New South Wales) registered nurses working in the clinical field of paediatrics, and another 2,500 working in child health. Of the clinical areas included above, obstetrics/gynaecology/midwifery had the highest number of registered nurses (over 14,000).
- Nearly one and a half thousand registered nurses across Australia stated that their main work setting was in a school or child health service.

Costs

This section provides information on the amount of direct expenditure on health care services provided for children under 15 years. These results are sourced from work undertaken at AIHW to estimate the proportion of total health system costs that is spent on particular diseases/injuries, as well as how these costs are distributed to different age groups (Mathers 1998).

Table 25.6: Health system costs, 1993–94

	Total costs ($million)	Cost per capita ($)
Males		
0–4 years	961	1,446
5–14 years	1,030	786
Females		
0–4 years	748	1,186
5–14 years	1,093	878
Total	**3,832**	**995**

Source: AIHW 1998a.

- In 1993-94, the total direct medical costs to children under 15 years was $3,832 million. Forty five percent of this was for children under 5 years of age.
- The per capita direct costs for this age group was $995 in 1993–94. The group with the highest per capita costs were boys under 5 years ($1,446).
- These costs are low compared to other age groups. For per capita costs, 5–14 year olds had the lowest costs of any age group in 1993–94. Even the per capita direct costs for 0–4 year olds ($1,319) was well below the overall per capita costs of $1,768 (derived from AIHW 1998a).

Private health insurance

This section provides information on the health insurance coverage of Australian families. In Australia, Medicare funds health services to all Australians, making health insurance less of determinant for access to health services than in some other countries. However, private health insurance may still provide the means for more timely care for certain elective procedures, as well as more affordable access to ancillary services (Clover et al. 1998; Schofield 1997).

The overall proportion of the Australian population with private health insurance has fallen each year since the introduction of Medicare in 1984 (AIHW 1998a). In June 1984, 50% of the population (all ages) were covered by private health insurance. By December

1997, this figure had fallen to 32%. Information on the proportion of families with dependants covered by private health insurance is given below.

Table 25.7: Per cent of the population with private health insurance

	Contributor unit type[(a)]			
Year	Sole parents with dependants	Couple with dependants	Single person	Couple without dependants
1983	31	83	52	67
1986	23	64	35	55
1988	22	62	36	53
1990	25	61	36	53
1992	22	55	25	50
1995[(b)]	18	47	26	42

(a) Includes all persons covered by insurance policy.

(b) 1995 figures based on projections from NATSEM's private health insurance data set.

Source: Schofield et al. 1997.

- Sole parent families have had lower private health insurance rates than the overall population since 1983. In 1995, it was estimated that only 18% of these families had private health insurance.
- Couple families with dependants have generally had higher uptakes of private health insurance than the general population. The proportion with private health insurance in 1983 was as high as 83%, but this had been estimated to have fallen to less than 50% in 1995. Couple families with dependants remain the group with the highest private health insurance coverage (AIHW 1998a).
- Over the period 1983 to 1995, the largest falls in private health insurance coverage was for single people, with a fall of 50%. The smallest falls were for couples without dependants (37%). The fall in the coverage of families with dependants was 42% for sole parents and 43% for couple families (AIHW 1998a).

Information on the insurance status of patients admitted to hospital is available from the AIHW National Hospital Morbidity Database. These figures are for reported insurance status, regardless of whether the insurance was used (patients may still be admitted as public patients even if they have private health insurance). These results do not indicate the proportion of patients with private health insurance, as a patient may be admitted more than once throughout the year and can thus be counted more than once in the results below.

Table 25.8: Insurance status for hospitalisations of 0–14 year olds, 1996–97

Insurance status	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Public hospitals									
Hospital insurance	26,507	13,180	8,373	n.a.	7,185	1,571	892	119	57,827
No hospital insurance	124,072	82,220	78,927	n.a.	34,551	4,985	6,551	7,280	338,586
Not reported	7,679	1,579	1,375	45,268	916	1,507	0	93	58,417
Private hospitals									
Hospital insurance	18,603	18,862	17,134	n.a.	5,223	2,216	2,461	n.a.	64,499
No hospital insurance	5,882	4,283	3,187	n.a.	1,023	294	6	n.a.	14,675
Not reported	494	79	590	8,710	1,030	1,932	0	n.a.	12,835

n.a. Not available.

Source: AIHW National Hospital Morbidity Database.

- In 1996–97, the majority of children (at least 74%) admitted to public hospitals were reported to have no private health insurance.
- In private hospitals, the majority did have private health insurance (at least 70%). There was also a group of children (at least 16%) using private hospitals who did not have private health insurance.

The results given in Table 25.8 do not indicate whether the patients with private health insurance were being admitted as private patients. It needs to be remembered that private health insurance in Australia does not usually cover the full costs of patients admitted as private patients in public hospitals, so some patients may choose to be admitted as public patients and therefore not meet any costs. In addition, patients without private health insurance may still choose to attend private hospitals.

Table 25.9: Insurance status by accommodation status, hospitalisations for 0–14 year olds, 1996–97

Sector and accommodation status	Insurance status		
	Hospital insurance	No hospital insurance	Not reported
Public hospitals			
Eligible public patient	16,486	326,483	48,115
Eligible private patient	40,481	9,417	8,541
Other eligible patient[(a)]	377	1,634	1,386
Ineligible patient	483	1,052	366
Not reported	0	0	0
Private hospitals			
Eligible public patient	960	1,357	2,256
Eligible private patient	63,190	11,758	10,306
Other eligible patient[(a)]	299	281	258
Ineligible patient	26	34	11
Not reported	24	1,245	4

(a) Includes Department of Veteran's Affairs patients and other eligible patients.

Source: AIHW National Hospital Morbidity Database.

- In public hospitals in 1996–97, the vast majority of children admitted as public patients did not have private health insurance. Not surprisingly, the majority of private patients in public hospitals did have private health insurance.
- The situation in private hospitals was less complicated, with nearly all patients being admitted as private patients. At least three-quarters of these children had private health insurance.

Use and access

Hospital use

In 1996–97, a little over 10% of hospitalisations in Australia were for under 15 year olds (AIHW 1998b), whereas this age group was estimated to account for over 21% of the total Australian population (ABS 1998a).

Table 25.10: Hospitalisations for 0–14 year olds[(a)], 1996–97

Sector and sex/ age group		NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total[(b)]
Public hospitals										
Males	< 1	24,768	16,070	12,714	6,218	6,368	1,321	1,411	1,304	70,174
	1–4	31,606	19,728	18,144	8,848	9,215	1,621	1,351	1,626	92,139
	5–9	20,370	12,529	11,078	6,099	5,704	1,006	928	800	58,514
	10–14	17,694	9,347	9,742	5,136	4,185	759	660	609	48,132
Females	< 1	17,521	11,128	9,507	4,213	4,195	811	1,091	1,088	49,554
	1–4	21,218	12,528	12,697	6,298	6,020	1,145	919	1,151	61,976
	5–9	13,417	8,737	7,841	4,415	3,689	686	598	491	39,874
	10–14	11,650	6,907	6,874	4,036	3,271	714	485	422	34,359
Total public hospitals		*158,244*	*96,974*	*88,597*	*45,263*	*42,647*	*8,063*	*7,443*	*7,491*	*454,820*
Private hospitals										
Males	< 1	2,328	3,269	2,309	1,159	560	714	722	n.a.	11,061
	1–4	5,083	4,063	4,240	1,611	1,622	693	239	n.a.	17,551
	5–9	4,017	3,432	2,994	1,214	1,040	602	198	n.a.	13,497
	10–14	3,172	2,628	2,593	979	930	545	151	n.a.	10,998
Females	< 1	1,439	2,041	1,532	793	425	578	734	n.a.	7,542
	1–4	3,054	2,562	2,833	1084	1,061	416	140	n.a.	11,150
	5–9	2,993	2,540	2,268	929	773	430	146	n.a.	10,079
	10–14	2,879	2,685	2,220	943	870	464	137	n.a.	10,198
Total private hospitals		*24,965*	*23,220*	*20,989*	*8,712*	*7,281*	*4,442*	*2,467*	*0*	*92,076*
Total		**183,209**	**120,194**	**109,586**	**53,975**	**49,928**	**12,505**	**9,910**	**7,491**	**546,798**

(a) Excludes a small number of hospitalisations where the sex was not recorded as male or female.

(b) Excludes the private hospital in the Northern Territory.

n.a. Not available.

Source: AIHW National Hospital Morbidity Database.

- In 1996–97, there were nearly 550,000 hospitalisations for children under 15 years in Australia. The majority (83%) of these were in the public sector.
- There were more hospitalisations in the 1–4 year age group than in other childhood age groups, both in public and private hospitals. These figures do not, however, take account of population sizes in the different age groups. Ten to fourteen year olds had the smallest number of hospitalisations of the age groups examined (see Chapter 4).
- There were more hospitalisations for boys than girls in nearly every age group in both public and private hospitals.

Diagnosis related groups provided a useful tool for examining the types of services provided in hospitals in Australia. They provide a means of grouping hospital episodes into relatively homogenous groups based on the resources required to treat these patients (AIHW 1998b). The classification used here is the Australian National Diagnosis Related Groups (AN-DRGs), which was developed for use with acute hospital admissions. Each of these types of admissions are grouped into a particular AN-DRG on the basis of the demographic and clinical characteristics of the patient and the episode in hospital. Information on the ten most frequently reported AN-DRGs (for 0–14 year olds) is presented below.

Table 25.11: Hospitalisations[(a)] for the ten most frequent AN-DRGs, 0–14 year olds, 1996–97

AN-DRG		Sector	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
187	Bronchitis and asthma[(b)]	Public	10,157	6,038	4,761	3,095	3,808	396	332	263	28,856
		Private	312	373	568	209	73	105	—	n.a.	1,640
122	Tonsillectomy and/or adenoidectomy	Public	4,678	4,907	3,163	1,622	1,685	233	308	91	16,689
		Private	4,176	2,917	3,574	1,153	1,165	339	194	n.a.	13,526
727	Neonate, adm. weight < 2,499 g[(c)]	Public	6,876	4,863	4,211	1,974	2,194	416	958	360	21,941
		Private	1,426	1,677	1,034	340	324	349	1,125	n.a.	6,294
124	Myringotomy with tube insertion	Public	3,091	4,086	1,439	1,662	1,776	187	279	125	12,646
		Private	3,255	3,998	2,177	916	1,888	453	182	n.a.	12,929
350	Gastroenteritis age < 10	Public	7,486	2,798	3,322	1,795	2,037	274	455	547	18,735
		Private	310	199	596	81	41	86	—	n.a.	1,313
128	Dental extractions and restorations	Public	2,244	2,086	2,583	1,193	1,056	347	89	163	9,777
		Private	1,627	2,486	1,351	1,159	633	229	149	n.a.	7,256
473	Fracture, sprain, strain and dislocation of upper arm or lower leg[(d)]	Public	4,740	2,436	3,386	1,147	959	201	241	165	13,278
		Private	495	356	509	199	131	131	4	n.a.	1,825
135	Otitis media and upper respiratory infection[(e)]	Public	5,013	2,000	3,241	1,564	1,396	231	199	178	13,833
		Private	223	216	389	85	112	61	2	n.a.	1,088
188	Whooping cough and acute bronchiolitis	Public	4,235	2,380	1,444	1,273	1,359	178	139	268	11,284
		Private	150	94	139	47	30	22	—	n.a.	482
726	Neonate, adm. weight > 2,499 g[(f)]	Public	3,271	2,137	1,663	569	342	180	115	182	8,472
		Private	337	568	328	172	63	49	91	n.a.	1,613

(a) For hospitalisations where the type of episode of care was reported as acute, or was not reported.

(b) Age < 50 without complications or comorbidities.

(c) Without significant OR procedure, without problem.

(d) Age < 64, with complications or comorbidities.

(e) Age < 10.

(f) Without significant OR procedure, with other problem.

n.a. not applicable

Source: AIHW National Hospital Morbidity Database.

- In 1996–97, the most commonly occurring AN-DRG for children was 'bronchitis and asthma'. There were nearly 30,500 hospitalisations classified into this AN-DRG, most of which were in public hospitals.
- The second most common AN-DRG was 'tonsillectomy and/or adenoidectomy' (30,200 hospitalisations). A large proportion of these cases were in private hospitals.
- Other high volume AN-DRGs included particular neonate admissions, other respiratory system related conditions and procedures, gastroenteritis, dental procedures and injuries to the forearm or lower leg.

Private medical services

These services include those provided by general practitioners, those provided by specialist practitioners and those provided for private patients in hospitals. Information presented in this section includes the number of Medicare items per person, and the reasons for consulting a doctor.

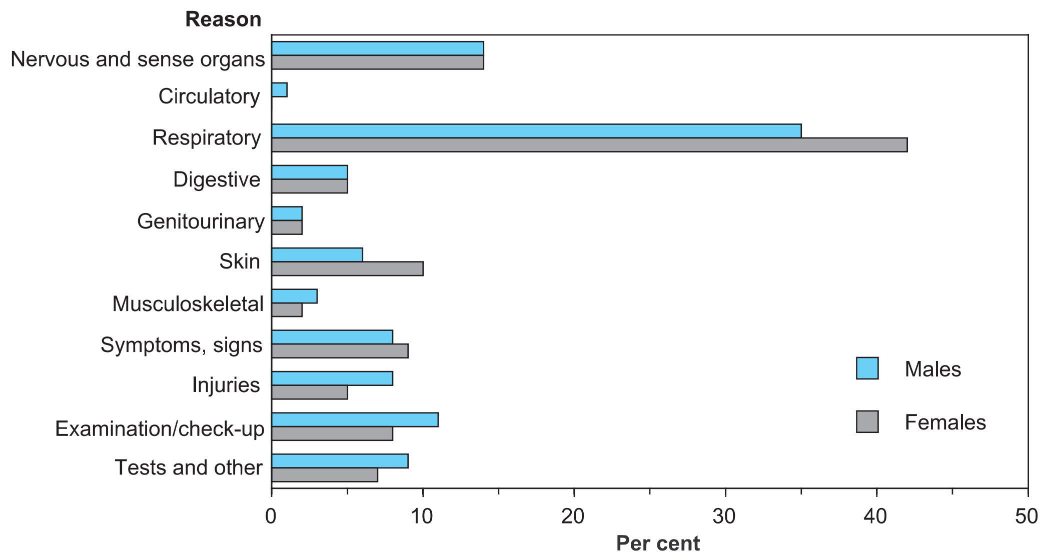
Table 25.12: Medicare items, per person, 1992–93 to 1996–97

Sex	Age group	1992–93	1993–94	1994–95	1995–96	1996–97
Males	0–4	9.7	9.9	9.6	9.8	9.6
	5–9	5.4	5.4	5.2	5.3	5.2
	10–14	4.5	4.6	4.5	4.5	4.5
Females	0–4	8.9	9.0	8.8	9.0	8.8
	5–9	5.4	5.4	5.2	5.3	5.2
	10–14	4.7	4.8	4.7	4.7	4.6

Sources: HIC 1993, 1994, 1995, 1996, 1997.

- Medicare items include services provided both outside hospitals by medical practitioners, and services provided for private patients in hospitals (both public and private hospitals).
- Over the 5-year period 1992–93 to 1996–97, the number of Medicare items per child has remained relatively steady in all age groups.
- In 1996–97, there were nearly 10 Medicare items claimed for every boy and nearly 9 for every girl under 5 years. For older children, there were around 5 items per person.

General practitioner consultations are a major source of health care for children. In 1995, 15.7% of these consultations were for children under 15 years, although they accounted for 21.5% of the population (AIHW 1998a, sourced from the Morbidity and Treatment Survey 1995). The age groups <1 year, 1–4 years and 5–14 years accounted for 2%, 5.8% and 7.9% of consultations respectively.



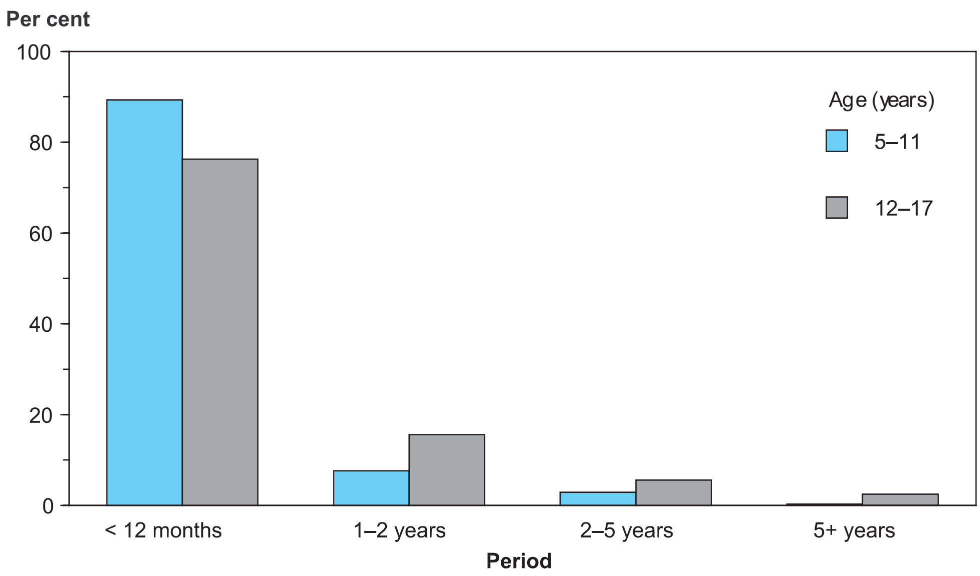
Source: AIHW, from ABS NHS data, 1995.

Figure 25.1: Reasons for consulting a doctor, 0–14 year olds, 1995

- Information in Figure 25.1 includes visits to all medical practitioners, including but not limited to general practitioners.
- By far the most common reason for children to consult a doctor was for respiratory conditions, with this reason reported over 30% of consultations for girls and over 40% for boys.
- The second most commonly reported reason for consulting a doctor was for conditions of the nervous and sense organs.

Dental consultations

Information on the use of dental services by children is presented in this section. Firstly, the period since last visiting a dental professional for 5–17 year olds is presented. Some information on where visits to dental professionals were made as well as the impact of cost on using these services is also provided. This information comes from the National Dental Telephone Survey conducted by the AIHW Dental Statistics Unit in 1996.



Source: AIHW 1998a.

Figure 25.2: Period since last visit to a dental professional, 1996

- The majority of children had visited a dental professional in the preceding 12 months (89% of 5–11 year olds and 76% of 12–17 year olds).
- Over 3% of 5–11 year olds and over 8% of 12–17 year olds had not visited a dental professional for over 2 years.

For 5–11 year olds, over half of the children (58.6%) had made their last dental visit to a public provider (AIHW 1998a). This pattern is markedly different to that of other sectors of the population, reflecting use of school dental services. Overall, 79% of Australians had made their last dental visit to a private provider and only 20% to a public provider. The pattern for 12–17 year olds was between that of young children and that of the overall population: 39% last visited a public provider.

As part of the survey, questions on whether cost was a deterrent to receiving dental care were asked. For 8.9% of both 5–11 year olds and 12–17 year olds, visits to dental professionals had been delayed or avoided because of cost. For 7.8% of 5–11 year olds and 9.0% of 12–17 year olds, recommended or wanted treatment was not undertaken because of cost.

26 Welfare services

This chapter provides a summary of welfare services for children aged 0–14 years in Australia. The data reported here relate primarily to Commonwealth programs, and have been obtained from *Australia's Welfare 1997* (AIHW 1997b).

The welfare services for children summarised in this chapter mainly fall under three categories:

- child care services
- disability services
- housing services.

Child protection services are covered in Chapter 23 of this report, and have not been included in this chapter.

Child care services

There has been an increasing demand for child care in Australia. This is mainly due to the increasing participation by mothers in the labour force (AIHW 1997b).

Child care services available for 0–12 year old children include:

- Long day care centres: aimed at providing care and developmental activities for 0–5 year old children.
- Family day care scheme: in this scheme people provide care and developmental activities for 0–12 year old children in their own homes. This scheme is managed by a central coordination unit in major regions.
- Occasional care services: in this scheme, 0–4 year old children are provided with care for shorter (maximum 20 hours per week) periods of time than in long day care centres. The aim of this scheme is to give parents an opportunity for respite or to attend to personal matters such as shopping, medical appointments, education classes.
- Preschools and kindergartens: the preschool program is designed mainly to provide educational and developmental activities for children between 4 and 5 years. Usually, each group of children meet for three to four sessions per week, each session being about 2.5 to 3 hours. Preschools are usually open only during school terms.
- Outside-school-hours care: this program is usually based on the school campus, and offers care and activities for children aged 5–11 years. There are three major types of care: before school, after school and school holiday programs (vacation care).
- Multifunctional centres: these centres are located in rural areas. A number of different child care services for 0–12 year old children are operated from one building. The services may include long-day care, outside-school-hours care and mobile services.
- Multifunctional Aboriginal Children's Services (MACS): included in this scheme are long-day care centres, play groups, enrichment and nutrition programs, services for mothers and other types of services.
- Mobile services: these services include child care, play groups, toy and book library services, and parental support/advice for families living in rural and remote areas.

The majority of child care services in Australia are funded under the Children's Services Program (CSP), administered by the Commonwealth. The majority of places funded under CSP have been in long day care, family day care and outside-school-hours care.

In 1996, 570,300 children under the age of 12 were estimated to use CSP-funded child care services. Of these children, 55% were in long day care centres, 18% in family day care, 20% in outside-school-hours care, 6% in occasional care, and 1% in other formal care (AIHW 1997b). In addition, an estimated 270,000 children were enrolled in State/ Territory preschools in 1995.

The age distribution of children using different types of formal child care services varies. Table 26.1 shows the results from the ABS Child Care Survey (ABS 1997c).

Table 26.1: Formal and informal child care use, 0–11 year olds, March 1996 (per cent)

	Age (years)								
Type of care	**< 1**	**1**	**2**	**3**	**4**	**5**	**6–8**	**9–11**	**Total**
Formal care	7.6	22.0	35.5	56.3	62.1	12.2	9.2	6.2	20.1
Informal care	33.6	41.6	42.9	42.4	40.0	33.7	34.1	33.3	36.4
Formal and/or informal care	38.0	55.1	62.5	75.3	76.8	41.3	40.1	37.3	48.4
No care	62.0	44.9	37.5	24.7	23.2	58.7	59.9	62.7	51.6

Source: ABS 1997c.

- The ABS Child Care Survey estimated that the largest proportions (three-quarters) of children using care (formal or informal) were 3 and 4 year old children.
- The age group most likely to be using formal care was 4 year olds. Children under 1 year old and 9–11 year olds were the groups least likely to be using formal care.
- At the time of the survey, nearly half of all children were using some form of formal or informal child care.

Disability services

There are three main groups of services available for children with disabilities or carers of children with disabilities:

- disability-specific income support
- disability services
- mainstream services.

The Department of Family and Community Services pays Child Disability Allowance to parents of eligible children with disabilities. This allowance is paid in recognition of the need for extra care and costs associated with raising a child with a disability.

In December 1996, there were 103,209 recipients of this allowance, 98% of which were principal carers of children aged under 16 (AIHW 1998c).

Under the Commonwealth–State Disability Agreement (CSDA), Australian governments also fund a wide range of disability support services. The services relevant to children are:

- accommodation support
- community support

- community access
- respite services.

In 1996, 4.3% of children aged 0–4 years and 9.8% of 5–14 year old children were the recipients of CSDA-funded services. Table 26.2 shows the number of 0–14 year old children receiving CSDA-funded disability support services.

Table 26.2: Use of CSDA-funded services by children aged 0–14 years, 1996[a][b][c]

	Child recipients		
Service category	**Number**	**Per cent**	**Children as a proportion of all recipients (per cent)**
Accommodation provided	417	7.5	3.2
Accommodation support (in-home and other)	295	5.3	7.4
Community support[d]	4,198	75.4	42.0
Community access	174	3.1	1.7
Respite services	503	9.0	33.1
Total	**5,587**	**100.0**	**14.4**

(a) An individual may be counted more than once if more than one service type was accessed on the 'snapshot' day.

(b) Data for recipients of CSDA services funded by Western Australia cover a year and have been adjusted for identified multiple service use.

(c) Data for recipients of CSDA services funded by the Australian Capital Territory were not collected.

(d) This category of services includes early childhood intervention, with 1,482 recipients aged under 14.

Source: AIHW 1998c.

- Community support was the most widely used service accounting for more than three-quarters of all CSDA services used by children. Of people receiving community support, 42% were children under 15 years.
- Respite care was the second most common service used by children, accounting for 9% of children receiving CSDA services.

Housing services

Data on housing assistance are highly fragmented and at present there is no single housing assistance data collection. Even with the existing data collections, there is large variability in data quality and comparability (AIHW 1997b).

A wide variety of housing assistance services are provided to low-income families—both couples with children and one-parent families. These services are generally provided under the Commonwealth–State Housing Agreement (CSHA) in the form of rental housing assistance and home purchase assistance. The programs covered by the CSHA are: Mortgage and Rental Assistance Program, mainstream public rental housing, community housing, Indigenous housing and home purchase assistance (HPA).

Rent assistance is available to individuals and families who are eligible for a Department of Family and Community Services payment, who are not renting from a State or Territory housing authority and who are not home owners or purchasers.

Other than the CSHA services there are some specific State and Territory assistance programs available for low-income households, including:

- interest-free loans to help in meeting rental bond payments and relocation expenses
- additional rent assistance to households paying an excessive proportion of their income on rent, or those on a disability support pension
- assistance to households either in crisis or leaving crisis accommodation to help them get into the private rental market
- loans for deposits for home purchasing or assistance with repayments if experiencing difficulty
- deposit assistance or stamp duty concessions to first-home buyers.

Some specific programs also exist for Indigenous people. These are:

- CSHA Aboriginal Rental Housing Program
- Aboriginal and Torres Strait Islander Commission's (ATSIC) Community Housing and Infrastructure Program
- Aboriginal and Torres Strait Islander Commission's (ATSIC) Home Ownership Program.

Accommodation and support services are also provided to people who are homeless or have experienced some form of crisis (AIHW 1997b). These services are provided by the Supported Accommodation Assistance Program (SAAP) and the Crisis Accommodation Program (CAP). SAAP is a joint Commonwealth–State-funded program. The services are largely delivered by non-government agencies, with some local government participation. CAP is part of the Commonwealth–State Housing Agreement (CSHA). SAAP provides recurrent funding for services for homeless people, and CAP provides capital funding to acquire or upgrade properties for community-based accommodation and support services. There is thus an overlap between these two programs. SAAP programs are often provided in CAP-funded accommodation.

There are no comprehensive data available on people living on the streets, in boarding houses, in other temporary accommodation or in non-SAAP-funded agencies (AIHW 1997b). Information is available, however, for clients receiving SAAP services. Table 26.3 shows the housing arrangement of SAAP clients under 15 years old prior to SAAP support.

Table 26.3: Under 15 year olds using SAAP support, July–December 1996

Type of housing/accommodation prior to support	Per cent of children
SAAP/CAP-funded accommodation	
Crisis/short-term accommodation	18.7
Medium/long-term accommodation	4.2
Other	6.7
Non-SAAP housing/ accommodation	
Non-SAAP emergency accommodation	0.0
Private rental	19.1
Owner-occupied	0.4
Public housing	6.0
Institutional	4.6
Living in a tent/park/street/squat	2.5
Other non-SAAP accommodation	37.8

Source: AIHW 1997b.

- The highest proportion of SAAP clients under the age of 15 years were those who had been living in other non-SAAP accommodation, followed by those living in private rental market and SAAP/CAP-funded crisis/short-term accommodation.
- Those living in owner-occupied rental property accounted for a very small proportion of SAAP clients.

27 Medication use

This chapter presents a summary of the use of medications by children, using data from the 1995 National Health Survey (NHS). Medications include pills or ointments, including vitamin and mineral supplements, and herbal or natural medicines. Sunscreens and cosmetics are not included in this category. Data are not available to report on the appropriateness of drug use, risk of overdose and toxicity, trends in drug use, and the quality use of medicines in children.

In 1995, 51% children were reported to have used medication in the 2 weeks prior to the NHS interview.

Table 27.1: Use of medication by children[(a)], 1995 (per cent)

	Age (years)				
Type of medication	**< 1**	**1–4**	**5–9**	**10–14**	**Total**
Vitamins and minerals	3.5	15.3	19.3	16.5	16.2
Herbal and natural	4.2	3.8	4.4	3.8	4.0
Medication for cough or cold	12.0	17.8	10.6	6.8	11.4
Medication for allergy	0.4	1.2	2.0	2.4	1.8
Asthma medication	1.9	6.4	9.6	9.7	8.2
Skin ointments	9.3	8.9	7.7	7.2	8.0
Pain relievers	23.7	14.4	9.2	16.2	13.9
Sleeping medications	0.5	0.3	0.0	0.0	0.2
Tranquillisers	0.2	0.2	0.1	0.2	0.2

(a) In the 2 weeks prior to interview.

Source: AIHW, from ABS NHS data, 1995.

- The most common type of medication used by children were vitamins and minerals (16.2%), followed by pain relievers (13.9%), medications for coughs and colds (11.4%), medication for asthma (8.2%) and skin ointments (8.0%).
- As mentioned above, vitamins and mineral supplements were used by around 16% of children. Herbal and natural medication were reported to be used by 4% of children.
- For children under 1 year, pain relievers were the most frequently used medication. Nearly a quarter of these babies were given pain relievers in the 2-week period.
- Medication for coughs and colds was the most frequently used medication by 1–4 year olds.
- In the 5–9 year age group, vitamins and minerals were used by nearly 20% of children. Asthma medication was reported to be used by almost 10% of children, and medications for coughs/colds by nearly 11% of children.
- For the older age group, 10–14 years, the most commonly used medication after vitamins and minerals were pain relievers, with nearly 14% of this age group reported to have used these in the 2-week period.

Part VIII: Health of populations

Relevant goals

- *Reduce the frequency of preventable premature mortality.*
- *Reduce the impact of disability.*
- *Reduce the incidence of vaccine-preventable diseases.*
- *Reduce the impact of conditions occurring in adulthood, but which have their origins or early manifestations in childhood or adolescence.*
- *Enhance family and social functioning.*

28 Indigenous children

This chapter provides an overview of the health of Indigenous children aged 0–14 years.

There is evidence that the health of Indigenous children is significantly worse than that of other Australian children. However, it is difficult to measure precisely the extent of this health disadvantage partly because Indigenous people are not always identified well in data collections.

The main sources of information available for this chapter include information on mortality and hospitalisations (from the AIHW Mortality Database and the AIHW National Hospital Morbidity Database). Data on mortality for Indigenous people is believed to be reliable only for South Australia, Western Australia and the Northern Territory (ABS & AIHW 1997). Less is known about the quality of Indigenous identification in the hospital statistics.

Information is also presented from the 1994 National Aboriginal and Torres Strait Islander Survey (NATSIS). The NATSIS was the first national survey of Australia's Indigenous people and was conducted by the Australian Bureau of Statistics. The information available relating to children from NATSIS is: breastfeeding; parent-assessed health status, recent and long-term health conditions; health-related actions taken; disability; and health risk factors (for children 13 years and over). Reports for children under 13 years were made by from parents or guardians.

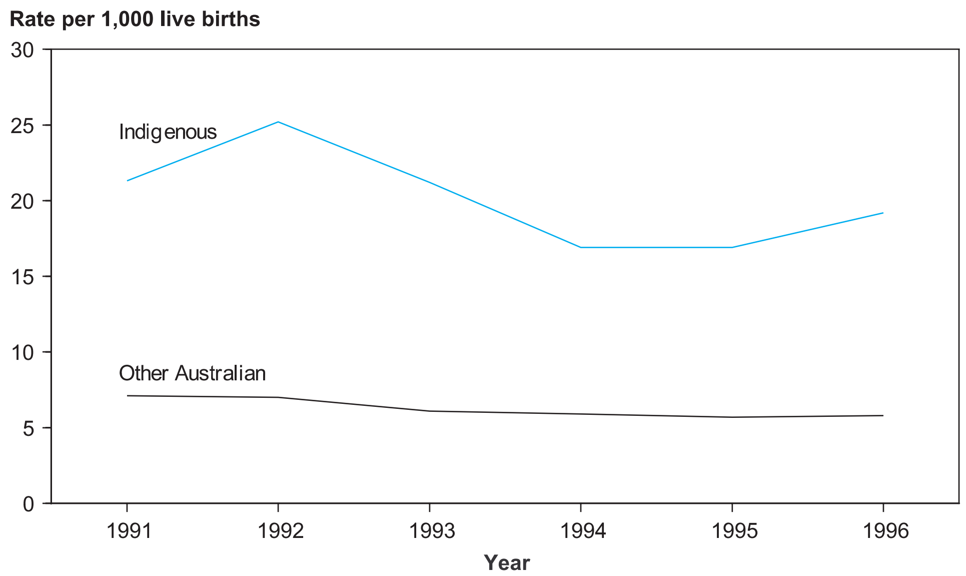
In 1996, Indigenous children constituted about 3.9% of the population of Australian children.

Mortality

This section includes mortality data for Indigenous children in South Australia, Western Australia and the Northern Territory, as these jurisdictions are believed to have Indigenous identification sufficiently reliable for reporting (as discussed above).

Infant mortality

The death rates among Indigenous people greatly exceed the corresponding total Australian rates at all ages (ABS & AIHW 1997). The greatest differences occur in the infant mortality rates (deaths of babies under 1 year old). Figure 28.1 shows trends in infant mortality among the Indigenous and other Australian populations.



Note: Includes SA, WA and NT only.

Source: AIHW Mortality Database.

Figure 28.1: Infant mortality among Indigenous and other Australian children, 1991 to 1996

- In the three States with reliable data, between 1991 and 1996 the infant mortality rate among Indigenous babies remained over 3 times higher than the rate experienced for other Australian infants.
- In 1996, the infant mortality rate for Indigenous babies in the three States combined was 19.2 per 1,000 live births, compared with 6.1 per 1,000 live births for other Australian infants in these jurisdictions.

Table 28.1: Main causes of Indigenous and other Australian infant mortality, 1991–96

	Males					Females				
	Indigenous		Other Australian			Indigenous		Other Australian		
Cause of death	No. of deaths	Rate per 1,000 live births	No. of deaths	Rate per 1,000 live births	Rate ratio	No. of deaths	Rate per 1,000 live births	No. of deaths	Rate per 1,000 live births	Rate ratio
All causes	233	20.8	836	6.1	3.4	204	19.4	586	4.6	4.2
Certain conditions originating in the perinatal period	82	7.3	368	2.7	2.7	75	7.1	258	2.0	3.6
Sudden infant death syndrome	57	5.1	146	1.1	4.6	49	4.7	95	0.7	6.7
Symptoms, signs and ill-defined conditions	60	5.4	146	1.1	4.9	50	4.7	99	0.8	5.9
Congenital anomalies	37	3.3	225	1.6	2.1	32	3.1	162	1.3	2.4

Note: Includes SA, WA and NT only.

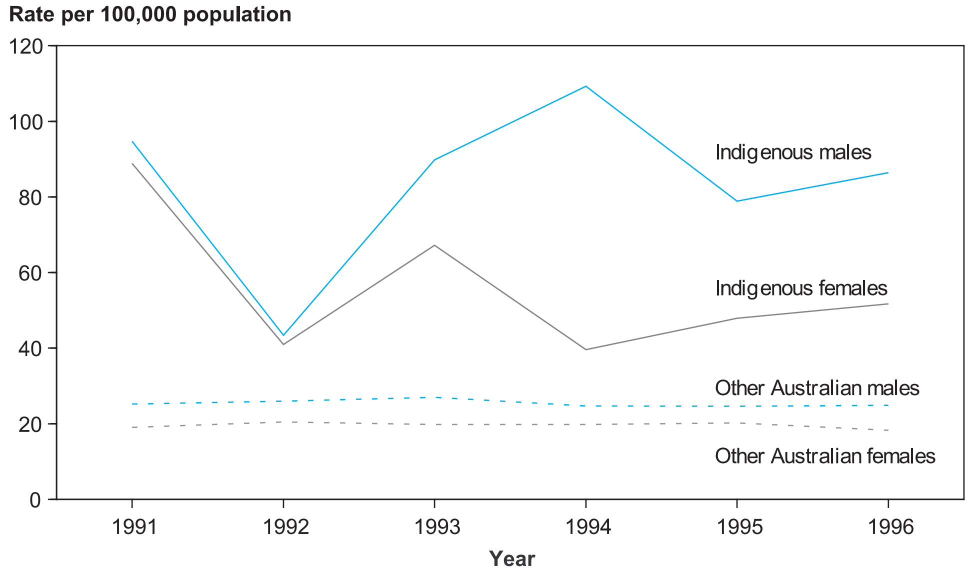
Source: AIHW Mortality Database.

- Rate ratios presented in Table 28.1 provide a means for comparing mortality between Indigenous and other Australian infants.
- During the period 1991 to 1996, the leading causes of death among both Indigenous and other Australian infants were certain conditions originating in the perinatal period.[1] However, the rate was 3 times higher for Indigenous boys and nearly 4 times higher for Indigenous girls than for their other Australian counterparts.
- Deaths from sudden infant death syndrome were nearly 5 times higher for Indigenous boys and 7 times higher for Indigenous girls compared with other Australian infants.
- Overall, the infant mortality rate was 3 times higher for Indigenous boys than for other Australian boys. The corresponding rate ratio was 4.2 for girls.

1. Such as the foetus or newborn being affected by maternal conditions which may be unrelated to present pregnancy, maternal complications of pregnancy; slow foetal growth and foetal malnutrition; disorders relating to short gestation and unspecified birth-weight.

Mortality among 1–14 year old children

Death rates were also higher in Indigenous children aged 1–14 years than in other Australian children.

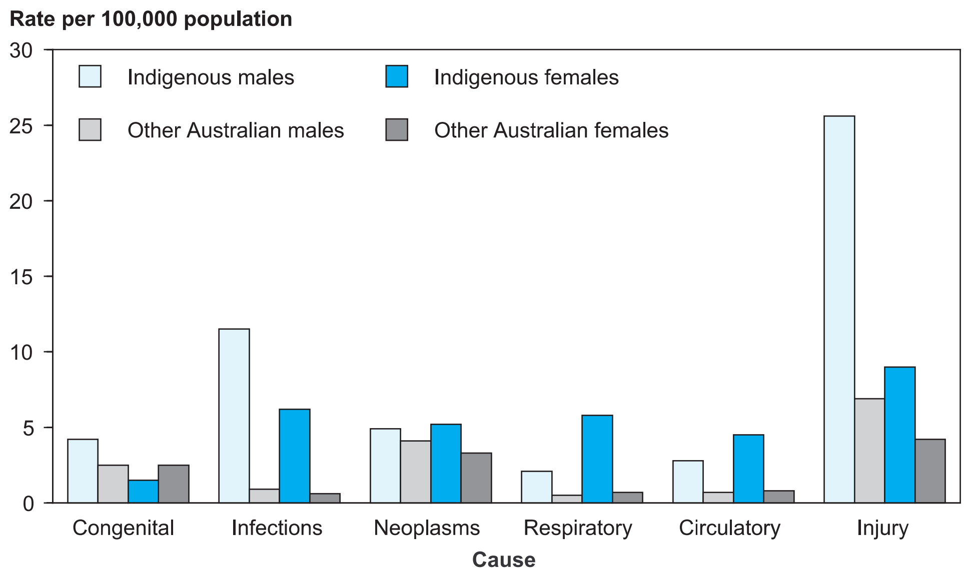


Note: Includes SA, WA and NT only.

Source: AIHW Mortality Database.

Figure 28.2: Deaths among Indigenous and other Australian children aged 1–14 years, 1991–96

- From 1991–96, the estimated death rates among Indigenous children varied between 40 and over 100 per 100,000 population. In comparison, the death rates for other Australian children remained fairly static at just over 20 per 100,000 population.
- For the whole period from 1991 to 1996, the death rate was three times higher for Indigenous children than for other Australian children. The difference in relative terms between Indigenous and other Australian children was similar for both sexes.
- Indigenous male death rates were higher than the corresponding female death rates all through the period.



Note: Includes SA, WA and NT only.

Source: AIHW Mortality Database.

Figure 28.3: Deaths from selected causes for Indigenous and other Australian children aged 1–14 years, 1991–96

- During the period 1991–96, death rates were higher for Indigenous children for almost every cause of death.
- As for other Australian children aged 1–14 years, the leading cause of death in Indigenous children was injury.
- Injury death rates were 4 times higher for Indigenous boys and 2 times higher for Indigenous girls compared with other Australian children.
- Infectious and parasitic diseases were the second leading cause of death among Indigenous children (12 times higher for boys and 10 times higher for girls than for other Australian children).

Injury

Table 28.2: Injury-related deaths among Indigenous and other Australian children aged 0–14 years, 1991–96

		Indigenous		Other Australian		
Sex	Age (years)	No. of deaths	Rate per 100,000 population	No. of deaths	Rate per 100,000 population	Rate ratio
Males	0–4	41	73.9	115	16.6	4.5
	5–9	15	29.8	57	8.0	3.7
	10–14	14	32.6	64	9.1	3.6
Females	0–4	24	46.3	79	12.0	3.9
	5–9	10	20.5	33	4.9	4.2
	10–14	5	11.8	38	5.7	2.1

Note: Includes SA, WA and NT only.

Source: AIHW Mortality Database.

- Mortality rates from injury were higher for Indigenous children than for other Australian children at every age group.
- Overall mortality rates were higher for Indigenous boys in all age groups than Indigenous girls and their other Australian counterparts.

Table 28.3: Deaths from specific injuries, 0–14 year olds, 1991–96

	Indigenous		Other Australian		
	No. of deaths	Rate per 100,000 population	No. of deaths	Rate per 100,000 population	Rate ratio
Road accidents	38	13.0	144	3.5	3.7
Drowning	20	6.9	85	2.1	3.3
Burns	0	0.0	2	0.0	0.0
Homicide	5	1.7	30	0.7	2.4

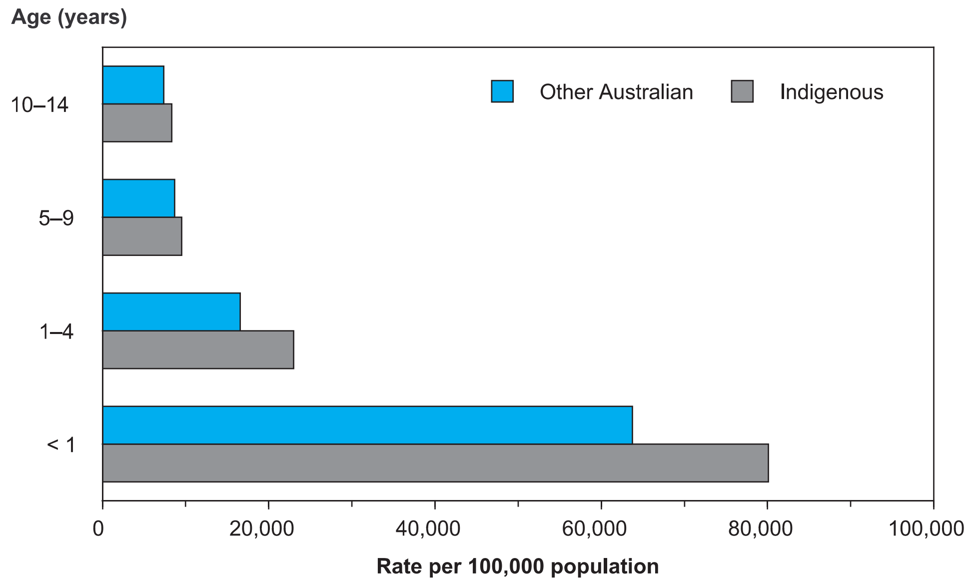
Note: Includes SA, WA and NT only. Rate ratio equals Indigenous rate divided by other Australian rate.

Source: AIHW Mortality Database.

- Over the period 1991–96, the two most common causes of injury deaths were identical for Indigenous and other Australian children road accidents and drowning.
- However, injury death rates for Indigenous children were higher than for other Australian children. The death rate from road accidents was nearly 4 times higher for Indigenous children than that for other Australian children.

Hospitalisation

As discussed earlier, the quality of the Indigenous identifier in hospital data has not been ascertained and is likely to be more accurate in some jurisdictions than in others. There is likely under reporting of Indigenous hospitalisations in the data. For this reason, results presented here may be underestimates of actual rates and should be viewed with caution. Therefore, rate ratios greater than 1 give a lower bound to the true differential.



Note: Includes data from all jurisdictions.

Source: AIHW National Hospital Morbidity Database.

Figure 28.4: Hospitalisations for Indigenous and other Australian children, 1996–97

- Despite likely underestimation of Indigenous children, hospitalisation rates were higher for children identified as Indigenous than for other Australian children in the younger age groups.
- Hospitalisation rates were similar for children identified as Indigenous and other Australians in the 5–9 and 10–14 age groups.

Table 28.4: Hospitalisations[a] for Indigenous and other Australian children aged 0–14 years, 1996–97 (rate per 100,000 population)

	Males			Females		
Principal diagnosis	Indigenous	Other Australian	Rate ratio	Indigenous	Other Australian	Rate ratio
Infectious and parasitic diseases	1,423	510	2.8	1,244	484	2.6
Neoplasms	127	157	0.8	26	132	0.2
Endocrine, nutritional, metabolic, immunity	283	204	1.4	369	173	2.1
Diseases of the blood and blood-forming organs	110	201	0.5	95	145	0.7
Mental disorders	362	361	1.0	108	169	0.6
Diseases of the nervous system and sense organs	1,448	1,626	0.9	1301	1,241	1.0
Diseases of the circulatory system	119	57	2.1	94	41	2.3
Diseases of the respiratory system	5,768	3,106	1.8	4,272	2,228	1.9
Diseases of the digestive system	1,027	1,329	0.8	897	1,075	0.8
Diseases of the genitourinary system	306	179	1.7	389	229	1.7
Diseases of the skin and subcutaneous tissue	1,047	295	3.5	1,041	248	4.2
Diseases of the musculoskeletal system and connective tissue	344	250	1.4	259	222	1.2
Congenital anomalies	383	783	0.5	323	457	0.7
Conditions originating in the perinatal period	1,241	1,297	1.0	1,122	1,058	1.1
Symptoms, signs and ill-defined conditions	1,328	1,150	1.1	1,309	1,014	1.3
Injury and poisoning	2,315	2,122	1.1	1,953	1,364	1.1
V-codes	1,217	1,340	0.9	704	790	0.9
Total	**18,848**	**14,967**	**1.2**	**15,060**	**11,070**	**1.4**

(a) Hospitalisations categorised by principal diagnosis.

Note: Rate ratio equals Indigenous rate divided by other Australian rate. Includes data from all jurisdictions.

Source: AIHW National Hospital Morbidity Database.

- Overall, the hospitalisation rate for children under 15 years identified as Indigenous (in the hospital data) was 1.2 to 1.4 times higher than for other children.
- Respiratory diseases were the most common reason for hospitalisation for all children. The rate for Indigenous children, however was almost 2 times higher than that for other Australian children.
- For boys, the highest rate ratios between Indigenous and other Australian children were for skin disorders (almost 4 times higher) and intestinal infectious diseases (about 3 times higher).
- For girls, the highest rate ratios were for skin disorders (almost 4 times higher) and intestinal infectious diseases (over 3 times higher).

Other issues

The first three subsections given below report results from the National Aboriginal and Torres Strait Islander Survey (NATSIS) conducted by the Australian Bureau of Statistics in 1994 (ABS 1996b). The remaining subsections present data from other surveys and data collections.

Parent-assessed health status

In 1994, the majority of Indigenous children in the 0–12 age group were reported to be in 'good' health by their parent or guardian: 36% of the children were reported to be in 'excellent' health and a further 37% in 'very good' health. Both boys and girls were reported to have similar health status, although boys were slightly more likely to be reported in excellent or very good health (ABS 1996b).

Recent and long-term illness

About 42% of Indigenous children in the 0–4 age group and 34% aged 5–14 were reported to have a recent illness (in the 2 weeks prior to survey). The most commonly reported conditions were diseases of the respiratory system followed by diseases of the skin and subcutaneous tissue and diseases of the nervous system and sense organs (ABS 1996b).

In children aged 0–14 years, asthma was the most commonly reported long-term illness. This was followed by hearing, skin and chest problems. Asthma and hearing problems were more common among 5–14 year olds than among 0–4 year olds, particularly in boys. About 1% of children aged 0–14 years were reported to have eye problems that were not correctable by glasses.

The reported conditions are consistent with the results from the hospital morbidity data presented above.

Breastfeeding

Over 70% of Indigenous babies were reported to have been breastfed (ABS 1996b). The rates were highest in the 0–1 and 2–3 year age groups. About 27% of Indigenous babies were reported to have been breastfed for 12 months or more. These rates were slightly lower than those reported for all Australian children (see Chapter 17).

Dental health

In the 1995 Child Dental Health Survey, information on Indigenous status was recorded only for the Northern Territory. Indigenous children were reported to have higher prevalence of decayed, missing or filled deciduous and permanent teeth, compared with other Australian children. They were more likely to have decayed teeth at the time of the examination and to have a higher percentage of caries in deciduous and permanent teeth (Davies 1996).

Birthweight of Indigenous infants

The birthweight of infants warrants particular emphasis as it is one of the leading predictors of infant mortality. Babies with low birthweight (less than 2,500 g) are at a greater risk of dying prematurely or requiring a longer period of hospitalisation, and of developing disabilities or handicaps (AIHW 1998a).

The proportion of low-birthweight babies born to Indigenous mothers has been significantly higher than the proportion observed among babies born to other Australian mothers. In most States and Territories, babies of Indigenous mothers are about 2–3 times more likely to be of low birthweight than babies of other Australian mothers. In the period 1991–93, the mean birthweight of babies born to Indigenous mothers was 216 g less than that of babies born to other Australian mothers (Indigenous 3,145 g; other Australians 3,361 g). Very low birthweight (< 1,500 g) occurred in 3.1% of births to Indigenous mothers and 1.3% of all other births, and extremely low birthweight (< 1,000 g) in 1.7% and 0.7% respectively (Plunkett et al. 1996).

Child abuse and neglect

Indigenous children are over-represented in child abuse and neglect statistics (Broadbent & Bentley 1997a). Various factors may contribute to this over-representation of Indigenous children, including: high rates of poverty and unemployment; poor living conditions for many families; the high proportion of single-parent families; high incidences of alcoholism and other health problems among the Indigenous population; lack of access to or ability to access appropriate parental support services; and different child-rearing practice of Indigenous people (Broadbent & Bentley 1997a). Table 28.5 shows the rates of substantiated reports of abuse and neglect in Indigenous and other Australian children.

Table 28.5: Substantiated child abuse and neglect, 1995–96 (rate per 1,000 population)

Age (years)	Indigenous	Other Australians	Rate ratio
0–4	21.9	5.7	3.8
5–9	16.7	5.3	3.2
10–14	17.5	5.9	3.0

Note: Rate ratio equals Indigenous rate divided by other Australian rate.

Source: Broadbent & Bentley 1997a.

- In 1995–96, the rate of substantiated report of abuse and neglect for 0–14 year old Indigenous children was much higher than that for other Australian children. The highest rate ratio (Indigenous rate divided by other Australian rate) was in the 0–4 age group.

29 Rural and remote area children

The health disadvantage experienced by those living in rural and remote areas of Australia extends to both children and adults. There is some evidence that rural Australian children experience a higher burden of illness than those residing in metropolitan areas (Humphries & Rolley 1991). Children living in non-metropolitan areas also have significantly higher death rates than those living in metropolitan areas (Mathers 1995). In particular, higher infant mortality rates are noted in rural areas (Humphries & Rolley 1991).

Information on the health of children living in rural and remote areas of Australia is limited in scope and structure, and is often piecemeal in nature. Several of the existing collections do not lend themselves to reliable small-area time-series analysis. Relevant locational information is often missing from many of the existing collections. In view of these limitations, only mortality and hospitalisation statistics on children living in rural and remote areas have been included in this report.

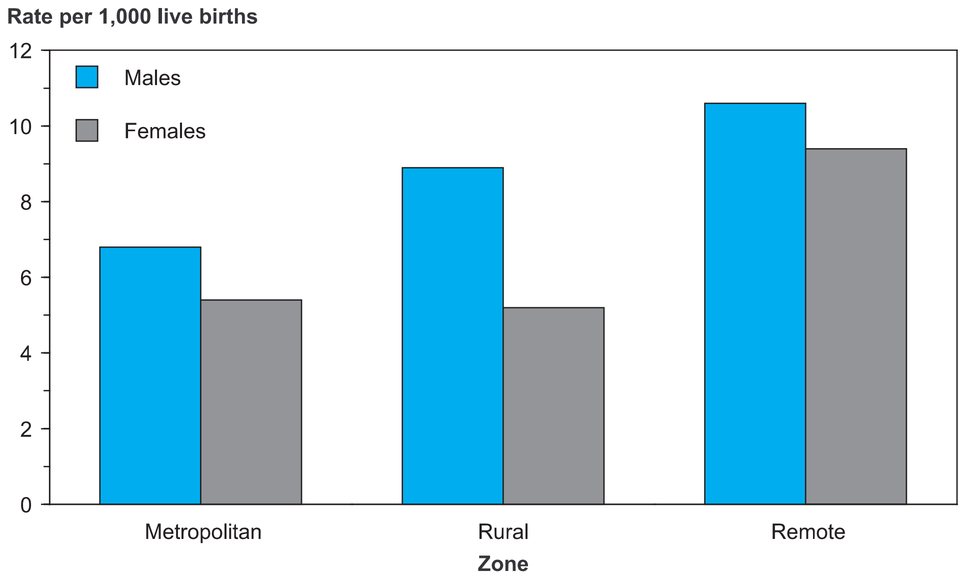
The Rural, Remote and Metropolitan Areas (RRMA) classification developed by the (former) Commonwealth Department of Primary Industries and Energy and the (former) Commonwealth Department of Human Services and Health (DPIE & DHSH 1994) was used for categorising information from the Mortality Database and the National Hospital Morbidity Database. The classification divides Australia's States and Territories into three zones (metropolitan, rural and remote), and a total of seven categories within these zones. The analysis presented in this report has been restricted to the three zones due to small numbers. Information on the distribution of the child population in the three zones is given in Chapter 2.

It is difficult to separate the effect of the Indigenous health disadvantage from the results presented in this chapter due to the small number of children involved when categorisation is made by rural/remote location and Indigenous status. However, for all ages, it has been shown that the higher death rates for Indigenous people have an impact on the overall death rate in remote zones, but little impact in the metropolitan and rural zones (Strong et al. in press).

Mortality

Death rates (all causes combined) for children in rural and remote zones (1991–96) were higher than the rates in the metropolitan zone. The rates were highest for both males and females living in the remote zone.

Infant mortality



Source: AIHW Mortality Database.

Figure 29.1: Infant mortality rates, 1991–96

- In the period 1991–96, infant mortality rates were higher in rural (6.9 per 1,000 live births) and remote (10.0 per 1,000 live births) zones than in the metropolitan zone (6.1 per 1,000 live births).
- As mortality rates for Indigenous babies were more than 2 to 3 times the rate for other Australian babies (see Chapter 28), the much higher proportion of Indigenous children in the remote zones partly accounts for the mortality differential described above.

Table 29.1: Infant mortality for selected causes, 1991–96 (rate per 1,000 live births)

	Zone		
Cause of death	**Metropolitan**	**Rural**	**Remote**
Sudden infant death syndrome	0.94	1.28	1.88
Injury	0.14	0.16	0.32
All causes	**6.12**	**6.88**	**10.02**

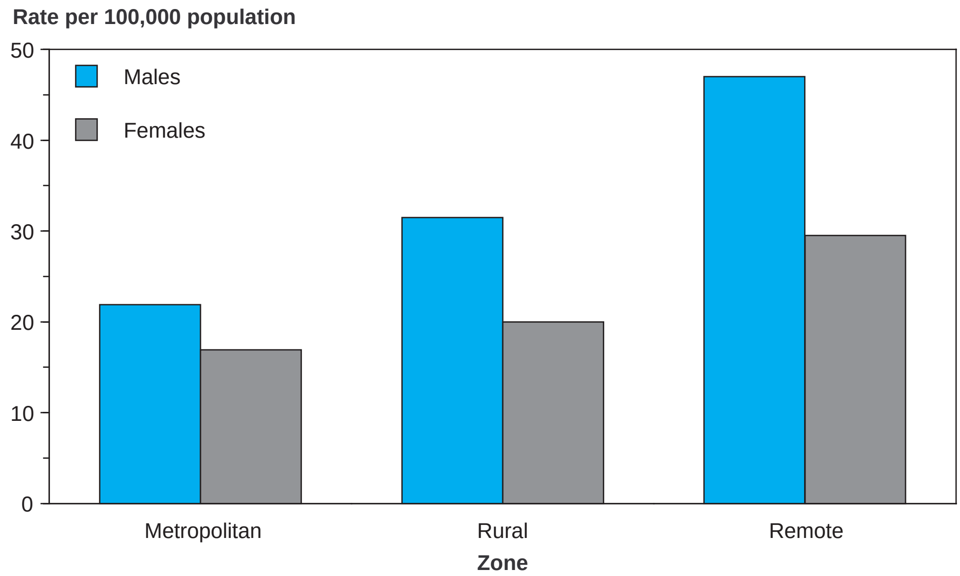
Source: AIHW Mortality Database.

- Infants living in rural and remote zones experienced higher death rates than children living in other zones.
- This was also the case for two major causes of infant death— sudden infant death syndrome (SIDS) and injury.
- Death rates for SIDS and injury were twice as high in the remote zone than in the metropolitan zone, again reflecting higher rates for Indigenous infants (see Chapter 28).

Mortality among children aged 1–14 years

The causes of death change as children grow and mature. The impact of this change varies across locations and population groups. Not only do the rates vary but the rankings of major causes of deaths may also differ.

Children were classified into one of the three zones based on their location of residence, rather than location of death.



Source: AIHW Mortality Database.

Figure 29.2: Deaths among children aged 1–14 years, 1991–96

- Disparities in death rates between metropolitan, rural and remote zones widen in the age group 1–14 years.

- In the period 1991–96, death rates for rural (25.9 per 100,000) and remote (38.5 per 100,000) zone children were respectively 32% and 98% higher than the rate for the metropolitan zone (19.4 per 100,000).

Table 29.2: Deaths from selected causes, 1–14 year olds, 1991–96 (rate per 100,000 population)

	Zone		
Cause of death	**Metropolitan**	**Rural**	**Remote**
Injury	7.5	12.5	19.7
Cancer	3.5	3.5	3.9
Asthma	0.4	0.4	0.7
All causes	**19.4**	**25.6**	**38.5**

Source: AIHW Mortality Database.

- Injury was the leading cause of death in all three zones, followed by cancer and asthma, among children aged 1–14 years.
- In the period 1991–96, injury death rates among children from the remote zone were more than twice the rate in the metropolitan zone. The rate in the rural zone was also 66% higher in comparison to the rate in the metropolitan zone.
- In contrast, childhood cancer deaths showed little variation in rates across the three zones.

Specific causes of death

This subsection presents more detailed information on road accidents and drowning. These specific causes were selected because of large differentials in death rates in the three zones for these causes of death.

Motor vehicle accidents

Motor vehicle accidents were the largest cause of childhood injury deaths among children aged 1–14 years, responsible for almost half of injury deaths during 1991–96.

Table 29.3: Deaths from motor vehicle accidents, 1–14 year olds, 1991–96 (rate per 100,000 population)

		Zone		
Sex	**Age (years)**	**Metropolitan**	**Rural**	**Remote**
Males	1–4	3.6	6.4	14.0
	5–9	3.2	5.7	9.2
	10–14	4.2	8.3	8.0
Females	1–4	1.9	4.1	6.9
	5–9	2.4	3.5	6.5
	10–14	2.6	3.9	3.9

Source: AIHW Mortality Database.

- Death rates were higher for children from rural and remote zones compared with those living in the metropolitan zone.
- Relatively higher death rates were noted in rural and metropolitan zones in the age group 10–14 years when compared with those aged 1–4 years. A reverse trend was noted in the remote zone.
- Boys of all ages had higher death rates from road accidents than girls; the ratio of the rate for boys to the rate for girls was similar in all three zones.

Drowning

Drowning is one of the most common causes of death among infants and toddlers, accounting for more than one-third of all injury deaths in that age group. In 1996, 59 children aged 1–4 years died by drowning (DHFS & AIHW 1998b).

Table 29.4: Deaths from drowning, 1–4 year olds, 1991–96 (rate per 100,000 population)

	Zone		
Sex	**Metropolitan**	**Rural**	**Remote**
Males	5.3	11.4	10.4
Females	3.5	3.9	6.2

Source: AIHW Mortality Database.

- In the 6 years (from 1991 to 1996), children living in rural and remote zones experienced higher death rates from drowning than those living in the metropolitan zone.
- Death by drowning was more common among boys than girls. The rate ratio was much higher in the rural zone, almost 3 times greater in males.

Hospitalisation

Information on hospitalisation was obtained from the National Hospital Morbidity database held at the AIHW. Data on selected principal diagnoses are presented in this section. These data may include repeat admissions for the same child. Table 29.5 shows the rates of hospitalisation (per 1,000 population) for 0–14 year old children. These results are based on the location of the children's residence, and not the location of the hospital they were treated at.

Table 29.5: Hospitalisation for selected principal diagnoses, 0–14 year olds, 1996–97 (rate per 1,000 population)

	Males				Females			
Principal diagnosis	**Metro.**	**Rural**	**Remote**	**Total**	**Metro.**	**Rural**	**Remote**	**Total**
Intestinal infectious diseases	4.7	6.4	12.6	5.5	4.5	6.1	10.8	5.2
Disorders of ear & mastoid process	12.5	11.3	11.9	12.2	9.1	8.1	9.4	8.8
Acute respiratory infections	8.5	14.1	20.5	10.5	5.3	9.2	14.6	6.7
Pneumonia and influenza	2.6	3.8	12.8	3.4	2.2	3.1	10.1	2.8
Diseases of the oral cavity, salivary glands & jaw	4.1	6.1	6.7	4.8	4.3	6.7	7.1	5.1
Diseases of male genital organs	4.1	4.5	4.5	4.2	—	—	—	—
Diseases of the skin & subcutaneous tissue	3.1	3.1	9.1	3.3	2.5	2.8	7.7	2.8
Congenital anomalies	8.0	7.1	6.3	7.8	4.9	3.8	4.2	4.6
Certain conditions originating in the perinatal period(a)	13.4	12.4	11.5	13.1	11.1	10.1	10.4	10.8
Symptoms, signs & ill-defined conditions(b)	11.5	11.6	15.9	11.7	10.0	10.4	15.5	10.4
Fractures, dislocations, sprains & strains	8.7	9.9	12.7	9.2	5.2	6.4	7.7	5.7
Open wounds, intracranial, internal, blood vessel injury	5.4	7.1	13.7	6.2	3.2	4.1	6.4	3.5
Total(c)	**155.7**	**166.6**	**227.1**	**161.9**	**113.2**	**124.1**	**171.9**	**118.9**

(a) Foetus or infant affected by maternal conditions which may be unrelated to present pregnancy, maternal complications of pregnancy; slow foetal growth and foetal malnutrition; disorders relating to short gestation and unspecified birthweight, etc.

(b) Includes symptoms, signs, abnormal results of laboratory or other investigative procedures, and ill-defined conditions regarding which no diagnosis classifiable elsewhere is recorded.

(c) Includes hospitalisations for all diagnoses, not only those included in the table.

Source: AIHW National Hospital Morbidity Database.

- In 1996–97, hospitalisation rates for most of the selected principal diagnoses listed above were higher for children living in rural and remote zones than those living in the metropolitan zone.
- There were some exceptions to this pattern—for example, disorders of the ear and mastoid process, and congenital anomalies.

Table 29.6 shows the average length of stay among children aged 0–14 years by metropolitan, rural and remote zones.

Table 29.6: Average length of stay for selected diagnoses with the highest hospitalisation rates, 1996–97 (days)

	Males				Females			
Principal diagnosis	**Metro.**	**Rural**	**Remote**	**Total**	**Metro.**	**Rural**	**Remote**	**Total**
Intestinal infectious diseases	2.0	1.9	4.1	2.2	2.1	2.1	4.1	2.1
Disorders of ear & mastoid process	1.1	1.2	1.7	1.1	1.1	1.2	1.7	1.2
Acute respiratory infections	2.1	2.1	2.7	2.2	2.3	2.1	2.6	2.2
Pneumonia and influenza	3.2	3.3	4.2	3.4	3.4	3.3	4.3	3.5
Diseases of the oral cavity, salivary glands & jaw	1.1	1.1	1.2	1.1	1.1	1.1	1.2	1.1
Diseases of the skin & subcutaneous tissue	2.3	2.4	3.2	2.4	2.2	2.4	3.4	2.4
Congenital anomalies	3.2	3.3	5.0	3.3	4.1	4.4	6.7	4.2
Certain conditions originating in the perinatal period[(a)]	9.1	8.8	11.2	9.1	10.1	9.2	12.0	10.1
Symptoms, signs & ill-defined conditions[(b)]	2.3	2.1	2.6	2.2	2.3	2.0	2.8	2.3
Fractures, dislocations, sprains & strains	2.1	2.2	2.3	2.1	1.9	1.9	2.5	1.9
Open wounds, intracranial, internal, blood vessel injury	1.6	1.7	1.8	1.7	1.5	1.5	1.4	1.5
Total	**2.7**	**2.6**	**3.2**	**2.7**	**3.0**	**2.8**	**3.7**	**3.0**

(a) Foetus or infant affected by maternal conditions which may be unrelated to present pregnancy, maternal complications of pregnancy; slow foetal growth and foetal malnutrition; disorders relating to short gestation and unspecified birthweight, etc.

(b) Includes symptoms, signs, abnormal results of laboratory or other investigative procedures, and ill-defined conditions regarding which no diagnosis classifiable elsewhere is recorded.

Source: AIHW National Hospital Morbidity Database.

- In 1996–97, the average length of stay was greater for children living in the remote zone than for those living in the rural and metropolitan zones.
- The average length of stay was lower for boys than for girls across all three zones.

Other issues

Immunisation

Similar immunisation rates were reported in metropolitan, rural and remote zones in the 1995 ABS Children's Immunisation and Health Screening Survey for all major vaccine-preventable diseases (Strong et al. in press).

Low birthweight

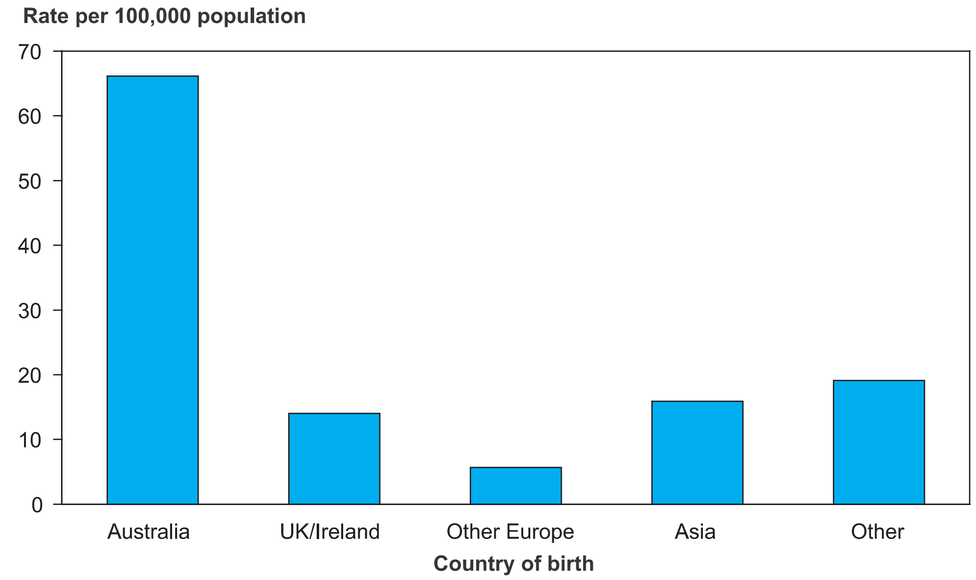
Higher proportions of low birthweight babies (< 2,500 g—see Chapter 5 for more information) were recorded for babies from remote zones born in 1991–95 (Strong et al. in press). This result is at least partly affected by the higher proportion of low-birthweight Indigenous babies compared to other Australian babies (Day et al. 1997).

30 Overseas-born children

This chapter provides some limited information on the health of children born outside Australia compared with children born in Australia. A number of publications have shown that adults born outside Australia tend to have better health than those born in Australia (AIHW 1998a, Mathers 1995). This health advantage is often termed the 'healthy migrant effect', where those in good health are more likely to meet eligibility criteria and be willing or able to migrate. Social, cultural or behavioural factors may also contribute.

Information on the health of children whose parents were born overseas was published in Mathers (1995). There it was shown that these children tended to retain some of the health advantage of their parents. For example, they had fewer reported chronic, recent and minor conditions. Compared with children of Australian-born parents, significant differences were generally found only for children whose parents were born outside Britain/Europe. Immunisation rates were also found to be lower for children whose parents were born overseas but outside Britain, particularly for children of Asian-born parents.

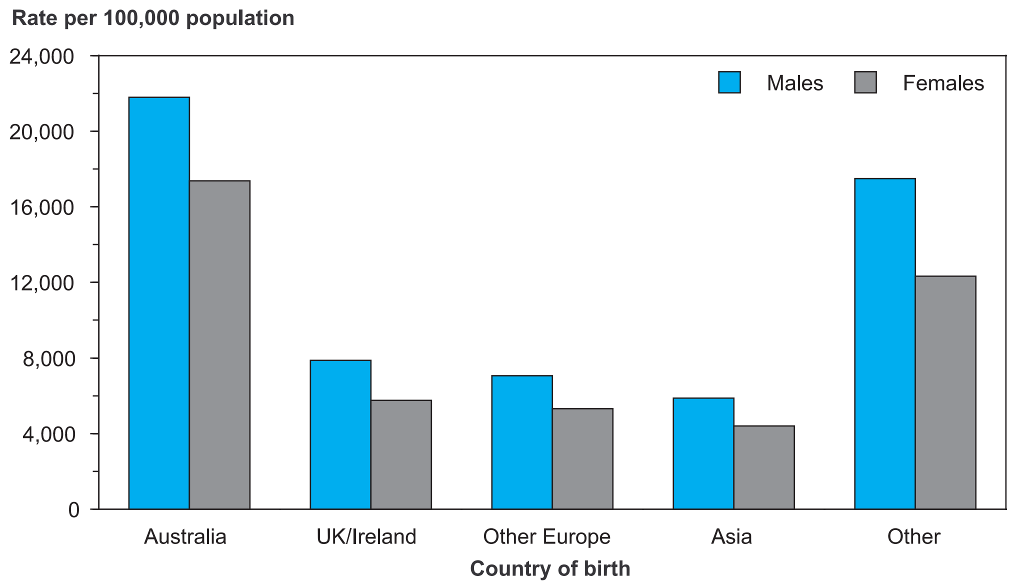
Following is some information on the health status and health service use of children born overseas. Results are shown for the death and hospitalisation rates of these children compared with children born in Australia. The country of birth groups used in this chapter are equivalent to those used in the analysis of the health of overseas-born people aged 15 years and over for the report *Australia's Health 1998* (AIHW 1998a). The country of birth groups are: Australia, United Kingdom and Ireland, Other Europe, Asia, and other (using the Australian Standard Classification of Countries for Social Statistics, ASCCSS). The largest individual country of birth in the 'other' group is New Zealand, where 37% of the child population of this group were born.



Source: AIHW Mortality Database.

Figure 30.1: Deaths of children under 15 years, 1991–96

- The death rate for children under 15 years (for the period 1991–96) was higher among children born in Australia than for children born in any of the other four groups of countries shown in Figure 30.1.
- The death rate for Australian-born children was over 60 per 100,000. For all the other groups, the death rate was less than 20 per 100,000.



Source: AIHW National Hospital Morbidity Database.

Figure 30.2: Hospitalisations for 0–14 year olds, 1996–97

- As for the death rates presented in Figure 30.1, Australian-born children had higher hospitalisation rates than children born in any of the other four country of birth groups.
- The hospitalisation rate for Australian-born children was nearly 20,000 per 100,000 children in 1996–97. The next highest rate was for children born in countries grouped as 'other', with a hospitalisation rate around 15,000 per 100,000 children. All the other groups had hospitalisation rates closer to 5,000 per 100,000 children.
- The hospitalisation rates for boys were higher than for girls in all the country of birth groups.

31 Socioeconomic status

There have been many studies displaying a link between socioeconomic status and health status, both for children and the general community. Mathers (1995) referenced a number of these, including Australian studies. Since publication of Mathers' report in 1995, evidence has continued to emerge, or be reviewed, of worse health being experienced by children from lower socioeconomic backgrounds (Aber et al. 1997).

There are a number of ways a child's socioeconomic status can be measured including family income, parental occupation and parental education. Currently in Australia, the main sources of socioeconomic information linked to health information are from population health surveys. In this chapter, we have sourced the latest National Health Survey for information on health status by socioeconomic groups.

Another way to measure the links between health status and socioeconomic status is to analyse health information by socioeconomically graded areas of residence. Many sources of health information (including mortality and hospital morbidity information) collect information on the area of usual residence (for example, using Statistical Local Areas or postcodes) for each individual. These areas can then be grouped by areas with similar indicators of socioeconomic disadvantage. The Australian Bureau of Statistics compiles an index of socioeconomic disadvantage (SEIFA—socioeconomic indexes for areas) based on information collected in censuses. A new version of the SEIFA index based on the 1996 census has not yet been released. For this reason, analysis by socioeconomic area has not been included in this chapter.

This chapter includes analysis of a number of health status indicators by family income based on information from the 1995 National Health Survey (NHS). This is similar to the approach taken in Chapter 3 of Mathers (1995). The health status indicators are not all directly comparable to those used by Mathers, so care needs to be taken with any comparisons. In addition, the family income groups are not comparable.

Family income calculations

Family income is based on the total reported gross annual income from income earners of the child's household. The data available from the NHS provide gross income categorised into 17 groups. An estimate of each person's income was made using the mid-point of each of these income groups. For the highest group (income $75,000 or more) an estimated income of $100,000 was used. For each household, gross family income is calculated as the sum of each of the income earners in the household. The gross family income is then adjusted to reflect the size of the family using the Henderson simplified equivalence scales (Whiteford 1985). This adjustment reflects the different amounts required by families of different sizes to reach the same capacity to pay for necessities of daily living. This method of calculating equivalent family income is identical to that used in Mathers (1995).

For the purpose of reporting health status by family income, children have been categorised into five groups based on equivalent family income. These groups are roughly equivalent in size (quintiles). The income groups and estimated proportion of children in each group are shown in Table 31.1.

Table 31.1: Family income quintiles used in this chapter

Quintile	Equivalent family income ($)	Percent of child population
1	0–13,699	20.4
2	13,700–19,599	19.4
3	19,600–28,599	21.3
4	28,600–41,699	19.1
5	41,700+	19.8

Family income provides a good indication of socioeconomic status in most cases. In a number of cases, however, income levels may not reflect the assets of a family. For example, a relatively well-off family with several assets may not need to earn the same level of income as a family with fewer assets to experience the same standard of living. In addition, family income reported here is pre-tax income. After-tax income more accurately reflects the available income of a family. However, after-tax income cannot be calculated from the information collected as part of the National Health Survey. In addition, self-reported income as collected in the NHS may not be a true reflection of actual income.

Health status indicators

The health status indicators chosen here are based on data from the 1995 National Health Survey able to be linked to family income. The indicators include:

- recent conditions
  - the proportion of children with reported conditions in the 2 weeks prior to the survey
  - the average number of conditions (per child) in the 2 weeks prior to the survey
- long-term conditions
  - the proportion of children with reported long-term conditions (conditions that have or are likely to last more than 6 months)
  - the average number of long-term conditions (per child)
- non-minor recent conditions
  - the proportion of children with reported non-minor conditions in the 2 weeks prior to the survey
  - the average number of non-minor conditions (per child) in the 2 weeks prior to the survey
- non-minor long-term conditions
  - the proportion of children with reported long-term non-minor conditions (conditions that have or are likely to last more than 6 months)
  - the average number of long term non-minor conditions (per child)
- reduced activity: the proportion of children with reduced activity days in the 2 weeks prior to the survey
- not breastfed: the proportion of children under 4 years who were never breastfed
- less than 3 months of exclusive breastfeeding: the proportion of children under 4 years who were exclusively breastfed for less than 3 months (including those never breastfed)
- hospitalisations: the proportion of children hospitalised (as an admitted patient) in the 2 weeks prior to the survey

- visits to emergency departments: the proportion of children who visited the emergency or casualty department of a hospital in the 2 weeks prior to the survey
- visits to doctors: the proportion of children who visited a doctor in the 2 weeks prior to the survey
- visits to dentists: the proportion of children who visited a dentist in the 2 weeks prior to the survey
- visits to other health professionals: the proportion of children who visited other health professionals in the 2 weeks prior to the survey
- prevalence of particular conditions: the proportion of children reported to have the following conditions (either as recent or long-term conditions):
  - otitis media
  - deafness
  - epilepsy
  - bronchitis
  - dental problems
  - eczema
  - speech impediment
  - asthma
  - hay fever
  - migraine
  - musculoskeletal deformities
  - injuries
  - emotional problems
  - mental retardation, specific delays in development.

As well as reflecting the underlying health status of the child, results for all these measures may be affected by a number of other factors. These include awareness of health issues by the reporting caregiver, an individual's perception of health status and differences in the accuracy of recall (as all these measures relate to either the last 2 weeks or longer). These factors need to be considered when interpreting the results given below.

Analysis

In this chapter, we have compared the health status measures across family income quintiles. While this approach provides an indication of health status by socioeconomic status, it is important to be aware of possible limitations of this aggregate analysis. Factors that may impact on this analysis include:

- the strength of the relationship between family income (as outlined above) and actual socioeconomic status
- the choice of boundaries for grouping by income (quintiles have been used here)
- comparability of parent-reported health status measures across income groups.

More extensive analysis than was possible for this report is needed to better understand links between socioeconomic status and children's health.

Recent and long-term conditions

Minor conditions have been excluded from Table 31.2. The conditions included in Table 31.2 are listed in the Appendix.

Table 31.2: Recent and long-term non-minor conditions, 0–14 year olds, 1995

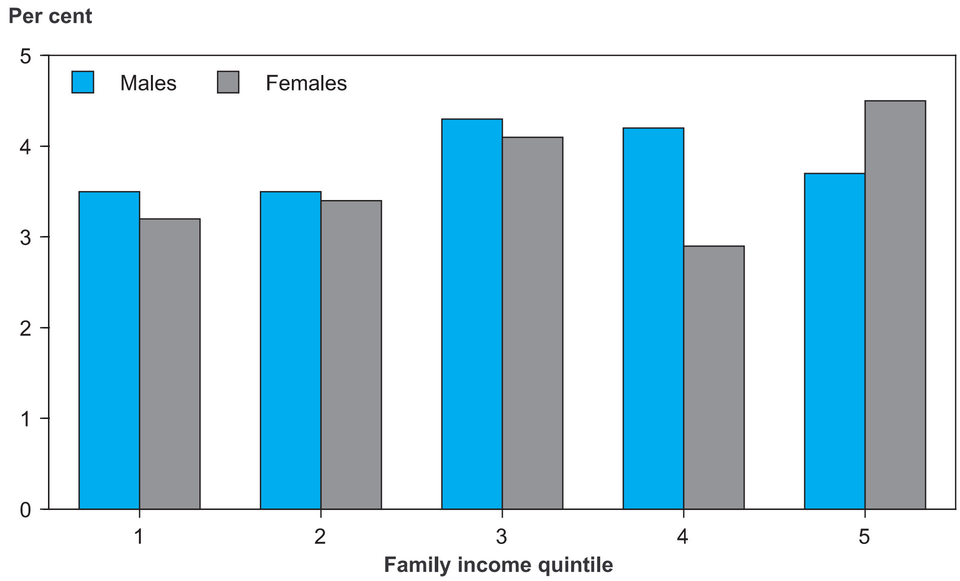
		Proportion of children (per cent)			Mean number of conditions		
Family income quintile		Males	Females	Total	Males	Females	Total
Recent conditions							
Lowest	1	32.2	31.8	32.0	0.41	0.40	0.41
	2	38.1	36.0	37.1	0.52	0.48	0.50
	3	39.5	34.7	37.2	0.53	0.44	0.49
	4	38.5	35.0	36.8	0.52	0.46	0.49
Highest	5	41.3	40.4	40.8	0.54	0.52	0.53
Long-term conditions							
Lowest	1	33.7	31.2	32.5	0.49	0.43	0.46
	2	40.5	33.1	36.8	0.64	0.44	0.54
	3	39.7	31.9	35.9	0.59	0.47	0.53
	4	35.3	29.7	32.6	0.51	0.41	0.46
Highest	5	37.4	30.1	33.8	0.57	0.40	0.49

Source: AIHW, from ABS NHS data, 1995.

- For non-minor conditions, children from high income families were reported to have the highest number and frequency of recent conditions. In contrast, children from low income families had the highest number and frequency of long-term conditions.
- For reported recent conditions:
  - highest proportion: 40.8% for highest income group
  - lowest proportion: 32.0% for the lowest income group
  - highest average number of conditions: 0.53 for the highest income group
  - lowest average number of conditions: 0.41 for the lowest income group.
- For reported long-term conditions:
  - highest proportion: 36.8% for the second lowest income group
  - lowest proportion: 32.5% for the lowest income group
  - highest average number of conditions: 0.54 for the second lowest income group
  - lowest average number of conditions: 0.46 for both the lowest and second highest income groups.
- More boys than girls were reported as having recent and long-term conditions. In addition, boys had more conditions than girls on average.

Reduced activity

Reduced activity is used here as a proxy for the health of children. The results given below are based on as assessment, by parents, of the number of days with reduced activity in a 2-week period.



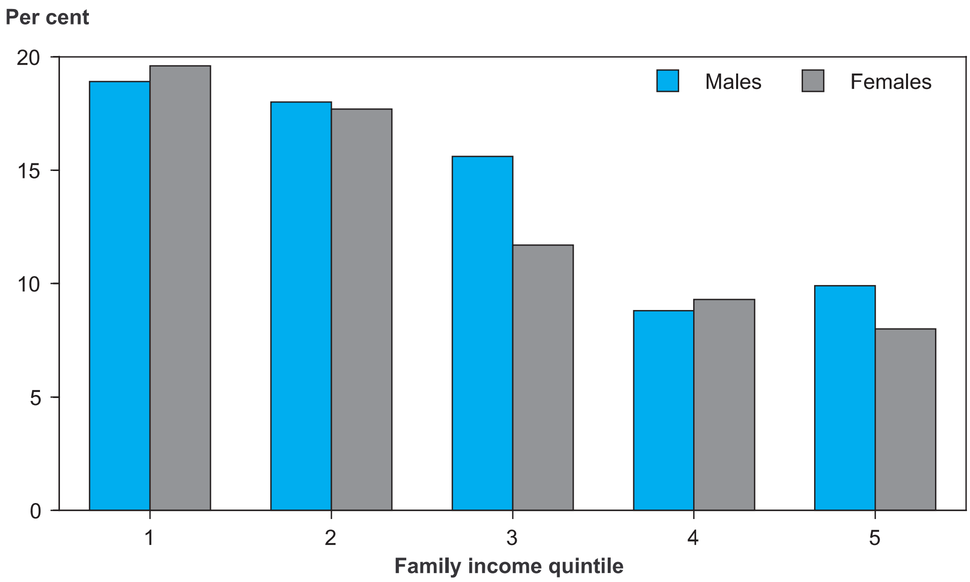
Source: AIHW, from ABS NHS data, 1995.

Figure 31.1: Children with reduced activity days in a 2-week period, 1995

- For boys, the middle income group had the highest proportions (4.3%) with reduced activity days. The smallest proportion (3.5%) was reported in the lower income groups.
- Girls in the highest family income group had the largest proportion (4.5%) of reported reduced activity days. The smallest proportion (2.9%) was reported for girls from the second highest family income group.

Breastfeeding

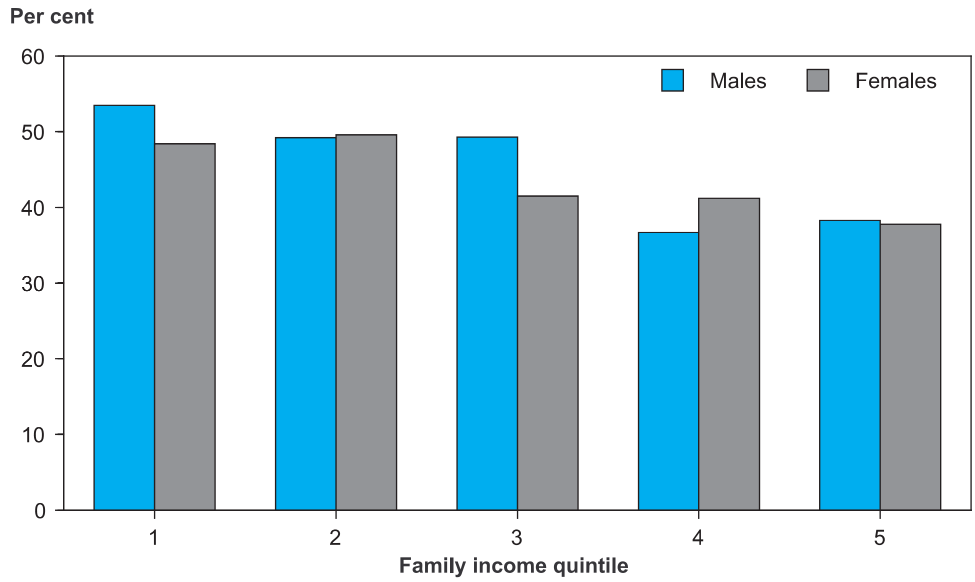
Breastfeeding has been recognised as having beneficial health effects for children (NHMRC 1992). Additional benefits have been demonstrated for children who were exclusively breastfed for at least 3 months (Wilson et al. 1998). Further background information on this issue is provided in Chapter 17 of this report.



Source: AIHW, from ABS NHS data, 1995.

Figure 31.2: Children under 4 years not breastfed, 1995

- For both boys and girls, there is a clear relationship between the proportion of children never breastfed across income groups.
- A much higher proportion of children in the lower income groups were not breastfed. Nearly 20% of children in the lower income groups compared with under 10% in the higher income groups were not breastfed.



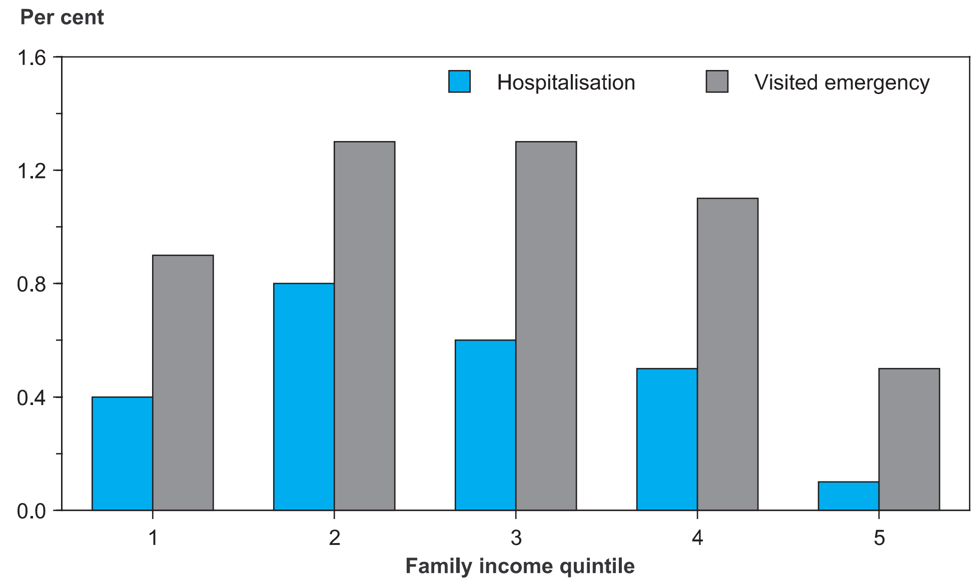
Source: AIHW, from ABS NHS data, 1995.

Figure 31.3: Children with less than 3 months of exclusive breastfeeding, 1995

- There is also a pattern between income group and the proportion of children with less than 3 months exclusive breastfeeding.
- Around one-half of children under 4 years in the lowest income group were not exclusively breastfed for the first 3 months of life. The comparable figure for the highest income group was less than 40%.

Health services use

Health services use reflects both health status and access to services. Also, a proportion of health services are for preventive actions, aimed at improving health status. Health actions for preventive measures have not been excluded in this analysis of health services use.

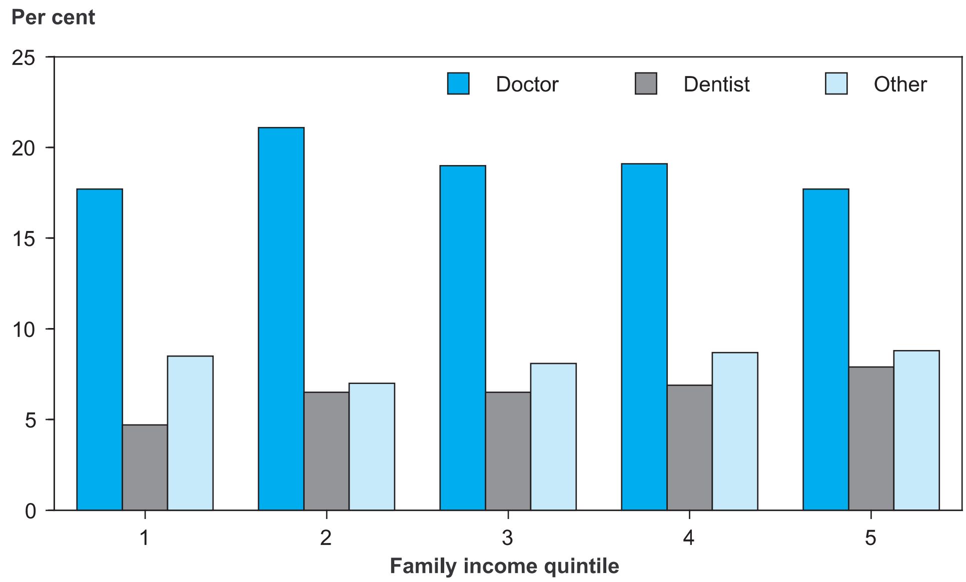


Source: AIHW, from ABS NHS data, 1995.

Figure 31.4: Children using hospitals in 2-week period, 1995

- The highest proportions of children using hospital services were in the second lowest income group. The lowest proportions were in the highest income group.
- Around 0.8% of children were admitted to hospital in the 2 weeks prior to the survey. The figure was 8 times lower for children in the highest income group.
- Just over 1% of children in the second lowest and middle income groups visited emergency departments in the 2 weeks prior to the survey. Children in the highest income group were more than 2.5 times less likely to do so.

Figure 31.5 shows visits to health professionals in the 2-week period prior to the survey. These visits may be either for treatment of current conditions or for preventive measures, as discussed earlier.



Source: AIHW, from ABS NHS data, 1995.

Figure 31.5: Children visiting health professionals in a 2-week period, 1995

- There was some variation in the proportion of children visiting a doctor in a 2-week period. The group with the highest proportion visiting a doctor was in the second lowest income group (21%) and the lowest proportions (18%) were reported for both the lowest and highest income groups.
- There were increasingly more visits to dentists across income groups. Nearly 5% of children in the lowest income group were reported to have visited a dentist in the 2-week period prior to interview, compared with nearly 8% in the highest income group. A fair proportion of these visits are likely to have been for preventive measures.

Specific conditions

This section includes information on the prevalence of particular conditions across income groups. These conditions may be of varying severity, both within and across conditions. These data include conditions reported both as recent and long-term conditions.

Table 31.3: Reported prevalence of particular conditions, 0–14 year olds, 1995 (per cent)

	Family income quintile				
Condition	Lowest 1	2	3	4	Highest 5
Otitis media	1.9	2.9	3.3	3.0	2.4
Deafness	1.4	2.5	1.3	1.1	1.1
Epilepsy	0.4	0.5	0.8	0.2	0.3
Bronchitis	3.1	3.5	3.2	2.6	1.7
Dental problems	4.7	6.5	6.5	6.9	7.9
Eczema	4.1	4.9	4.8	5.7	5.6
Speech impediments	1.7	2.1	1.7	1.5	1.9
Asthma	15.6	18.1	17.5	14.4	15.8
Hay fever	5.9	5.8	6.6	6.4	8.1
Migraine	0.8	0.3	0.3	0.5	0.4
Musculoskeletal deformities	0.2	0.5	0.2	0.4	0.4
Injuries	5.0	5.3	5.0	5.7	7.6

Source: AIHW, from ABS NHS data, 1995.

- The pattern of prevalence of these conditions across income groups varied by condition.
- The conditions with higher reported prevalence in the lower income groups included deafness, bronchitis and migraine.
- The highest reported prevalence of asthma was for children in the second lowest and middle income groups.
- Both otitis media and epilepsy had the highest reported prevalence in the middle income group.
- A number of conditions had greater reported prevalence in the higher income groups. These included dental problems, eczema, hay fever and injuries.
- The remaining conditions included in Table 31.3 display varying prevalence across income groups.

32 International comparisons

This chapter provides some international comparisons on aspects of child health for which data are readily available. The results presented here have come from *International Health: How Australia Compares* (de Looper & Bhatia in press). The countries included in that report are Organisation for Economic Cooperation and Development (OECD) countries, plus a number of other countries of regional interest to Australia. This group of countries can be regarded as 'developed' countries.

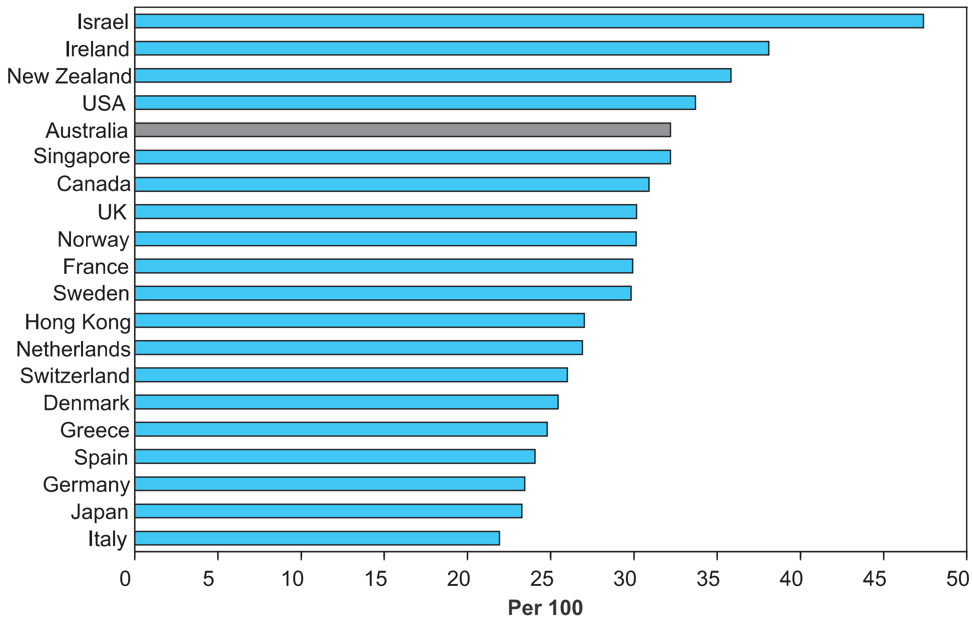
Information from de Looper and Bhatia (in press) included here has come from OECD reports, reports by the United Nations organisations (including the World Health Organization and the United Nations Children's Fund). Australian data presented here may not be the latest data available (as presented earlier in this report) but are the data most comparable to that from the other countries.

In some of the figures presented below, data are not available for all countries for the same year. Results are included only if they fall within 2 years of Australian data.

Although the data presented in the figures in this chapter relate to developed countries, some comparisons are also made with developing countries in the text.

Dependency ratio

The child dependency ratio measures the proportion of children aged under 15 years as a proportion of the working-age population aged 15–64 years. Time trends on this measure for Australia are presented in Chapter 2.



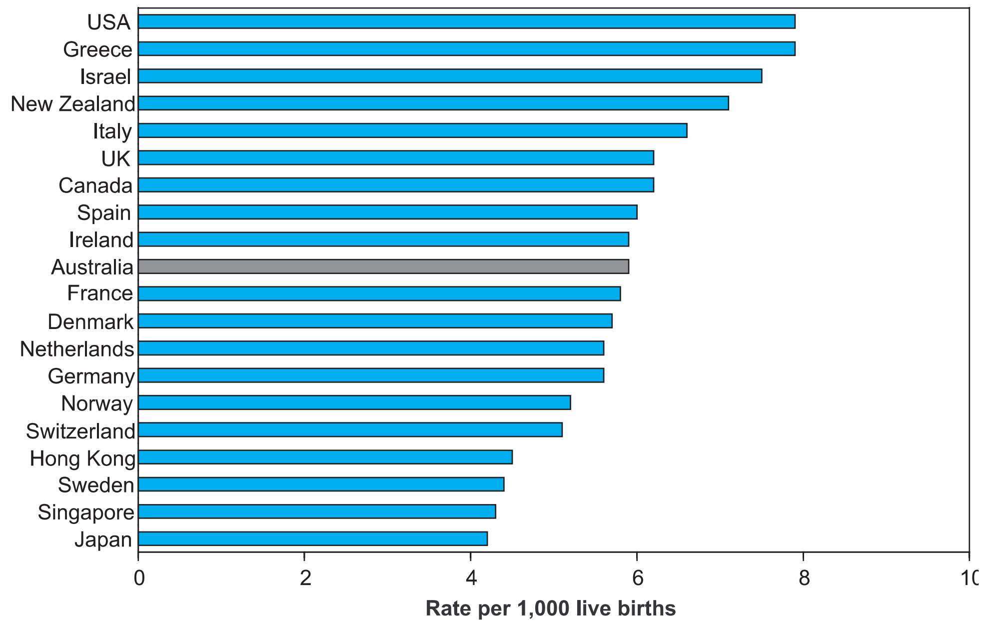
Source: de Looper & Bhatia in press.

Figure 32.1: Child dependency ratio, 1995

- Compared with other countries, Australia had a relatively large proportion of children aged less than 15 years in 1995, resulting in a higher child dependency ratio.
- Australia ranked fifth behind Israel, Ireland, New Zealand and the United States in the ranking of the child dependency ratio.

Infant mortality

Infant mortality rates measure deaths among children aged under 1 year. Trends and main causes of death for Australian infants are presented in Chapter 3.



Source: de Looper and Bhatia in press.

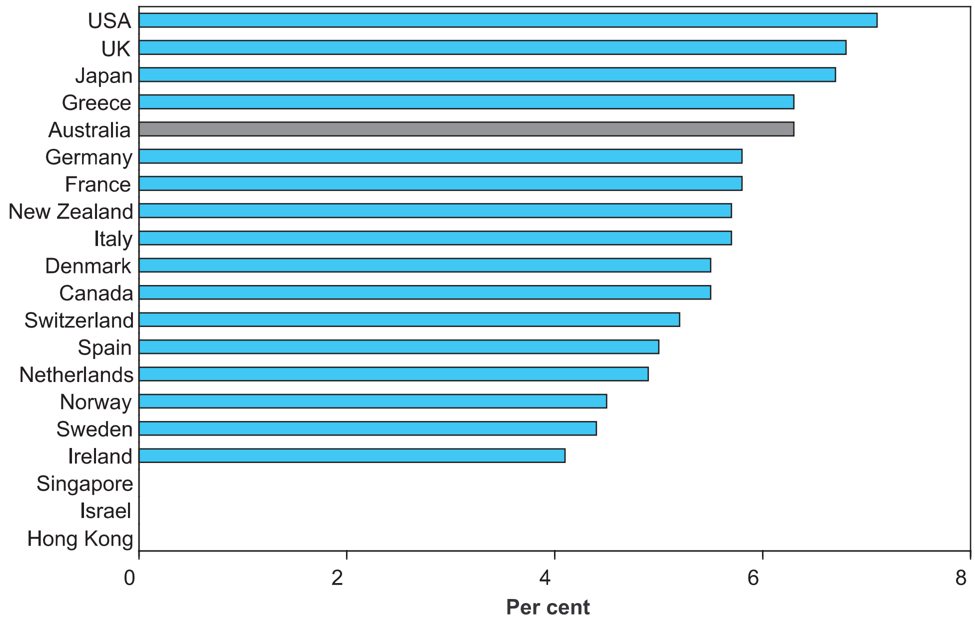
Figure 32.2: Infant mortality rates, 1994

- Australia's infant mortality rate is around the average for all countries included here. In 1994, Australia's infant mortality rate was 5.9 per 1,000 live births which is equivalent to the mean infant mortality rate for these countries.
- In 1994, the United States and Greece had the highest infant mortality rates of these countries, and Japan and Singapore had the lowest.
- Although infant mortality rates can be used as an indicator of maternal and infant health and health service delivery, comparisons between countries are complicated by many factors. These include differing population characteristics, maternal risk factors and data collection systems. For example, it is believed that in Japan a proportion of infant deaths are recorded as stillbirths and therefore would not be included in the infant mortality rates (de Looper and Bhatia in press).

Although Australia's infant mortality rate is at average levels compared with other developed countries, it is still very much lower than that experienced in developing countries. In Indonesia, for example, the infant mortality rate was estimated to be 49 per 1,000 live births in 1997, compared with 6 in Australia. Other examples in our region include 20 per 1,000 live births in Fiji and 30 per 1,000 live births in Thailand (WHO 1998).

Low birthweight

Birthweight is an important indicator of the health of newborns. Better health outcomes are expected in babies weighing at least 2,500 g at birth. Details on birthweight for Australian babies born in 1995 are presented in Chapter 5.



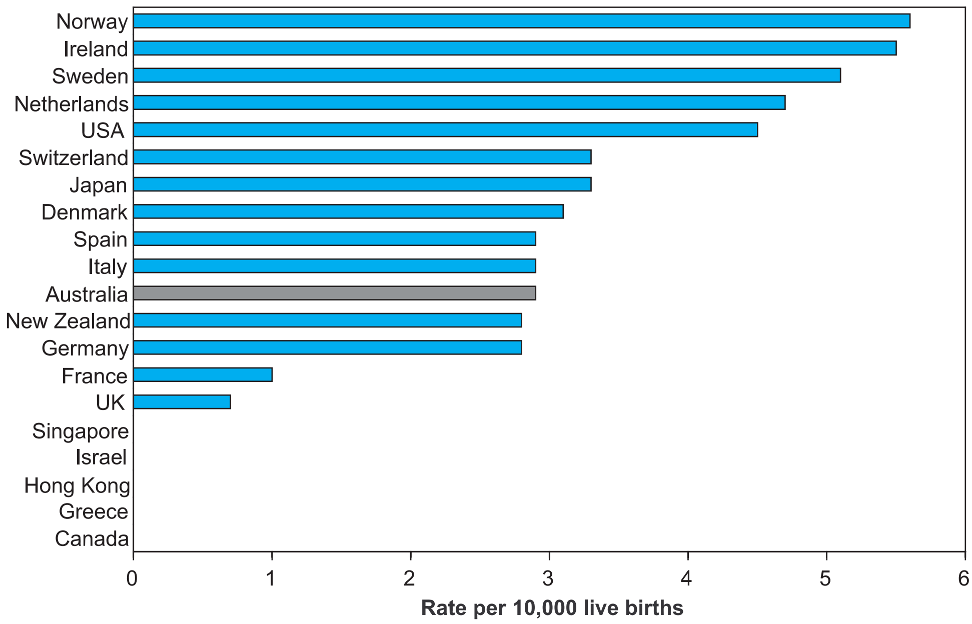
Source: de Looper & Bhatia in press.

Figure 32.3: Proportion of low-birthweight babies, 1992

- Compared with other countries included in Figure 32.3, Australia had a relatively high proportion of low-birthweight babies in 1992, behind the United States, United Kingdom, Japan and Greece.
- The proportion of low birthweight babies may be affected by a number of factors including gestational age and the health of newborns. The level of technology in different countries will also affect these proportions—countries with more advanced technology available that enables survival of very low and extremely low birthweight babies are likely to have a higher proportion of low-birthweight babies (de Looper & Bhatia in press). In some countries, however, 2,500 g may not be an appropriate cut-off for low birthweight.

Congenital malformations

Congenital malformations are chromosomal, structural or anatomical abnormalities that are present at birth. Details on the incidence of congenital malformations in Australian babies are included in Chapter 11.

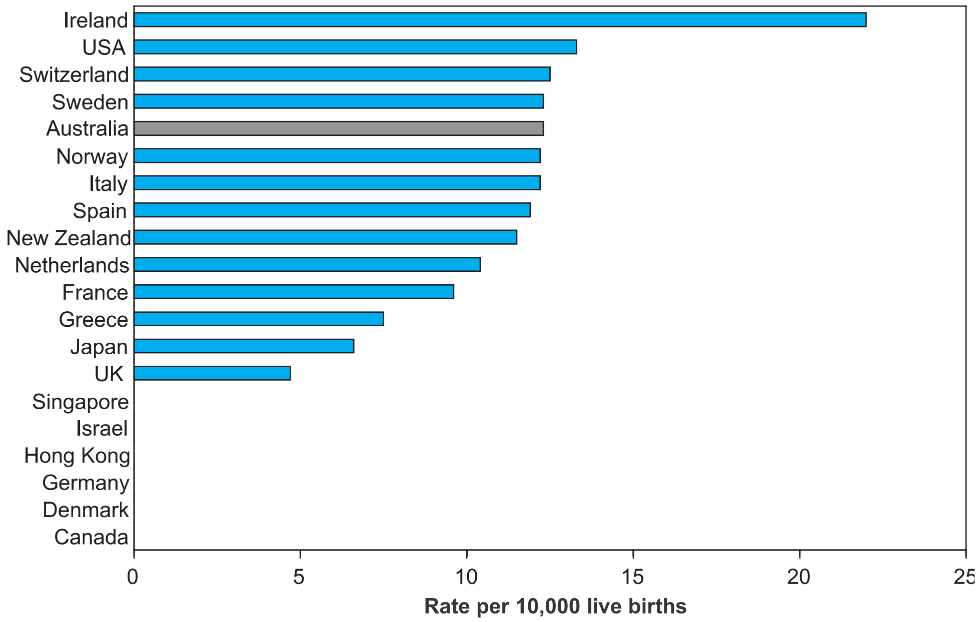


Note: 1992 data: Sweden. 1993 data: France, Italy, Denmark. 1994 data: Ireland, Netherlands, USA, Switzerland, Japan, Spain, Australia, Germany, UK. 1995 data: New Zealand and Norway.

Source: de Looper & Bhatia in press.

Figure 32.4: Incidence of spina bifida, 1992–95

- In 1994, the recorded incidence of spina bifida in Australia was relatively low compared with other developed countries. Only the United Kingdom, France, Germany and New Zealand had lower recorded rates.
- These rates are affected by differing termination rates for abnormalities detected during pregnancy.



Note: 1992 data: Greece and Sweden. 1995 data: Norway.

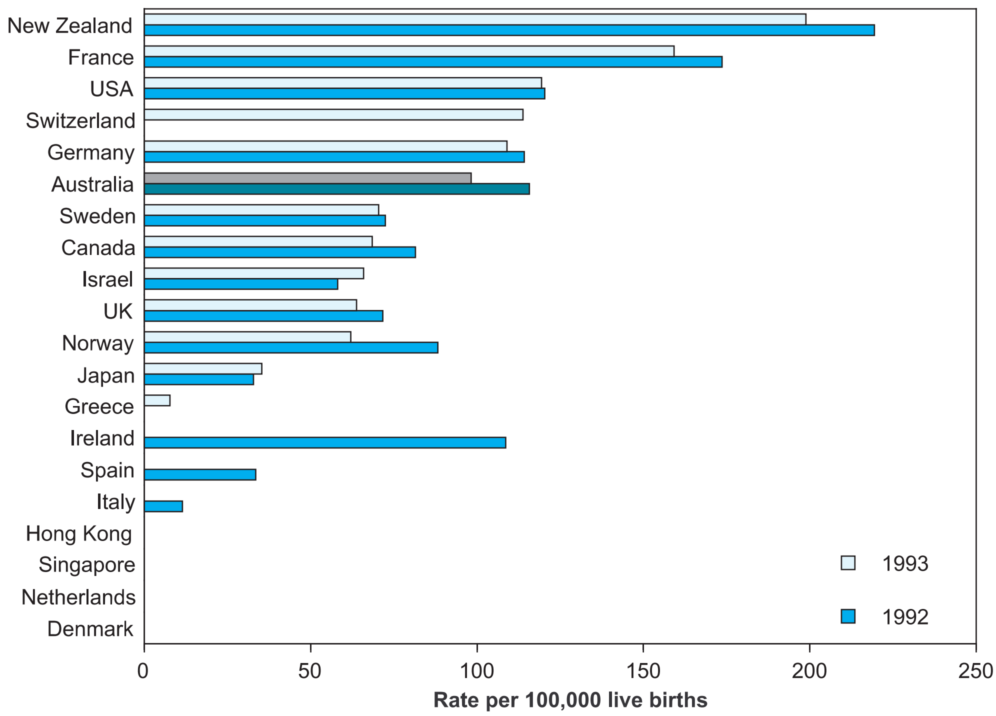
Source: de Looper & Bhatia in press.

Figure 32.5: Incidence of Down syndrome, 1994

- In 1994, Australia's incidence of Down syndrome was fifth highest among these countries. Ireland had the highest rate, followed by the United States, Switzerland and Sweden.
- These rates are affected by a variety of factors which may differ between countries, including termination rates (for cases detected during pregnancy) and the age of the mother.

Sudden infant death syndrome

In Australia, sudden infant death syndrome (SIDS) is the most common cause of death for babies aged between 1 and 12 months. Analysis of SIDS in Australia is presented in Chapter 6 of this report.



Source: de Looper & Bhatia in press.

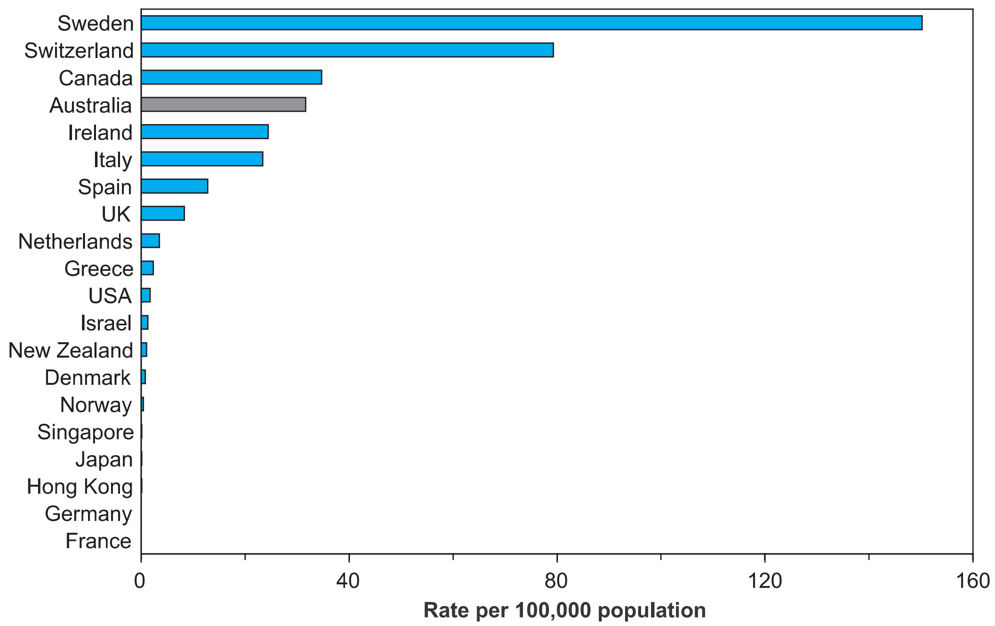
Figure 32.6: SIDS death rates, 1992 and 1993

- Results presented above are ranked using 1993 data. Results are also presented for SIDS rates in 1992, as data for some countries were available only for 1992.
- In 1993, Australia had the sixth highest SIDS death rate among these countries. However, data were not available for a number of countries.
- SIDS rates have fallen significantly in Australia and some other countries during the 1990s, including since 1993. These trends may also affect the comparison between countries.

Vaccine-preventable diseases

Vaccine-preventable diseases continue to account for a large number of childhood deaths around the world. It is estimated that around 2 million children die each year from vaccine-preventable diseases including measles and pertussis (WHO & UNICEF 1996). The majority of these deaths occur in developing countries. Nevertheless, vaccine preventable diseases remain a problem in developed countries.

Details on the occurrence of vaccine-preventable diseases and immunisation rates in Australia are presented in Chapter 15 of this report.

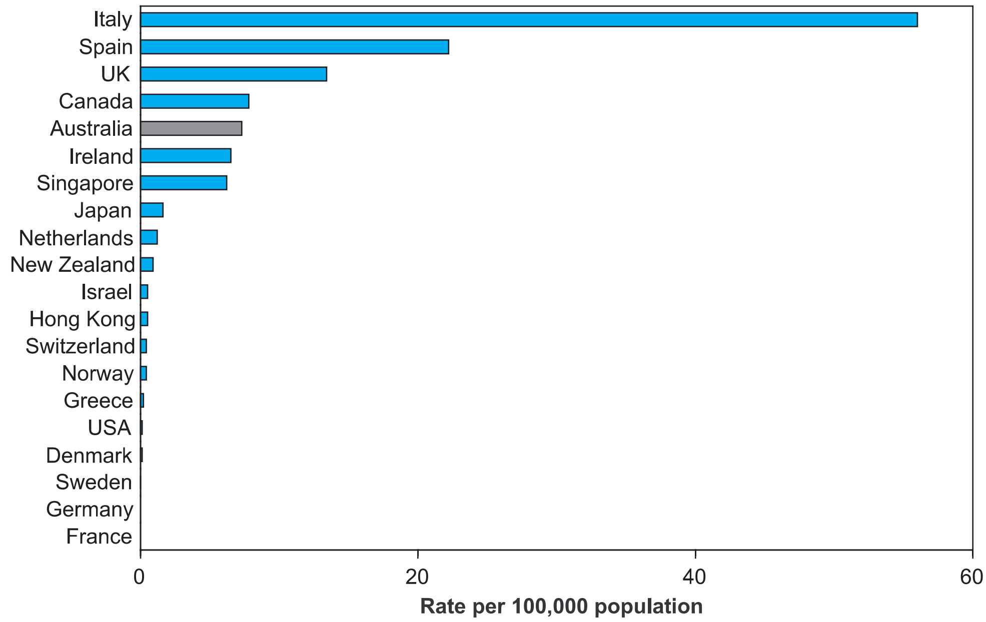


Note: 1993 data: Norway and Ireland.

Source: de Looper & Bhatia in press.

Figure 32.7: Pertussis notifications, 1994

- In 1994, Australia had the fourth highest notification rate for pertussis out of the 18 developed countries with data available. Note that only Germany and France did not have data available to be included in this figure.
- The notification rates are affected by differing case definitions, methods of diagnosis and completeness of case notification (de Looper & Bhatia in press).
- Vaccine-preventable diseases are epidemic diseases which may reduce the usefulness of 1 year of data. Trends in the incidence of pertussis in four of these countries are included in de Looper & Bhatia (in press). These trends show that pertussis notifications have increased in Australia since the late 1970s, with marked increases in the most recent years. However, these increases are not paralleled in Japan, the United Kingdom or the United States.

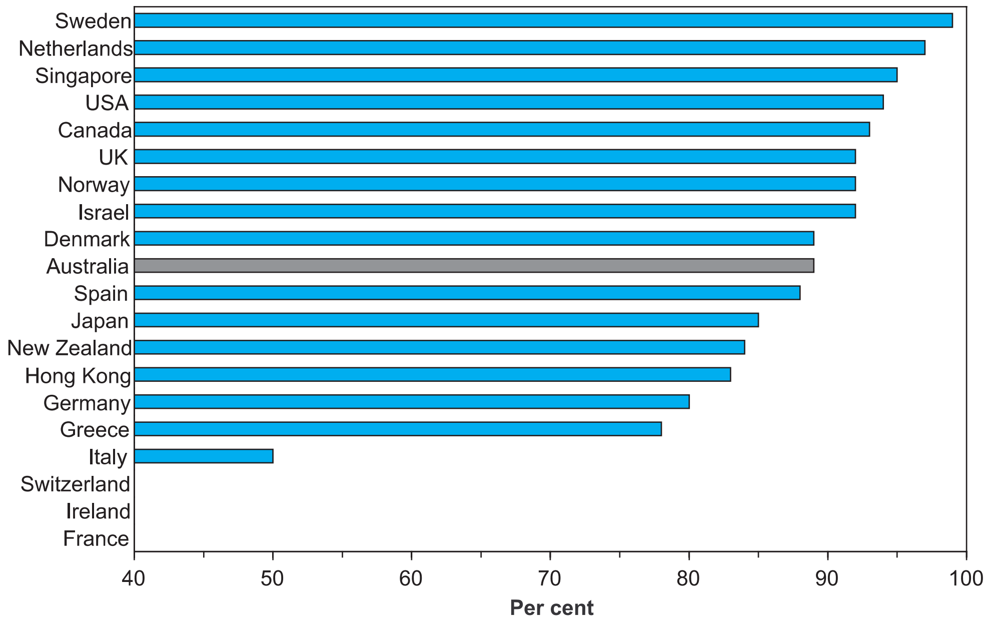


Note: 1993 data: Japan. 1994 data: Sweden and New Zealand.

Source: de Looper & Bhatia in press.

Figure 32.8: Measles notifications, 1995

- Australia's notification rate for measles was also high compared with other developed countries in 1995, though markedly lower than the highest rate which was recorded in Italy.
- See cautionary notes under Figure 32.7.

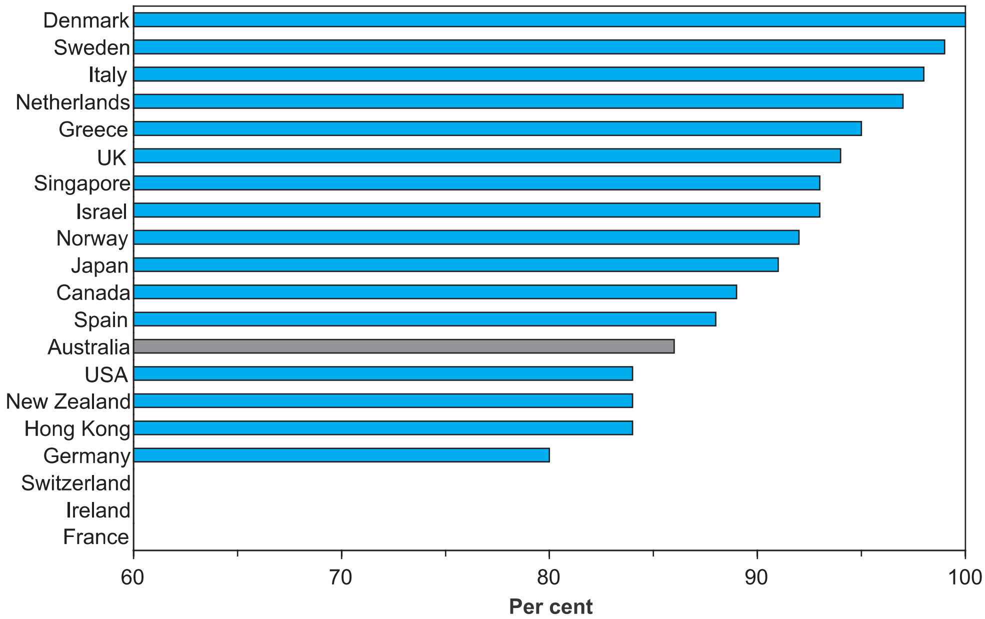


Note: DPT: Diphtheria, tetanus and pertussis. *1993 data: Japan, Norway, Netherlands. 1994 data: Greece, Germany, Hong Kong, New Zealand, Spain, Denmark, Israel, UK, Canada, USA, Sweden.*

Source: de Looper & Bhatia in press.

Figure 32.9: Immunisation for DPT, 1 year olds, 1993–95

- In 1995, the proportion of Australian 1 year olds fully immunised against diphtheria, tetanus and pertussis (DTP) was around the middle of the range observed in developed countries.
- The link between immunisation rates and notification rates is not apparent between Figures 32.7 and 32.9. For example, Sweden had both the highest notification rate for pertussis and the highest immunisation rate.

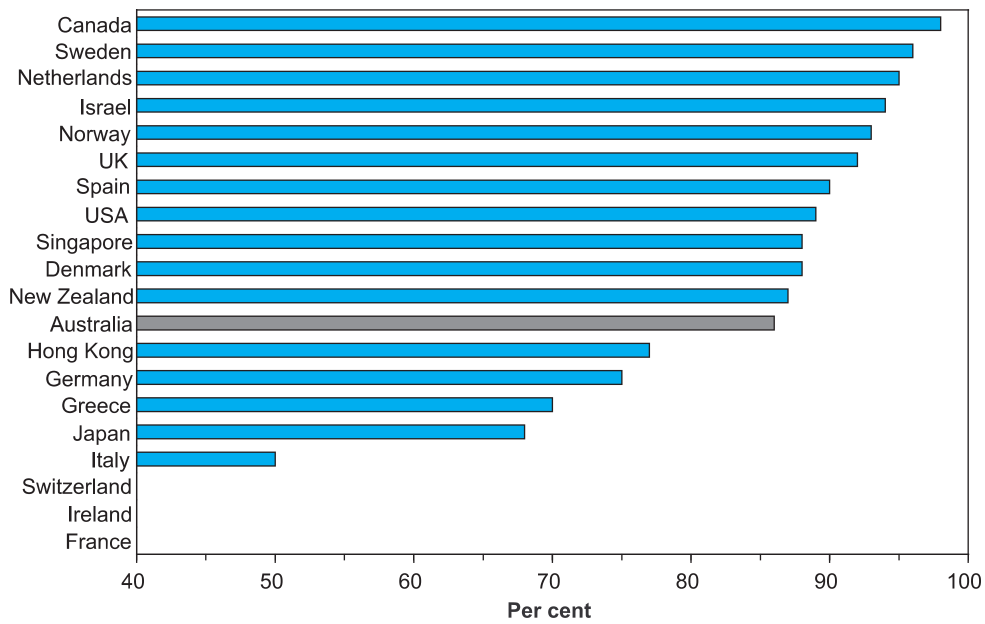


Note: 1993 data: Japan, Norway, Netherlands. 1994 data: Germany, Hong Kong, New Zealand, USA, Spain, Canada, Israel, UK, Greece, Sweden, Denmark. 1995: Australia, Singapore, Italy

Source: de Looper & Bhatia in press.

Figure 32.10: Immunisation rates for polio, 1 year olds, 1993–95

- The World Health Organization is aiming to make polio the second vaccine-preventable disease after smallpox to be eradicated worldwide. Although polio has been declared to be eradicated from some parts of the world (for example, in the Americas), high immunisation rates are still required in all parts of the world to increase the likelihood of eradication.
- Of the developed countries included in Figure 32.10, Australia had a relatively low polio immunisation rate for 1 year old children.



Note: 1993 data: Japan, Norway, Netherlands. 1994 data: Greece, Germany, Hong Kong, New Zealand, Denmark, USA, Spain, UK, Israel, Sweden, Canada. 1995: Italy, Australia, Singapore.

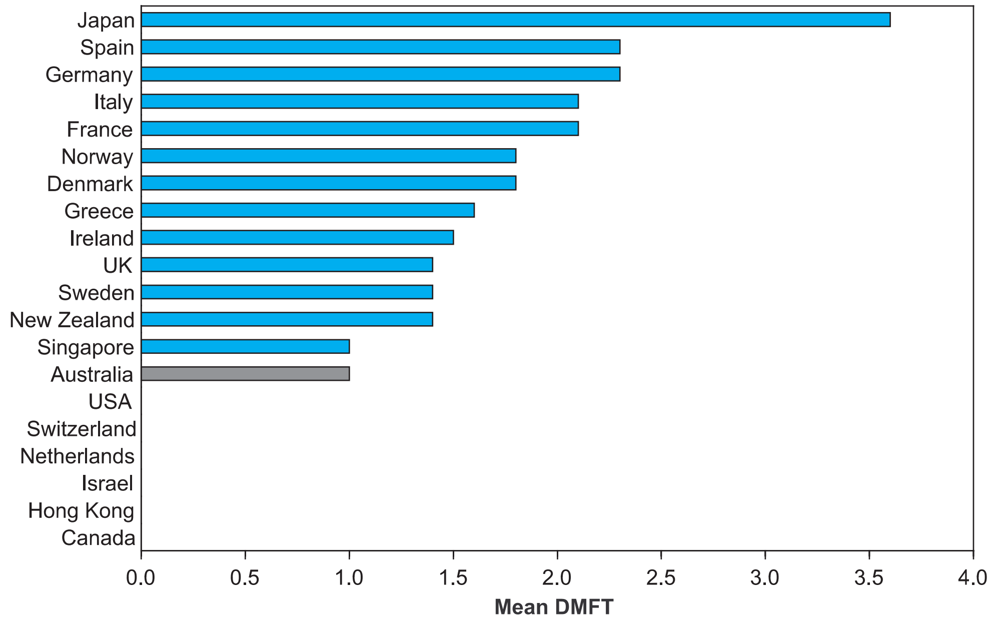
Source: de Looper & Bhatia in press.

Figure 32.11: Immunisation rates for measles, 1 year olds, 1993–95

- Figure 32.11 presents immunisation rates for measles in the period 1993–95.
- Australia had a comparatively lower measles immunisation rate for 1 year olds compared with other developed countries.
- Italy had the lowest immunisation rate shown in Figure 32.11, as well as by far the highest measles notification rate shown in Figure 32.8. However, the link between low immunisation rates and high incidence of the relevant disease are not obvious for the other countries. This is likely to be due to the complexity of epidemic cycles and herd immunity.

Dental disease

The DMFT score measures the number of decayed, missing and filled permanent teeth. High scores indicate higher levels of dental disease. Further detail on dental disease in Australian children is presented in Chapter 9.



Note: 1993 data: UK, Greece, France, Spain, Japan. 1994 data: Singapore. 1995 data: Australia, New Zealand, Sweden, Germany. 1996 data: Ireland, Denmark, Norway, Italy.

Source: de Looper & Bhatia in press.

Figure 32.12: DMFT scores, 12 year olds, 1993–96

- Of the developed countries with data available, Australia and Singapore had the lowest mean DMFT score in 12 year old children, at 1.0.
- Japan had the highest DMFT score for 12 year olds—3.6.

Appendix

States and Territories

This section provides State and Territory breakdowns of national results presented earlier in this report. In some cases, the scope of the data may vary by State or Territory, particularly in the identification of healthy newborns in the hospital data. It is recommended that individual State and Territory health authorities be contacted for advice on further interpretation of the data.

Table A.1: Mortality by State and Territory

Measure	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Infant mortality rate, 1996 (per 1,000 live births)								
Males	6.5	5.7	6.7	8.0	5.9	5.7	5.4	11.8
Females	5.0	4.4	6.0	4.8	4.0	3.2	6.0	11.2
Perinatal mortality rate (per 1,000 total relevant births)	9.6	7.3	8.5	8.4	7.5	8.6	7.9	10.6
Death rate 1996, 1–4 year olds (per 100,000 population)								
Males	0.4	0.3	0.5	0.5	0.3	0.2	0.3	0.4
Females	0.3	0.2	0.4	0.3	0.2	0.4	0.2	0.6
Death rate 1996, 5–9 year olds (per 100,000 population)								
Males	0.2	0.2	0.2	0.1	0.1		0.2	0.2
Females	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
Death rate 1996, 10–14 year olds (per 100,000 population)								
Males	0.2	0.2	0.3	0.3	0.2	0.1	0.3	0.4
Females	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.4

Note: These figures further breakdown those given in Chapter 3.

Source: AIHW Mortality Database, ABS 1997b.

Table A.2: Hospitalisations by State and Territory (rate per 100,000)

Variable	ICD-9-CM code	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Hospitalisations by age									
<1 year		52,635	53,307	55,386	49,685	60,543	52,954	90,427	65,941
1–4 years		17,294	15,321	19,368	17,519	22,904	14,144	15,069	19,391
5–9 years		9,266	8,540	9,862	9,525	11,268	7,760	8,297	7,763
10–14 years		8,136	6,867	8,546	8,258	9,075	6,843	6,328	6,782
Hospitalisations by principal diagnosis, 0–14 year olds									
Asthma	493	798	732	714	841	1,360	480	514	556
Nonsuppurative otitis media	381	499	834	740	644	1,154	671	585	215
Chronic tonsils & adenoids	474	541	656	585	668	782	460	617	131
General symptoms	780	548	498	524	545	530	260	296	372
Disorders from short gestation & LBW	765	313	374	394	282	395	273	562	554
Fracture of radius and ulna	813	403	304	505	330	391	313	381	350
Acute bronchitis & bronchiolitis	466	356	266	244	364	482	201	211	605
Encounter for other procedures	V58	396	148	440	181	279	219	398	125
Other respiratory cond. of newborn	770	283	191	235	114	99	205	371	265
Diseases of hard tissues of teeth	521	168	299	384	337	373	362	214	255
Hospitalisations by principal procedure[(a)], 0–14 year olds									
Myringotomy	200	576	979	653	706	1,395	682	830	285
Injection/infusion of other therapeutic substance	992	592	318	706	382	739	255	489	147
Closed reduction of fracture w/o int. fixation	790	435	346	452	388	379	374	447	360
Tonsillectomy with adenoidectomy	283	336	413	462	401	490	171	383	58
Circumcision	640	425	403	249	343	434	286	176	454
Respiratory therapy	939	347	255	420	363	272	124	222	114
Miscellaneous physical procedures	998	245	367	270	304	264	194	249	207
Surgical removal of tooth	231	121	169	283	131	171	256	152	141
Adenoidectomy without tonsillectomy	286	151	131	217	124	193	162	125	56
Other local excision of lesion of skin	863	172	159	116	200	156	136	89	56

(a) Includes unqualified neonates.

Note: These figures further breakdown those given in Chapter 4. Slight differences exist between the Western Australian results presented above and those obtained by the Health Department of Western Australia.

Source: AIHW National Hospital Morbidity Database.

Table A.3: Maternal and infant conditions by State and Territory (rate per 100,000)

Variable	ICD-9-CM code	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Births by maternal age, 1995 (per cent)									
<20 years		5.0	3.5	6.9	6.1	5.3	7.1	4.0	14.0
40+ years		2.1	2.1	1.6	1.7	1.8	1.4	2.0	1.5
Preterm births (<37 weeks) (per cent of total births)		6.3	7.1	7.9	7	7.8	6.2	6.8	8.8
Low birthweight (<2,500g) (per cent)		5.8	6.5	6.8	6.6	6.8	6.4	5.9	8.8
Hospitalisations for < 1 year olds by principal diagnosis, 1996–97									
Infectious diseases	001–139	7.4	4.3	6.0	7.8	7.1	4.6	4.7	10.8
Respiratory diseases	460–519	16.4	12.9	13.6	19.0	18.2	11.1	6.7	24.7
Congenital abnormalities	740–759	6.6	6.2	7.4	6.4	5.1	5.4	7.1	2.8
Conditions originating in perinatal period	760–779	34.1	37.6	34.9	24.7	21.8	28.9	38.1	35.8
Symptoms and signs	780–799	9.5	13.1	12.1	12.2	10.0	6.2	2.8	6.0
V codes	V01–V82	10.7	10.7	9.0	14.0	20.6	29.9	32.9	5.9
Other	all others	15.4	15.2	17.0	15.9	17.2	13.8	7.7	14.0

Note: These figures further breakdown those given in Chapter 5. Slight differences exist between the Western Australian results presented above and those obtained by the Health Department of Western Australia.

Sources: Day et al. 1997, AIHW National Hospital Morbidity Database.

Table A.4: Injuries and poisonings, 0–14 year olds, by State and Territory (rate per 100,000 population)

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Deaths (ICD-9 800–999)								
1994 Males	9.2	5.6	12.6	12.1	10.4	14.6	23.1	32.6
1994 Females	8.2	5.6	7.8	9.6	4.8	9.5	3.0	0.0
1995 Males	8.8	12.0	13.7	16.0	7.8	11.0	5.8	28.0
1995 Females	7.5	4.8	12.8	8.4	7.5	1.9	9.0	17.0
1996 Males	12.4	8.5	18.8	17.8	9.8	0.0	2.9	19.6
1996 Females	4.8	4.5	10.6	10.5	7.5	5.8	15.0	25.1
Hospitalisations (ICD-9-CM 800–999 principal diagnosis)								
1994–95 Males	1,949	1,709	2,527	2,066	2,390	1,631	1,493	2,144
1994–95 Females	1,219	1,105	1,652	1,371	1,466	1,012	926	1,326
1995–96 Males	2,058	1,718	2,697	2,117	2,292	1,852	1,651	2,231
1995–96 Females	1,308	1,094	1,733	1,403	1,475	1,278	1,065	1,643
1996–97 Males	2,011	1,684	2,875	2,221	2,444	1,679	1,544	1,895
1996–97 Females	1,258	1,092	1,814	1,439	1,541	1,117	1,023	1,311

Note: These figures further breakdown those given in Chapter 7. Slight differences exist between the Western Australian results presented above and those obtained by the Health Department of Western Australia.

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

Table A.5: Hospitalisations for mental disorders, 0–14 year olds, by State and Territory (rate per 100,000)

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Principal diagnosis of mental disorder (ICD-9-CM 290–316)								
1994–95 Males	314	126	83	103	149	55	87	41
1994–95 Females	71	101	81	65	113	53	159	17
1995–96 Males	529	88	83	236	129	57	58	55
1995–96 Females	142	110	95	206	121	52	75	29
1996–97 Males	764	125	129	345	149	59	50	31
1996–97 Females	210	119	152	253	116	68	106	17
Self-inflicted injury (ICD-9-CM E950–E959)								
1994–95 Males	5	7	2	4	4	5	0	4
1994–95 Females	19	15	13	32	20	4	15	0
1995–96 Males	3	5	5	7	4	7	9	8
1995–96 Females	23	20	21	24	18	13	33	21
1996–97 Males	4	4	6	8	8	6	0	12
1996–97 Females	20	16	19	22	25	14	39	8

Note: These figures further breakdown those given in Chapter 8. Slight differences exist between the Western Australian results presented above and those obtained by the Health Department of Western Australia.

Source: AIHW National Hospital Morbidity Database.

Table A.6: Dental disease (mean dmft/DMFT scores) by State and Territory

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
5 and 6 year olds (deciduous teeth): dmft	1.66	1.62	1.92	1.23	1.31	1.39	1.30	1.82
12 year olds (permanent teeth): DMFT	0.93	1.02	1.37	1.04	0.64	0.86	0.61	0.82

Note: These figures further breakdown those given in Chapter 9.

Source: Davies & Spencer 1997.

Table A.7: Childhood cancer deaths and hospitalisations, 0–14 year olds, by State and Territory (rate per 100,000)

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Deaths (ICD-9 140–239)								
1994 Males	5.7	6.2	6.3	1.5	5.2	5.5	5.8	0.0
1994 Females	4.9	3.9	3.8	0.5	6.1	0.0	0.0	0.0
1995 Males	3.7	5.2	6.4	5.0	1.3	1.8	11.6	8.0
1995 Females	3.3	3.5	2.6	1.6	2.7	1.9	6.0	8.5
1996 Males	3.9	4.3	5.0	5.5	5.2	0.0	8.7	3.9
1996 Females	3.6	3.2	5.6	1.6	1.4	3.9	0.0	0.0
Hospitalisations (ICD-9-CM 140–239 principal diagnosis)								
1994–95 Males	275	195	399	392	237	152	264	77
1994–95 Females	248	199	289	305	279	141	220	47
1995–96 Males	310	229	403	303	268	201	295	44
1995–96 Females	248	222	333	342	226	200	190	46
1996–97 Males	291	245	361	291	255	165	216	27
1996–97 Females	239	240	354	321	251	337	215	67

Note: These figures further breakdown those given in Chapter 12.

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

Table A.8: Hospitalisations for asthma (ICD-9-CM 493 principal diagnosis), 0–14 year olds, by State and Territory (rate per 100,000)

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
1994–95 Males	1,035	861	1,039	1,217	1,620	565	821	839
1994–95 Females	633	522	640	750	962	290	388	558
1995–96 Males	1,079	881	949	1,122	1,697	537	739	712
1995–96 Females	634	513	580	745	1,011	288	413	454
1996–97 Males	988	935	865	1,016	1,687	583	690	676
1996–97 Females	597	519	554	655	1,015	372	331	429

Note: These figures further breakdown those given in Chapter 13. Slight differences exist between the Western Australian results presented above and those obtained by the Health Department of Western Australia.

Source: AIHW National Hospital Morbidity Database.

Table A.9: Hospitalisations for other chronic diseases, 0–14 year olds, by State and Territory (rate per 100,000)

	ICD-9-CM code (principal diagnosis)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Diabetes	250								
1993–94		40	47	44	36	48	48	54	29
1994–95		46	49	46	35	54	54	87	13
1995–96		51	52	47	37	50	31	58	8
1996–97		47	51	55	38	52	46	51	10
Cystic fibrosis	277.0								
1996–97		20	27	49	16	82	21	12	12
Cerebral palsy	343								
1996–97		52	7	16	9	6	6	9	4
Epilepsy	345								
1996–97		125	91	125	127	83	80	113	102

Note: These figures further breakdown those given in Chapter 14. Slight differences exist between the Western Australian results presented above and those obtained by the Health Department of Western Australia.

Source: AIHW National Hospital Morbidity Database.

Table A.10: Hospitalisations for vaccine-preventable diseases, 0–14 year olds, by State and Territory (rate per 100,000)

Disease	ICD-9-CM code (principal diagnosis)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Pertussis	033								
1994–95		14.6	13.6	24.0	21.4	11.7	16.8	14.8	79.2
1995–96		12.2	12.1	18.1	10.5	18.3	8.5	3.0	18.3
1996–97		15.5	23.2	7.3	24.1	33.5	6.7	8.9	0.0
Hib	320.0, 464.3, 038.41								
1994–95		3.3	3.3	5.9	3.9	4.0	9.3	0.0	10.4
1995–96		2.9	2.4	2.1	2.3	4.3	3.8	4.4	0.0
1996–97		2.6	1.1	2.3	2.3	1.0	2.9	1.5	0.0
Measles	055								
1994–95		11.4	1.2	39.4	1.3	1.3	0.0	5.9	79.2
1995–96		1.3	0.3	1.4	0.3	1.0	2.8	0.0	0.0
1996–97		1.1	0.3	0.5	1.0	0.3	0.0	0.0	2.0
Rubella	771.0								
1994–95		0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0
1995–96		0.1	0.5	0.3	0.0	0.0	0.0	0.0	0.0
1996–97		0.2	0.4	0.7	0.0	0.0	0.0	0.0	0.0
Hepatitis B	070.2, 070.3								
1994–95		0.5	0.4	0.6	0.3	0.3	0.0	0.0	0.0
1995–96		0.2	0.2	1.0	0.3	0.3	0.0	0.0	0.0
1996–97		0.3	0.2	0.5	0.0	0.0	0.0	0.0	2.0
Mumps	072								
1994–95		0.5	0.1	0.8	1.0	0.0	0.9	0.0	2.1
1995–96		0.6	0.5	0.3	0.5	1.0	0.0	1.5	4.1
1996–97		0.5	0.1	0.3	0.3	0.7	0.0	0.0	0.0
Varicella	052								
1994–95		16.2	11.7	23.7	16.0	10.0	8.4	14.8	29.2
1995–96		11.7	9.7	10.0	15.6	13.0	7.5	16.3	14.3
1996–97		13.4	9.3	16.1	14.7	9.0	12.4	14.9	12.1
Rotavirus	008.61								
1994–95		113.7	54.4	71.9	72.9	73.2	55.1	290.8	195.9
1995–96		97.4	55.4	77.4	87.7	133.1	58.3	224.6	413.6
1996–97		97.8	47.4	74.9	78.4	94.1	42.8	241.3	92.4

Note: These figures further breakdown those given in Chapter 15.

Source: AIHW National Hospital Morbidity Database.

Table A.11: Hospitalisations for selected communicable diseases, 0–14 year olds, by State and Territory, 1996–97 (rate per 100,000)

	ICD-9-CM code (principal diagnosis)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Tuberculosis	010–018								
Males		1.9	0.8	0.8	1.5	0.7	0.0	0.0	0.0
Females		1.1	0.6	0.8	4.2	0.0	0.0	0.0	0.0
Menigococcal	036								
Males		8.0	5.6	14.5	7.4	2.0	11.1	11.7	11.7
Females		8.1	5.6	9.2	8.4	4.8	7.8	6.1	29.1
Malaria	084								
Males		0.9	0.4	5.8	3.0	1.3	0.0	0.0	7.8
Females		0.8	0.6	4.2	0.5	1.4	0.0	0.0	12.5
Haemolytic uraemic syndrome	283.11								
Males		1.6	0.4	0.5	1.5	0.7	0.0	0.0	7.8
Females		1.1	0.2	1.1	1.6	0.7	0.0	0.0	0.0

Note: These figures further breakdown those given in Chapter 16.

Source: AIHW National Hospital Morbidity Database.

Table A.12: Hospitalisations for 'child battering and other maltreatment' (ICD-9-CM external cause code E967), 0–14 year olds, by State and Territory (rate per 100,000)

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Hospitalisations, 1996–97	11.3	6.9	14.8	10.9	15.1	9.5	6.0	32.1

Note: These figures further breakdown those given in Chapter 23.

Source: AIHW National Hospital Morbidity Database.

National Health Survey coded conditions

Item description	Item Code	Non-minor?	Item description	Item Code	Non-minor?
Not applicable	(000)		Eczema, dermatitis	(035)	yes
Thyroid disease	(001)	yes	Acne	(036)	yes
Gout	(002)		Other diseases of skin/subcutaneous tissue	(037)	yes
Obesity	(003)		Sciatica	(038)	
Other endocrine, nutritional and metabolic diseases and immunity disorders	(004)		Disorders of the intervertebral disc	(039)	yes
Nerves, tension, nervousness	(005)		Back problems (unspecified)	(040)	yes
Other mental disorders	(006)	yes	Speech impediment, NEC	(041)	yes
Blindness (complete or partial, NOT corrected by glasses)	(007)	yes	Other diseases of the musculoskeletal system and connective tissue	(042)	yes
Other diseases of eye and adnexa	(008)	yes	Herpes	(043)	yes
Otitis media	(009)	yes	Tinea	(044)	yes
Deafness (complete/ partial)	(010)	yes	Other infectious and parasitic diseases	(045)	yes
Ear pain	(011)	yes	Diseases of the blood and blood forming organs	(046)	yes
Other diseases of the ear and mastoid process	(012)	yes	Complications of pregnancy, childbirth and the puerperium	(047)	yes
Epilepsy	(013)	yes	Congenital anomalies	(048)	yes
Other diseases of the nervous system	(014)		Complications of surgical and medical care, NEC	(050)	yes
Atherosclerosis	(015)		Allergy NEC	(051)	
Fluid problems, NOS	(016)		Insomnia	(052)	
Varicose veins	(017)		Pyrexia	(053)	
Haemorrhoids	(018)	yes	Localised swelling	(054)	
Other diseases of circulatory system	(019)	yes	Difficulty breathing	(055)	
Bronchitis/ Emphysema	(020)	yes	Chest pain	(056)	
Sinusitis	(021)		Abdominal pain	(057)	
Cough or sore throat	(022)		Heartburn	(058)	
Other diseases of the respiratory system	(023)	yes	Dizziness	(059)	
Diarrhoea, enteritis	(024)	yes	Headache—due to stress or tension	(060)	
Ulcer	(025)		Headache—due to unspecified or trivial cause	(061)	
Hernia	(026)	yes	Virus	(062)	
Constipation	(027)		Curvature of spine	(063)	
Dental problems	(029)	yes	Other symptoms, signs and ill-defined conditions	(064)	
Other diseases of digestive system	(030)	yes	Skin cancer	(065)	
Kidney diseases	(031)	yes	Breast cancer	(066)	
Other diseases of the urinary system	(032)	yes	Osteoporosis	(067)	
Other diseases of the genital system	(033)	yes	Rheumatoid arthritis	(068)	
Skin rash, NOS	(034)		Osteoarthritis	(069)	

(continued)

Item description	Item Code	Non-minor?	Item description	Item Code	Non-minor?
Arthritis, NEC	(070)	yes	High cholesterol	(108)	
Asthma	(071)	yes	Paralysis	(109)	yes
Hypertension	(072)		Other hereditary and degenerative disorders of the nervous system	(110)	yes
Neoplasms, NEC	(073)	yes	Absence of limbs or parts or limbs	(111)	yes
Checkup/ examination	(074)		Musculoskeletal deformities	(112)	yes
Common cold	(075)		Missing organs, NEC	(113)	yes
Contraceptive management	(076)		Psoriasis	(114)	yes
Counselling	(077)		Astigmatism	(115)	
Diabetes Mellitus—Type 1	(078)	yes	Hypermetropia / Far-sighted	(116)	
Diabetes Mellitus—Type 2	(079)	yes	Myopia / Short-sighted	(117)	
Hangover	(080)		Presbyopia	(118)	
Hayfever	(081)	yes	Stroke (including after effects of)	(119)	
Heart disease	(082)	yes	Fractures	(120)	yes
Immunisation	(083)		Dislocations, sprains and strains	(121)	yes
Influenza	(084)		Internal injuries	(122)	yes
Disorders of menstruation	(085)		Open wounds	(123)	yes
Migraine	(086)	yes	Bruising and crushing	(124)	yes
Pregnancy supervision/ childbirth	(087)		Entry of foreign bodies	(125)	yes
Strabismus	(088)		Burns and scalds	(126)	yes
Rheumatism	(089)		Poisoning (other than by food)	(127)	yes
Test	(090)		Other injuries	(128)	yes
X-ray	(091)		Injuries, type not stated	(129)	yes
Donor	(092)		Ill-defined signs and symptoms of heart conditions	(182)	
Diabetes, unspecified	(093)	yes	Depression	(205)	yes
Preventive measures	(097)		Psychoses	(206)	yes
Other reasons of health	(098)		Emotional problems, NEC	(207)	yes
Visual disturbances	(099)		Body image and eating disorders	(208)	
Cataracts	(100)	yes	Alcohol and drug dependence	(209)	
Glaucoma	(101)		Cerebrovascular disease (excl. stroke)	(219)	yes
Blackouts, fits or loss of consciousness, NEC	(102)	yes	Mental retardation, specific delays development	(306)	yes
Incomplete use of arms or fingers	(103)	yes	Other conditions	(992)	
Incomplete use of feet or legs	(104)		No recent conditions	(996)	
Disfigurement, NEC	(105)		No chronic conditions	(997)	
High blood sugar	(106)		Unspecified conditions	(998)	
Other disorders of refraction and accommodation	(107)		No conditions	(999)	

Correspondence between report structure and the Health Goals and Targets for Australian Children and Youth

Structure of this report		Health goals and targets for Australian children and youth				
Part	Chapter	Reduce the frequency of preventable premature mortality	Reduce the impact of disability	Reduce the incidence of vaccine-preventable diseases	Reduce the impact of conditions occurring in adulthood, but which have their origins or early manifestations in childhood or adolescence	Enhance family and social functioning
Mortality and morbidity in children	Mortality overview	✓				
	Morbidity overview	✓			✓	
	Maternal and infant conditions	✓	✓			
	Sudden infant death syndrome	✓				
	Injury	✓	✓		✓	
	Mental health problems	✓	✓		✓	✓
	Dental disease		✓		✓	
Disability and chronic conditions	Disability overview		✓		✓	
	Congenital malformations	✓	✓		✓	
	Childhood cancer	✓	✓			
	Asthma	✓	✓		✓	
	Other chronic diseases	✓	✓		✓	
Infectious diseases	Vaccine preventable diseases and immunisation	✓		✓		
	Other communicable diseases	✓				
Biological and behavioural determinants	Diet and nutrition				✓	
	Physical activity				✓	
	Healthy weight				✓	
	Sun protection				✓	
	Drug use by children				✓	✓
Family and social environment	Families and child health				✓	✓
	Children in need of protection				✓	✓
	Schools and education				✓	✓

(continued)

Abbreviations

ABS	Australian Bureau of Statistics
ACIR	Australian Childhood Immunisation Register
AIHW	Australian Institute of Health and Welfare
AHMAC	Australian Health Ministers' Advisory Council
AN-DRGs	Australian National Diagnosis Related Groups
APSU	Australian Paediatric Surveillance Unit
ASSAD	The Australian School Students Alcohol and Drugs Surveys
ASCCSS	Australian Standard Classification of Countries for Social Statistics
BMI	Body mass index
CAP	Crisis Accommodation Program
CSDA	Commonwealth–State Disability Agreement
CSHA	Commonwealth–State Housing Agreement
CSP	Children's Services Program
DHFS	Department of Health and Family Services
DMFT	Number of decayed, missing and filled permanent teeth
dmft	Number of decayed, missing and filled deciduous teeth
DSS	Department of Social Security
Hib	*Haemophilus influenza* type b
HIC	Health Insurance Commission
HPA	Indigenous Housing and Home Purchase Assistance
HUS	Haemolytic uraemic syndrome
ICD-9	International Classification of Diseases, ninth revision
ICD-9-CM	International Classification of Diseases, ninth revision, clinical modification
LBW	Low birthweight
MACS	Multifunctional Aboriginal Children's Services
NATSEM	National Centre for Social and Economic Modelling
NATSIS	National Aboriginal and Torres Strait Islander Survey
NCSCH	National Cancer Statistics Clearing House
NDSHS	National Drug Strategy Household Survey
NDTIS	National Dental Telephone Interview Surveys
NHDC	National Health Data Committee
NHMD	National Hospital Morbidity Database
NHMRC	National Health and Medical Research Council
NHS	National Health Survey
NNDSS	National Notifiable Diseases Surveillance System
NNS	National Nutrition Survey
NPSU	National Perinatal Statistics Unit
OECD	Organisation for Economic Cooperation and Development

RRMA	Rural, Remote and Metropolitan Areas
SAAP	Supported Accommodation Assistance Program
SIDS	Sudden infant death syndrome
SEIFA	Socioeconomic index for areas
UNICEF	United Nations Children's Fund
WHO	World Health Organization

State/ Territories

NSW	New South Wales
Vic	Victoria
Qld	Queensland
WA	Western Australia
SA	South Australia
Tas	Tasmania
ACT	Australian Capital Territory
NT	Northern Territory

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