The Health of the People of New South Wales

Report of the Chief Health Officer

Public Health Division
NSW Health Department

March 1996

This report was compiled by the following present and former staff of the NSW Health Department's Public Health Division:

(in alphabetical order)

Guncha Ansari
Gaston Arnolda
John Brown
Lucy Burns
Magnolia Cardona
Jennifer Chipps
Tim Churches
Glenn Close
Paul Corben
Stephen Corbett
Christine Cowie
Shing Chung Fung
Margaret Kelaher
Ed Kraa
Michael Levy
Cait Lonie
Wendy Manning
Rob Menzies
Helen Moore
Geoff Morgan
Ru Nguyen
Shanti Raman
Geoff Richards
Geoff Sayer
Gavin Stewart
Lyn Stoker
Lee Taylor
Margaret Williamson

The preparation of the report relied heavily on the Health Outcomes Information and Statistical Toolkit (HOIST), which is managed by Tim Churches and Peter Brandon.

The report was edited by Lee Taylor, Louisa Jorm, Michael Frommer and George Rubin.

State Health Publication No: (ESB) 960035
ISBN 0 7310 0780 8

Suggested citation: Public Health Division. *The Health of the People of New South Wales - Report of the Chief Health Officer*. NSW Health Department, 1996.

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The Better Health Centre
162 Blues Point Road
NORTH SYDNEY NSW 2060
AUSTRALIA

FOREWORD

I have much pleasure in presenting the first edition of the Chief Health Officer's Report on the Health of the People of New South Wales.

The purpose of the Report is to provide a detailed account of the health status of the NSW population, with particular emphasis on priority population groups. The report also focuses on key health issues facing our community such as cardiovascular disease, cancer, mental health, injury, diabetes and asthma.

The Report uses available population health information in NSW. It brings together data which are routinely collected in administrative systems and in the course of epidemiologic surveillance, as well as data from occasional surveys and studies conducted to answer specific health questions.

The process of compiling such a Report - especially its first edition - inevitably draws attention to information gaps, deficiencies of data, and the weaknesses of existing surveillance systems. One of the intended by-products of the Report is to stimulate improvements in the processes and systems for gathering health information in NSW. Comprehensive, timely information on major health status and health outcome indicators is an essential component in achieving the major goals of NSW Health. These are to improve the health of the people of NSW; to ensure equity of access to services; and to improve the quality of services provided.

In future editions of the Report there will be progressive improvements in its coverage of health status and health outcome indicators. This will enable information to be more readily used in the development of policies, programs and services which more effectively meet the health needs of the people of NSW. Most importantly, we will be able to clearly see whether major health goals and targets are being achieved to improve our health.

It is intended that this document will be of use to health consumers and their representative organisations, Area and Rural Health Services, professional organisations, health professionals themselves and a range of other users. I encourage your comments on the Report - whether it is used, how it is used, and how it could be made more useful.

The production of this Report is largely a result of some very hard work done by staff of the NSW Health Department's Public Health Division. I would like to take this opportunity to express my appreciation for their efforts.

George Rubin
Chief Health Officer

EXECUTIVE SUMMARY

The Chief Health Officer's Report on the Health of the People of New South Wales aims to provide a concise account of the health status of the population, with particular emphasis on specific subgroups and on current high priority health problems. The Report brings together data from epidemiologic surveillance, routine administrative systems, occasional surveys, and studies conducted to answer specific health questions.

Demography

The estimated resident population of NSW was 5,928,000 in 1991 and 6,044,391 in 1994. In 1991, about one in four people were born overseas, and one in five spoke a language other than English at home. Aboriginal and Torres Strait Islander peoples comprised around 1.2 per cent of the population. About one-third of the adult population had an annual individual income of less than $12,000, and just over 11 per cent were unemployed.

Health-related behaviours

Cigarette smoking is the single most important preventable cause of illness and death in NSW. The proportion of NSW adults reporting current smoking fell between 1977 and 1994, from 43 to 27 per cent in men and 30 to 22 per cent in women. Rates of current smoking have also declined among secondary school students, in males from 22 per cent in 1983 to 17 per cent in 1993, and in females from 29 per cent to 22 per cent over the same period.

Excessive alcohol consumption contributes substantially to ill health, including motor vehicle crashes, other injuries and liver disease. In 1989/90, about 5 per cent of adults reported consuming alcohol at high risk level, and a further 7 per cent at medium risk level. Heavy alcohol use is common among young people: in 1992, 21 per cent of male and 17 per cent of female secondary school students reported drinking five or more alcoholic drinks in a row at least once in the preceding fortnight.

Lack of exercise is an important modifiable risk factor for coronary heart disease. In 1994, 60 per cent of men and 43 per cent of women reported exercising at moderate to high levels. Fifteen per cent of adults were classified as sedentary.

Obesity is well established as a risk factor for diabetes, hypertension and lipid abnormalities. In 1994, 48 per cent of men and 31 per cent of women were classified as overweight or obese, based on self-reported height and weight. This compares with 43 per cent and 29 per cent, respectively, in 1989/90.

The environment

In urban areas, air quality is determined by the complex nexus between urban development, population growth, land use and transport. Studies of respiratory symptoms in asthmatics, hospital emergency department attendances, hospital admissions and deaths, which comprise the Health and Air Research Program (HARP), are due to be completed in mid 1996.

Water contaminants which are of most concern to public health include microbiological contaminants, by-products of disinfection, aluminium, heavy metals, pesticides and blue-green algae. The NSW Health Department will soon have additional responsibilities to formally audit water quality in Sydney, through surveillance of the Sydney Water Corporation testing programs.

Lead exposure has re-emerged as a public health concern in NSW, due to the increasing evidence of the subtle effects of lead on the cognitive development of children. In November 1994, the NSW Lead Task Force outlined the lead management action plan to minimise environmental lead and human exposure to lead.

Patterns of health and illness

Between 1971 and 1993, life expectancy at birth increased from 68 to 75 years for men, and from 74 to 81 years for women.

Over the five years 1988-92, there were 43,757 deaths per annum on average. Of these:

- 35% were due to circulatory diseases,
- 19% to cancer,
- 6% to respiratory diseases, and
- 4% to injury and poisoning.

Potential years of life lost (PYLL) before age 75 is a measure of premature mortality and emphasises conditions which cause death among younger people. Injury and poisoning accounted for the greatest number of PYLL in males up to the age of 75 years, with two-thirds due to suicide and motor vehicle traffic accidents. In females, the leading cause of PYLL was cancer, with about one-quarter due to breast cancer.

In males the most common reasons for hospitalisation were digestive diseases, followed by circulatory diseases and injury and poisoning. In females the most common reasons were pregnancy, digestive diseases, and genito-urinary diseases.

In 1989/90, 29 per cent of the population reported their health as excellent, 49 per cent as good, 17 per cent as fair and 5 per cent as poor. Seventy-one per cent reported that they had had an illness in the previous two weeks, and 64 per cent reported a long-term condition.

In 1993 it was estimated that 17 per cent of NSW people had a disability. Of these, 79 per cent had a handicap that limited their ability to perform certain tasks of daily living.

Mothers and newborns

In 1994, 87,984 births were reported to the NSW Midwives Data Collection. Over one-quarter of all births in NSW occurred in the Western and South-Western Areas of Sydney. Seventeen per cent of confinements were among women born in non-English speaking countries. Thirteen per cent were among women aged over 35 years, compared with only 9 per cent in 1987.

In 1994, two per cent of mothers had prenatal diagnosis by amniocentesis or chorionic villus sampling. Onset of labour was spontaneous in 80 per cent of confinements. Seventy-one per cent of confinements followed normal vaginal deliveries, 17 per cent caesarean sections, and 11 per cent instrumental deliveries (forceps or vacuum extraction), while 1 per cent followed vaginal breech deliveries.

In 1994, 6.3 per cent of infants were of low birthweight (less than 2500 grams) and 6.4 per cent were premature (<37 weeks gestation). The perinatal mortality rate decreased from 11.5 per 1000 total births in 1986 to 10.6 in 1992.

Infectious diseases

A total of 24,079 notifications of infectious diseases were received in 1994 under the Public Health Act 1991.

Of these, 3,235 were for vaccine-preventable diseases, predominantly measles (1499 notifications) and pertussis (whooping cough) (1419 notifications). Notifications for *Haemophilus influenzae* type b (Hib) fell from 228 in 1992 to 61 in 1994, reflecting the introduction of Hib vaccines.

The 1989/90 Australian Bureau of Statistics National Health Survey reported that 52 per cent of NSW children aged less than six years were fully immunised. While there are no more recent comparable data, other surveys suggest that immunisation coverage has improved substantially since 1990.

From 1981 to 1994, 12,101 notifications for Human Immunodeficiency Virus (HIV) infection were received. In 1994 there were 435 notifications for HIV infection, the lowest annual number since HIV

testing began. From 1981 to 1994, 3,398 cases of Acquired Immunodeficiency Syndrome (AIDS) were notified. These included 460 cases notified as having been diagnosed in 1994. Homosexual contact remains the most important risk factor for HIV infection and AIDS in NSW.

Since hepatitis C became notifiable late in 1991, there has been a dramatic increase in notifications for hepatitis C antibody (4,306 notifications in 1992, 6,342 in 1993, and 9,366 in 1994). The presence of hepatitis C antibody indicates exposure to hepatitis C virus only, and is not a conclusive indicator of continuing infection. However, it is clear that hepatitis C infection is a growing public health problem in NSW.

Cardiovascular diseases

Between 1971 and 1992 the age-standardised mortality rate for coronary heart disease (CHD) in males was more than halved, from 437 to 214 per 100,000. In females the rate was almost halved, from 221 to 118 per 100,000. Over the same time period the age-standardised mortality rate for stroke in males fell in both sexes (from 176 to 68 per 100,000 in males and from 159 to 60 per 100,000 in females).

Despite these reductions, cardiovascular disease remains a major cause of mortality in NSW. In 1992, 10,826 NSW residents died of CHD (5,874 men and 4,952 women), and 4,393 died following a stroke (1,778 men and 2,615 women).

In 1993/94, there were 133,776 separations from NSW hospitals with a principal diagnosis of cardiovascular disease. These included 52,576 separations for CHD and 16,337 separations for cerebrovascular disease. There has been a recent shift in the nature of CHD inpatients, with decreasing admissions for acute myocardial infarction ("heart attack") and increasing admissions for assessment and management of non-infarct diagnoses, such as stable and unstable angina. This change is reflected by increasing numbers of coronary artery catheterisation/angiography procedures for the investigation of CHD and coronary revascularisation procedures.

Cancer

In 1992, cancer accounted for 11,474 deaths (26 per cent of all deaths) in NSW. As a cause of death, cancer ranked second only to cardiovascular diseases.

In men, cancers of the prostate, lung, and colon and rectum, and melanoma, accounted for 60 per cent of new cases of cancer and 54 per cent of cancer deaths in 1992. The lifetime risk (to age 74 years) of men developing any type of cancer was 1 in 3, and that of dying from cancer was 1 in 6.

In women, cancers of the breast, lung, and colon and rectum, and melanoma, accounted for 56 per cent of all new cases of cancer and 48 per cent of all cancer deaths in 1992. The lifetime risk (to age 74) of women developing any type of cancer was 1 in 4, and that of dying from cancer was 1 in 10.

Mental disorders

There is currently no information on the prevalence of mental disorders in NSW. This deficiency will be addressed by the planned 1996/7 National Mental Health Survey.

Although hospital care is only part of a range of services provided by NSW Health to people with mental disorders, it is the only form of service that is routinely monitored and reported.

Of the 61,407 hospitalisations (including day-only) for mental disorders in 1993/94, 27 per cent were for depression and related disorders, 14 per cent for schizophrenic disorders and 9 per cent for alcohol abuse and dependence. Estimated hospitalisation rates for mental disorders varied widely by gender, Aboriginality and ethnicity.

Over the period 1988/89 to 1993/94, the number of day-only hospital admissions for mental disorders increased, but the total number of hospitalisations and average length of hospital stay did not change substantially.

Injury

Injury is a leading cause of preventable morbidity and mortality in NSW, accounting for 6 per cent of all deaths in 1992 and 10 per cent of all hospitalisations in the financial year 1992/3.

The mortality rate due to injury has been falling since the early 1970s, to 36.5 per 100,000 in 1992. The hospitalisation rate, however, increased from 1988 to 1992/3, to 18 per 1,000 population. Males had higher death and hospitalisation rates due to injury than females.

Regardless of intent, the commonest causes of death due to injury were motor vehicle accidents and falls, followed by poisoning, suffocation and firearm injuries. The commonest causes of hospitalisation due to injury were falls and poisoning, followed by sport-related, injuries caused by being struck by an object, and cutting and piercing injuries.

Of the deaths due to injury, 64 per cent were reported as accidental, 31 per cent as self-inflicted and 4 per cent as inflicted by others. Of the hospital separations due to injury, 91 per cent were reported as accidental, 4 per cent as self-inflicted and 5 per cent as inflicted by others.

Asthma

Asthma is an important clinical and public health problem, and is the most common cause of non-infectious, non-smoking related chronic respiratory disease in NSW.

In 1989/90, 8 per cent of the NSW population (approximately 443,000 people) reported having asthma as a long term condition. Children were more likely to have asthma than adults. In 1993/94 there were 20,371 hospitalisations due to asthma.

While asthma is a common condition, it is an uncommon cause of death. In 1992, there were 307 deaths due to asthma.

Diabetes mellitus

Diabetes mellitus is a common, chronic and costly condition. In 1989/90, 4.8 per cent of adults reported having diabetes or high blood sugar. It was estimated that, statewide, 110,000 adults had diabetes and 88,500 had high blood glucose.

In addition to those people known to have diabetes, another 50 per cent of people with diabetes may be undiagnosed.

Diabetes was recorded as the underlying cause of death in 684 people in 1992. As deaths related to diabetes are frequently caused by diabetic complications such as ischaemic heart disease, stroke, and renal disease, current mortality data underestimates the real contribution of diabetes to total mortality.

Diabetes was reported as the principal diagnosis in 5,115 hospitalisations in NSW in 1993/94.

People with diabetes experience both acute and long term complications. They are 15 times more likely to have a lower extremity amputation (LEA) than the population as a whole. Between 1989/90 and 1993/94, age-standardised hospitalisation rates for LEAs increased in males from 10.8 to 15.0 per 100,000 population and in females from 4.5 to 5.9 per 100,000.

Diabetic retinopathy is the leading cause of new cases of blindness. Up to 36 per cent of people with diabetes have retinopathy and 8-15 per cent have retinopathy which is vision threatening.

The health of Aboriginal and Torres Strait Islander peoples

The NSW Aboriginal and Torres Strait Islander population numbered an estimated 80,437 in 1994. Compared with non-Aboriginal people, Aboriginal and Torres Strait Islander peoples had lower levels of education, employment and income.

In the period 1985-1992, Aboriginal and Torres Strait Islander peoples had higher mortality rates than non-Aboriginal people, after adjustment for differences in age distribution, and a lower overall life expectancy. Cardiovascular disease, injury and poisoning, cancer, liver disease and respiratory disease accounted for most of this excess mortality.

Aboriginal and Torres Strait Islander babies born in the period 1987-1990 were twice as likely as non-Aboriginal babies to be of low birthweight, and twice as likely to die in the perinatal period.

In 1994, it was estimated that the prevalence of diabetes in Aboriginal and Torres Strait Islander peoples was two and a half times that in the NSW general population. The Aboriginal and Torres Strait Islander population also had almost twice the prevalence of high blood pressure among people aged 45 years or older, and about four and a half times the prevalence of kidney disease among those aged 35 years and over. The prevalence of ear or hearing problems in Aboriginal and Torres Strait Islander children aged less than 15 years was over five times that in the general population.

Children and young people

At the 1991 Census children and young people under 25 years of age comprised 37 per cent of the NSW population.

Between 1982 and 1992, infant mortality (deaths before one year of age) decreased from 9.8 to 6.9 per 1,000 live births. The most common causes of infant mortality were congenital malformations and Sudden Infant Death Syndrome (SIDS). Between 1988 and 1992, the most common causes of death among children and young people up to the age of 24 years were injury (38 per cent) and cancer (5.6 per cent). The overall mortality rate was higher for males (1.0 per 1,000) than females (0.6 per 1,000).

Deaths and hospitalisations due to injury were more common among males than females. Among 0-4 year olds the most common causes of injury related deaths were drowning and traffic accidents, while the most common causes of injury related hospitalisation were falls and poisoning. Among 5-24 year-olds, most injury related deaths were due to traffic accidents, and most injury related hospitalisations to traffic accidents or falls.

Suicide accounted for 20 per cent of deaths among people aged up to 25 years, and 25 per cent of deaths in the 15-24 year age group. Eighty-five per cent of suicide deaths were in males. Hospitalisation for self-inflicted injury in this age group, however, was more common among females than males.

In 1994, over 25,000 children under 15 years of age received the Child Disability Allowance. More than 8,000 school children were identified as having an intellectual disability.

In 1994, there were over 13,000 confirmed cases of abuse or neglect in children and young people.

Older people

In 1993, people aged 60 years and over comprised 12 per cent of the population. This proportion is predicted to increase to between 20.5 and 22.0 per cent of the total population by the year 2041.

In 1989/90, the ABS estimated that 54 per cent of older people in NSW had cardiovascular conditions as a recent and/or long term condition. In 1992, 52 per cent of deaths among older people were from cardiovascular diseases.

In 1992, 24 per cent of deaths among older people were from cancer. The most common sites for new cases of cancer in people aged 60 years and over were prostate, lung and colon cancer in men, and breast, colon and lung cancer in women.

In 1989/90, 89 per cent of older people reported an illness in the previous two weeks. The most commonly reported conditions were hypertension (34 per cent of older people) and arthritis (19 per cent). Ninety-four per cent of older people reported long term conditions. Disorders of eyesight were reported by 62 per cent of older people and arthritis was reported by 37 per cent.

In 1993, 43 per cent of people aged 60-74 years had a disability, and 82 per cent of these had a handicap. In those aged 75 years and over, 65 per cent had a disability, and 90 per cent of these had a handicap.

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CONTENTS

CHAPTER 1
DETERMINANTSOF HEALTH

- The estimated resident population of NSW in 1991 was 5,928,000 and in 1994 was 6,044,391.
- Aboriginal and Torres Strait Islander people comprised approximately 1.2 per cent of the population in 1994.
- In 1991, about one in four people in NSW were born overseas, and one in five spoke a language other than English at home.
- The proportion of NSW adults who currently smoke fell from 37 per cent in 1977 to 24 per cent in 1994, with a greater decrease in males than females.
- In 1989/90 about 5 per cent of adults reported consuming alcohol at a high risk level, and a further 7 per cent at a medium risk level.
- A survey of drug use in 1993 reported that 3 per cent of males and 2 per cent of females aged 14-plus years reported ever using heroin. The mortality rate due to opiate overdose in 1990 was 2.7 per 100,000 population, an increase of 170 per cent over the preceding decade.
- Participation in methadone programs in 1994 was 184 per 100,000 population, more than double the 1987 rate of 82 per 100,000.
- A 1994 survey showed that 60 per cent of males and 43 per cent of females exercised at moderate to high levels.
- In 1994, 48 per cent of men and 31 per cent of women were classified as overweight or obese, based on self-reported height and weight. This compares with 43 per cent and 29 per cent, respectively, in 1989/90.

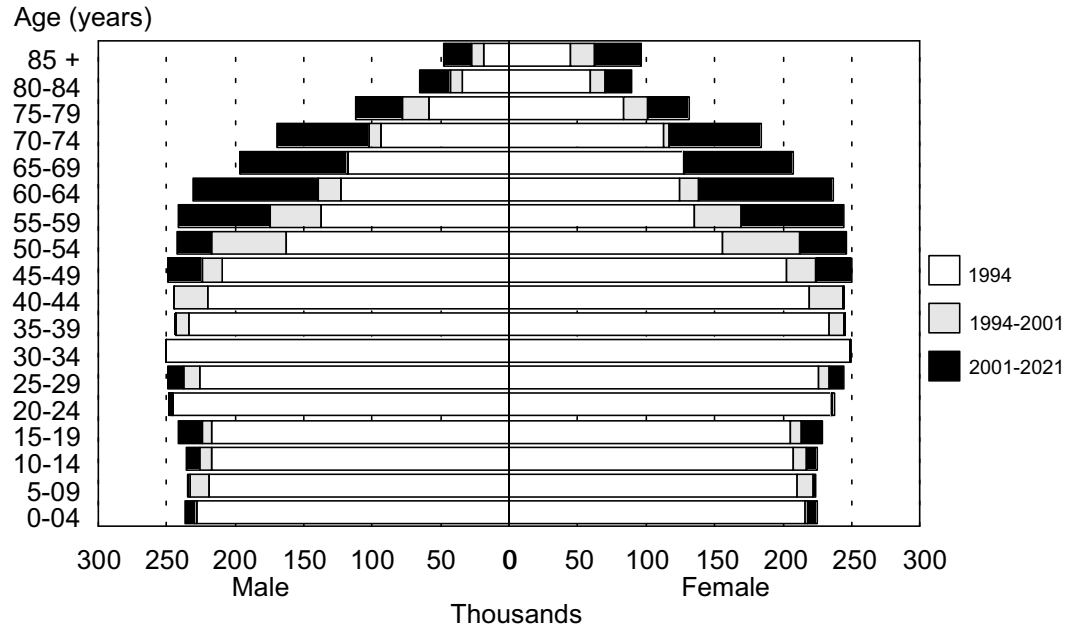
1.1 Demography

The estimated resident population of NSW in 1991 was 5,928,800, comprising 2,950,100 males (49.8 per cent) and 2,978,700 females (50.2 per cent) [1]. On the basis of population growth between 1986 and 1991, it is estimated that the total NSW population in 1994 was 6,044,391.

The proportion of older people in the population is increasing: nearly 12 per cent of the population was aged 65 years and over in 1991 compared to 9 per cent in 1971. It is estimated that this proportion will increase to 12-13 per cent by 2001 and 19-21 per cent by 2031 [2]. The ageing of the population is described in more detail in chapter 13. There has been a trend for women increasingly to outnumber men after 50 years of age and it is expected that this trend will continue (Figure 1.1).

In 1994, the Wentworth and South Western Sydney Areas and the Orana District had the highest proportion of persons aged under 25 years (42.1,41.2 and 41.3 per cent respectively); while the highest proportion of persons aged over 65 years were in the Lower North Coast, Macleay-Hastings and Tweed Districts (18.8, 18.4 and 18.4 per cent respectively) (Table 1.1).

Figure 1.1 Population pyramid for NSW in 1994 and projected population increases to 2001 and 2021



Note: It isexpected that the number of males and females aged 30-44 will decrease by 2021.
Source : Australian Bureau of Statistics. Projections of the Populations of Australia, States and Territories, 1993 to 2041. (Series B displayed). Catalogue No. 3222.0, 1994.

The Australian Bureau of Statistics (ABS) estimated that the NSW Aboriginal and Torres Strait Islander population was 80,437 on 30 June 1994 [3], having risen from 75,204 at the 1991 Census [4]. Aboriginal and Torres Strait Islander peoples therefore comprise approximately 1.2 per cent of the NSW population. The demographic profile of Aboriginal and Torres Strait Islander peoples is described in detail in chapter 11.

At the 1991 Census, 1,445,123 people in NSW (24 per cent) were reported to have been born overseas, and 852,667 (14 per cent) were born in non-English speaking countries. Of those born overseas, the majority were born in the United Kingdom and Ireland (22 per cent), followed by Southern Europe (11 per cent), South-East Asia (10 per cent), New Zealand and the South Pacific Islands (8 per cent), Eastern Europe, Russia, and the Central Asian and Baltic States (8 per cent), and Northern and Eastern Asia (7 per cent)[5]. The distribution of the population for overseas countries of birth is shown in Table 1.2.

Table 1.1 Estimated resident population by age and Health Area/District of residence, NSW 1994

Health Area/District of residence	Age (years) 0-24		25-44		45-64		65 plus		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Central Sydney	93860	29.4	120034	37.6	64491	20.2	40761	12.8	319146	100.0
Northern Sydney	237659	32.5	223387	30.5	166390	22.7	104857	14.3	732293	100.0
Southern Sydney	183134	34.2	164678	30.8	114647	21.4	72812	13.6	535271	100.0
Eastern Sydney	93166	30.1	110760	35.7	63420	20.5	42507	13.7	309853	100.0
Western Sydney	246520	39.7	189866	30.6	128509	20.7	56271	9.1	621166	100.0
Wentworth	124170	42.1	96742	32.8	51893	17.6	22287	7.6	295092	100.0
South Western Sydney	288562	41.2	217911	31.1	131723	18.8	62388	8.9	700584	100.0
Central Coast	87467	34.4	71021	27.9	51622	20.3	44199	17.4	254309	100.0
Hunter	190124	36.7	153856	29.7	105250	20.3	69237	13.4	518467	100.0
Illawarra	119046	36.3	95908	29.2	69506	21.2	43776	13.3	328236	100.0
Barwon	14513	39.2	11288	30.5	8015	21.6	3243	8.8	37059	100.0
Castlereagh	10780	37.1	8080	27.8	6512	22.4	3693	12.7	29065	100.0
Central Western	24949	39.0	17430	27.2	13252	20.7	8374	13.1	64005	100.0
Clarence	16653	35.1	13222	27.9	10496	22.1	7097	15.0	47468	100.0
Evans	28171	40.3	20529	29.3	13524	19.3	7723	11.0	69947	100.0
Far West	9802	35.4	8225	29.7	5790	20.9	3911	14.1	27728	100.0
Hume	30425	37.8	23303	28.9	16545	20.5	10292	12.8	80565	100.0
Lachlan	14926	37.7	10792	27.3	8373	21.2	5487	13.9	39578	100.0
Lower North Coast	24519	32.4	18978	25.1	17988	23.8	14225	18.8	75710	100.0
Macleay-Hastings	26299	32.8	20463	25.6	18611	23.2	14715	18.4	80088	100.0
Macquarie	29802	39.6	22377	29.7	15003	19.9	8064	10.7	75246	100.0
Mid North Coast	31225	36.6	24154	28.3	17952	21.1	11912	14.0	85243	100.0
Monaro	21112	38.2	18844	34.1	10874	19.7	4429	8.0	55259	100.0
Murray	14828	35.8	12120	29.2	9178	22.1	5337	12.9	41463	100.0
Murrumbidgee	19068	38.6	14303	29.0	10144	20.5	5877	11.9	49392	100.0
New England	28869	40.6	19089	26.8	14581	20.5	8593	12.1	71132	100.0
North West	30428	38.3	22492	28.3	16856	21.2	9664	12.2	79440	100.0
Orana	6092	41.3	4531	30.7	2953	20.0	1192	8.1	14768	100.0
Richmond	49521	36.8	38847	28.8	27052	20.1	19265	14.3	134685	100.0
Riverina	36928	40.9	26502	29.3	16744	18.5	10157	11.2	90331	100.0
South Coast	18529	32.1	15478	26.8	13370	23.2	10292	17.8	57669	100.0
Southern Tablelands	23808	36.6	18826	28.9	14163	21.8	8295	12.7	65092	100.0
Tweed	19253	32.6	15896	26.9	13017	22	10875	18.4	59041	100.0
NSW	2194208	36.3	1849932	30.6	1248444	20.7	751807	12.4	6044391	100.0

Data source: Population estimates (HOIST), Epidemiology Branch, NSW Health Department.

Table 1.2 Overseas-born population by country of birth, NSW 1991

Country of birth	No.	%	Country of birth	No.	%
United Kingdom	324194	22.4	Iran	7634	0.5
New Zealand	84669	5.9	Uruguay	7324	0.5
Italy	70530	4.9	Czechoslovakia	7043	0.5
Former Yugoslavia	61357	4.2	Spain	6502	0.4
Lebanon	51465	3.6	Singapore	6353	0.4
Vietnam	49174	3.4	Thailand	5927	0.4
China	44859	3.1	Papua New Guinea	5755	0.4
Greece	44283	3.1	France	5747	0.4
Philippines	37418	2.6	Laos	5712	0.4
Germany	33888	2.3	Mauritius	5546	0.4
Hong Kong	33414	2.3	Argentina	5511	0.4
Netherlands	23697	1.6	Taiwan	5154	0.4
Malta	21495	1.5	Tonga	4269	0.3
India	20510	1.4	Iraq	4051	0.3
Malaysia	20475	1.4	Romania	3582	0.2
Poland	20335	1.4	Switzerland	3438	0.2
Fiji	18309	1.3	Syria	3357	0.2
South Africa	18240	1.3	Pakistan	3294	0.2
United States of America	17902	1.2	Western Samoa	3238	0.2
Egypt	16970	1.2	Denmark	3030	0.2
Korea	16144	1.1	Ukraine	2950	0.2
Indonesia and Timor	14562	1.0	Finland	2731	0.2
Chile	13285	0.9	Latvia	2706	0.2
Turkey	11605	0.8	Israel	2649	0.2
Hungary	10969	0.8	Peru	2649	0.2
Japan	10864	0.8	Sweden	2166	0.1
Sri Lanka	10705	0.7	Other former USSR	7182	0.5
Portugal	10083	0.7	Other Africa	4553	0.3
Cyprus	8437	0.6	Other Middle East	4127	0.3
Canada	8059	0.6	Other	29939	2.1
Austria	7956	0.6	Not stated	137394	9.5
Cambodia	7757	0.5	**Total**	**1445123**	**100.0**

Data source: Australian Bureau of Statistics 1991 Census data (HOIST).
Epidemiology Branch, NSW Health Department.

At the 1991 Census, 987,241 people in NSW (about one in five) reported that they spoke a language other than English at home. The most common languages spoken at home were Chinese languages (12.8 per cent of all languages other than English), Arabic (12.0 per cent) and Italian (11.6 per cent) (Table 1.3). There were lower proportions of younger and older people among the population who spoke a language other than English at home: 36.6 per cent of the non-English speaking community were less than 25 years of age and 8.1 per cent were aged 65 years or over, compared with 37.5 per cent and 12.6 per cent respectively of the English speaking population (Table 1.4). Detailed information on the demographic features of the non-English speaking population has been reported elsewhere [6].

Table 1.3 Language other than English spoken at home, NSW 1991

Language	No.	%	Language	No.	%
Chinese languages	126324	12.8	Polish	19820	2.0
Arabic	118002	12.0	French	17731	1.8
Italian	114257	11.6	Turkish	16470	1.7
Greek	987231	10.0	Korean	16428	1.7
Spanish	48458	4.9	Portuguese	14148	1.4
Vietnamese	42637	4.3	Hindi	13165	1.3
German	35218	3.6	Indonesian/Malay	12747	1.3
Filipino languages	31553	3.2	Dutch	11701	1.2
Macedonian	25937	2.6	Hungarian	11166	1.1
Maltese	20941	2.1	Other	167219	16.9
Croatian	24596	2.5	**Total**	**987241**	**100.0**

Data source: Australian Bureau of Statistics 1991 Census data (HOIST). Epidemiology Branch, NSW Health Department.

Table 1.4 NSW population by age and English or other language spoken at home, 1991

Age (years)	Language spoken at home			
	English		Language other than English	
	No.	%	No.	%
0-4	347751	7.6	64413	6.5
5-9	345532	7.5	63805	6.5
10-14	334517	7.3	70217	7.1
15-19	348487	7.6	77556	7.9
20-24	344520	7.5	84978	8.6
25-29	351690	7.7	88907	9.0
30-34	368581	8.0	89386	9.1
35-39	343217	7.5	82671	8.4
40-44	335091	7.3	79374	8.0
45-49	273708	6.0	61960	6.3
50-54	222454	4.8	55589	5.6
55-59	193409	4.2	47024	4.8
60-64	206626	4.5	40967	4.1
65-69	193493	4.2	34202	3.5
70-74	154651	3.4	20123	2.0
75+	229460	5.0	26069	2.6
Total	**4593187**	**100.0**	**987241**	**100.0**

Source: Choucair S, Nivison-Smith I. Population Profile, Volume Seven, Demographic and Social Indicators New South Wales. Southern Sydney Area Health Service, 1994.1.2

1.2 Socioeconomic status

The socioeconomic status of the Aboriginal and Torres Strait Islander peoples in NSW is described in detail in chapter 11. This section deals with the socioeconomic status of the NSW population as a whole, and of non-English speaking groups.

1.2.1 Income

At the 1991 Census, about one-third of the NSW population had an individual income of less than $12,000 and 58 per cent had an income of less than $30,000 (Table 1.5). Females tended to have a lower individual income than males.

Those who spoke a language other than English at home tended to have a lower individual income than those who spoke English at home (Table 1.6). However there was great variation among non-English speaking groups: the proportion of people with an income of less than $12,000 per annum varied from 20.0 per cent of those who spoke Filipino languages to 45.3 per cent of Polish speakers.

Table 1.5 Annual individual income by sex, NSW 1991

Annual individual income	Males		Females		Total	
	No.	%	No.	%	No.	%
Less than $3001	137,258	4.8	319,508	11.1	456,766	8.0
$3001-12000	524,126	18.4	819,245	28.4	1,343,371	23.4
$12001-$20000	349,606	12.3	383,020	13.3	732,626	12.8
$20001-$30000	473,303	16.6	299,584	10.4	772,887	13.5
$30001-$50000	393,849	13.8	162,267	5.6	556,116	9.7
$50001-$60000	91,932	3.2	16,893	0.6	108,825	1.9
Over $60000	58,794	2.1	9,600	0.3	68,394	1.2
Not stated/not applicable	815,946	28.7	877,505	30.4	1,693,451	29.5
Total	**2,844,814**	**100.0**	**2,887,622**	**100.0**	**5,732,436**	**100.0**

Note: Not applicable refers to persons less than 15 years of age.
Source: Choucair S, Nivison-Smith I. Population Profile, Volume Seven, Demographic and Social Indicators New South Wales. Southern Sydney Area Health Service, 1994.

Table 1.6 Individual annual income by language spoken at home, NSW 1991

Annual individual income	Language spoken at home			
	English		Language other than English	
	No.	%	No.	%
Less than $3001	360,892	7.9	89,748	9.1
$3001-12000	1,099,342	23.9	230,882	23.4
$12001-$20000	579,503	12.6	148,692	15.1
$20001-$30000	634,298	13.8	135,777	13.8
$30001-$50000	481,293	10.5	73,438	7.4
$50001-$60000	96,110	2.1	12,477	1.3
Over $60000	60,940	1.3	7,250	0.7
Not stated/not applicable	1,280,817	27.9	289,021	29.3
Total	**4,593,195**	**100**	**987,285**	**100**

Note: Not applicable refers to persons less than 15 years of age
Source: Choucair S, Nivison-Smith I. Population Profile, Volume Seven, Demographic and Social Indicators New South Wales. Southern Sydney Area Health Service, 1994.

1.2.2 Level of education attained

In 1991, 10.3 per cent of the NSW population had a diploma or higher level of qualification, 8.3 per cent had a skilled vocational qualification and 3.0 per cent had a basic vocational qualification (Table 1.7). Males tended to have higher levels of qualification than females.

People who spoke a language other than English at home were more likely to have a bachelor degree or higher and were less likely to have a vocational qualification than people who spoke English (Table 1.8) The proportion of people with a diploma qualification or higher varied from 1.9 per cent among Maltese speakers to 29.5 per cent of those who spoke Filipino languages.

Table 1.7 Level of education by sex, NSW 1991

Level of education (highest)	Males		Females		Total	
	No.	%	No.	%	No.	%
Higher degree	26,363	1.2	10,621	0.5	49,864	0.9
Postgraduate diploma/Bachelor degree	130,086	5.7	115,449	5.0	302,329	5.3
Undergraduate/Associate diploma	72,423	3.2	131,581	5.7	233,837	4.1
Skilled vocational	365,973	16.1	41,283	1.8	474,738	8.3
Basic vocational	51,280	2.3	98,529	4.2	174,156	3.0
Inadequately described	20,337	0.9	16,621	0.7	51,202	0.9
No qualification	1,463,752	64.5	1,693,214	72.9	3,891,837	67.9
Not stated	138,874	6.1	216,804	9.3	554,156	9.7
Total	**2,269,088**	**100.0**	**2,324,102**	**100.0**	**5,732,118**	**100.0**

Note: No qualification includes those less than 15 years of age
Source: Choucair S, Nivison-Smith I. Population Profile, Volume Seven, Demographic and Social Indicators New South Wales. Southern Sydney Area Health Service, 1994.

Table 1.8 Level of education by language spoken at home, NSW 1991

Level of education (highest)	Language spoken at home			
	English		Language other than English	
	No.	%	No.	%
Higher degree	36,984	0.8	12,750	1.3
Postgraduate diploma/Bachelor degree	245,535	5.3	56,044	5.7
Undergraduate/Associate diploma	204,004	4.4	29,173	3.0
Skilled vocational	407,256	8.9	65,864	6.7
Basic vocational	149,809	3.3	23,924	2.4
Inadequately described	36,958	0.8	13,964	1.4
No qualification	3,156,966	68.7	686,188	69.5
Not stated	355,678	7.7	99,046	10.0
Total	**4,593,190**	**100.0**	**986,953**	**100.0**

Note: No qualification includes those less than 15 years of age.
Source: Choucair S, Nivison-Smith I. Population Profile, Volume Seven, Demographic and Social Indicators New South Wales. Southern Sydney Area Health Service, 1994.

1.2.3 Employment status

The unemployment rate at the 1991 Census was 11.2 per cent: 11.9 per cent among males and 10.3 per cent among females. In May 1995, the unemployment rate was 7.6 per cent, and varied from 19.1 per cent among 15-19 year-olds to 4.5 per cent among 45-54 year-olds [7]. In 1991the unemployment rate was higher among people who spoke a language other than English at home compared with those who spoke English at home (17.5 per cent compared to 9.9 per cent) [6]. However, the unemployment rate among non-English speaking people varied from 9.2 per cent among Dutch speakers to 46.4 per cent of Vietnamese speakers.

At the 1991 Census, the labour force participation rate in NSW was 62.3 per cent overall, 73.5 per cent for males and 51.5 per cent for females. The participation rate has remained stable since 1991, varying between 61.7 and 62.2 per cent [7]. In 1991, the participation rate of non-English speaking people was 61.8 per cent compared with 63.0 per cent among English-speaking people [6].

- The *unemployment rate* is the number of unemployed expressed as a percentage of the labour force (i.e. employed plus unemployed).
- The *labour force participation rate* is the labour force expressed as a percentage of the civilian population aged 15 years and over.

1.3 Health-related behaviours

1.3.1 Tobacco consumption

It has been estimated that cigarette smoking causes 40 per cent of all deaths among men and 20 per cent among women aged less than 65 years in Australia [8], and 21 per cent of all heart disease mortality [9]. Smoking also increases the risk of death from heart disease associated with other conditions including diabetes, hypertension and hyperlipidaemia. It has been estimated that cessation of smoking reduces the individual risk of myocardial infarction by 50 to 70 per cent [10].

Over half of all cancers of the lip, mouth and throat, and larynx can be attributed to smoking, as well as 84 per cent of lung cancer in males and 77 per cent in females, and 41 per cent of peptic ulcers. In pregnancy, smoking is associated with low birthweight and about 15 per cent of cases of antepartum haemorrhage[8].

The proportion of NSW adults reporting current smoking fell from 37 per cent in 1977 to 24 per cent in 1994 (Figure 1.2). There has been a greater decrease in the rate of current smoking in males (from 43 to 27 per cent) than in females (from 30 to 22 per cent).

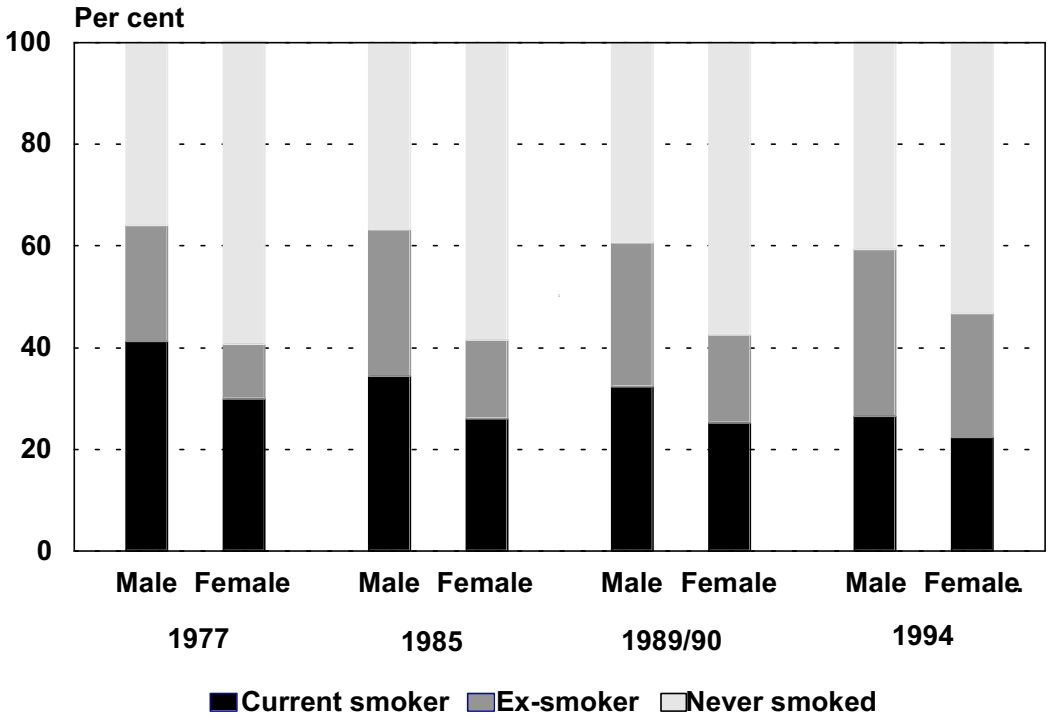
The overall decline in smoking prevalence has followed an increase in rates of cessation of smoking rather than a fall in uptake. In particular, the proportion of females who reported never having smoked decreased from 59 per cent in 1977 to 53 per cent in 1994.

The reported rate of smoking in pregnancy was 22.1 per cent in 1994 (see chapter 3).

Surveys of year 5 and 6 primary school students showed a decrease in the proportion of students who had ever tried smoking from 34 per cent in 1986 to 25 per cent in 1993 [11]. In 1993, smoking was more common among males than females and the proportion of students who smoked at least weekly increased slightly compared with 1986 but remained less than 2 per cent (Table 1.9).

Surveys of secondary school students showed a decrease in the age-adjusted rate of smoking among males, from 21.8 per cent in 1983 to 17.3 per cent in 1992, and among females from 28.8 per cent to 21.9 per cent over the same period (Figure 1.3). In 1992, 62.6 per cent of males and 61.0 per cent of females reported never smoking more than once or twice [12].

Figure 1.2 Trends in smoking status by sex, NSW residents aged 18 years and over, 1977-94



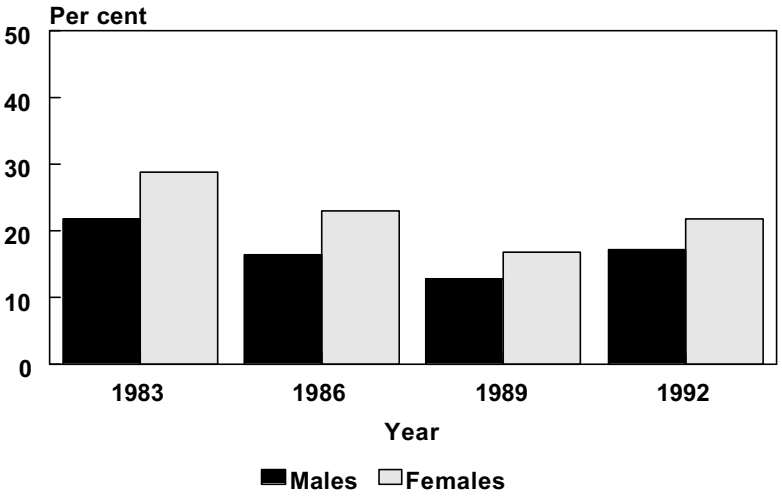
Source: Australian Bureau of Statistics, Survey of Alcohol and Tobacco Consumption, 1977; Australian Bureau of Statistics Life Style: Health Risk Factors, NSW, 1985; and National Health Survey, 1989-90; NSW Health Department Health Promotion Survey, 1994.

Table 1.9 Trends in reported smoking among year 5 and 6 primary school students by sex, NSW 1986-93

Reported smoking	1986		1989		1993	
	Female (%,n=1287)	Male (%,n=1291)	Female (%,n=449)	Male (%,n=504)	Female (%,n=1170)	Male (%,n=1227)
Don't smoke	92.5	85.7	93.3	89.7	92.7	86.1
Few times a year	6.1	9.9	5.6	8.5	4.6	7.7
1-3 times a month	0.9	2.6	0.9	0.8	1.7	3.2
Once a week	0.5	1.4	0.0	0.6	0.6	1.6
Every day	0.1	0.5	0.2	0.4	0.3	1.5

Source: Bauman A, Chen JC, Cooney A, Dobbinson S and Flaherty B. 1993 Survey of Drug Use by NSW Primary School Children. New South Wales Health Department, 1994.

Figure 1.3 Trends in reported cigarette smoking among secondary students aged 12-16 years, NSW 1983-92



Notes: Smoking includes daily or occasional use.
Percentages are age adjusted.
Source: Cooney A, Dobbinson S, Flaherty B. 1992 Survey of Drug Use by NSW Secondary School Students. NSW Health Department, 1994.

1.3.2 Alcohol consumption

Excessive alcohol consumption contributes substantially to ill health in Australia. It has been estimated that, Australia-wide, hazardous and harmful alcohol consumption (as defined by the National Health and Medical Research Council) causes a substantial proportion of common health problems including[8]:

- 54 per cent of cases of cirrhosis of the liver among males and 43 per cent among females
- 26 per cent of road injuries
- 11 per cent of hypertension among males and 6 per cent among females
- 24 per cent of cases of acute pancreatitis
- 84 per cent of cases of chronic pancreatitis
- 34 per cent of fall injuries
- 34 per cent of drownings
- 47 per cent of assaults

In 1994 in NSW, 17 per cent of fatal road accidents involved alcohol. This proportion has remained fairly stable since 1987, ranging from 17 to 25 per cent[13].

At the 1989/90 ABS National Health Survey, men more commonly reported drinking alcohol at a higher risk level than women. Alcohol consumption at medium to high risk levels was most common in the 25-34 year age group in males, and the 18-24 year age group in females (Table 1.10).

Table 1.10 Level of risk of alcohol consumption by sex and age, NSW 1989/90

Level of risk	Age (years) 18-24 (%)	25-34 (%)	35-44 (%)	45-64 (%)	65 and over (%)	Total (%)
Males						
Did not consume alcohol	33.0	21.1	25.0	26.1	38.5	27.4
Consumed alcohol-						
Low	50.0	60.0	59.4	55.8	54.1	56.3
Medium	7.5	11.0	7.6	9.3	5.0	8.4
High	9.6	9.0	8.2	8.8	2.4	7.9
Total	67.0	79.0	75.1	74	61.5	72.6
Total	100	100.0	100.0	100.0	100.0	100.0
Females						
Did not consume alcohol	43.0	43.1	43.0	48.0	63.6	48.0
Consumed alcohol-						
Low	46.2	49	49.0	43.9	31.7	44.1
Medium	8.1	7.0	7.1	5.8	4.1	6.3
High	2.7	1.0	1.0	2.3	0.6	1.6
Total	57.1	5.07	57.1	52.0	36.4	52
Total	100	100.0	100.0	100.0	100.0	100.0
Total persons						
Did not consume alcohol	38.0	32.1	34.0	36.9	53.0	37.9
Consumed alcohol-						
Low	48.1	54.0	54.3	50.0	41.1	50.1
Medium	7.8	9.0	7.3	5.8	4.1	7.3
High	6.2	5.0	4.6	5.6	1.4	4.7
Total	62.1	68	66.2	63.1	47.0	62.1
Total	100.0	100.0	100.0	100.0	100	100.0

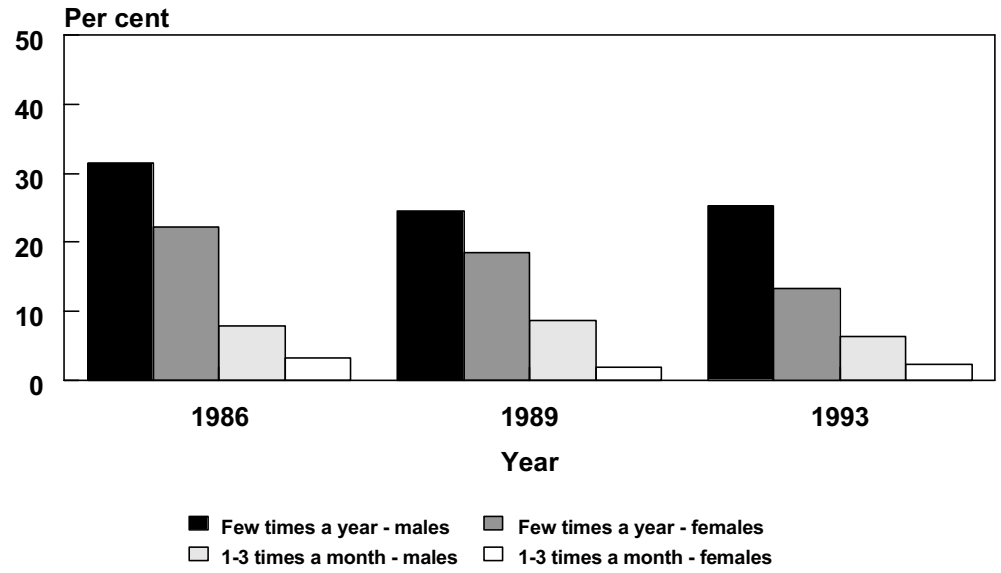
Note: Low risk level of alcohol consumption is defined as a daily intake of less than 50 ml for males and 25 ml for females, medium level as 50-75ml for males and 25-50 ml for females, and high as greater than 75 ml for males and 50 ml for females.

Source: Australian Bureau of Statistics & NSW Department of Health. State of Health in NSW. ABS Catalogue No. 4330.1, 1993.

The proportion of year 5 and 6 primary school students who reported having ever consumed alcohol declined from 84.1 per cent in 1986 to 77.4 per cent in 1993; and the proportion who consumed alcohol monthly declined from 8.7 to 7.0 per cent over the same period. Males continued to consume alcohol more frequently than females (Figure 1.4).

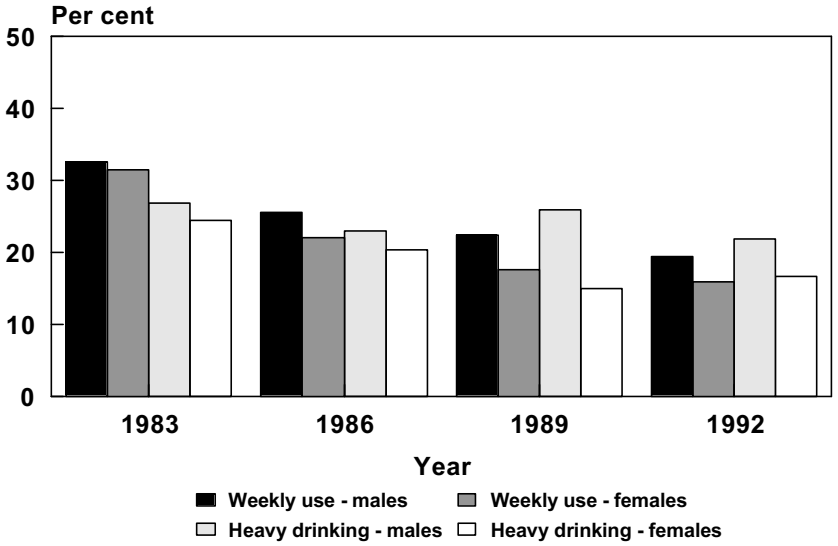
All levels of alcohol consumption decreased in secondary school students between 1983 and 1992, though males reported consistently drinking more alcohol than females. The age-adjusted rates of ever having drunk alcohol declined between 1983 and 1992 in males from 81.8 to 70.9 per cent, and in females from 77.3 to 63.0 per cent. Rates of drinking alcohol at least weekly decreased between 1983 and 1992: among males from 32.6 to 19.5 per cent and among females from 31.5 to 16.0 per cent; while rates of reported heavy drinking (consumption of five or more alcoholic drinks in a row at least once during the preceding two weeks) decreased in males from 26.9 per cent in 1983 to 21.8 per cent in 1992, and among females from 24.4 to 16.6 per cent (Figure 1.5).

Figure 1.4 Trends in alcohol consumption in year 5 and 6 primary school students, NSW 1986-93



Source : Bauman A, Chen JC, Cooney A, Dobbinson S and Flaherty B. 1993 Survey of Drug Use by NSW Primary School Children. New South Wales Health Department, 1994.

Figure 1.5 Trends in alcohol consumption in secondary students aged 12-16 years, NSW 1983-92



Notes: Weekly use refers to alcohol consumption at least once per week.
Heavy drinking refers to consumption of five or more alcoholic drinks in a row at least once during the preceding fortnight.
Percentages are age adjusted.

Source: Cooney A, Dobbinson S, Flaherty B. 1992 Survey of Drug Use by NSW Secondary School Students. NSW Health Department, 1994.

1.3.3 Other drug use

Cannabis

Cannabis in small quantities acts as a relaxant and large quantities cause exhilaration, hallucinations and delusions. Long term effects include psychosis, and increased risks of lung cancer, bronchitis and respiratory disease. The proportion of female secondary school students who reported ever using cannabis decreased slightly from 22 per cent in 1983 to 21 per cent in 1992[12]. However, usage by males increased from 24 to 30 per cent over the same period. Among persons aged over 14 years in 1993, 41 per cent of males and 27 per cent of females reported ever using cannabis[14].

Stimulants

The proportion of secondary school students who reported ever having used stimulants (cocaine, speed, amphetamines, 'pep' pills) decreased from 9.9 per cent in 1983 to 6.2 per cent in 1992 in females and from 11 to 8 per cent in males[12]. In people aged 14 years and over in 1993, 7 per cent of females and 11 per cent of males reported ever using amphetamines[14].

In 1993, 3 per cent of females and 5 per cent of males aged 14 years and over reported ever using cocaine[14]. The majority of past users had not used the drug in the preceding 12 months. Males aged between 20 and 34 were most likely to use cocaine. Polydrug use was common amongst cocaine users, often to enhance or moderate the effects of cocaine[15,16].

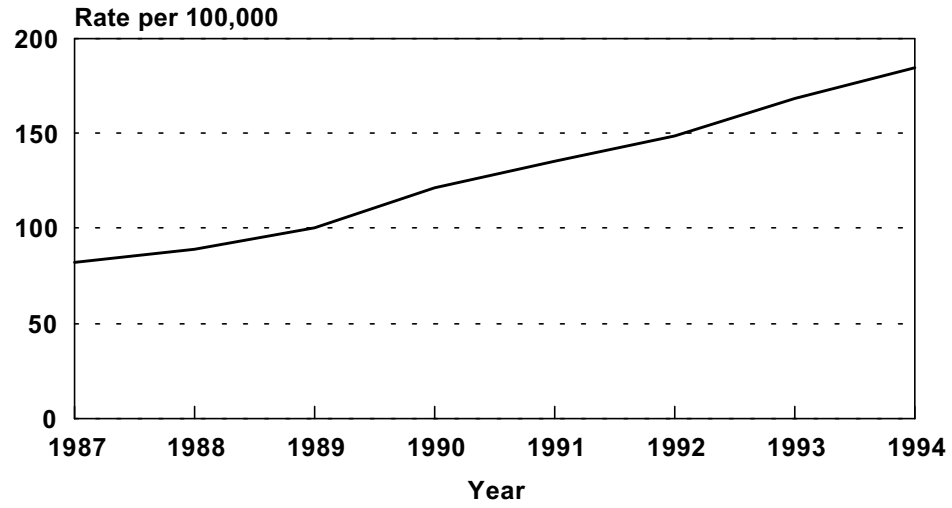
Narcotics

The reported rate of ever using narcotics (illegally) among 12-16 year-old secondary school students declined between 1983 and 1992, from 4 to 3 per cent in female students and from 6 to 5 per cent among male students[12]. Among people aged 14 years and over in 1993, 2 per cent of females and 3 per cent of males reported ever using heroin[14].

A recent study by the National Drug and Alcohol Research Centre has found that mortality due to opiate overdose has increased by 170 per cent over the decade to 1990, from 1.0 to 2.7 per 100,000[17]. There were 197 deaths due to heroin overdose in NSW in 1992[18]. Heroin-caused deaths occurrred mainly among males (82 per cent), usually among a dependent population of users (80 per cent), typically in the home environment (68 per cent), and often in the vicinity of other persons (58 per cent). There was time for intervention in the majority of cases (60 per cent), although intervention was actually sought or administered prior to the subject's death in only 21 per cent of cases. A minority of cases were heroin-only deaths (26 per cent) and in almost half of cases (45 per cent) alcohol was detected at autopsy. The study found that the majority of subjects (72 per cent) had never been in a methadone treatment program. The finding that 58 per cent of fatal overdoses occurred in the presence of other people has led to the development of campaigns aimed at educating peers in resuscitation techniques.

Participation in methadone programs has more than doubled since 1987: from 82.0 per 100,000 in 1987 to 184.1 per 100,000 in 1994 (Figure 1.6).

Figure 1.6 Trends in methadone program participation, persons aged 15 years of age and over, NSW 1987-94



Source: NSW Methadone Program 1993-94. Annual Statistical Report. Drug and Alcohol Directorate, NSW Health Department, 1995

1.3.4 Physical activity

Lack of exercise is an important modifiable risk factor for coronary heart disease. It is estimated that a 7 per cent reduction in deaths from coronary heart disease would occur if half those people taking some moderate activity increased the frequency of moderate activity to at least five days per week[19].

The 1994 NSW Health Promotion Survey 1994[20] indicated that males tend to exercise at higher levels than females: 60 per cent of males exercised at moderate to high levels compared with 43 per cent of females (Table 1.11).

Table 1.11 Participation in exercise by sex and energy expenditure category, NSW 1994

Sex	Category of energy expenditure (%)				
	High	Moderate	Low	Sedentary	Total
Male	26.0	34.0	26.0	14.0	100.0
Female	14.0	29.0	41.0	16.0	100.0
Total	**20.0**	**32.0**	**33.9**	**14.9**	**100.0**

Data source: NSW Health Promotion Survey data, 1994. Health Promotion Branch, NSW Health Department.

1.3.5 Nutrition

Cholesterol

Diet contributes to the risk of cardiovascular disease through an association with blood cholesterol level, blood pressure, obesity and diabetes mellitus. The association is strong between serum cholesterol, especially low density lipoprotein (LDL) cholesterol, and coronary heart disease mortality, and there is evidence that a reduction in serum cholesterol reduces the risk of death from coronary heart disease [21,22].

The most recent available information on cholesterol levels in NSW dates from 1989 (Figure 1.7). The mean cholesterol level for Sydney residents was 5.5 mmol/L in males and 5.3 mmol/L for females. Mean cholesterol levels in the Hunter area were slightly higher than Sydney at 5.8 mmol/L for both sexes.

A recent Consensus Statement on the management of hyperlipidaemia recommended that drug treatment should be considered for people with cholesterol levels above 6.5 mmol/L and any other major coronary risk factor[23]. Of Sydney residents surveyed in 1989, 17 per cent of males and 16 per cent of females had measured serum cholesterol at or above that level, compared with 24 per cent of males and 27 per cent of females resident in the Hunter area surveyed in the same year (Figure 1.8).

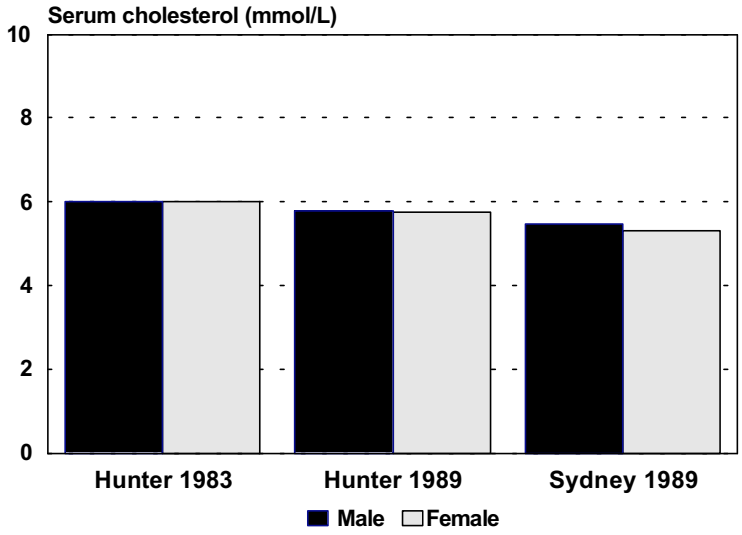
Obesity

Obesity is well established as a risk factor for diabetes, hypertension and lipid abnormalities. It is the most important modifiable risk factor for non-insulin dependent diabetes mellitus.

The most recent source of information on the prevalence of overweight or obesity in NSW is the NSW Health Promotion Survey 1994[20]. Overweight or obese was defined as a Body Mass Index of more than 25 which was calculated from self-reported height and weight. The Survey found that 48 per cent of men and 31 per cent of women were overweight or obese[20]. These rates were higher than those found in the 1989-90 National Health Survey, which also relied on self-report, and a previous survey in Sydney based on actual measurements of height and weight (Figure 1.9). A 1994 study indicated that 38 per cent of Aboriginal and Torres Strait Islanders aged 13 years and older in south-eastern Australia were overweight or obese[24].

Abdominal obesity is also a risk factor for cardiovascular disease. In 1989, 42 per cent of males and 21 per cent of females surveyed in Sydney were found to be abdominally obese, compared with 75 per cent of males and 57 per cent of females surveyed in the Hunter area (Figure 1.10).

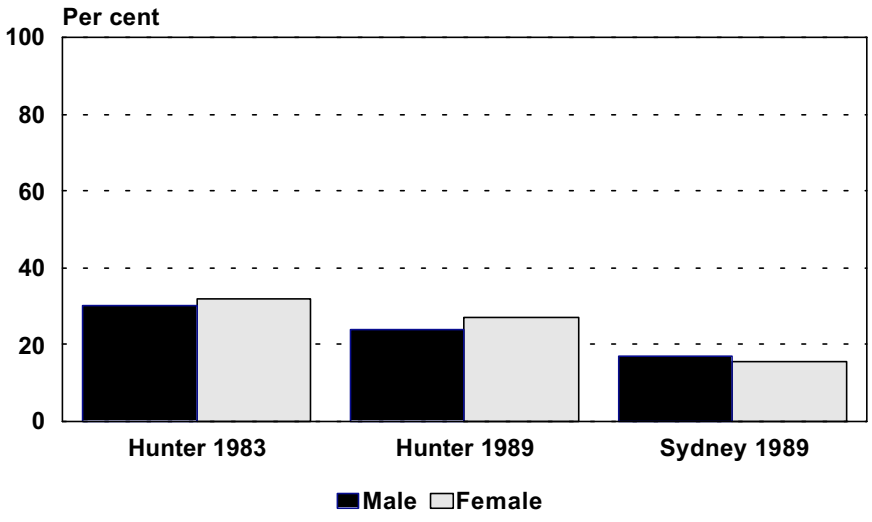
Figure 1.7 Mean serum cholesterol levels by sex, population surveys NSW 1983-89



Note: Hunter RFPS 1983 surveyed people aged 35-64 years: Hunter RFPS 1989, 20-69 years; and National Heart Foundation RFPS, 20-69 years.

Source: Alexander HM, Dobson, AJ, Fraccaro R, Kelly P. Hunter Region Heart Prevention Program: Risk Factor Prevalence Study Data Book. Hunter Region Disease Prevention Program, 1995.
National Heart Foundation of Australia and Australian Institute of Health. Risk Factor Prevalence Study Survey No. 3, 1989, Cities Analysis. Canberra: NHFA and AIH, 1991.

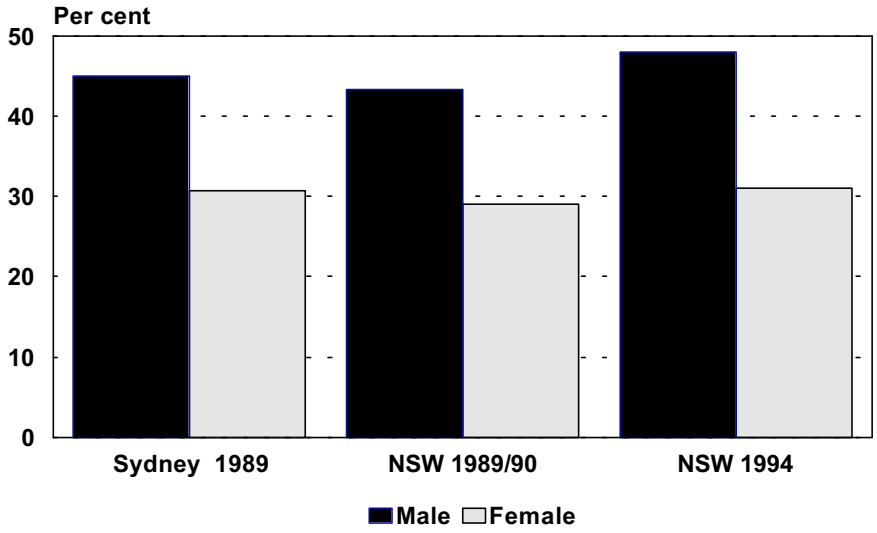
Figure 1.8 Population with serum cholesterol of 6.5 mmol/L or above, population surveys NSW 1983-89.



Note: Hunter RFPS 1983 surveyed people aged 35-64 years: Hunter RFPS 1989, 20-69 years; and National Heart Foundation RFPS, 20-69 years.

Source: Alexander HM, Dobson, AJ, Fraccaro R, Kelly P. Hunter Region Heart Prevention Program: Risk Factor Prevalence Study Data Book. Hunter Region Disease Prevention Program, 1995.
National Heart Foundation of Australia and Australian Institute of Health. Risk Factor Prevalence Study Survey No. 3, 1989, Cities Analysis. Canberra: NHFA and AIH, 1991.

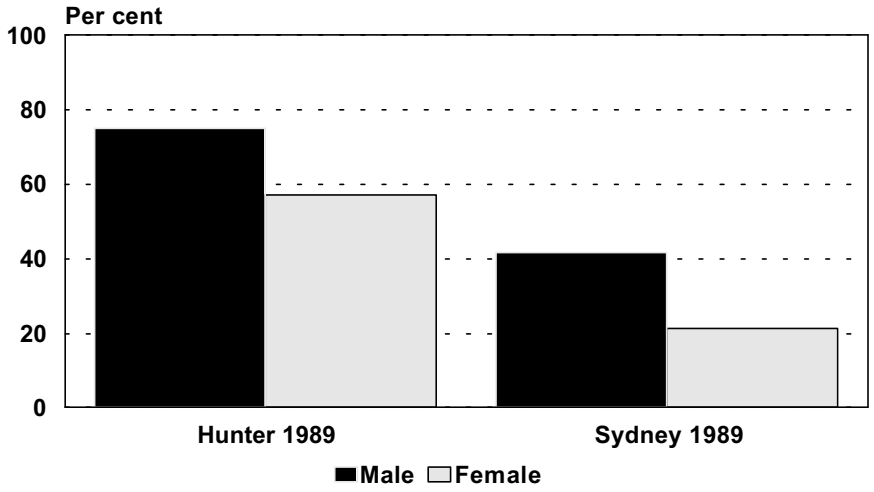
Figure 1.9 Prevalence of overweight/obesity by sex, population surveys NSW 1989-94



Note: National Heart Foundation RFPS surveyed people aged 20-69 years; ABS National Health Survey and NSW Health Department Health Promotion Survey surveyed people 18 years and over.

Source: National Heart Foundation of Australia and Australian Institute of Health. Risk Factor Prevalence Study Survey No. 3, 1989, Cities Analysis. Canberra: NHFA and AIHW, 1991; Australian Bureau of Statistics, 1989/90 National Health Survey data; NSW Health Department Health Promotion Survey, 1994.

Figure 1.10 Abdominal obesity by sex, population surveys NSW 1989



Notes: Abdominal obesity defined as waist to hip ratio > 0.9 for males and > 0.8 for females.
Hunter RFPS 1989 surveyed people aged 20-69 years; and National Heart Foundation RFPS (Sydney), 20-69 years.

Source: Alexander HM, Dobson, AJ, Fraccaro R, Kelly P. Hunter Region Heart Prevention Program: Risk Factor Prevalence Study Data Book. Hunter Region Disease Prevention Program, 1995.
National Heart Foundation of Australia and Australian Institute of Health. Risk Factor Prevalence Study Survey No. 3, 1989, Cities Analysis. Canberra: NHFA and AIH, 1991.

Food intake

It is recognised that increased consumption of vegetables, fruit and core cereal foods (bread, cereals, rice and pasta) will contribute to improved health in NSW[25]. The NSW Health Promotion Survey 1994, which yielded the most recent information on population dietary habits and food intake in NSW, included questions on consumption of bread and fruit, but not vegetables.

Fruit and vegetables are the most important dietary sources of antioxidants, which protect against cancer and cardiovascular disease[26,27]. These foods are also important sources of dietary fibre and complex carbohydrates, and increasing their consumption will result in a corresponding decrease in fat intake[28]. National Health and Medical Research Council (NHMRC) guidelines[29] recommend that adults should eat at least two serves of fruit per day. Almost half of NSW adults in 1994 (54 per cent of men and 41 percent of women) reported eating less than this recommended amount[23].

NHMRC guidelines[29] also recommend that adults should eat at least seven serves of breads and cereals per day. Breads and cereals are important sources of complex carbohydrates, dietary fibre and a range of minerals and vitamins. In NSW in 1994, 26 per cent of men and 44 per cent of women reported eating two or less serves of bread per day[23]. As bread is the major cereal source in many Australian diets, these data suggest that cereal consumption is inadequate, particularly among women.

Reductions in the consumption of dietary fat and saturated fats as a proportion of total energy intake will also contribute to improved health in NSW[25]. Intake of fat (especially saturated fat) is associated with obesity and cardiovascular disease. Milk and milk products, meats and fats such as butter, margarine and oils are the most important contributors to fat and saturated fat intake. The greatest decreases in intake are likely to result from reducing serving sizes of meats, trimming meat fat (including chicken skin) and substituting lower-fat meats and milks[28]. While there are no good trend data, the NSW Health Promotion Survey 1994 yielded some information about change in fat consumption in NSW.

Consumption of modified- or low-fat milks appears to be increasing. Forty per cent of NSW adults in 1994 (33 per cent of men and 46 per cent of women) reporting using mainly modified- or low-fat milk[23]. This compares with 10 per cent of men and 17 per cent of women in the National Dietary Survey Sydney sub-sample in 1985[28].

Consumption of fat on meat may be declining. In NSW in 1994, only 8 percent of adults (12 percent of men and 3 per cent of women) reported that they usually ate most of the fat on meat[23], compared with about 15 percent of adults in western Sydney in 1989-90[28]. This reduction was not seen for consumption of skin on chicken, however. In NSW in 1994, 37 per cent of adults (47 percent of men and 27 per cent of women) reported that they usually ate most of the skin on chicken[23], compared with about 30 per cent of adults in western Sydney in 1989-90[28].

The 1995 National Dietary Survey will provide better baseline information on a range of nutritional indicators. These 1994 data from the NSW Health Promotion Survey, however, suggest that the following areas should be priorities for intervention:

- increasing fruit and vegetable consumption
- increasing bread and cereal consumption, particularly among women
- decreasing fat and saturated fat intake, particularly among men

In promoting consumption of breads and cereals, however, accompanying messages should emphasise the need to limit the intake of butter, margarine and other fats which are often consumed with these foods[28].

1.4 The environment

1.4.1 Air

Air quality standards adopted by the National Health and Medical Research Council, World Health Organization (WHO) long term goals, and US Environmental Protection Agency air quality standards, are the benchmarks used by the NSW Environment Protection Authority to regulate air quality in NSW.

The air pollutants of primary concern in urban NSW are:

- ozone which may increase the sensitivity of the airways to allergic triggers in people with asthma;
- particles, long term exposure to which may increase risk of death from heart and lung disease[30];
- nitrogen dioxide which may exacerbate asthma and increase susceptibility to respiratory infection, and;
- sulphur dioxide which may provoke wheezing and exacerbate asthma.

Air pollutants are unlikely to be a major cause of asthma but may trigger attacks of asthma in susceptible individuals.

In urban areas air quality in the long term is determined by the complex nexus between urban development, population growth, land use and transport. Improvement in air quality requires co-operation across the entire spectrum of agencies and industries involved in these issues. At the Air Quality Summits of July 1991 and February 1992, the NSW Government initiated the Metropolitan Air Quality Study in the Sydney, Illawarra and Lower Hunter regions to expand and improve the current air monitoring program; and a parallel Health and Air Research Program (HARP) to study the adverse health effects of air pollution in these regions. The HARP studies are due to be completed in mid 1996 and include studies of respiratory symptoms in asthmatics, hospital emergency department attendances, hospital admissions and deaths. Preliminary results have been reported in *HARP Newsletters.*

1.4.2 Food

Surveillance of food quality

In NSW, surveillance of food quality includes the following activities:

- The NSW Health Department co-operates with the National Food Authority in conducting the Australian Market Basket Survey (AMBS), which aims to monitor pesticides and contaminants present in food.
- Monitoring of industry self-regulation programs. The Department supports industry self-regulation of the goats' milk, orange juice, oysters and catering industries.
- Specific surveys of individual contaminants or pesticides as necessary.
- Monitoring of compliance with food regulations. Currently surveys of egg, fish, ice, bottled water and goats' milk are safety priorities.
- The occurrences of food-borne illnesses are monitored at a Statewide level to detect outbreaks which may not be apparent at Area or District level. Close links are maintained with the National Enteric Pathogens Surveillance Scheme which may detect outbreaks occurring at a national level.

Recent food surveys in NSW include the 1984 and 1992 Australian Market Basket Surveys, a survey of seafood sold in the market place (1989-1993), and surveys of aluminium in canned foods, *Vibrio parahaemolyticus* in cooked prawns, and pesticides in fruit and vegetables.

Monitoring of food quality is primarily aimed at the detection of heavy metals, pesticides and microbiological contamination.

Heavy metals

Mercury poisoning through consumption of seafood is not a major public health problem in Australia. The 1984 Market Basket Survey examined all foods for mercury and found significant residues only in seafood. The proportion of each type of seafood with an excess of mercury was relatively low. The highest levels of excess were recorded for larger, predatory species of fish (swordfish, shark, marlin etc). This was expected, as these species occupy the top of the seafood chain. The source of mercury found in the larger fish may not be related to local environmental contamination as these fish may travel considerable distances, as may some of their prey.

Results from the 1992 Market Basket Survey indicated that the Australian diet is considered safe in terms of intake of cadmium, copper, lead and zinc.

Pesticides

Maximum residue levels of organochlorine pesticides and polychlorinated biphenyls (PCBs) were surveyed in fish, crustacea and molluscs from April 1990 to October 1991. A total of 186 samples were analysed. Two per cent of samples (three mullet samples) were found to have marginally excessive PCB content. The low number of samples found to be in contravention of the standards prescribed in the National Food Standards Code indicated that fish sold in NSW over this period could be consumed with confidence.

Microbiological contamination

Algae are an important part of the diet of shellfish such as mussels, oysters, pipis and scallops. As some species of algae are capable of producing toxins it is possible for shellfish, and to a lesser extent some species of crustaceans, to accumulate toxins, particularly when blooms of algae occur in estuaries. When these seafood are consumed the accumulated toxins can produce food poisonings such as paralytic shellfish poisoning (PSP), diarrhoetic shellfish poisoning (DSP) and neurotoxic shellfish poisoning (NSP). PSP can cause deaths due to respiratory failure and DSP can cause severe gastrointestinal problems and can promote stomach tumours.

Little is known about the distribution of toxic marine algae in the NSW marine environment. However, no cases of toxic shellfish poisoning have been notified in NSW. Limited monitoring has identified toxin-producing algae in a number of areas. On one occasion in 1993, public warnings to avoid consuming wild oysters from Sydney harbour were issued when samples of wild oysters collected during a bloom of *Alexandrium catenatum* were found to contain more than 3 mg/mg of saxitoxin, exceeding the National Food Standards Code prescribed limit for PSP toxin concentrations of 0.8 mg/mg.

Oysters harvested from NSW estuaries have been implicated in a number of outbreaks of viral gastroenteritis, one involving more than 2,000 people [31,32,33]. Norwalk virus was implicated in all of these outbreaks. In the majority of outbreaks, contamination of the oysters occurred due to sewage discharge and urban run-off following periods of heavy rainfall. The outbreaks received wide publicity and seriously affected the viability of the NSW oyster industry.

Following the 1978 outbreak compulsory purification of oysters was introduced in three stages from 1981 to 1983. Purification of oysters prior to sale remains a legal requirement in NSW.

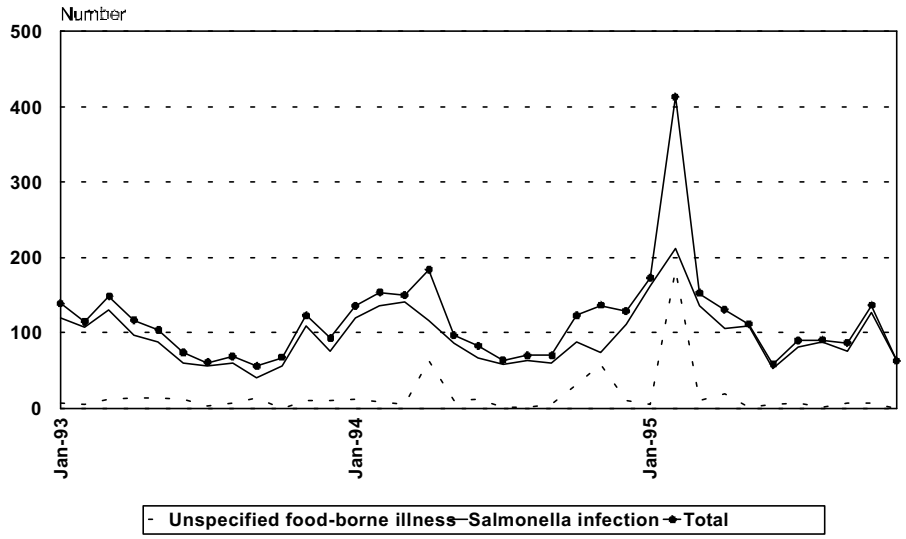
The purification process can considerably reduce the bacterial contamination of oysters. However, viral agents and some bacteria such as *Vibrio parahaemolyticus* and *Vibrio vulnificus* are unlikely to be successfully removed. Consequently, reliance on purification as a control measure has limited application to the control of viral gastroenteritis.

Results of oyster sampling by NSW Health Department Food Inspectors in the period 1991 to 1992[34] show a high level of compliance with the bacteriological standards prescribed by the NSW Food Act. Compared with results for previous periods, there was an improvement in overall bacterial standards. This improvement is considered to be due to lower than average rainfall, the establishment of oyster farmers' quality assurance programs and increased monitoring by the NSW Health Department. No outbreaks of gastroenteritis associated with shellfish have occurred in NSW since 1990.

Food-borne disease

In the period January 1990 to November 1995, 13,315 notifications of food-borne illnesses were reported to the NSW Health Department. Of these, 6,746 (50.7 per cent) were for *Salmonella* infection, 6,280 (47.2 per cent) were for unspecified food-borne illnesses, 228 (1.7 per cent) for typhoid or paratyphoid, and 61 (0.5 per cent) for listeriosis. Recent trends in the notifications of food-borne diseases are shown in Figure 1.11.

Figure 1.11 Notification for food-borne illnesses, NSW January 1993 - November 1995



Note: Total includes total for the following diseases: Unspecified food-borne illnesses, salmonella infection, listeriosis, typhoid and paratyphoid.

Data source: Infectious Disease Surveillance System, AIDS/Infectious Diseases Branch, NSW Health Department.

An outbreak of ciguatera poisoning

- A notification of 4 cases of intoxication following consumption of home cooked Spanish Mackerel on 22 May 1994 was received on 25 May 1994 by Northern Sydney Area Public Health Unit. Symptoms of nausea, vomiting, diarrhoea, paraesthesia, temperature perception reversals, arthralgia, myalgia, pruritus, chills and fever were consistent with ciguatera poisoning.
- Subsequently three notifications of a similar illness were received by the Eastern Sydney Public Health Unit Area. These three cases had also purchased Spanish Mackerel from the same retail outlet on 21 May 1994.
- All Public Health Units in NSW were notified and asked to undertake active surveillance for further cases of ciguatera poisoning through hospital Accident and Emergency Departments. These activities disclosed two further related cases in the Hunter Area.
- Investigation by Food Surveillance Officers revealed four further cases of suspected ciguatera poisoning amongst staff of the implicated retail outlet and their relatives. The staff and their relatives had also consumed cutlets from the consignment of Spanish Mackerel sold through the shop on 21 to 23 May 1995.
- The implicated fish were traced to a batch of Spanish Mackerel from Queensland. Public Health Units were asked to contact all retail outlets which sold this shipment of fish to ensure all fish were withdrawn from sale. The Queensland Health Department was asked to investigate the source of these fish.
- The NSW Health Department issued a press release on 2 June 1994. Thirty additional suspected cases of ciguatera poisoning were notified as a result (twenty-seven in NSW and three in the ACT).

Follow up to an outbreak of haemolytic uraemic syndrome (HUS)

- An outbreak of haemolytic uraemic syndrome (HUS), which occurred in South Australia between 25 December 1994 and February 1995, called into question the adequacy of current safeguards in food policy in Australia.
- On 23 January 1995 a mettwurst contaminated with a rare pathogen, a verotoxin producing *Escherichia coli* 0111 (VTEC), was associated with the outbreak. The was the first food-borne outbreak attributed to this pathogen and the first outbreak of HUS in Australia.
- A recall of Garibaldi brand mettwurst was initiated by the National Food Authority. Public Health Units, with the assistance of Local Authorities, removed contaminated product from the market. Samples were obtained and sent to the Division of Analytic Laboratories for analysis. These samples were all found to be positive for enterotoxin-producing genes.
- On 25 January 1995 the Communicable Diseases Network of Australia and New Zealand (CDNANZ) requested active surveillance be undertaken for cases of HUS. A total of nine cases of HUS have been notified in NSW in 1995. Although all cases appear unrelated a detailed investigation of all cases is being undertaken.
- During 1995 the National Food Authority (NFA) implemented changes to Food Standard Code C1 for meat and meat products which incorporated a Code of Hygienic Production for Uncooked Fermented Comminuted Meat products. In addition, the CSIRO is carrying out a three year research program on VTEC and the NFA will carry out a survey of fermented meats.
- The NSW Health Department has participated in the NFA survey of fermented meat products and has additionally undertaken a detailed survey and assessment of fermented meat production in NSW. By August 1995 over 100 samples had been submitted to laboratories and the majority of processors in NSW have been assessed to ensure compliance with the requirements of the new code.

1.4.3 Water

Draft Guidelines for Drinking Water Quality (1994) in Australia have been produced by the National Health & Medical Research Council (NHMRC) and the Agricultural & Resource Management Council of Australia and New Zealand and specify a duty of care by the water supply and health authorities to ensure safe drinking water is provided to the public. When approved, these will replace existing drinking water guidelines. Contaminants which are of most concern to public health include: microbiological contaminants; by-products of disinfection; aluminium; heavy metals; pesticides; and blue-green algae.

As it is not feasible to test for all organisms in water, the coliform group of organisms, and in particular *Escherichia coli*, are used as indicator bacteria of faecal contamination. Currently, there is insufficient information in NSW or elsewhere in Australia, to determine the health effects of non-compliance with the microbiological guidelines. However, it is reasonable to assume that the health risk of gastrointestinal disease relates to the amount and extent by which the microbiological guidelines are exceeded.

Organisms which can survive disinfection processes during treatment of drinking water include *Cryptosporidium* and *Giardia lamblia*. The infective dose for these organisms is known to be low, but has not been definitively quantified. Results of the Water Board's testing program for *Cryptosporidium* have shown that the oocysts are generally present in raw water sources at a concentration of 0.1-1 oocysts/L. During treatment and distribution of the water, this concentration is reduced by about 10 times in the unfiltered areas of the supply (94 per cent of Sydney's water), and by about 100 times in the filtered areas[35].

The Sydney Water Corporation (SWC) is currently installing filtration plants at its Sydney treatment works. At present, about 7 per cent of the total supply is fully treated with microfiltration as well as chlorination. This will help to overcome potential disease outbreaks caused by microbial contamination due to the presence of *Giardia lamblia* or *Cryptosporidium* in the water supply.

The NSW Health Department and the SWC are developing a Memorandum of Understanding between the two organisations which will place additional responsibilities on the NSW Health Department to formally audit water quality in Sydney through surveillance of the results of SWC water testing programs. Similar discussions are also taking place with the Hunter Water Corporation which supplies reticulated drinking water to the Newcastle/Cessnock areas.

The Department of Land & Water Conservation through the Country Towns Water Supply and Sewerage Subsidy Program incorporates 128 councils and 200 water supply schemes. In rural NSW towns, about 82 per cent of the water supply comes from surface sources while the remainder originates from groundwater sources which include deep bores and shallow wells. The variation in geographical, environmental, and climatic conditions across the state results in varying water quality in different areas.

A recent Health Department review of rural drinking water quality found that approximately 27 per cent of supplies were not tested during 1991/1992 and that some of these supplies served populations of over 15,000 people[36]. In addition a number of supplies failed existing microbiological health criteria on a continual basis. Pesticides were detected in 19 locations during the three year period 1990-92, although levels were below the guidelines or found in trace amounts. Recommendations made to improve both monitoring and compliance include: annual reporting of the results; strongly encouraging water supply authorities to test water quality in their areas; structuring the pesticide monitoring program to suit patterns of use; and investigation of either short or long term non-compliance by Public Health Units.

1.4.4 Lead

Lead exposure has re-emerged as a public health concern in NSW, due to the increasing evidence of the subtle effects of lead on the cognitive development of children. Observable effects found at levels formerly thought to be safe, has prompted a world-wide re-evaluation of environmental lead controls and the health risk associated with lead-contaminated environments.

Recent evidence indicates that levels of blood lead as low as 10-25 g/dl can cause neurological impairment in the preschool aged child[37]. Furthermore, there is no evidence of a threshold for the effects of lead[38,39]. Children absorb lead by ingestion and inhalation through contact with lead particles in soil, dust and air. The relative contribution to blood lead from ingestion is likely to be greater than that from inhalation.

In June 1993 the NHMRC reduced the level of blood lead above which public health action should be taken from 25 g/dl to 15 g/dl in response to this evidence. The revised guideline specifies a new blood lead goal for all Australians of 10 g/dl, with a series of action guidelines recommended for individual and public management responses for levels commencing at 15 g/dl.

Contamination is a major problem in lead mining and smelting communities where the risk of lead exposure is much greater. Surveys conducted in Broken Hill showed that over 75 per cent of children had blood lead levels above 10 g/dL, and approximately 25 per cent had levels above 25 g/dL. Similarly, in Boolaroo near Newcastle, 84 per cent of children had blood lead levels above 10 g/dL, and 6 per cent had levels above 25 g/dL.

Lead has also been demonstrated to be a problem in some areas of Sydney. A study of young children in inner city Sydney reported that 51 per cent of children had blood lead levels above the recommended level[40]. High blood lead levels were strongly associated with the presence of children during household renovation. Blood lead levels increased with the concentration of lead in the soil and dust from vacuum cleaners but not with the lead content of household paint.

In November 1994, the NSW Lead Task Force outlined the lead management action plan to minimise environmental lead and human exposure to lead[41]. Initiatives include:

- Minimising the amount of lead being released into the environment.
- Reducing lead in petrol. Recommendations were to reduce lead in petrol from 0.4 to 0.3 g/L by early 1994, to 0.2 g/L by the end of 1994, and to lower levels in the longer term and to encourage owners of leaded petrol vehicles to use unleaded petrol.
- Lowering blood lead levels in the community. Enhancing public awareness of the sources of lead and how individuals can minimise their exposure to lead, through a widespread education campaign. In non-point source areas, this campaign will emphasise the use of unleaded petrol as well as safe removal of leaded paint in older housing.
- Establishing a long term strategy for the reduction of blood lead levels in Broken Hill, Boolaroo and other point source areas.
- Trialing the effectiveness of various remediation measures in heavily contaminated areas.

1.4.5 Pesticides

'Pesticide' is a generic term for a broad range of chemical substances used to control insects, weeds, animals and vectors of disease. Exposure to pesticides can occur through inhalation, ingestion or through skin. Skin exposure entails significant absorption for many pesticides. Recent surveys in NSW indicate that skin exposure is the most important source in a number of industries[42].

Acute pesticide poisoning can result from intentional, occupational or accidental poisoning. The majority of unintentional poisonings occur in an occupational setting. In Australia acute symptomatic pesticide poisoning is rare, with a NSW Health Department review of mortality, attributing 10 male deaths to agricultural chemical poisoning in the period 1989-1992. Hospitalisations attributable to this cause are also rare. However, pesticides constituted 15.9 per cent of all substances involved in poisoning as reported to the Poisons Information Centre[43].

1.4.6 Legionella

Legionnaires' disease is caused by the microorganism *Legionella pneumophila* and related *Legionella* species such as *L. longbeachae*. The bacteria are ubiquitous in the natural environment. Often, however, conditions exist in the built aquatic environment eg cooling towers, water systems, in which the *Legionella* bacteria can proliferate and survive in numbers which may cause disease.

In 1994, 61 cases of Legionnaires' disease were reported to the NSW Health Department. Peaks in the occurrence of Legionnaires' disease occurred in 1987, 1989, 1992, and 1993, and were related to specific outbreaks such as the outbreak in Wollongong in 1987, and in Fairfield in 1992. Most of these outbreaks occurred in the month of April and a summer-autumn peak for Legionnaires' disease notifications has been identified[44]. One theory for this phenomenon is that air conditioning and cooling systems may be turned on and off during the autumn period due to fluctuations in temperature, allowing bacteria to proliferate and then be dispersed into the environment.

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CHAPTER 2
PATTERNS OF HEALTH AND ILLNESS

- Between 1971 and 1993 in NSW, life expectancy at birth increased from 68 to 75 years in males and from 74 to 81 years in females.
- Over the 5 year period 1988-1992, there were on average 43,757 deaths per year. Of these, 35 per cent were due to circulatory diseases, 19 per cent to cancer, 6 per cent to respiratory diseases and 4 per cent to injury and poisoning.
- The largest number of potential years of life lost (PYLL) before age 75 in males was due to injury and poisoning, of which about two-thirds was due to suicide and motor vehicle traffic accidents. In females, the leading cause of PYLL was cancer, of which about one-quarter was due to breast cancer.
- The most common causes of hospitalisation were digestive diseases followed by circulatory diseases and injury and poisoning in males, and pregnancy, digestive and genitourinary diseases in females.
- In 1989/90, 29 per cent of the population reported their health as excellent, 49 per cent as good, 17 per cent as fair and 5 per cent as poor.
- In 1989/90, 71 per cent of the population reported a recent illness in the previous two weeks and 64 per cent reported a long-term condition.
- In 1988, it was estimated that 16 per cent of the NSW population had a disability and 13 per cent had a disability which limited their ability to perform certain tasks of daily living.

2.1 Life expectancy

Between 1971 and 1993, life expectancy at all ages increased in NSW (Table 2.1). Life expectancy at birth increased from 68 to 75 years in males and from 74 to 81 years in females; and life expectancy at age 60 years increased from 16 to 19 years in males and 20 to 24 in females. In 1993, the life expectancy at birth in NSW was the same as that in Australia as a whole for both males and females.

Table 2.1 Expectation of life by sex, NSW 1971-93

Age (years)	Expectation of life (years)							
	1971		1981		1991		1993	
	Male	Female	Male	Female	Male	Female	Male	Female
0	68.0	74.4	71.1	78.3	74.3	80.3	74.8	80.8
10	59.8	65.9	62.2	69.2	65.0	71.0	65.5	71.4
20	50.3	56.2	52.7	59.4	55.4	61.2	55.8	61.5
30	41.1	46.5	43.4	49.6	46.0	51.4	46.4	51.7
40	31.7	37.0	33.9	40.0	36.6	41.7	37.0	42.0
50	23.0	28.0	25.0	30.7	27.5	32.3	27.9	32.6
60	15.5	19.7	17.1	22.0	19.1	23.3	19.4	23.6
70	9.7	12.3	10.7	14.2	12.2	15.3	12.3	15.5
80	5.7	7.0	6.2	8.0	6.9	8.8	7.0	8.8

Note: The expectation of life is the number of years of life remaining to persons who reach a specified age and are subject to the mortality conditions of the years shown.

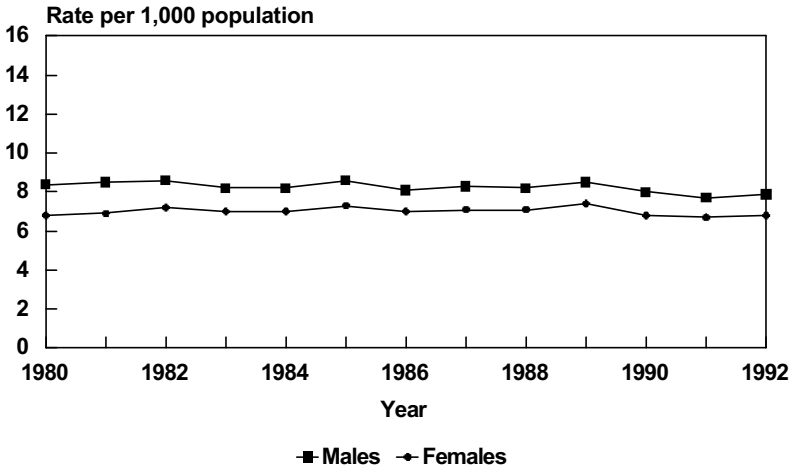
Source: Australian Bureau of Statistics. Demography 1993, Catalogue No. 3311.1.

2.2 Mortality

Crude death rates decreased in males from 8.4 per 1,000 in 1980 to 7.9 in 1992. Crude death rates in females remained unchanged at 6.8 per 1,000, and were lower than males for the whole period (Figure 2.1).

In males standardised mortality rates were lowest in the Northern Sydney Area and South Coast District and highest in the Orana and Far West Districts (Table 2.2). In females rates were lowest in the Northern Sydney Area and Tweed Districts and highest in the Orana and Barwon Districts.

Figure 2.1 Crude mortality rates by sex, NSW 1980-92



Data source: Australian Bureau of Statistics mortality data, and population estimates (HOIST), Epidemiology Branch, NSW Health Department

In the five year period 1988-1992, there were on average 43,757 deaths per year. Of these, 23,411 (53.5 per cent) occurred in males and 20,347 (46.5 per cent) occurred in females (Table 2.3).

The pattern of causes of mortality varied with age. Injury and poisoning was the most common cause of death among those under 45 years of age, cancer in the 45-64 year age group and diseases of the circulatory system in those aged over 65 years. These three groups of conditions accounted for 33,986 of all deaths (77.6 per cent) and are discussed in detail in Chapters 5, 6 and 8.

Table 2.2 Crude and standardised mortality rates by sex and Health Area/ District, NSW 1988-92 (a)

Health Area /District of Residence	Sex	Average number deaths per year	Crude death rate/1,000	Standardised death rate/1,000
Central Sydney	Male	1702	10.4	11.4 ↑
	Female	1545	9.5	6.4 ↑
Northern Sydney	Male	2637	7.4	8.0 ↓
	Female	3008	8.0	5.0 ↓
Southern Sydney	Male	2004	7.6	8.6 ↓
	Female	1920	7.2	5.3 ↓
Eastern Sydney	Male	1533	9.9	10.1 ↑
	Female	1336	8.5	5.8
Western Sydney	Male	1922	6.4	10.0 ↑
	Female	1709	5.7	6.3 ↑
Wentworth	Male	741	5.4	9.3
	Female	627	4.5	5.9
South Western Sydney	Male	2002	6.0	9.7
	Female	1598	4.8	5.9
Central Coast	Male	1252	10.9	9.5
	Female	984	8.2	5.5
Hunter	Male	2153	8.7	9.9 ↑
	Female	1826	7.4	5.9
Illawarra	Male	1286	8.2	9.4
	Female	981	6.3	5.8
Barwon	Male	167	8.5	11.7 ↑
	Female	117	6.4	7.0 ↑
Castlereagh	Male	132	9.4	10.0
	Female	102	7.4	6.0
Central Western	Male	316	10.3	11.6 ↑
	Female	264	8.4	6.6 ↑
Clarence	Male	208	9.5	9.3
	Female	183	8.4	6.2
Evans	Male	256	7.6	9.8
	Female	213	6.5	5.9
Far West	Male	160	11.2	12.6 ↑
	Female	115	8.2	6.3
Hume	Male	340	8.6	9.8
	Female	271	6.8	5.7
Lachlan	Male	212	10.5	11.1 ↑
	Female	173	8.7	6.6 ↑
Lower North Coast	Male	367	10.6	9.1
	Female	271	7.7	5.4
Macleay-Hastings	Male	401	11.2	9.4
	Female	287	7.8	5.4
Macquarie	Male	315	8.7	11.2 ↑
	Female	238	6.6	6.3 ↑
Mid North Coast	Male	343	8.9	9.2
	Female	257	6.6	5.5
Monaro	Male	172	6.6	10.6
	Female	136	5.5	6.7 ↑
Murray	Male	177	8.4	9.6
	Female	122	6.2	5.6
Murrumbidgee	Male	203	8.1	10.0
	Female	161	6.7	6.0
New England	Male	300	8.8	10.1
	Female	236	6.8	5.8
North West	Male	339	8.8	10.6 ↑
	Female	276	7.1	5.9
Orana	Male	75	9.7	13.7 ↑
	Female	42	6.4	8.9 ↑
Richmond	Male	543	8.9	9.0
	Female	444	7.3	5.5
Riverina	Male	352	8.3	10.4 ↑
	Female	292	6.8	6.0
South Coast	Male	247	9.5	8.4 ↓
	Female	177	6.9	5.3
Southern Tablelands	Male	301	9.4	11.0 ↑
	Female	257	8.3	6.8 ↑
Tweed	Male	265	10.3	9.1
	Female	179	6.8	4.9 ↓
NSW	Male	23411	8.1	9.5
	Female	20347	6.9	5.7

Notes: (a) Rates directly age-standardised to the Australian 1991 Census population

↑ ↓ Age-standardised mortality rate significantly higher or lower ($p<0.01$) than that of the NSW population for the same sex.

Data source: Australian Bureau of Statistics mortality data, and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

Table 2.3 Deaths by age, sex and most common catagories of cause of death, NSW 1988-92 (a)

Age (years)	Category of cause of death	Males		Females		Persons	
		Average no. deaths/year	Rate/ 1,000	Average no deaths/year	Rate/ 1,000	Average no. deaths/year	Rate/ 1,000
0-24	Total	1091	1.0	591	0.6	1682	0.8
	Injury and poisoning	481	0.4	157	0.1	639	0.3
	Conditions originating in the perinatal period	180	0.2	134	0.1	314	0.1
	Congenital anomalies	118	0.1	97	0.1	215	0.1
25-44	Total	1535	1.7	638	0.7	2173	1.2
	Injury and poisoning	642	0.7	162	0.2	804	0.4
	Cancer	243	0.3	264	0.3	508	0.3
	Diseases of the circulatory system	216	0.2	72	0.1	288	0.2
45-64	Total	4816	8.3	2574	4.5	7390	6.4
	Cancer	1725	3.0	1248	2.2	2973	2.6
	Diseases of the circulatory system	1888	3.2	716	1.3	2604	2.3
	Injury and poisoning	358	0.6	128	0.2	486	0.4
	Diseases of the respiratory system	264	0.5	173	0.3	437	0.4
	Diseases of the digestive system	233	0.4	95	0.2	328	0.3
65-plus	Total	15969	55.5	16544	42.2	32513	47.9
	Diseases of the circulatory system	7905	27.5	9584	24.5	17489	25.7
	Cancer	4213	14.7	3158	8.1	7370	10.8
	Diseases of the respiratory system	1707	5.9	1140	2.9	2846	4.2
	Diseases of the digestive system	474	1.6	567	1.4	1041	1.5
	Endocrine, nutritional and metabolic diseases and Immunity disorders	321	1.1	369	0.9	690	1.0
	Injury and poisoning	341	1.2	325	0.8	666	1.0
	Diseases of the genitourinary system	264	0.9	356	0.9	620	0.9
	Diseases of the nervous system & sense organs	270	0.9	320	0.8	590	0.9
	Mental disorders	190	0.7	307	0.8	497	0.7
	Infectious & Parasitic diseases	101	0.4	113	0.3	214	0.3
All	Total	23411	8.1	20347	6.9	43757	7.5
	Diseases of the circulatory system	10033	3.5	10385	3.5	20418	3.5
	Cancer	6236	2.1	4709	1.6	10945	1.9
	Diseases of the respiratory system	2027	0.7	1353	0.5	3379	0.6
	Injury and poisoning	1822	0.6	773	0.3	2595	0.4
	Diseases of the digestive system	770	0.3	688	0.2	1458	0.3
	Endocrine, nutritional and metabolic diseases and immunity disorders	609	0.2	451	0.2	1060	0.2
	Diseases of the nervous system and sense organs	389	0.1	403	0.1	792	0.1
	Mental disorders	349	0.1	366	0.1	715	0.1
	Diseases of the genitourinary system	298	0.1	407	0.1	706	0.1
	Infectious & parasitic diseases	196	0.1	146	0.0	342	0.1
	Conditions originating in the perinatal period	180	0.1	134	0.0	314	0.1
	Congenital anomalies	151	0.1	126	0.0	276	0.0
	Ill-defined Conditions	159	0.1	110	0.0	269	0.0
	Diseases of the musculoskeletal system and connective tissue	80	0.0	160	0.1	239	0.0

Note: (a) Categories of death are shown for which more than 200 deaths per year were reported.
Data source: Australian Bureau of Statistics mortality data, and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

2.3 Potential years of life lost

Potential years of life lost (PYLL) before age 75 is a measure of premature mortality and emphasises diseases or conditions which cause death among younger people.

In males in 1992, the largest single number of PYLL was due to injury and poisoning, of which about two-thirds was due to suicide and motor vehicle traffic accidents. Cancer accounted for the second largest number of PYLL, followed by circulatory diseases (Table 2.4).

In females, the leading cause of PYLL was cancer, of which about one-quarter was due to breast cancer and one-tenth to lung cancer. Injury and poisoning accounted for the second largest number of PYLL, followed by circulatory diseases.

Table 2.4 Potential years of life lost (PYLL) before age 75, by sex and category of cause of death, NSW 1992

Category of cause of death	PYLL	
	Males	Females
Cancer	54314	50978
Lung	10941	5029
Breast	-	13426
Colorectal	5404	4742
Melanoma	3180	2319
Cervix	0	2374
Prostate	1089	0
Injury and Poisoning	88229	28118
Suicide	29872	6070
Motor vehicle traffic accidents	28092	10274
Diseases of the Circulatory system	47529	20866
Ischaemic heart disease	32922	9398
Cerebrovascular disease	5991	5435
Conditions originating in the Perinatal period	24362	18652
Congenital Anomalies	17924	12262
Endocrine, Nutritional, and Metabolic Diseases and Immunity Disorders	16701	4163
Ill-defined Conditions	11839	6515
Diseases of the Respiratory system	7609	6147
Diseases of the Nervous system & Sense organs	7760	4794
Diseases of the Digestive system	8222	3669
Mental disorders	9690	2942
Infectious & Parasitic diseases	4474	1737
Diseases of the Genitourinary system	573	1161
Diseases of the Musculoskeletal system and Connective tissue	229	1113
Diseases of Blood and Blood-forming organs	631	387
Diseases of Skin and Subcutaneous tissue	76	158
Complications of Pregnancy, Childbirth and the Puerperium	0	339

Note: PYLL estimated from NSW life table, 1992.
Data source: Australian Bureau of Statistics mortality data (HOIST), Epidemiology Branch, NSW Health Department.

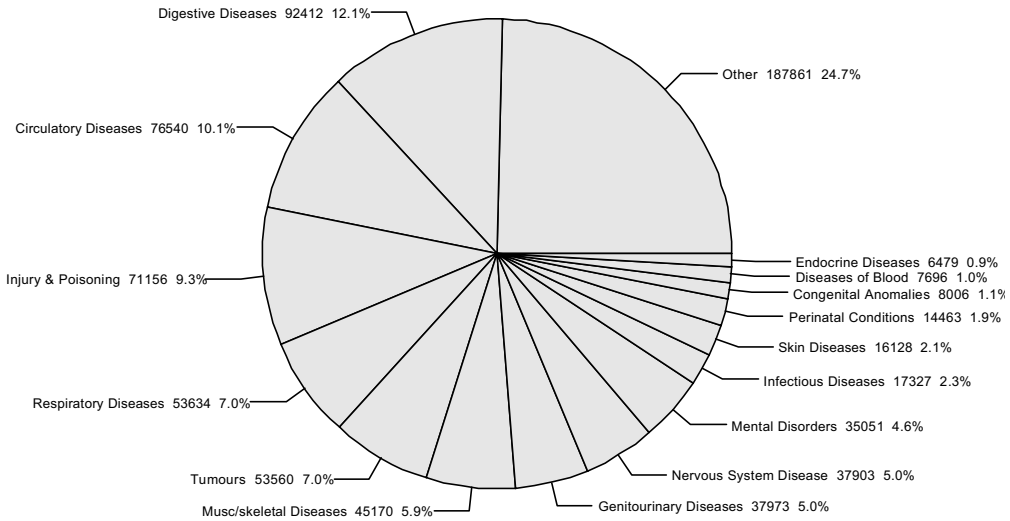
2.4 Morbidity

2.4.1 Hospitalisation

About three quarters of all hospitalisations are for serious morbidity. In 1993/94, a total of 1,676,909 admissions to NSW hospitals were reported to the NSW Inpatient Statistics Collection; 761,404 (45.4 per cent) occurred in males and 915,505 (54.6 per cent) occurred in females.

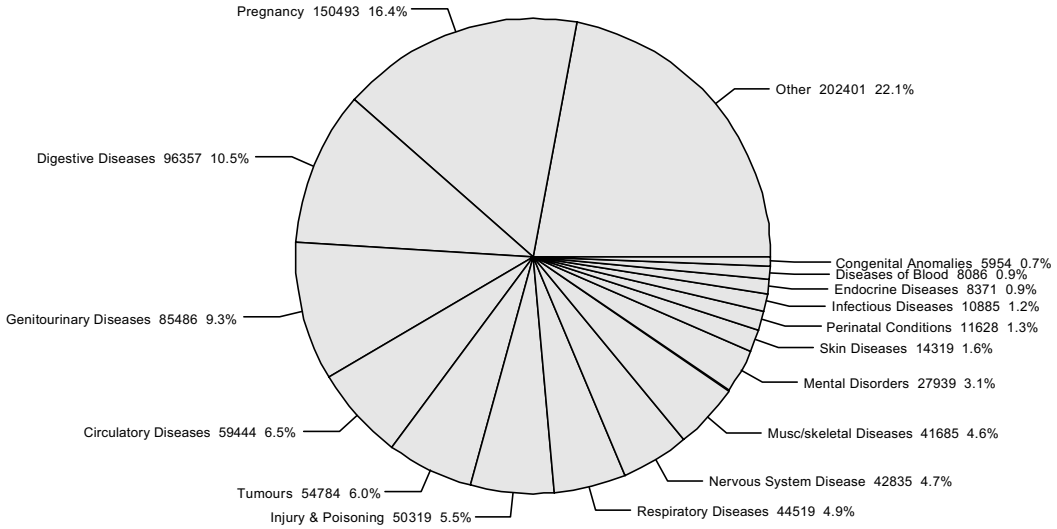
In males, over one-third of hospitalisations were due to digestive, circulatory, and respiratory diseases and injury and poisoning (Figure 2.2). In females about one in six hospitalisations were related to pregnancy and a further one in four were due to digestive, genitourinary or circulatory diseases (Figure 2.3)

Figure 2.2 Principal diagnosis for hospitalisations among males, NSW hospitals 1993/94



Note: 'Other' category refers to symptoms, signs, ill-defined conditions and circumstances other than disease or injury.
Data source: NSW Inpatient Statistics Collection (HOIST), Epidemiology Branch, NSW Health Department.

Figure 2.3 Principal diagnosis for hospitalisations among females, NSW hospitals 1993/94



Note: 'Other' category refers to symptoms, signs, ill-defined conditions and circumstances other than disease or injury.
Data source: NSW Inpatient Statistics Collection (HOIST), Epidemiology Branch, NSW Health Department.

2.4.2 Self-reported health status, recent illnesses and long term conditions

At the 1989/90 ABS National Health Survey, 29 per cent of the population reported their health as excellent, 49 per cent as good, 17 per cent as fair and 5 per cent as poor[1].

Seventy-one per cent of people reported one or more recent illnesses and 64 per cent reported one or more long term conditions (Table 2.5). Females were more likely to report both recent and long term conditions than males.

Table 2.5 Self-reported recent illnesses and long term conditions by age and sex, NSW 1989/90

Type of illness/ condition`	Age (years) <5 (%)	5-14 (%)	15-24 (%)	25-44 (%)	45-64 (%)	>65 (%)	Sex Male (%)	Female (%)	Total (%)
Recent	65.9	56.9	63.0	69.2	79.1	88.7	65.6	75.3	70.5
Long term	23.8	40.7	49.7	64.3	87.7	93.9	61.6	65.8	63.7
Recent and/or long term	70.7	67.2	75.4	82.8	94.4	97.7	80.0	85.0	82.5

Note: Recent illness refers to a health problem occurring in the two weeks prior to interview. Long term condition refers to a health problem which has lasted or is expected to last more than 6 months.

Source: Australian Bureau of Statistics and New South Wales Health Department. State of Health in NSW. Australian Bureau of Statistics, Catalogue No. 4330.1, 1993.

Respiratory conditions were the most common type of recent condition reported (by 23 per cent of the population), followed by digestive diseases (13 per cent), and diseases of the circulatory system (12 per cent)[1].

For recent respiratory conditions, the common cold was most commonly reported (by 10 per cent of the population) followed by asthma (4 per cent). The prevalence of recent asthma was found to vary from 3 per cent in those over 75 years of age to 8 per cent in 5-14 year-olds. Overall, 1 per cent of those surveyed reported recent bronchitis or emphysema.

The most common types of digestive diseases reported were dental problems (5 per cent of the population).

The most common types of circulatory disease reported were hypertension (8 per cent) and heart disease (2 per cent). The prevalence of reported hypertension increased with age, from 2 per cent among persons aged 25-44 years to 34 per cent of those aged 75 years and over.

Diseases of the nervous system and sense organs were the most common type of long term condition reported (37 per cent of the population), followed by diseases of the musculoskeletal system and connective tissue (26 per cent) and diseases of the respiratory system (20 per cent).

Problems with sight were reported in 31 per cent of the population, and increased with age from 7 per cent in persons aged 5-14 years to 66 per cent in those aged 45-64 years. Deafness (partial or complete) was reported in 4 per cent of the population, and also increased with age from 1 per cent in persons aged 5-14 years to 13 per cent in those aged 75 years and over.

Arthritis was reported in 11 per cent of the population. The reported rate increased with age to a maximum of 41 per cent in those aged 75 years and over.

Asthma as a long term condition was reported by 8 per cent of the population and was most commonly reported among persons aged 5-14 years (15 per cent). Hayfever was reported by 8 per cent of the survey population and bronchitis or emphysema in 3 per cent.

2.5 Disability

The ABS identifies a person as having a disability if they have one or more of a selected group of impairments or disabilities which have lasted or are likely to last 6 months or more[2]. The ABS Survey of Disability, Ageing and Carers estimated that 1,015,600 people (16.9 per cent) in NSW had a disability in 1993.

A disability may result in a handicap which limits a person's ability to perform certain tasks associated with daily living. The ABS survey covered limitations in relation to one or more of the following five areas: self care, mobility, verbal communication, schooling and employment. All children with disabilities who were aged less than 5 years were considered to have a handicap. It was estimated that 803,200 people in NSW had a handicap in 1993, comprising 79 per cent of all people with a disability.

In 1993 there were 518,300 males and 497,300 females who had a disability. The proportion of people who reported a disability increased from 4 per cent of 0-4 year old children to 65 per cent of people aged 75 years and over. Of people with a disability who were aged 5 years and over, about 65,200 (7 per cent) mainly spoke a language other than English at home.

Eighty-nine per cent of people with a disability had a disabling physical condition and 11 per cent reported a mental disorder. The most commonly reported physical conditions were arthritis, disorders of the ear and mastoid process (including hearing loss) and other musculoskeletal disorders.

The most common causes of disabling conditions in males were injury (16 per cent) and disease, illness or hereditary conditions (16 per cent), and in females were disease, illness or hereditary conditions (22 per cent).

In 1993, 94 per cent of people with a disability lived in households. Six per cent lived in establishments such as hospitals, hostels and nursing homes, over 80 per cent of whom were aged 65 years and over.

Of the 803,200 people with a handicap in 1993, the severity of the handicap was mild for 306,200 (38 per cent) people, moderate for 139,300 (17 per cent) people, severe for 98,900 (12 per cent) people and profound for 147,300 (18 per cent) people. For the remaining 11,400 (13 per cent) people, the degree of severity was not determined.

In 1993, the unemployment rate was 11 per cent for people with a disability but no handicap, 22 per cent for people with a handicap and 12 per cent for the labour force as a whole. The labour force participation rate was 75 per cent of people with a disability but no handicap, 44 per cent for people with a handicap and 73 per cent for the labour force as a whole.

Fifty-nine per cent of people with a disability needed help with at least one of the following activities of daily living: self-care, mobility, verbal communication, health care, home help, home maintenance, meal preparation, personal affairs and transport. The most frequent areas of need were home maintenance (39 per cent), transport (30 per cent) and home help (28 per cent). Help was received by 93 per cent of those who needed help, and the rate varied from 80 per cent of people who needed help with verbal communication to 94 per cent of people who needed help with home maintenance.

References

1. Australian Bureau of Statistics and New South Wales Health Department. State of Health in NSW. Australian Bureau of Statistics, Catalogue No. 4330.1, 1993.
2. Ageing and Disability Department and Australian Bureau of Statistics. Facts on Disability in NSW. Australia, ABS Catalogue No. 4198.0, 1995.

CHAPTER 3
MOTHERS AND NEWBORNS

- Overall, mothers and babies in NSW enjoy an excellent level of health. However, the health of mothers and babies in the Aboriginal and some non-English speaking communities continues to be poor by comparison.
- In 1994, 87,984 births were reported to the NSW Midwives Data Collection.
- Thirteen per cent of confinements were to women over 35 years, compared with only 9 per cent in 1987.
- In 1992, 1.4 per cent of reported confinements followed assisted conception.
- in 1994, 2 per cent of mothers had prenatal diagnosis by amniocentesis or chorionic villus sampling.
- In 1993/94, 17,532 terminations of pregnancy were reported to the NSW Inpatient Statistics Collection.
- In 1994, 71 per cent of mothers delivered by normal vaginal delivery, 17 per cent by caesarean section, 11 per cent by instrumental delivery (forceps or vacuum extraction) and 1 per cent by vaginal breech delivery.
- The Perinatal mortality rate decreased from 11.5 per 1,000 total births in 1986 to 10.6 in 1992. The perinatal mortality rate varied from 4.9 per 1,000 in South Coast District to 19.9 per 1,000 in Orana District.
- In 1994, 6.3 per cent of infants were of low birthweight (less than 2,500 grams birthweight) and 6.4 per cent were premature (less than 37 weeks gestation).

3.1 Demographic characteristics

In 1994, 87,984 births were reported to the NSW Midwives Data Collection. Of these, 2,370 were twins and 90 were triplets. Over one-quarter of all births in NSW occurred in the Western and South-Western Areas of Sydney (Table 3.1).

There has been a trend for mothers to give birth at later ages. Between 1987 and 1994, the proportion of confinements among mothers over 35 years of age increased from 9.0 per cent to 13.1 per cent. Over the same period, the proportion of confinements in teenage mothers decreased from 5.7 to 5.0 per cent. Fertility rates have decreased among women aged 20-29 years and increased among women aged 30-44 years (Table 3.2).

In 1994, there were 1,531 confinements among Aboriginal mothers (1.8 per cent of all confinements). Aboriginal mothers were younger overall than non-Aboriginal mothers: 348 (22.4 per cent) deliveries among Aboriginal mothers were to teenagers, and 74 (4.8 per cent) were to women aged 35 years and over.

Confinements to mothers born in non-English speaking countries comprised 17.0 per cent of all confinements in NSW[1]. Since 1987, there has been a trend towards an increasing proportion of confinements to mothers born in Asian countries (particularly Vietnam, China, Philippines and Hong Kong), and a decreasing proportion of confinements to mothers born in Europe, reflecting recent immigration patterns (Table 3.2).

3.2 Assisted conception

Australia-wide, 73.1 per cent of pregnancies following *in-vitro* fertilisation (IVF) and 74.5 per cent following gamete intrafallopian transfer (GIFT) would be expected to result in at least one liveborn baby.

In 1991, 438 pregnancies were reported following IVF and 329 pregnancies following GIFT among NSW mothers[2]. In the period 1979-1991, 2,304 pregnancies were reported following IVF and 1,394 following GIFT.

In 1992, 1,205 (1.4 per cent) confinements reported to the NSW Health Department followed assisted conception. Of these, 281 (23.3 per cent) followed IVF, 208 (17.3 per cent) followed GIFT and 716 (59.4 per cent) followed other types of assisted conception (for example artificial insemination).

Table 3.1 Perinatal outcomes by Health Area/District of mother's residence, NSW

Area/District of residence	Total births	Premature infants		Low birthweight infants		Infants with low Apgar score (<5)		Perinatal mortality	
	No.	No.	%	No.	%	No.	%	No.	Rate/ 1,000
Central Sydney	4582	299	6.5	300	6.5	122	2.7	41	8.3
Northern Sydney	8847	575	6.5	462	5.2	396	4.5	69	7.8
Southern Sydney	7830	549	7.0	473	6.0	275	3.5	68	8.8
Eastern Sydney	3414	253	7.4	249	7.3	88	2.6	24	7.3
Western Sydney	10157	684	6.7	639	6.3	511	5.0	119	11.7
Wentworth	5043	379	7.5	332	6.6	249	4.9	50	9.9
South-Western Sydney	12142	791	6.5	726	6.0	654	5.4	101	8.4
Central Coast	3828	257	6.7	221	5.8	132	3.4	25	6.5
Hunter	7335	543	7.4	426	5.8	230	3.1	60	8.0
Illawarra	4664	277	5.9	260	5.6	283	6.1	46	10.0
Barwon District	510	27	5.3	34	6.7	37	7.3	7	11.5
Castlereagh District	450	38	8.4	28	6.2	21	4.7	5	11.7
Central West District	956	37	3.9	39	4.1	32	3.3	9	8.8
Clarence District	602	40	6.6	31	5.1	23	3.8	4	6.3
Evans District	955	59	6.2	50	5.2	76	8.0	16	16.9
Far West District	305	14	4.6	17	5.6	8	2.6	2	5.3
Hume District	1156	63	5.4	55	4.8	32	2.8	6	5.4
Lachlan District	645	46	7.1	43	6.7	36	5.6	14	24.3
Lower North Coast District	954	68	7.1	65	6.8	21	2.2	12	12.1
Macleay-Hastings District	1024	79	7.7	62	6.1	62	6.1	12	11.6
Macquarie District	1201	80	6.7	72	6.0	57	4.7	9	6.8
Mid North Coast District	1126	88	7.8	77	6.8	66	5.9	15	12.6
Monaro District	646	14	2.2	21	3.3	40	6.2	4	6.1
Murray District	284	11	3.9	8	2.8	5	1.8	4	13.0
Murrumbidgee	879	35	4.0	38	4.3	41	4.7	10	11.8
New England	1021	48	4.7	59	5.8	70	6.9	10	9.6
North West District	1146	66	5.8	77	6.7	82	7.2	8	6.9
Orana District	289	27	9.3	24	8.3	16	5.5	6	19.9
Richmond District	1696	95	5.6	94	5.5	174	10.3	14	7.8
Riverina District	1368	86	6.3	76	5.6	82	6.0	24	16.3
South Coast District	711	39	5.5	36	5.1	16	2.3	3	4.1
Southern Tablelands District	843	30	3.6	40	4.7	58	6.9	7	8.7
Tweed District	622	25	4.0	31	5.0	38	6.1	6	8.3
NSW	87,984	5,658	6.4	5,112	5.8	1,042	1.2	991	10.6
Australia	262,726	-	-	16,493	6.3	2,596	1.0	7,710	9.4

Notes:
1. NSW data for births, premature and low birthweight infants, and low Apgar score are for 1994.
2. Perinatal deaths refer to births of 500 grams birthweight or, if birthweight is unknown, 22 weeks gestation.
3. Perinatal deaths for NSW Areas and Districts exclude deaths occurring interstate.
4. Perinatal deaths and all Australian data are for 1992.

Sources:
1. NSW Midwives Data Collection 1994 (HOIST), Epidemiology Branch, NSW Health Department.
2. Lancaster P, Huang J, Pedisich E. Australia's Mothers and Babies 1992. Australian Institute of Health and Welfare National Perinatal Statistics Unit, Perinatal Statistics Series Number 2. AIHW National Perinatal Statistics Unit, Sydney 1995.
3. Australian Bureau of Statistics perinatal death data, Epidemiology Branch, NSW Health Department.

Table 3.2 Selected demographic trends in NSW, 1987-94 (a)

	1987		1988		1990		1991		1992		1993		1994	
Births and confinements														
Confinements (No.)	82126		82630		86499		85784		87801		86746		86738	
Births (No.)	83098		83555		87532		86917		88976		87901		87984	
Maternal age distribution	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Teenage mothers	4651	5.7	4739	5.7	4850	5.6	5108	6	4741	5.4	4493	5.2	4370	5
Mothers aged 35-plus years	7421	9	7780	9.4	8974	10.4	9447	11	10208	11.6	10566	12.2	11358	13.1
Fertility	**Rate/1000**		**Rate/1000**		**Rate/1000**		**Rate/1000**		**Rate/1000**		**Rate/1000**		**Rate/1000**	
General fertility rate	56.2		56.5		55.7		56		56.7		55.4		55.8	
Age-specific fertility rates														
15-19	20.3		20.3		20.9		22.8		21.9		21.2		21.4	
20-24	84.8		80.4		78.6		75.6		76.7		73.4		72	
25-29	134		130.9		129.5		127.3		128.8		125.7		128.9	
30-34	89.4		90		95.2		98.3		101.6		101.2		104.5	
35-39	30.1		31		34.9		36.5		38.9		39.8		42.7	
40-44	5.1		4.7		5.6		6		6.3		6.5		7.2	
45-49	0.3		0.7		0.4		0.3		0.3		0.3		0.3	
Maternal country of birth (b)	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Australia	61284	74.6	60482	73.2	64926	75.1	63522	74	64924	73.9	63471	73.2	63758	73.5
United Kingdom	3948	4.8	3846	4.7	3007	3.5	3603	4.2	3533	4	3299	3.8	3085	3.6
Lebanon	2206	2.7	2251	2.7	2425	2.8	2395	2.8	2398	2.7	2334	2.7	2299	2.7
New Zealand	1583	1.9	1673	2	1859	2.1	1924	2.2	1954	2.2	1859	2.1	1814	2.1
Vietnam	994	1.2	1158	1.4	1134	1.3	1208	1.4	1425	1.6	1625	1.9	1658	1.9
China	288	0.4	365	0.4	582	0.7	828	1	1052	1.2	1328	1.5	1562	1.8
Philippines	902	1.1	937	1.1	1167	1.3	1144	1.3	1195	1.4	1309	1.5	1163	1.3
Hong Kong	378	0.5	404	0.5	405	0.5	572	0.7	589	0.7	647	0.7	669	0.8
Former Yugoslavia	743	0.9	774	0.9	729	0.8	721	0.8	732	0.8	636	0.7	609	0.7
Fiji	384	0.5	424	0.5	458	0.5	553	0.6	555	0.6	526	0.6	585	0.7
India	283	0.3	294	0.4	339	0.4	390	0.5	460	0.5	475	0.5	555	0.6
Turkey	393	0.5	351	0.4	345	0.4	349	0.4	366	0.4	378	0.4	385	0.4
Italy	605	0.7	533	0.6	502	0.6	468	0.5	416	0.5	415	0.5	353	0.4
United States of America	270	0.3	312	0.4	351	0.4	274	0.3	305	0.3	294	0.3	331	0.4
Indonesia	241	0.3	248	0.3	260	0.3	309	0.4	343	0.4	314	0.4	313	0.4

(a) Data for 1989 are not available. All indicators refer to confinements. All percentages refer to total confinements for the year.
(b) Data refer to the fifteen most common maternal countries of birth over the seven year period.
Source: NSW Midwives Data Collection and population estimates (HOIST). Epidemiology Branch, NSW Health Department.

3.3 Prenatal diagnosis

Of the 86,738 mothers who delivered in 1994, 1,751 (2.0 per cent) were reported to have had either an amniocentesis or chorionic villus sampling (CVS). Three-quarters of these mothers had an amniocentesis (1,304, 1.5 per cent) and one quarter had CVS (464, 0.5 per cent). The proportion of mothers choosing to have these procedures increased with increasing maternal age. Among mothers aged 35 years or over, 12.4 per cent of mothers were reported to have had one of these procedures. There is currently no comprehensive information on the proportion of pregnant women who have had an ultrasound examination for the purpose of prenatal diagnosis in NSW.

3.4 Termination of pregnancy

In the 1993-94 financial year, 17,532 terminations of pregnancy were reported to the NSW Inpatient Statistics Collection (ISC). Of these, 3,622 (17.5 per cent) were among teenagers, and 6,077 (29.4 per cent) were among women aged 20-24 years. Terminations carried out in some private clinics are not routinely reported to the ISC. Adelson et al reported that there were 28,000 Medicare claims for termination of pregnancy in the year ending 30 June 1991, and as many as 15 per cent of terminations may not have generated a Medicare claim[3].

The most commonly reported reasons for mothers seeking a termination of pregnancy were concerns about finances, change in lifestyle, single parenthood and being too young[3]. Terminations following the detection of congenital malformations account for only a small proportion of all terminations. In 1992, 150 terminations of pregnancy following the detection of a congenital malformation were reported to the NSW Birth Defects Register (BDR)[4]. However, as notifications of termination of pregnancy to the BDR are voluntary, this figure is likely to be an underestimation.

3.5 The health of mothers

Most mothers have an uneventful pregnancy and delivery. In 1994, 61.0 per cent of all NSW mothers and 64.6 per cent of Aboriginal mothers had no major medical conditions or obstetric complications during pregnancy and had a normal vaginal delivery.

In 1994, 22.1 per cent of mothers reported smoking during pregnancy[5]. Of all mothers, 9.3 per cent reported smoking fewer than 10 cigarettes per day, 11.3 per cent reported smoking more than 10 cigarettes per day, and in 1.2 per cent of cases the number of cigarettes smoked was not stated.

The most common conditions reported to the NSW Midwives Data Collection are pregnancy-induced hypertension, prolonged rupture of membranes and gestational diabetes, affecting 5.8, 2.8 and 2.7 per cent of all mothers respectively. Compared with non-Aboriginal mothers, Aboriginal mothers are four times more likely to be hepatitis B positive and about one and a half times more likely to have a threatened premature labour (Table 3.3).

Among mothers born in non-English speaking countries the rate of hepatitis B is 10 times higher than the rate in mothers born in English speaking countries - two-thirds of all hepatitis B positive mothers in NSW are born in non-English speaking countries[1]. In 1990-93, gestational diabetes occurred at the rate of 1.4 per cent among mothers born in English-speaking countries. Substantially higher rates of gestational diabetes were reported among mothers born in China (5.8 per cent); Fiji (5.1 per cent); Vietnam (5.0 per cent); Hong Kong (4.2 per cent); Philippines (4.2 per cent); India (3.9 per cent); Turkey (3.5 per cent); Former Yugoslavia (3.3 per cent); Eastern Europe, Russia and the Central Asian and Baltic States (3.1 per cent); Lebanon (3.0 per cent); and Italy (2.3 per cent). Higher rates of antepartum haemorrhage have been reported among mothers born in India (2.9 per cent), of pregnancy-induced hypertension among mothers born in Fiji (8.5 per cent), and of prolonged rupture of membranes among mothers born in China (3.9 per cent), Fiji (2.9 per cent), India (2.7 per cent) and Vietnam (2.6 per cent)[1].

Table 3.3 Maternal medical conditions and obstetric complications by Aboriginality, NSW 1994

Medical condition/obstetric complication	Aboriginal/Torres Strait Islander (ATSI)		Non-ATSI		Not stated		Total	
	No.	%	No.	%	No.	%	No.	%
Antepartum haemorrhage								
Placenta praevia	7	0.5	375	0.4	0	0.0	382	0.4
Placental abruption	14	0.9	341	0.4	3	1.0	358	0.4
Cause unknown	27	1.8	946	1.1	5	1.7	978	1.1
Diabetes mellitus	7	0.5	356	0.4	1	0.3	364	0.4
Essential hypertension	13	0.8	628	0.7	2	0.7	643	0.7
Gestational diabetes	48	3.1	2256	2.7	13	4.5	2317	2.7
Hepatitis B	35	2.3	512	0.6	2	0.7	549	0.6
Pregnancy-induced hypertension	83	5.4	4960	5.8	15	5.2	5058	5.8
Prolonged rupture of membranes	50	3.3	2361	2.8	12	4.1	2423	2.8
Threatened premature labour	46	3.0	1544	1.8	5	1.7	1595	1.8

Data source: NSW Midwives Data Collection (HOIST), Epidemiology Branch, NSW Health Department

Postnatal depression is now recognised as a major cause of maternal morbidity. Depression after birth may manifest in three ways: first as the 'baby blues', which is short-lived and affects up to 80 per cent of mothers in the first two weeks after childbirth; second, as postnatal depression, which affects about 10 to 15 per cent of mothers and may persist for several months; and third as a psychosis, which is rare, affecting between 1 and 3 of every 1,000 mothers. There is no information on the prevalence of postnatal depression in NSW. However, it is likely that at least 8,000 mothers per year suffer from postnatal depression and at least 100 would require psychiatric admission for postpartum psychosis.

Deaths among mothers in Australia are extremely rare. In NSW on average, there are 3-4 deaths per year which are directly caused by the pregnancy or its management, and there are a further 6-7 deaths per year which are due to conditions not directly caused by the pregnancy. While the number of pregnancy-related deaths among Aboriginal women is very small, the death rate is much higher than that of non-Aboriginal women: in the period 1982-1990, 4 maternal deaths which were directly attributed to the pregnancy or its management occurred in Aboriginal mothers - a mortality rate of 38 per 100,000 births compared with a rate of 5 per 100,000 for non-Aboriginal women[6].

3.6 Labour and delivery

Between 1987 and 1994, the rate of spontaneous onset of labour increased from 71.7 to 79.7 per cent. Between 1987 and 1993 the rate of induction of labour has stayed fairly stable at about 20 per cent (20.2 per cent in 1994). However, the rate of augmentation of labour has increased from 17.4 per cent in 1987 to 23.4 per cent in 1994.

Over the period 1987 to 1994, the rate of normal vaginal delivery increased from 67.7 per cent to 70.6 per cent and the rate of caesarean section delivery increased from 15.9 per cent to 17.3 per cent of all births. These increases have been accompanied by a decrease in the rate of vaginal breech delivery from 1.4 per cent to 1.1 per cent, and the rate of instrumental delivery (forceps or vacuum extraction) from 13.9 to 10.8 per cent.

3.7 Health of newborn infants

In 1994, 76.3 per cent of infants were born at full term, of normal birthweight, had an Apgar score of 7 or more and did not require admission to a Special Care Nursery or Neonatal Intensive Care Unit.

The perinatal mortality rate in NSW has decreased from 11.5 to 10.6 per thousand births between 1986 and 1992. A similar decrease has occurred in the perinatal mortality rate for Australia (Figure 3.1). Factors contributing to the fall in perinatal mortality in NSW include the increasing trend for high risk pregnancies to be managed in tertiary referral centres, and improved survival rates for extremely low birthweight babies (less than 1,000 grams) who are admitted to a Neonatal Intensive Care Unit[7].

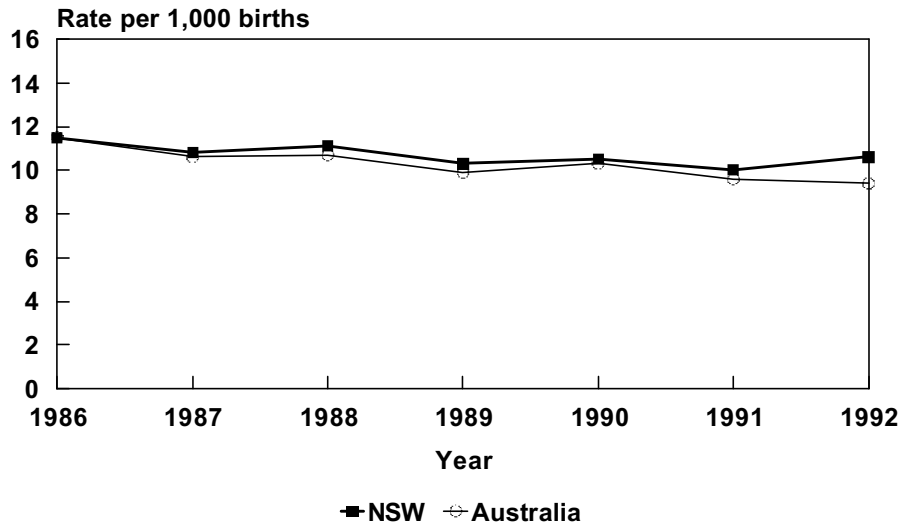
In 1993, the main conditions in the foetus or infant which contributed to perinatal deaths included hypoxia, birth asphyxia and other respiratory conditions (31.3 per cent), other conditions originating in the perinatal period (29.0 per cent) and congenital malformations (21.4 per cent)[8].

Higher rates of ill health and subsequent disability occur among premature infants (less than 37 weeks

gestation) compared with those born at full term. In 1994, 5,658 (6.4 per cent) newborns were born prematurely, 611 (0.7 per cent) were born at 28-31 weeks gestation and 506 (0.6 per cent) at less than 27 weeks gestation.

Similarly, low birthweight babies (less than 2,500 grams) are more likely to have ill-health compared with normal birthweight babies. In 1994, 5,112 (5.8 per cent) of all babies were low birthweight, 487 (0.6) per cent weighed 1,000-1,499 grams and 544 (0.6 per cent) weighed less than 1,000 grams.

Figure 3.1 Perinatal mortality, NSW and Australia, 1986-1992



Source: Lancaster, P Huang, J Pedisch. Australia's Mothers and Babies 1992. Perinatal Statistics Series, Number 2. AIHW National Perinatal Statistics Unit, Sydney, 1995.

In 1994, 2,157 (2.5 per cent) newborns had a five-minute Apgar score less than 7, and 16,315 (18.5 per cent) were admitted to a Special Care Nursery or Neonatal Intensive Care Unit.

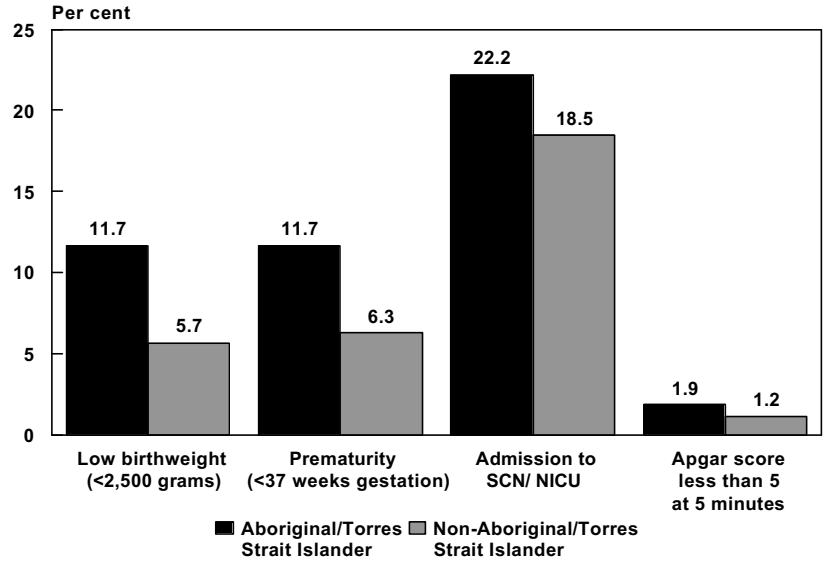
In 1992, 1,363 babies born with major congenital malformations in NSW were reported to the National Perinatal Statistics Unit Congenital Malformations Monitoring System. These babies include stillbirths and livebirths where the malformation was detected in the first month of life. The rate of major malformations was 1.5 per cent in NSW compared to 1.7 per cent for Australia[9].

In NSW, congenital malformations are reported to the NSW Birth Defects Register, which covers malformations detected during pregnancy, at birth and in the first year of life. In 1992, 2,142 (2.4 per cent) of livebirths and stillbirths were reported to have a major congenital malformation. The types of malformations reported are described in chapter 12.

Selected perinatal outcomes are shown in Table 3.1, by mother's area of residence. Infants born to NSW mothers had a slightly higher rate of perinatal mortality but similar rates of low birthweight and low Apgar score compared with Australia overall. The relatively low rates of adverse outcomes reported in areas bordering other States, such as Tweed and Monaro Districts, may be a result of high risk mothers being transferred interstate for care.

Compared with babies born to non-Aboriginal mothers, babies born to Aboriginal mothers are more likely to be premature, low birthweight, have a low 5-minute Apgar score at birth and be admitted to a Special Care Nursery or Neonatal Intensive Care Unit (Figure 3.2).

Figure 3.2 Selected perinatal outcomes by maternal Aboriginality, NSW 1994



Data source: NSW Midwives Data Collection 1994 (HOIST), Epidemiology Branch, NSW Health Department.

There are also substantial variations in the health of babies of mothers born in non-English speaking countries. Compared with infants of mothers born in English speaking countries, higher perinatal mortality rates have been found among infants of mothers born in the Pacific Islands and Lebanon; higher rates of low birthweight among infants of mothers born in the Pacific Islands and India; and higher rates of prematurity among infants of mothers born in the Pacific Islands and the Philippines. Comparatively low rates of low birthweight and prematurity have been observed among infants of mothers born in Lebanon, China and Hong Kong.

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CHAPTER 4
INFECTIOUS DISEASES AND THEIR PREVENTION

- In 1994 there were 24,079 notifications for infectious diseases in NSW
- Hepatitis C is a growing public health problem in NSW and Australia, with over 9,000 cases notified in 1994
- In 1994 there were 3,235 notifications of vaccine preventable diseases, of which 94 per cent were for measles and pertussis (whooping cough)
- In 1989/90 52 per cent of children aged less than six years were fully immunised in NSW
- Between 1984 and 1994 there were 12,101 notifications for HIV, of which 435 were in 1994
- Between 1984 and 1994 there were 3,398 notifications for AIDS, of which 460 were in 1994
- Information on exposure categories suggests that homosexual contact remains the most important risk factor for HIV infection and AIDS in NSW

4.1 Notifiable infectious diseases

The NSW Public Health Act 1991 requires doctors, hospital chief executive officers or general managers, and pathology laboratories to notify listed infectious diseases of public health significance to the State's 15 Public Health Units. Certain vaccine preventable diseases are also notifiable by school principals and directors of child care facilities. Statewide information based on these notifications is then compiled by the NSW Health Department.

Table 4.1 shows the numbers of notifications received in 1994 for each notifiable condition reported. No notifications were reported for the following notifiable diseases: cholera, plague, poliomyelitis, rabies, epidemic typhus, viral haemorrhagic fevers, and yellow fever. Of the 24,079 disease notifications, more than one-third were for hepatitis C and almost one-fifth for hepatitis B. Measles and pertussis (whooping cough) were the next most commonly reported notifiable diseases. Adverse events following immunisation are are also notifiiable. In 1994, there were 43 notifications of such events.

Table 4.1 Notifiable infectious diseases, NSW 1994

Infectious disease	No.	Infectious disease	No.
Hepatitis C	9416	Rubella	234
Hepatitis B	4722	Food-borne illness	223
Measles	1504	Malaria	187
Pertussis (whooping cough)	1421	Meningococcal disease	143
Salmonella infection	1129	Legionnaires' disease	61
Syphilis	1072	*Haemophilus influenzae* type b	61
Hepatitis A	592	Typhoid and Paratyphoid	36
Mycobacterial infections (other than tuberculosis)	562	Hepatitis D	20
Mycobacterial tuberculosis	414	Hydatid disease	19
AIDS	460	Mumps	11
HIV	435	Leptospirosis	14
Arboviral infection	383	Listeriosis	9
Gonorrhoea	364	Brucellosis	4
Gastroenteritis	306	Tetanus	4
Q fever	268	Leprosy	3
		Acute hepatitis (unspecified)	2
		Total	**24079**

Data Source: Infectious diseases surveillance system, AIDS/Infectious Diseases Branch, NSW Health Department.

4.2 Vaccine Preventable Diseases

4.2.1 Notifications

In 1994 there were 3,235 notifications for vaccine preventable diseases in NSW. Poliomyelitis and diphtheria were the only vaccine preventable diseases not notified. Over recent years there has been a marked increase in the number of notifications for measles and pertussis (whooping cough) (Table 4.2).

Haemophilus influenzae type b (Hib)

There were 61 notifications for Hib in 1994, compared with 133 in 1993 and 228 in 1992.

Measles

There were 1,504 notifications for measles in 1994. From 1984 there have been three-yearly epidemics to 1990; additionally there has been a gradual increase since 1991 in notifications for measles in NSW, with 43 notifications in 1988, 839 in 1992 and 2,397 in 1993.

Pertussis (whooping cough)

There were 1,421 notifications for pertussis in 1994. Pertussis notifications were reported from all Public Health Units during 1994. The highest notification rate was in the North Coast of NSW.

Table 4.2 Trends in notifications for vaccine preventable diseases, NSW 1985-94

Disease	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Diphtheria	0	0	1	0	0	0	0	0	0	0
Haemophilus influenzae type b	NN	NN	NN	NN	NN	NN	224	228	133	61
Measles	46	140	246	43	76	388	455	839	2397	1504
Mumps	NN	NN	NN	NN	NN	NN	7	23	14	11
Pertussis (whooping cough)	303	227	43	25	202	149	50	226	1544	1421
Poliomyelitis	0	0	0	0	0	0	0	0	0	0
Rubella	NN	NN	NN	NN	NN	NN	62	347	824	234
Tetanus	1	0	1	1	0	2	6	2	5	4

Notes: NN - Not a notifiable condition in NSW for the specified year
Data Source: Infectious Diseases Surveillance System, AIDS/Infectious Disease Branch NSW Health Department

4.2.2 Hospitalisations

Haemophilus influenzae type b (Hib)

In 1993/94 there were 616 hospitalisations where Hib was recorded as a diagnosis. Of these, 452 (73 per cent) were hospitalisations where Hib was recorded as the principal diagnosis, and comprised septicaemia (23 principal diagnoses, or 5 per cent), meningitis (85, or 19 per cent) and pneumonia (344, or 76 per cent).

The age of people hospitalised with Hib ranged from newborn to 94 years, with a mean of 44 years. The highest hospitalisation rate was among children less than 1 year of age followed by children aged 1 year (63.4 per 100,00 and 35.7 per 100,000 respectively). The age- and sex-specific hospitalisation rates followed a bimodal pattern, peaking in the very young and older people. Among children less than four years of age, the diagnoses included meningitis (60 per cent), pneumonia (27 per cent), and septicaemia (13 per cent).

There were 11 deaths in hospital caused by Hib during 1993/94.

Measles

In 1993/94 there were 427 hospitalisations where measles was recorded as a diagnosis and 351 hospitalisations (82 per cent) where measles was recorded as the principal diagnosis. Of the 427 total hospitalisations for measles, morbidities reported included:

- measles without mention of a complication (355, or 83 per cent)
- post-measles pneumonia (23, or 5 per cent)
- post-measles otitis media (15, or 3 per cent)

- measles with keratoconjunctivitis (12, or 3 per cent)
- measles with other specified complications (12, or 3 per cent)
- post-measles encephalitis (2, or 0.5 per cent)

The age of people hospitalised ranged from newborn to 82 years, with a mean of 7 years. The highest hospitalisation rate was among those less than one year of age, accounting for more than one-third (90) of admissions, followed by the one-year age group (23.2 per 100,000 population) and the 2-4 year age group (22.9 per 100,000 population). Eighty-five reported hospitalisations were for Aboriginal people.

There were no deaths in hospital due to measles in 1993/94.

Pertussis (whooping cough)

In 1993/94 there were 391 hospitalisations where pertussis was recorded as a diagnosis. Of these, 348 (89 per cent) were hospitalisations where pertussis was recorded as the principal diagnosis.

The age of people admitted to hospital ranged from newborn to 79 years, with a mean of 5 years. The highest hospitalisation rates were among the under 1-year age group (255.9 per 100,000 population), accounting for 64 per cent of all whooping cough admissions. This was followed by the 1-year age group (26.9 per 100,000 population) and the 2-4 year age group (13.7 per 100,000 population).

There were no deaths in hospital due to pertussis in 1993/94.

4.2.3 Immunisation status

The control of vaccine preventable disease is largely dependent upon achieving high coverage rates of immunisation among children. The 1989/90 ABS National Health Survey reported that, among NSW children aged less than six years:

- 52 per cent were fully immunised;
- approximately a further 30 per cent were partly immunised; and
- nearly 20 per cent were completely unimmunised against diphtheria, tetanus, pertussis, measles and mumps or had an unknown immunisations status.
- whooping cough had the lowest coverage rate of all vaccines; and
- infants and children from lower socioeconomic groups and ethnic minorities were least likely to be fully immunised.

In 1995, Public Health Units throughout NSW commenced reporting immunisation coverage levels of 2 year-old children attending child care facilities - the Statewide Sentinel Immunisation Surveillance System (SSISS). SSISS collects data on documented 'age-appropriate' immunisation among these 2 year-olds. While the data collected by the National Health Survey and SSISS are based on different age groups of children, immunisation coverage rates appear to have improved since 1989 (Table 4.3).

The implementation of the Australian Childhood Immunisation Register on 1 January 1996 will provide information on the immunisation status of all Australian children, enable reminder letters to be sent to parents and facilitate follow-up of unimmunised children.

Table 4.3 Immunisation coverage rates, NSW1989/90-1995

Vaccine	1989/90 National Health Survey (%)(a)	Statewide Sentinel Immunisation Surveillance System (%)(b)
Diphtheria	85	82
Pertussis (whooping cough)	70	82
Poliomyelitis	72	90
Measles	85	96
Fully immunised	52	80

Notes: (a) Immunisation coverage among children aged less than six years.
(b) Immunisation coverage among children aged two years.

Data Source: Australian Bureau of Statistics 1989/90 National Health survey data, Epidemiology Branch; Statewide Sentinel Immunisation Surveillance System, AIDS/Infectious Diseases Branch, NSW Health Department.

4.3 Human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS)

4.3.1 HIV

Under the NSW Public Health Act 1991, HIV infection is notifiable by reference laboratories. In 1994 there were 435 notifications for HIV infection, the lowest annual number since HIV testing began. One hundred and twenty three of the notified cases (28.3 per cent) had evidence of recent infection. From 1981 to 1994, 12,101 notifications for HIV were received (Table 4.4).

The (former) Eastern Sydney Area had the highest notification rate (52.2 per 100,000 population), followed by the Central Sydney Area (23.3 per 100,000). All other areas recorded rates lower than the State average of 7.0 per 100,000.

In 1994 HIV infection was most commonly notified among persons aged 25-34 years followed by those aged 35-44 years. These two groups accounted for 69 per cent of all HIV notifications (Table 4.5).

Of the 435 notified cases of HIV infection, 89.8 per cent were in males, 7.2 per cent were in females, and sex was not recorded for 3.0 per cent.

Risk exposure was recorded for 386 of the 435 notifications. Information on exposure categories suggests that homosexual contact remains the most important risk factor for HIV infections in NSW (Table 4.6). Injecting drug use was associated with 30 notifications, transfusions with seven, and vertical transmission (i.e. children born to HIV positive mothers) with eight notifications.

In 1994, in collaboration with the National Centre in HIV Epidemiology and Clinical Research, the NSW Health Department commenced enhanced surveillance of HIV risk exposure on all new diagnoses of HIV infection, where reported mode of infection was other than 'male to male sexual contact' or 'vertical transmission' . The aims of the study were to validate reported information on risk factors, identify cases where the mode of transmission was unusual, and provide an opportunity for patients to have their exposure to HIV investigated.

Table 4.4 Notifications for HIV and AIDS by year and Public Health Unit, NSW

Public Health Unit	AIDS				HIV			
	1994	(%)	Cumulative 1984-94	(%)	1994	(%)	Cumulative 1984-94	(%)
Central Sydney	95	(20.7)	711	(20.9)	77	(17.7)	973	(8.0)
Southern Sydney	20	(4.3)	153	(4.5)	20	(4.6)	187	(1.5)
Eastern Sydney	183	(39.8)	1227	(36.1)	164	(37.7)	2097	(17.3)
South Western Sydney	16	(3.5)	111	(3.3)	22	(5.1)	160	(1.3)
Western Sydney	27	(5.9)	146	(4.3)	23	(5.3)	196	(1.6)
Wentworth	11	(2.4)	98	(2.9)	12	(2.8)	102	(0.8)
Northern Sydney	28	(6.1)	318	(9.4)	31	(7.1)	397	(3.3)
Central Coast	11	(2.4)	67	(2.0)	8	(1.8)	48	(0.4)
Illawarra	12	(2.6)	53	(1.6)	9	(2.1)	53	(0.4)
Hunter	9	(2.0)	95	(2.8)	15	(3.4)	139	(1.1)
North Coast	18	(3.9)	103	(3.0)	7	(1.6)	98	(0.8)
Northern Districts	3	(0.7)	17	(0.5)	1	(0.2)	15	(0.1)
Western NSW	0	(0.0)	10	(0.3)	0	(0.0)	10	(0.1)
Central West NSW	1	(0.2)	18	(0.5)	2	(0.4)	32	(0.3)
South West NSW	2	(0.4)	15	(0.4)	1	(0.2)	23	(0.2)
South East NSW	1	(0.2)	7	(0.2)	1	(0.2)	14	(0.1)
Not stated	14	(3.0)	162	(4.8)	42	(9.7)	7557	(62.4)
Total	**460**	**(100.0)**	**3398**	**(100.0)**	**435**	**(100.0)**	**12101**	**(100.0)**

Data source: NSW AIDS Register and NSW HIV Database, AIDS/Infectious Diseases Branch, NSW Health Department.

Table 4.5 Notifications for HIV and AIDS by age and year, NSW

Age group (years)	AIDS 1994	(%)	AIDS Cumulative 1984-94	(%)	HIV 1994	(%)	HIV Cumulative 1984-94	(%)
0-4	2	(0.4)	7	(0.2)	11	(2.5)	46	(0.4)
5-14	1	(0.2)	8	(0.2)	0	(0.0)	34	(0.3)
15-24	8	(1.7)	131	(3.9)	56	(12.9)	1380	(11.4)
25-34	181	(39.3)	1226	(36.1)	205	(47.1)	3621	(29.9)
35-44	170	(37.0)	1276	(37.6)	93	(21.4)	2319	(19.2)
45-54	80	(17.4)	548	(16.1)	44	(10.1)	744	(6.1)
55-64	14	(3.0)	147	(4.3)	16	(3.7)	210	(1.7)
65 & over	4	(0.8)	55	(1.6)	4	(0.9)	57	(0.5)
Not stated	0	(0.0)	0	(0.0)	6	(1.4)	3690	(30.5)
Total	**460**	**(100.0)**	**3398**	**(100.0)**	**435**	**(100.0)**	**12101**	**(100.0)**

Data source: NSW AIDS Register and NSW HIV Database, AIDS/Infectious Diseases Branch, NSW Health Department.

Table 4.6 Notifications for HIV by risk exposure and year, NSW

Risk exposure	1994	(%)	Cumulative 1984-94	(%)
Homosexual/bisexual	280	(64.4)	5047	(41.7)
Homosexual + Injecting Drug Use	15	(3.4)	120	(1.0)
Heterosexual	56	(12.9)	355	(2.9)
Injecting Drug Use	5	(1.1)	236	(2.0)
Heterosexual + Injecting Drug Use	10	(2.3)	60	(0.5)
Transfusion	7	(1.6)	98	(0.8)
Haemophilia	1	(0.2)	61	(0.5)
Vertical	8	(1.8)	28	(0.2)
Other	4	(0.9)	42	(0.3)
Not stated	49	(11.3)	6054	(50.0)
Total	**435**	**(100.0)**	**12101**	**(100.0)**

Data source: NSW HIV Database, AIDS/Infectious Diseases Branch, NSW Health Department

4.3.2 AIDS

Under the Public Health Act 1991, AIDS is notifiable by medical practitioners and hospital chief executive officers or general managers. Surveillance of AIDS in Australia relies primarily on the passive receipt of case reports from doctors in each State and Territory, although some active case finding is carried out by State and Territory health departments[1]. AIDS is defined as HIV infection plus one or more AIDS-defining illnesses. This definition is based on the revised case definition from the US Centers for Disease Control and Prevention (CDC)[2]. However, while the CDC defines as cases individuals who are HIV positive and have CD4 counts below 200/ L but do not have an AIDS-defining illness, the Australian definition requires the presence of at least one AIDS-defining illness.

At the time of writing, 460 AIDS cases had been notified as diagnosed during 1994 in NSW, and 3,398 cases had been notified from 1984 to 1994 (Table 4.4). The (former) Eastern Sydney Area had the highest notification rate (58.3 per 100,000 population), followed by the Central Sydney Area (28.8 per 100,000). The overall notification rate for NSW was 7.4 per 100,000.

Of the 460 AIDS notifications, 95.7 per cent were males, 3.9 per cent were females, and 0.4 per cent were transsexuals.

Risk exposure was recorded for 428 of the 460 notifications. As with HIV infection, information on exposure categories suggests that homosexual contact remains the most important risk factor (Table 4.7). Injecting drug use was reportedly associated with 27 notifications, transfusions with seven, and vertical transmission with two notifications.

Since the mean period from HIV infection to AIDS is about 10 years, AIDS risk exposure data do not necessarily reflect current risk exposure patterns. In 1994, the distribution of risk exposures reported for HIV and AIDS notifications respectively, was similar for intravenous drug use with or without sexual contact (7 per cent, 6 per cent). However, a higher proportion of heterosexual contact was reported for HIV (13 per cent) than AIDS (4 per cent), and a correspondingly lower proportion of homosexual/ bisexual contact was reported for HIV (64 per cent) than AIDS (81 per cent) (Tables 4.6, 4.7).

In 1994, 71 deaths were reported as due to AIDS. From 1981 to 1994, 2,336 deaths due to AIDS were reported, of which 2,255 were males (96.5 per cent), 75 females (3.3 per cent) and six transsexuals (0.3 per cent). At the end of 1994 there were 1,062 people living with AIDS.

It has been shown that active rather than passive surveillance by health departments can improve case reporting[3], and that the use of laboratory based reporting can improve AIDS surveillance.[4] Under-reporting of AIDS in NSW has been estimated at 20 per cent. The main reasons given by doctors for not reporting persons with AIDS were difficulties with reporting procedures, the complicated AIDS case definition, concerns about maintaining patient confidentiality, and inadequate Health Department feedback on AIDS surveillance data[5]. Active surveillance investigations were carried out in a number of public hospitals and private general practices in 1994 to determine the extent of under-reporting and to improve the completeness of AIDS surveillance in NSW[6]. As a result, 273 new cases of AIDS were identified for 1994 and the estimated efficiency of passive reporting was 82 per cent. This estimate ranged from 32 to 94 per cent among hospitals or general practices and is consistent with patterns recognised overseas.[7]

Table 4.7 Notifications for AIDS by risk exposure by year, NSW

Risk exposure	1994	(%)	Cumulative 1981-94	(%)
Homosexual/Bisexual	371	(80.7)	2859	(84.2)
Homosexual + Injecting Drug Use	13	(2.8)	116	(3.4)
Heterosexual	18	(3.9)	98	(2.9)
Injecting Drug Use	3	(0.7)	11	(0.3)
Heterosexual + Injecting Drug Use	11	(2.4)	58	(1.7)
Transfusion	7	(1.5)	97	(2.9)
Haemophilia	1	(0.2)	38	(1.1)
Vertical	2	(0.4)	8	(0.2)
Other	2	(0.4)	10	(0.3)
Not stated	32	(7.0)	103	(3.0)
Total	460	(100.0)	3398	(100.0)

Data source : NSW AIDS Register, AIDS/Infectious Diseases Branch, NSW Health Department

4.4 Hepatitis B

Notifications for hepatitis B have gradually increased with 3,586 cases notified in 1992, 4,101 in 1993, and 4,722 in 1994. In 1994 the highest notification rate was for the South Western Sydney Area (185.2 per 100,000). This compared with a notification rate of 76.3 per 100,000 for the State as a whole.

Of the 4,722 hepatitis B notifications for 1994, 84 notifications (1.8 per cent) were for acute hepatitis B, 630 notifications (13.3 per cent) were for chronic hepatitis B and 4,015 notifications (84.9 per cent) were not specified as either acute or chronic hepatitis B.

4.5 Hepatitis C

Hepatitis C infection is a growing public health problem in Australia. As long ago as 1974 there was evidence that an agent or agents (other than the hepatitis A virus or the hepatitis B virus) could cause post-transfusion hepatitis. However, it was not until 1988 that the Chiron Corporation identified the agent called hepatitis C virus. Late in 1989 a hepatitis C screening test became available and was introduced into Australia in February 1990.

As initial infection with hepatitis C is usually subclinical, accurate monitoring of hepatitis C is difficult. Chronic infection is common and may lead to serious sequelae such as cirrhosis and hepatoma.

Since hepatitis C became notifiable late in 1991, there has been a dramatic increase in notifications for hepatitis C antibody in NSW, with 4,306 in 1992, 6,342 in 1993, and 9,416 in 1994. This increase may be explained by two events. The first is the progressive introduction of testing for hepatitis C antibody in the NSW health system after February 1990. Second, many of the hepatitis C antibody notifications are for people who were apparently infected in years prior to 1990. The highest notification rate was for the (former) Eastern Sydney Area (535.2 per 100,000). This compared with a notification rate of 151.3 per 100,000 for the State as a whole.

The presence of hepatitis C antibody indicates exposure to the hepatitis C virus only and is not considered to be a conclusive indicator of continuing infection.

There is currently no routinely collected information on risk exposures associated with hepatitis C infection. In 1994, a 12-month pilot study commenced involving the collection of risk factor information for every twentieth notification of hepatitis C.

4.6 Tuberculosis

New South Wales has achieved a high level of control of tuberculosis (TB) and has one of the lowest notification rates in the world.

During 1990 and 1991 the NSW Health Department undertook a critical evaluation of the TB control efforts within the State. The review culminated in the release of the strategy *Controlling Tuberculosis in New South Wales* which is the basis for NSW Health Department policy with regard to TB management throughout the State.

TB control includes assessment, diagnosis and screening for TB, supervision of medications, health care worker screening, establishment and maintenance of local TB Advisory Committees and management of health undertakings for migrants.

4.6.1 Notifications

The number of notifications for TB in NSW declined steadily prior to 1986, and have remained fairly constant at about 400 notifications per year since 1991 (Figure 4.1). In 1994, 414 notifications for TB were received, a rate of 6.6 per 100,000 population. TB notifications show marked geographical variation with the majority of notifications coming from metropolitan Sydney. The highest rate of notifications occurred in the South Western Sydney Area (10.4 per 100,000 population).

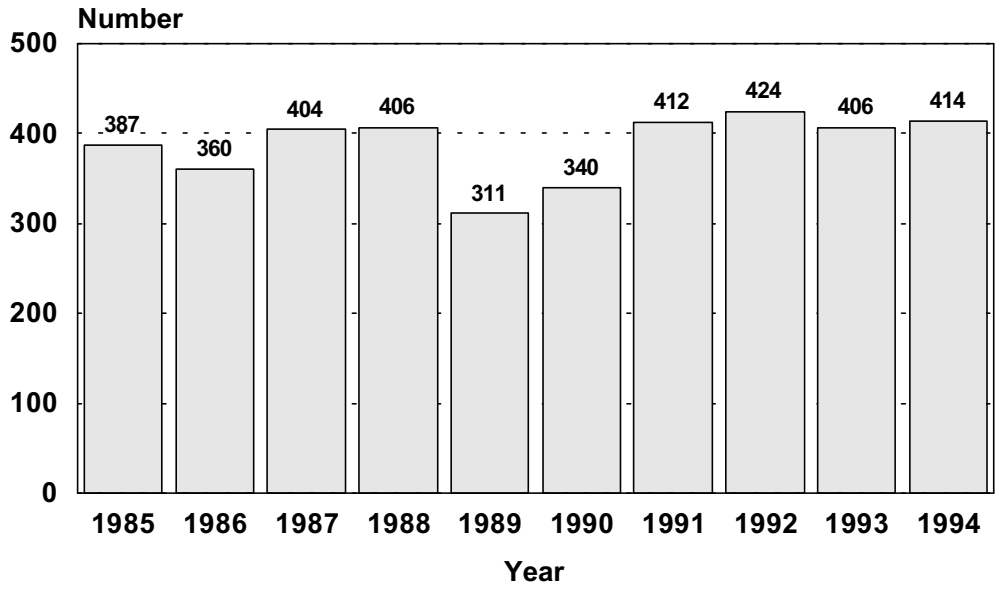
Males older than 70 years were the age/sex group with the highest rate of notification during 1994 (22.6 per 100,000 population). Females accounted for 204 notifications (6.4 per 100,000 population) and males for 210 notifications (6.6 per 100,000 population).

Respiratory disease accounted for 63 per cent of notifications and 3 per cent of notifications were for meningeal disease. Seventy-five per cent of respiratory cases were laboratory confirmed; 53 per cent were direct smear positive at diagnosis. The rate of smear positive TB was 2.4 per 100,000 population.

In 1994 five notifications were received for persons who identified themselves as Aboriginal, a rate of approximately 4 per 100,000 population. Three of these were for pulmonary disease. This low number may be a true reflection of the burden of infection in that community, or due to poor enumeration of cases.

Overseas born individuals accounted for 78 per cent of notifications. Vietnam was the country of birth for 16 per cent of notifications, China for 10 per cent of notified cases and the Philippines for 9 per cent. English was the first language spoken for 44 per cent of TB notifications, Vietnamese for 16 per cent of notifications, Chinese for 12 per cent and Tagalog for 3 per cent.

Figure 4.1 Notifications for tuberculosis, 1985-1994



Data source: Infectious Diseases Surveillance System, AIDS/Infectious Diseases Branch, NSW Health Department.

4.6.2 Prevalence

In order to measure the burden of *Mycobacterium tuberculosis* infection on the community, a number of prevalence surveys have been undertaken in the past five years:

- A study of police recruits reported that 11 per cent had been infected with TB[8].
- A study of year 8 school children reported that 10 per cent had been infected[9]. Twenty-seven per cent of overseas born children were infected compared with two per cent of Australian born children.
- In a small study of prison inmates 47 per cent were found to be infected with TB[10].

4.6.3 Hospitalisations

In 1993/94, there were 493 hospitalisations for TB as a major diagnosis in NSW hospitals, a rate of 4.7 per 100,000 population. TB was the principal diagnosis in 293 (59 per cent) cases and included the following diagnostic groups:

- pulmonary tuberculosis (188, 65 per cent)
- other respiratory tuberculosis (12, four per cent)
- tuberculosis of bones and joints (16, six per cent)
- tuberculosis of the genitourinary system (8, 3 per cent)
- tuberculosis of the central nervous system (7, 2 per cent)
- primary tuberculous infections (5, 2 per cent)
- tuberculosis of other organs (57, 20 per cent)

The rate of hospitalisation for TB was highest in the (former) Eastern Sydney Area (12 per 100,000 population).

Males aged 70-plus years were the age/sex group with the highest hospitalisation rate (16.8 per 100,000 population).

Less than one-third (30 per cent) of persons hospitalised with a principal diagnosis of tuberculosis were Australian born. Of the remaining, 70 (29 per cent) were born in South East Asia, 30 (11 per cent) in North East Asia, and 20 (7 per cent) in the United Kingdom and Europe.

4.6.4 Outcomes of Treatment

In 1994 surveillance of the outcomes of TB treatment was commenced in NSW. In 1994, 84 per cent of people notified were assessed as completed/cured, 5 per cent died, 1 per cent defaulted and 1 per cent were considered treatment failures. For 10 per cent the outcome was unknown.

Eleven per cent of notifications reported details of HIV testing. This is a slight increase over the previous year (9 per cent). Twelve notifications (3 per cent) were for HIV/TB coinfected persons in 1994. The rate of TB/HIV coinfection was the same as that reported for 1993.

The NSW TB strategy requires that all anti-TB medication be as directly observed therapy (DOT) by qualified health professionals. During 1994, 85 per cent of cases were fully supervised and 3 per cent were partially supervised. Nine per cent of cases were not supervised and for 3 per cent of notifications, no information was available on level of supervision.

4.6.5 Drug resistance

Drug susceptibility of *Mycobacterium tuberculosis* isolates is monitored by the Mycobacteriology Reference Laboratory at the Institute of Clinical Pathology and Medical Research, Westmead Hospital.

Susceptibility of isolates remained high to the four standard drugs used in New South Wales (isoniazid, rifampicin, ethambutol and pyrazinamide). In 1994 less than 6 per cent of isolates were resistant to one first-line anti-TB drug.

The number of reactivated cases provides a marker for the potential of secondary drug resistance occurring as resistance patterns should conform to drugs used to treat the disease. Ten per cent of notifications were classified as reactivations. This is a high rate, and reflects treatment programs in donor countries of migrants to NSW.

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CHAPTER 5
CARDIOVASCULAR DISEASES

- Between 1971 and 1992, the age-standardised mortality rate for coronary heart disease in males fell from 437.1 to 214.1 per 100,000. In females the rate was almost halved, from 221.3 to 117.6 per 100,000.
- Between 1971 and 1992, the age-standardised mortality rates for stroke in males fell from 176.4 to 67.8 per 100,000 and in females from 158.8 to 59.5 per 100,000.
- Despite these reductions, cardiovascular disease remains a major cause of illness and death in NSW
- In 1992, 10,826 NSW residents died of coronary heart disease and 4,393 died following stroke.
- Between 1989/90 and 1993/94 the number of procedures for coronary artery catherisation/ angiography increased from 11,728 to 20,893 and for coronary artery bypass graft from 4,326 to 6,058.

Cardiovascular disease has been a major health problem for most of this century. The proportion of all deaths caused by circulatory system disease rose from about one in four in 1921 to a peak of almost 60 per cent in the late 1960s. Since the early 1970s mortality from circulatory system disease has declined substantially, but it nevertheless remains a major cause of death in NSW, as in most western industrialised countries. In NSW in 1992, deaths due to coronary heart disease (CHD) and stroke accounted for 37 per cent of all deaths, and 70 per cent of these were due to CHD.

The annual direct cost to the health system in NSW of CHD alone has been estimated at about $200 million (expressed in 1989/90 prices)[1]. If indirect costs (such as forgone earnings and absenteeism) are added, the estimate is more than $400 million. The corresponding costs for stroke are $160 million and $230 million. These figures do not include other costs to the community, such as those associated with caring for the ill and disabled.

5.1 Mortality

In 1992, 10,826 NSW residents died of CHD (5,874 males and 4,952 females). Figure 5.1 shows the fall in mortality for CHD in the two decades from 1971 to 1992. The age-standardised CHD mortality rate for males fell from 437.1 per 100,000 in 1971 to 214.1 per 100,000 in 1992 (51 per cent), and for females from 221.3 to 117.6 per 100,000 (46.9 per cent).

In 1992, 4,393 NSW residents died following stroke (1,778 males and 2,615 females). Stroke mortality has decreased more than CHD mortality in the recent past. Age-standardised mortality rates for both sexes fell by 62 per cent between 1971 and 1992 (for males from 176.4 to 67.8 per 100,000 and for females from 158.8 to 59.5 per 100,000) (Figure 5.2).

These changes in mortality compare favourably with the general Australian experience over the same period. The Australian CHD mortality rate fell by 48 per cent for males and 45 per cent for females. The corresponding stroke mortality rates fell by 58 per cent for males and 61 per cent for females.

Age-standardised Australian CHD mortality rates were relatively high by world standards, being nearly five times higher among males, and four times higher among females than in Japan, and comparable to those in the United Kingdom (1991 rates), Canada (1990 rates) and the USA (1989 rates)[2]. Australian death rates due to stroke, while relatively lower on the international scale, were nevertheless higher than those of Canada and the USA.

International comparisons derived from the World Health Organization's multi-centre MONICA study indicate that heart attack rates are relatively high in Australia (MONICA centres collected data on heart disease in Newcastle and Perth). The heart attack rate for men in Newcastle was the ninth highest of the 38 centres, and for women was the third highest. Perth ranked 22nd and 16th respectively. Case fatality rates, however, were relatively low. In Newcastle, men had the sixth lowest, and women the seventh lowest case fatality rate[3].

Although the declines in mortality are continuing overall in NSW, there are some important differences in mortality among population groups within NSW, particularly for Aboriginal people, some ethnic groups and some socioeconomic groups[4].

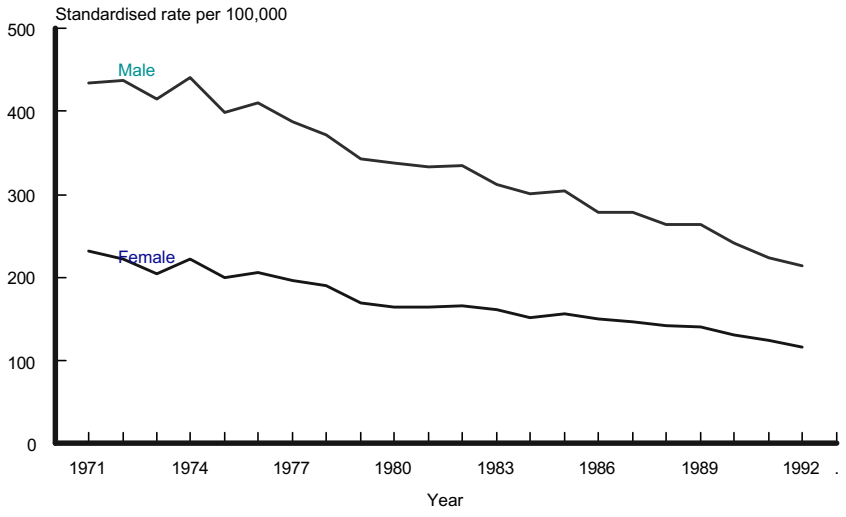
In the 1984-87 period, the age-standardised mortality rate for CHD among Aboriginal people from western NSW was 13 times higher than for the NSW population overall. Circulatory system disease, notably CHD, accounted for much of the observed excess mortality[5].

Immigrants are highly selected, often being relatively young and healthy at the time of arrival. CHD death rates for most overseas-born Australians are lower than for those born in Australia, and appear to increase only slightly with length of residence[6]. Age-standardised CHD premature (25-74 years of age) mortality rates for 1988-92 for males born in Eastern Europe, Russia or the Baltic States, and Melanesia, Micronesia or Polynesia were significantly higher than those for the Australian born, or general NSW, populations. The same groups also had the highest mortality rates for females, but only the Eastern European rate was significantly above the overall NSW rate[4].

Substantial gradients of mortality according to socioeconomic status exist in Australia[7], although the precise causal links for conditions such as CHD are not clear[8]. A recent review found that in 1985-87 age-adjusted CHD mortality rates for 25-64 year-olds in the quintile of most disadvantaged (according to the Australian Bureau of Statistics Index of Relative Socioeconomic Disadvantage) were 55 per cent higher for males and 122 per cent higher for females, than for those in the quintile of least disadvantage. It was suggested that income and employment status explained about half this differential. Risk factors and demographics accounted for some of the remainder[7].

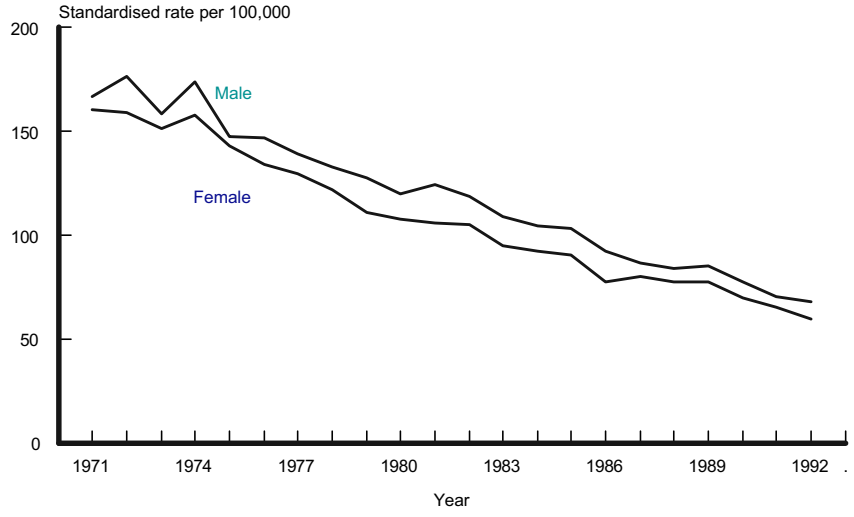
There is substantial geographic variation in cardiovascular disease mortality, especially for CHD, in NSW (Tables 5.1 and 5.2). In the period 1988-1992, the highest coronary heart disease mortality rates, after adjustment for the age and sex profile of the population, occurred in residents of Orana and Barwon Districts, and the lowest rates in Northern Sydney and Southern Sydney Areas and the Macleay-Hastings District. For stroke, the highest mortality rate occurred in residents of the Central Sydney Area.

Figure 5.1 Age standardised mortality rates for coronary heart disease by sex and year, NSW 1971-92



Note: Rates standardised to the 1991 Australian Census population
Data source: Australian Bureau of Statistics mortality data

Figure 5.2 Age standardised mortality rates for cerebrovascular disease by sex and year, NSW 1971-92



Note: Rates standardised to the 1991 Australian Census population.
Data source: Australian Bureau of Statistics mortality data.

5.2 Hospitalisation

In 1993/94, there were 133,776 separations from NSW hospitals with a principal diagnosis of cardiovascular disease (Table 5.3). The most common principal diagnosis was CHD, for which there were 52,576 separations: 10,839 for acute myocardial infarction and 41,737 for other CHD manifestations. Cerebrovascular disease accounted for 16,337 separations: 12,709 for stroke and 3,628 for transient ischaemic attacks.

The most substantial change in hospitalisation for cardiovascular disease has been the shift in recent years in the nature of the CHD inpatient population (Table 5.3). There have been decreasing numbers of people with acute myocardial infarctions, and increasing numbers with non-infarct diagnoses, such as stable and unstable angina, for assessment and management.

This change is reflected in the rapid increase in the number and rate of coronary angiography procedures for investigation of CHD. At the same time, there have been substantial increases in hospital separation rates for coronary revascularisation procedures, including coronary artery bypass graft and coronary angioplasty (Table 5.4). Rates of coronary angioplasty have risen dramatically in the past five years, though rates remain well below those of the USA. These increases have been most marked in the older age groups[4].

Although CHD is the major cause of mortality, stroke remains an important cause of death, and a major cause of morbidity. It has been estimated that up to 75 per cent of survivors at one to three weeks after a stroke have a persisting significant disability[9].

Table 5.3 shows a slight increase in hospitalisations (though a slight decrease in the rate per 100,000) for stroke between 1989/90 and 1993/94. The best evidence from Australasian studies indicates that, though the incidence of fatal stroke is falling (probably due primarily to improvements in early case fatality), non-fatal incidence rates are increasing over time[10]. With improvements in survival and increase in the numbers of elderly people in the population, stroke will make an increasing contribution to the community burden of disability due to cardiovascular disease.

There was a small increase in the number of hospitalisations for congestive heart failure between 1988/89 and 1992/93, though the age-adjusted rate per 100,000 was stable (Table 5.3). This reflects the impact of the increasing number of people aged 65 years and older in the population. The increases were largely among the older age groups, especially those 80 years and older. Separation rates for congestive heart failure were substantially higher in this very elderly population, male and female, than in other age groups.

Table 5.1 Coronary heart disease mortality by sex and Health Area/District of residence, NSW 1988-92

Health Area/ District	No. (Average per annum) Male	Female	Age-standardised rate/ 100,000 Male	Female
Central Sydney	413	387	312.1 ↑	164.3 ↑
Northern Sydney	738	759	225.0 ↓	117.9 ↓
Southern Sydney	521	466	222.5 ↓	124.4 ↓
Eastern Sydney	348	327	270.4 ↑	150.0
Western Sydney	531	461	289.8	171.7 ↑
Wentworth	187	150	260.9	146.8
South Western Sydney	536	403	270.1	154.7 ↑
Central Coast	336	251	247.4	133.2 ↓
Hunter	595	471	271.4	146.8
Illawarra	376	265	279.0 ↑	154.5
Barwon	47	34	348.2 ↑	205.3 ↑
Castlereagh	33	27	250.7	152.4
Central West	78	60	289.4	148.3
Clarence	58	45	257.0	144.7
Evans	75	60	295.9	163.5
Far West	36	31	320.3	163.6
Hume	73	72	221.7	147.2
Lachlan	57	40	293.9	151.4
Lower North Coast	100	67	223.7 ↓	126.1 ↓
Macleay-Hastings	96	71	226.7 ↓	127.5 ↓
Macquarie	85	63	309.2 ↑	163.2
Mid North Coast	92	65	244.1	135.7
Monaro	45	33	288.5	165.7
Murray	42	23	224.1	106.4 ↓
Murrumbidgee	47	37	234.9	138.3
New England	77	65	263.6	155.3
North West	93	78	291.2	160.4
Orana	21	10	386.4 ↑	228.4 ↑
Richmond	150	123	247.7	147.5
Riverina	100	82	299.9 ↑	162.9
South Coast	70	43	225.5	124.9
Southern Tablelands	88	75	320.1 ↑	192.4 ↑
Tweed	72	47	248.9	123.6 ↓
NSW	**6,216**	**5,190**	**260.3**	**144.0**

Notes: Rates standardised to the 1991 Australian Census population.
↑ Significantly above ($p < 0.01$) the NSW average rate for 1988-92.
↓ Significantly below ($p < 0.01$) the NSW average rate for 1988-92.
Data source: Australian Bureau of Statistics mortality data and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

Table 5.2 Cerebrovascular disease mortality by sex and Health Area/District of residence, NSW 1988-92.

Health Area/ District	No. (Average per annum) Male	Female	Age-standardised rate/ 100,000 Male	Female
Central Sydney	152	263	120.1↑	102.5 ↑
Northern Sydney	248	518	79.0	77.1
Southern Sydney	174	277	80.6	72.3
Eastern Sydney	117	178	93.9	79.7
Western Sydney	140	218	88.9	80.7
Wentworth	54	73	79.5	70.8
South Western Sydney	147	196	88.7	76.0
Central Coast	96	133	75.6	71.9
Hunter	166	252	81.3	77.6
Illawarra	101	131	85.7	78.0
Barwon	14	13	106.5	76.9
Castlereagh	12	13	98.5	70.0
Central West	25	31	95.9	72.6
Clarence	19	31	87.8	100.6 ↑
Evans	19	30	79.5	80.5
Far West	10	11	77.2	57.0
Hume	25	36	77.4	72.5
Lachlan	19	21	103.4	73.8
Lower North Coast	27	38	70.1	74.9
MacLeay-Hastings	34	42	79.4	74.5
Macquarie	25	33	96.6	84.4
Mid North Coast	23	31	62.5 ↓	64.9
Monaro	14	14	99.8	72.2
Murray	12	16	76.3	72.8
Murrumbidgee	17	22	91.9	80.0
New England	21	23	72.1	53.8 ↓
North West	25	35	85.3	89.2
Orana	5	5	99.7	109.9
Richmond	45	66	77.3	78.7
Riverina	32	36	98.5	69.0
South Coast	18	22	64.9 ↓	65.5
Southern Tablelands	22	30	85.1	76.1
Tweed	19	21	73.5	57.6 ↓
NSW	**1,875**	**2,859**	**84.8**	**77.7**

Notes: Rates standardised to the 1991 Australian Census population
↑ Significantly above ($p < 0.01$) the NSW average rate for 1988-92
↓ Significantly below ($p < 0.01$) the NSW average rate for 1988-92
Data source: Australian Bureau of Statistics mortality data and population estimates (HOIST), Epidemiology Branch, NSW Health Department

Table 5.3 Hospital separations for cardiovascular diseases in NSW hospitals, 1989/90 and 1993/94

		1989/90				1993/94			
		Male		Female		Male		Female	
Principal Diagnosis	ICD.9	No.	Std rate/ 100,000	No.	Std rate/ 100,000	No.	Std rate/ 100,000	No.	Std rate/ 100,000
Coronary heart disease									
Acute myocardial infarction	410	6764	254	4026	121.2	6866	237.9	3973	108.5
Other coronary heart disease	411-414	19147	692	10203	315.3	27518	927.8	14219	407.4
Cerebrovascular disease									
Stroke	430-434 436-438	5940	238	5663	167	6523	237.2	6186	164.9
Transient ischaemic attack	435	1620	67	1644	48.1	1774	65.9	1854	48.7
Peripheral vascular disease									
Diseases of arteries, arterioles and capillaries	440-448	4507	173	2818	85.3	4948	174.4	3130	87.7
Diseases of veins and lymphatics and other Diseases of the circulatory system	451-459	9124	326	10282	345.8	11009	368.9	12293	384.9
Congestive heart failure	428	5667	240	5924	168.9	6338	239.1	6885	174.4
Hypertensive disease	401-405	1171	43	2099	65.6	1157	39.8	2047	58.9
Rheumatic heart disease	390-398	252	9	417	13.9	240	8.1	467	14.4
Diseases of the pulmonary circulation	415-417	658	25	727	22.8	907	31.5	1120	32.8
Other forms of heart disease	420-427, 429	6875	259	5236	163	9114	317.3	7207	206.3

Note: Data refers to separations from NSW hospitals only
Rates standardised to the Australian Census population 1991
Source: NSW Inpatient Statistics Collection, 1989/90 and 1993/94

Table 5.4 Hospital separations for selected procedures, NSW 1988-92

Procedure	ICD.9	1989/90 Male No.	1989/90 Male Rate/ 100,000	1989/90 Female No.	1989/90 Female Rate/ 100,000	1993/94 Male No.	1993/94 Male Rate/ 100,000	1993/94 Female No.	1993/94 Female Rate/ 100,000
Catheter/ angiogram	37.21-37.23, 88.55-88.57	8117	281.3	3611	118.0	14374	473.9	6519	199.1
Coronary artery bypass graft	36.1-36.19	3351	116.6	975	31.1	4606	152.7	1452	43.1
Percutaneous coronary angioplasty	36.01, 36.05, 36.09	970	33.4	361	11.6	2633	86.1	845	25.7

Note: Data refer to separations from NSW Hospitals.
Rates standardised to the 1991 Australian Census population.
Data source: NSW Inpatient Statistics Collection 1989/90 and 1993/94 (HOIST), Epidemiology Branch, NSW Health Department

5.3 Cardiovascular risk factors

The major modifiable determinants of coronary heart disease risk are cigarette smoking, elevated blood cholesterol, hypertension and a sedentary lifestyle. Diabetes and obesity have also been identified as risk factors.

The major modifiable determinants of stroke in the population are most importantly blood pressure levels, cigarette smoking, and to a lesser degree cholesterol level, alcohol consumption and bodyweight. The prevalence of cigarette smoking, serum cholesterol levels, alcohol consumption and obesity in NSW have been described earlier (see chapter 1, section 1.3).

Surveys during the 1980s showed a higher prevalence of certain risk factors: glucose intolerance, obesity, and hypertension in Aboriginal people of south-eastern Australia compared to Australians of European descent[11,12,13,14,15]. Also higher rates of smoking and lower rates of quitting smoking have been found in Aboriginal communities[13]. Lower total and high density lipoprotein (HDL) and cholesterol levels have been found in rural Aboriginal communities than in comparable groups of European descent, though these may increase with urbanisation[15]. The lower socioeconomic status of Aboriginal Australians and the remoteness of many Aboriginal communities also contribute significantly to their higher mortality rates. Health differentials among Aboriginal and Torres Strait Islander people are described in more detail in chapter 11.

The prevalence of cardiovascular risk factors varies substantially across ethnic groups. In the 1989/90 National Health Survey, men and women born in continental Europe and Asia were significantly more likely to report being inactive than respondents born in Australia. Men and women born in continental Europe were significantly more likely to be overweight or obese compared with those born in Australia. Those born in Asia or the United Kingdom/Ireland were significantly less likely to be overweight. Men born in continental Europe and women born in the United Kingdom/Ireland were significantly more likely, and Asian born women less likely, to report being current smokers compared with those born in Australia. Current smoking prevalence rates were higher among Asian born males but this was not significantly different from the Australian born rate. Women born in the United Kingdom/Ireland were also significantly more likely to have elevated blood cholesterol and less likely to have high blood pressure than the Australian born population[7].

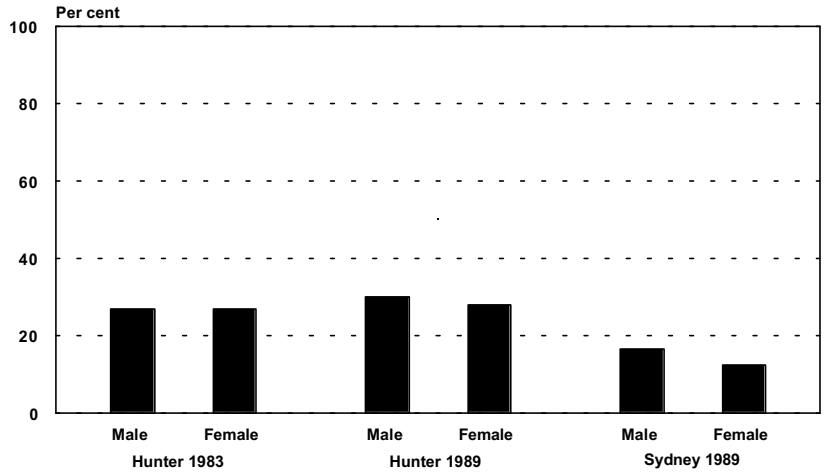
High blood pressure is an independent risk factor for a number of disorders including CHD, stroke, congestive heart failure and renal insufficiency. Systolic and diastolic pressures have been found to be independent predictors of risk, although systolic blood pressure has almost invariably been associated with a higher level of CHD risk for a similar range of blood pressure[16].

Evidence exists for the effectiveness of drug, and non-drug, therapy for mild hypertension in reducing the incidence of stroke, though benefits in terms of CHD are more controversial. Drug therapy for severe hypertension (diastolic blood pressure 115mm Hg) is of benefit in the primary prevention of stroke and myocardial infarction.

Risk of myocardial infarction has been estimated to be reduced by 2 to 3 per cent by each 1 mm Hg decline in diastolic blood pressure[19]. Targeting individuals with mildly elevated blood pressure, however, is unlikely to substantially reduce stroke mortality as the majority of the excess deaths from stroke occur in individuals who are normotensive. The impact on mean population levels of blood pressure has been limited[17].

The most recent information on the prevalence of high blood pressure was reported as part of the National Heart Foundation Risk Factor Prevalence Survey (NHF RFPS) among 20 to 69 year-olds in Sydney 1989 and the Hunter Program Risk Factor Prevalence Survey among 35 to 64 year-olds in the Hunter Area 1983 and 20-69 year-olds in 1989 (Figure 5.3). In the NHF RFPS, approximately 16 per cent of males and 12 per cent of females were identified as hypertensive (ie systolic blood pressure 160 mm Hg and/or diastolic blood pressure 95 mm Hg). Only about half the males, and a third of the females, with measured blood pressure in the hypertensive range, were currently being treated. A relatively greater proportion of females being treated for hypertension (69 per cent) were found to have a satisfactory level of blood pressure than males (54.0 per cent).

Figure 5.3 Prevalence of hypertension, population surveys NSW 1983-89



Notes: Hypertension is defined as taking medication for hypertension or a systolic blood pressure 160 mm Hg or above and /or diastolic blood pressure 95 mm Hg or above. Hunter RFPS 1989 surveyed people aged 20-69 years; and National Heart Foundation RFPS (Sydney), 20-69 years.

Source: Alexander HM, Dobson, AJ, Fraccaro R, Kelly P. Hunter Region Heart Prevention Program: Risk Factor Prevalence Study Data Book. Hunter Region Disease Prevention Program, 1995.
National Heart Foundation of Australia and Australian Institute of Health.Risk Factor Prevalence Study Survey No. 3, 1989, Cities Analysis. Canberra: NHFA and AIH, 1991.

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14. Guest CS, O'Dea K, Hopper JL, Larkins RG. Hyperinsulinaemia and obesity in Aborigines of south eastern Australia with comparisons from rural and urban Europid populations. Diab Res Clin Pract, 1993;20:155-64.
15. Guest CS, O'Dea K, Larkins RG. Blood pressure, lipids and other risk factors for cardiovascular disease in Aborigines and persons of European descent of south eastern Australia. Aust J Public Health, 1994;18:79-86.
16. Whelton P. Epidemiology of hypertension. Lancet, 1994;344:101-106.
17. Manson JE, Tosteson H, Ridker PM, Satterfield S, Herbert P, O'Connor GT, Buring JE, Hennekens CH. The primary prevention of myocardial infarction. N Engl J Med, 1992;326:1406-15.

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CHAPTER 6
CANCER

- In 1992, cancers collectively accounted for 11,474 deaths - 25.6 per cent of total deaths in NSW - and as a cause of death ranked second only to all diseases of the circulatory system (including heart attack and stroke).
- In men, cancers of the prostate, lung, colon and rectum, and melanoma accounted for 60 per cent of new cases of cancer and 54 per cent of cancer deaths in 1992. The lifetime risk to age 74 of men developing any type of cancer was 1 in 3 and that of dying from cancer was 1 in 6.
- In women, cancers of the breast, colon, lung and rectum, and melanoma accounted for 56 per cent of all new cases in 1992 and 48 per cent of all cancer deaths. The lifetime risk to age 74 of women developing any type of cancer was 1 in 4 and that of dying from cancer was 1 in 10.
- Cancer rates in NSW vary according to geographic area. Age-standardised ratios for the years 1988-1992 were significantly higher than the NSW average for lung cancer for males living in the Central Sydney, Western Sydney and South-Western Sydney Areas (incidence and mortality); for colorectal cancer, for males living in the Eastern Sydney Area (incidence) and for females living in the Macquarie District (mortality); for breast cancer, for Northern Sydney and Eastern Sydney Areas (incidence) and Central Sydney Area (mortality); and for prostate cancer, for the Central West District (mortality).
- The greatest opportunities for prevention and early detection of cancer are in deterring cigarette smoking uptake and promoting smoking cessation to prevent lung and other cancers; reducing sun exposure to prevent skin cancers; encouraging regular Pap smear screening of women aged 18-70 years to prevent cervical cancer; and encouraging two-yearly mammographic screening, particularly for women aged 50-69 years, to detect early stage breast cancer.

Cancer is now one of the leading causes of death in NSW. The proportion of deaths due to cancer in NSW has doubled since the 1940s and the crude mortality rate has increased by more than 50 per cent since 1950[1]. Cancer risk generally increases with age. With increases in life expectancy and the long latency periods for the development of many cancers, cancer will become an increasingly important cause of morbidity and mortality in NSW.

6.1 The burden of cancer in NSW

In 1992, cancers collectively accounted for 11,474 deaths - 25.6 per cent of total deaths in NSW - and as a cause of death ranked second only to all diseases of the circulatory system (including heart attack and stroke)[1]. Cancer caused more male deaths in NSW in 1992 (6,627 deaths) than ischaemic heart disease, which caused 6,296 deaths. For females however, deaths from ischaemic heart disease (5,298 deaths) continued to exceed those from cancer (4,847 deaths).

In 1992, cancers of the prostate, lung, colon and rectum, and melanoma accounted for 60 per cent of new cases of cancer and 54 per cent of cancer deaths among males (Table 6.1). Men had a lifetime risk to age 74 of 1 in 14 of developing prostate cancer compared with a risk of 1 in 18 for lung cancer. However, the risk of dying of lung cancer was higher - 1 in 20 compared with 1 in 62 for prostate cancer.

Among females, cancers of the breast, colon, lung and rectum, and melanoma accounted for 56 per cent of all new cases in 1992 and 48 per cent of all cancer deaths. Breast cancer presents the greatest lifetime risk to age 74 of both developing and dying of cancer: 1 in 14 and 1 in 47 respectively.

Age is the most important risk factor for cancer, with the highest incidence and mortality rates for most cancers occurring over the age of 65 years[2]. The occurrence of cancer among older people is discussed in Chapter 13.

Table 6.1 Most frequently occurring cancers by sex, NSW 1992

Primary site	Incidence				Mortality (a)			
	No.	Per cent all new cases	Crude incidence rate	Lifetime risk 0-74 of one in:	No.	Per cent of all deaths	Crude mortality rate	Lifetime risk 0-74 of one in:
Males								
Prostate	2811	22	94.8	14	785	12	26.5	62
Lung	1749	14	59.0	18	1618	25	54.6	20
Melanoma of Skin	1178	9	39.7	29	226	4	7.6	161
Colon	1140	9	38.5	29	501	8	16.9	71
Rectum	731	6	24.7	44	318	5	10.7	109
Lymphomas	575	4	19.4	65	258	4	8.7	143
Unknown Primary	537	4	18.1	70	497	8	16.8	71
Bladder	462	4	15.6	80	197	3	6.6	206
Stomach	397	3	13.4	85	290	5	9.8	121
Kidney	383	3	12.9	84	131	2	4.4	268
Other	2857	22	-	-	1582	24	-	-
All sites	12820	100	432.5	3.2	6403	100	216.0	6.0
Females								
Breast	2645	25	88.3	14	871	18	29.1	47
Colon	1033	10	34.5	41	504	11	16.8	95
Melanoma of Skin	971	9	32.4	40	141	3	4.7	321
Lung	693	7	23.1	55	581	12	19.4	67
Unknown Primary	538	5	18.0	93	440	9	14.7	122
Rectum	487	5	16.3	79	171	4	5.7	286
Lymphomas	459	4	15.3	92	239	5	8.0	199
Body of Uterus	399	4	13.3	84	73	2	2.4	592
Cervix Uteri	382	4	12.8	95	120	3	4.0	320
Ovary	323	3	10.8	108	184	4	6.1	205
Other	2544	24	-	-	1392	29	-	-
All sites	10474	100	349.8	4.2	4716	100	157.5	9.9

Note: (a) Mortality figures in this table may vary from those in section 6.1, due to differences in timing and coding of data between the Australian Bureau of Statistics and NSW Central Cancer Registry sources.

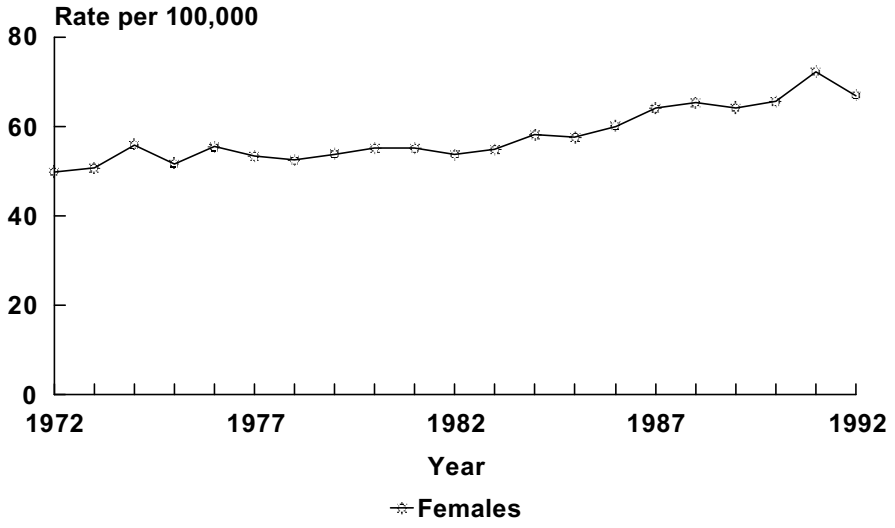
Source: Coates M, Day P, McCredie M and Taylor R. Cancer in New South Wales. Incidence and Mortality 1992. NSW Cancer Council and NSW Health Department, 1995.

6.2 Cancer incidence and mortality

6.2.1 Breast cancer

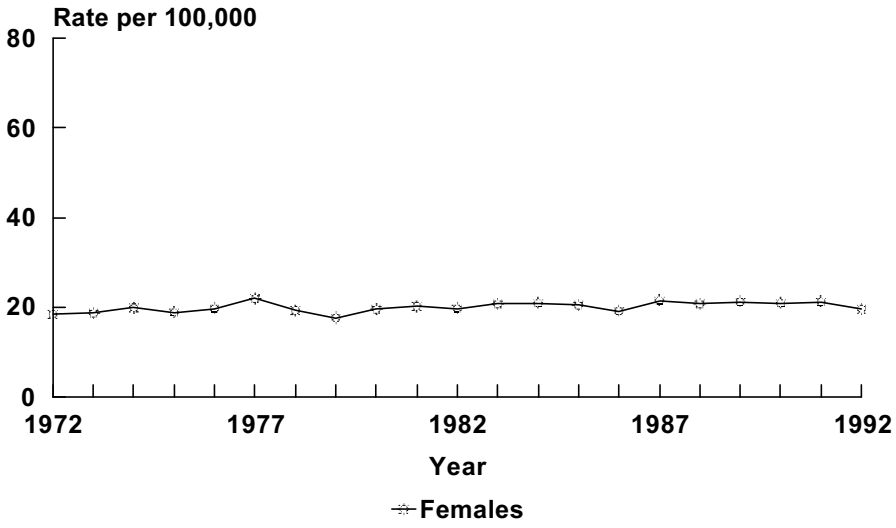
Breast cancer was the most commonly occurring cancer in women in NSW in 1992. Between 1973-77 and 1988-92, the age-standardised incidence rates for breast cancer rose by 25 per cent for women (Figure 6.1) and mortality rates rose by 5 per cent (Figure 6.2). Incidence and mortality rates increased with age, but the rate of increase slowed after age 45 years. The 5-year survival rate for women with breast cancer in NSW for the period 1987-91 was 77 per cent (95 per cent confidence interval: 75 to 79 per cent). Five-year survival rates remained relatively stable during the period 1977-86 at 73-74 per cent, an increase from 70 per cent in the period 1972-76[3].

Figure 6.1 Trends in incidence of breast cancer, NSW 1972-92



Source: Coates M, Day P, McCredie M and Taylor R. Cancer in New South Wales. Incidence and Mortality 1992. NSW Cancer Council and NSW Health Department, June 1995.

Figure 6.2 Trends in mortality due to breast cancer, NSW 1972-92

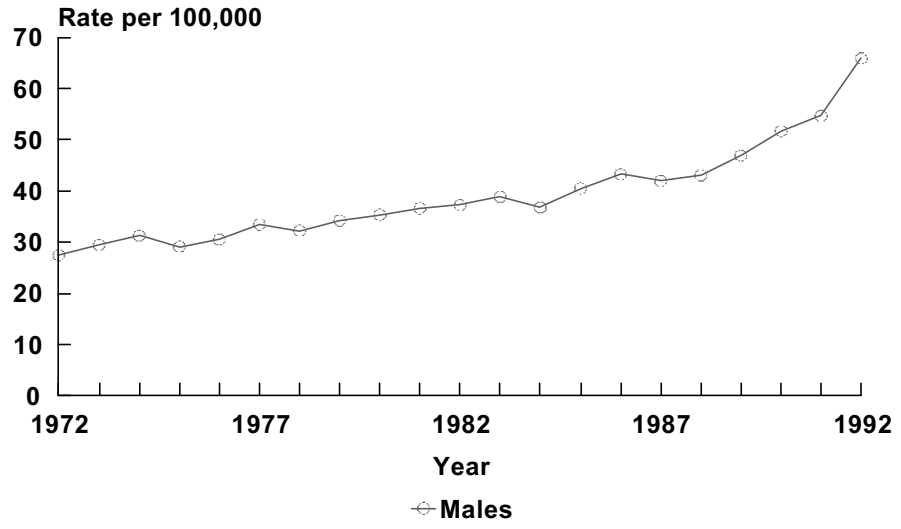


Source: Coates M, Day P, McCredie M and Taylor R. Cancer in New South Wales. Incidence and Mortality 1992. NSW Cancer Council and NSW Health Department, June 1995.

6.2.2 Prostate cancer

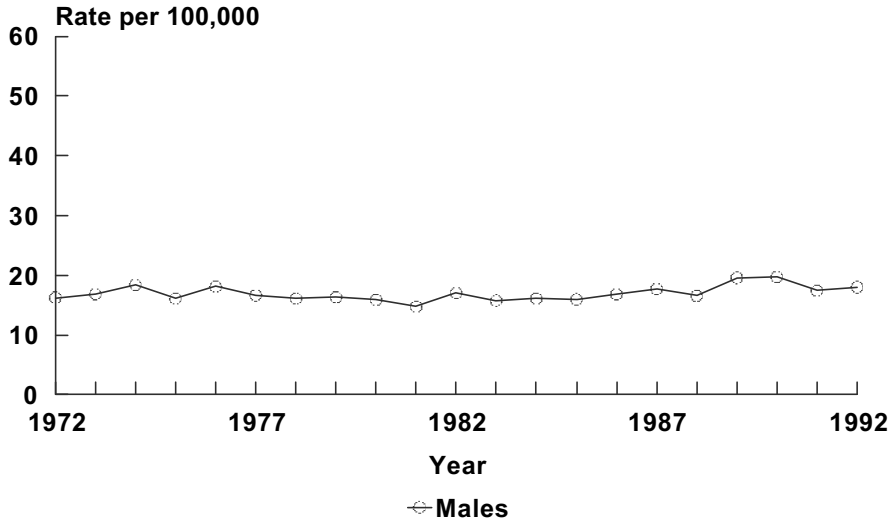
Prostate cancer was the most common cancer among men in NSW in 1992. Between 1973-77 and 1988-92, the age-standardised incidence rates for prostate cancer increased by 73 per cent (Figure 6.3), but mortality rates increased by only 6 per cent (Figure 6.4). Some of the increase in incidence may be due to improved diagnosis[2]. Five-year survival rates of men with prostate cancer have increased from 51 per cent in 1972-76 to 65 per cent in 1987-91. The 1987-91 rates were highest for men aged 50-79 years, with a peak of 67 per cent in the 60-69 year age group. The degree of spread at diagnosis is associated with survival, with cancers localised to the prostate having a significantly higher survival rate (78 per cent) compared with regional involvement (45 per cent) or metastatic cancer (20 per cent)[4].

Figure 6.3 Trends in incidence of prostate cancer, NSW 1972-92



Source: Coates M, Day P, McCredie M and Taylor R. Cancer in New South Wales. Incidence and Mortality 1992. NSW Cancer Council and NSW Health Department, June 1995.

Figure 6.4 Trends in mortality due to prostate cancer, NSW 1972-92

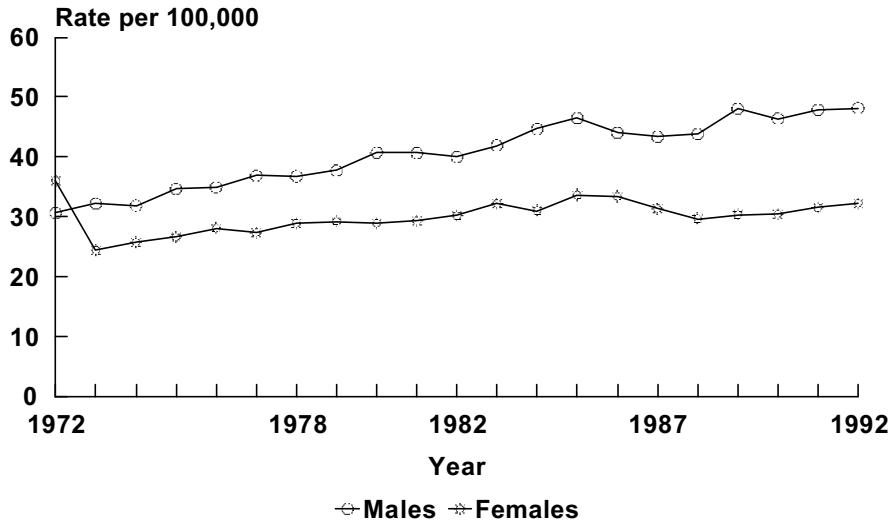


Source: Coates M, Day P, McCredie M and Taylor R. Cancer in New South Wales. Incidence and Mortality 1992. NSW Cancer Council and NSW Health Department, June 1995.

6.2.3 Colorectal cancer

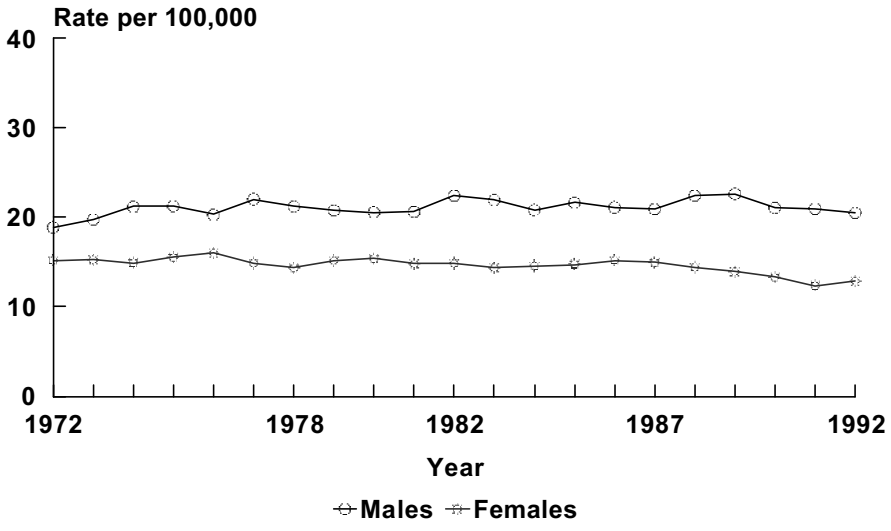
Together, cancers of the colon and rectum were the second most common site for new cases and deaths from cancer in both men and women in 1992. Between 1973-77 and 1988-92, the age-standardised incidence rates for cancer of the colon increased by 34 per cent for men and 19 per cent for women, and for rectal cancer increased by 42 per cent for men and 12 per cent for women (Figure 6.5). There was no change in mortality rates among males for colon cancers, but an increase of 10 per cent for rectal cancers. The mortality rates for both colon and rectal cancers fell in women by 11 per cent and 17 per cent respectively (Figure 6.6). Incidence and mortality rates for both cancers were similar for men and women to age 50, after which rates were higher for men than women.

Figure 6.5 Trends in incidence of colorectal cancer by sex, NSW 1972-92



Source: Coates M, Day P, McCredie M and Taylor R. Cancer in New South Wales. Incidence and Mortality 1992. NSW Cancer Council and NSW Health Department, June 1995.

Figure 6.6 Trends in mortality for colorectal cancer by sex, NSW 1972-92

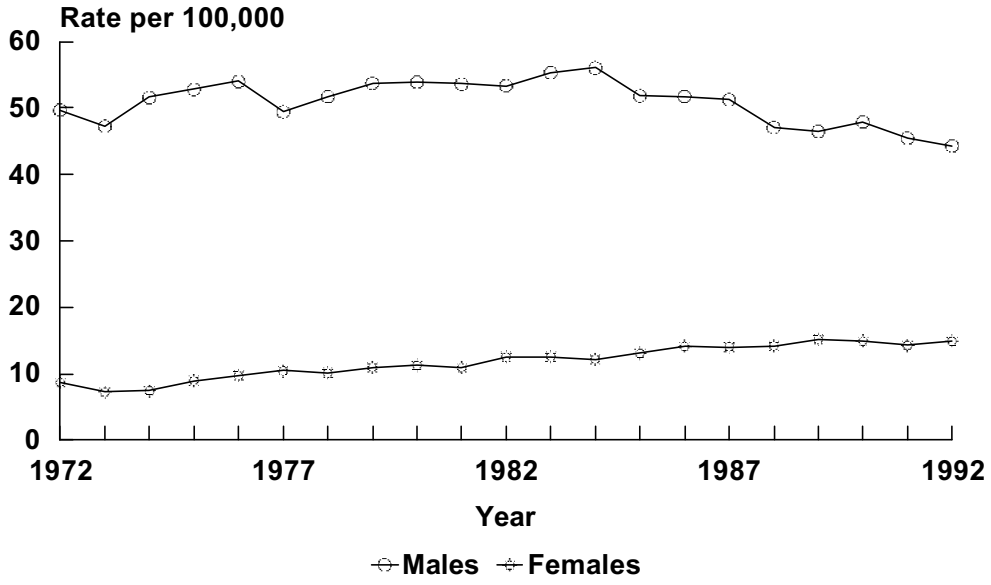


Source: Coates M, Day P, McCredie M and Taylor R. Cancer in New South Wales. Incidence and Mortality 1992. NSW Cancer Council and NSW Health Department, June 1995.

6.2.4 Lung cancer

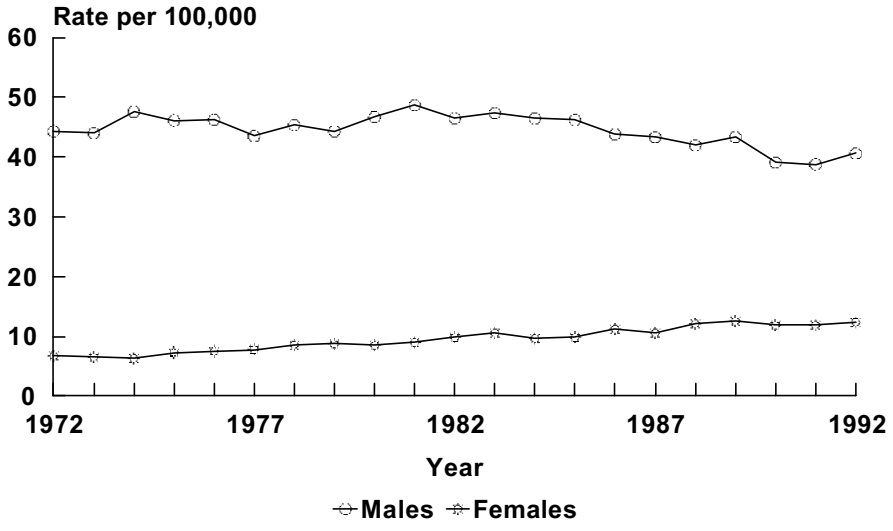
In 1992, lung cancer was the second most common site for new cases of cancer in men and the fourth most common site in women in NSW. It was the most common cause of cancer deaths in males and the second most common cause in females. Incidence and mortality rates for lung cancer increased with age, with male rates exceeding female rates from the age of 45 years onwards to a peak of 4:1 in incidence and 5:1 in mortality. Between 1973-77 and 1988-92, the age-standardised incidence rates for lung cancer fell by 9 per cent for men and rose by 69 per cent for women in NSW (Figure 6.7). The age-standardised mortality rates fell by 10 per cent for men and rose by 72 per cent for women over the same period (Figure 6.8).

Figure 6.7 Trends in incidence of lung cancer by sex, NSW 1972-92



Source: Coates M, Day P, McCredie M and Taylor R. Cancer in New South Wales. Incidence and Mortality 1992. NSW Cancer Council and NSW Health Department, June 1995.

Figure 6.8 Trends in mortality due to lung cancer by sex, NSW 1972-92

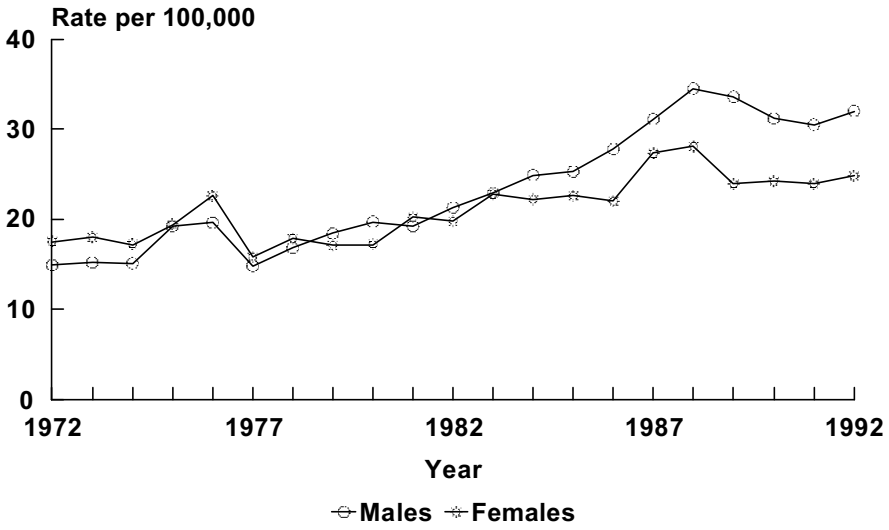


Source: Coates M, Day P, McCredie M and Taylor R. Cancer in New South Wales. Incidence and Mortality 1992. NSW Cancer Council and NSW Health Department, June 1995.

6.2.5 Melanoma

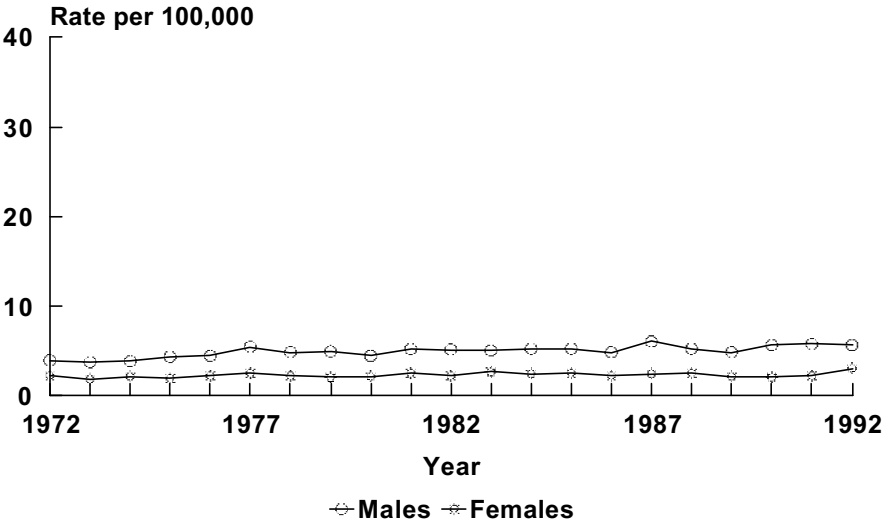
Melanoma of the skin was the third most common single site for new cases of cancer in men and women in NSW in 1992 and the ninth and eleventh most common cause of death from cancer respectively. Between 1975-76 and 1988-92, the age-standardised incidence rates for melanoma of the skin rose by 68 per cent for men and 19 per cent for women (Figure 6.9). Age-standardised mortality rates increased by 28 per cent for men and 11 per cent for women during the same period (Figure 6.10). Incidence rates for melanoma of the skin were similar for both sexes until 50 years, after which they increased more sharply for males than females.

Figure 6.9 Trends in incidence of melanoma by sex, NSW 1972-92



Source: Coates M, Day P, McCredie M and Taylor R. Cancer in New South Wales. Incidence and Mortality 1992. NSW Cancer Council and NSW Health Department, June 1995.

Figure 6.10 Trends in mortality due to melanoma by sex, NSW 1972-92

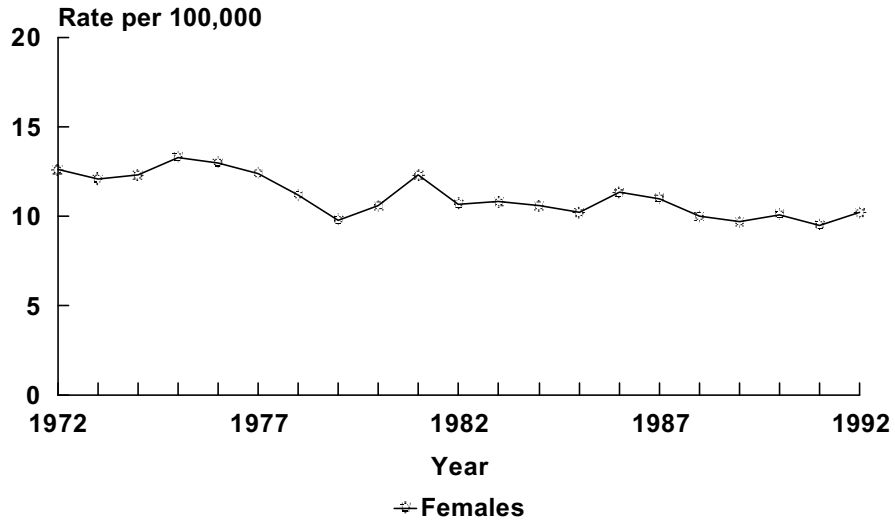


Source: Coates, Day P, McCredie M and Taylor R. Cancer in New South Wales. Incidence and Mortality 1992. NSW Cancer Council and NSW Health Department, June 1995.

6.2.6 Cervical cancer

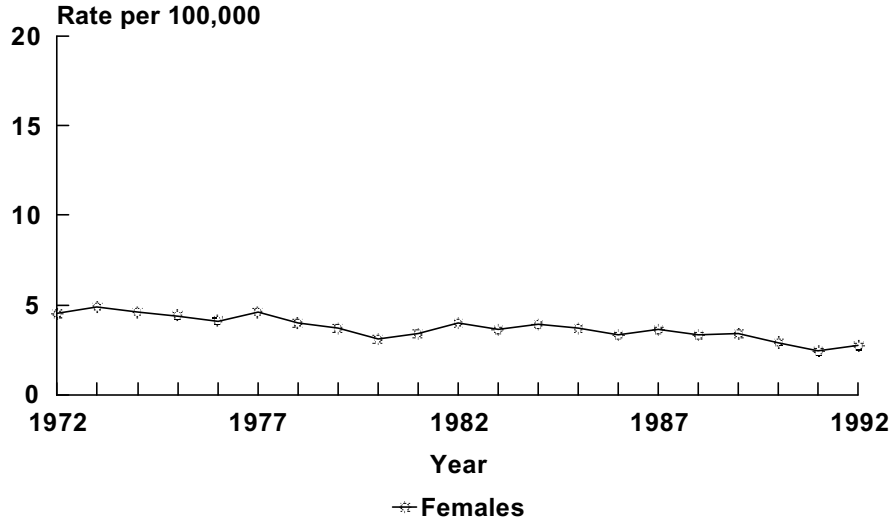
In 1992, cervical cancer was the ninth most common site for new cases of cancer in women and the thirteenth most common cause of death from cancer. Between 1973-77 and 1988-92, the age-standardised incidence rate for cervical cancer fell by 22 per cent (Figure 6.11) and the age-standardised mortality rate fell by 35 per cent (Figure 6.12). Unlike most cancers, incidence rates for cervical cancer increased rapidly between ages 20 and 39 years. A significant increase in 5-year survival rates for cervical cancer occurred between 1972-76 and 1977-81 (unpublished data, NSW Central Cancer Registry). The survival rate was stable during 1981-1991. Overall, the 5 year survival rate increased from 64 per cent in the 1972-76 period to 72 per cent in the 1987-91 period.

Figure 6.11 Trends in incidence of cervical cancer, NSW 1972-82



Source: Coates M, Day P, McCredie M and Taylor R. Cancer in New South Wales. Incidence and Mortality 1992. NSW Cancer Council and NSW Health Department, June 1995.

Figure 6.12 Trends in mortality due to cervical cancer, NSW 1972-82



Source: Coates M, Day P, McCredie M and Taylor R. Cancer in New South Wales. Incidence and Mortality 1992. NSW Cancer Council and NSW Health Department, June 1995.

6.3 Variations in cancer occurrence

In 1992, crude incidence and mortality rates for lung cancer were highest for males living in the Central Coast and Central Sydney Areas, and the Lower North Coast and Castlereagh Districts (Table 6.2). However, when the age distribution of the population was taken into account, and data were pooled for the years 1988-92, incidence and mortality rates were significantly higher than the NSW average for males living in the Central Sydney, Western Sydney and South-Western Sydney Areas (Figure 6.1.3).

For colorectal cancer, crude incidence and mortality rates were highest for males living in the Central Coast Area and Clarence, South Coast and Tweed Districts. The standardised incidence ratio was significantly higher than the overall NSW figure for males living in the Eastern Sydney Area and the standardised mortality ratio was significantly higher for females living in the Macquarie District.

Crude incidence rates of breast cancer were highest in Northern Sydney and Eastern Sydney Areas, and mortality rates were highest in the Central Coast Area and the Lower North Coast District. The standardised incidence ratio for breast cancer was significantly higher than the overall NSW figure for Northern Sydney and Eastern Sydney Areas, while the standardised mortality ratio was significantly elevated for women living in the Central Sydney Area.

The crude incidence of prostate cancer was highest in the Clarence and Macleay-Hastings Districts while the crude mortality rate was highest in the Mid North Coast District. Standardised incidence ratios were significantly higher than the overall NSW figure for men living on the Central Coast, and in the Central West, Hume, Mid North Coast and North West Districts. The standardised mortality ratio for prostate was significantly elevated for the Central West District only.

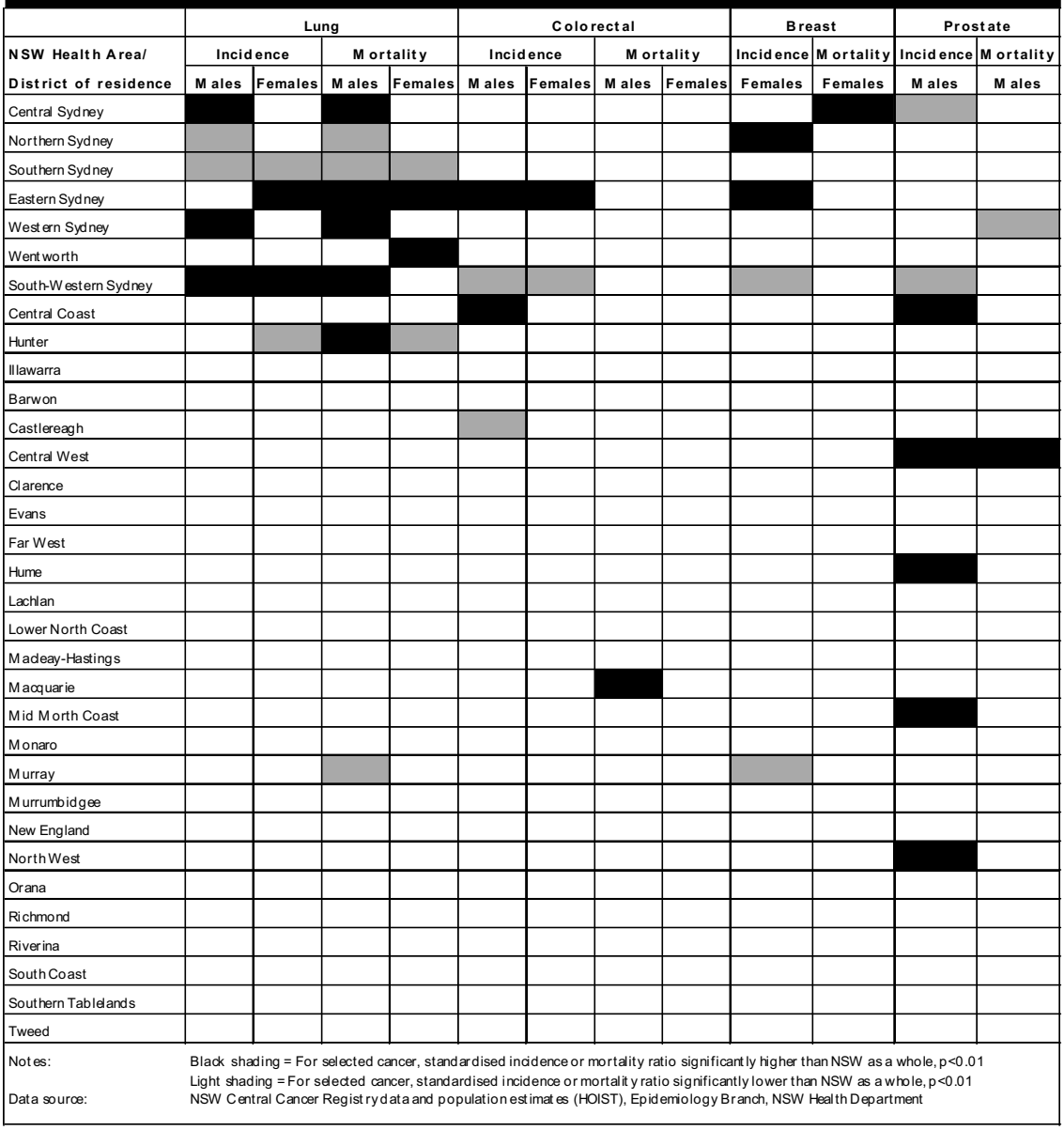
Table 6.2 Occurrences of selected cancers by Health Area/District of residence, 1992

Health Area of residence	Lung								Colorectal								Breast				Prostate			
	Incidence				Mortality				Incidence				Mortality				Incidence		Mortality		Incidence		Mortality	
	Males		Females		Males		Females		Males		Females		Males		Females		Females		Females		Males		Males	
	N	CR	N	CR	N	CR	N	CR	N	CR	N	CR	N	CR	N	CR	N	CR	N	CR	N	CR	N	CR
Central Sydney	125	77	41	25	113	70	38	23	102	63	87	54	58	36	36	22	161	99	57	35	133	82	38	24
Northern Sydney	174	49	104	28	151	42	85	23	245	69	238	63	96	27	101	27	432	115	121	32	418	118	94	26
Southern Sydney	141	53	54	20	121	46	37	14	165	62	139	51	85	32	57	21	283	105	70	26	274	103	80	30
Eastern Sydney	102	66	58	37	95	61	55	35	134	87	104	66	46	30	51	32	184	116	55	35	176	114	46	30
Western Sydney	164	53	68	22	162	53	47	15	144	47	131	43	69	22	45	15	224	73	85	28	197	64	49	16
Wentworth	50	35	33	23	56	39	30	21	46	32	42	29	17	12	24	17	86	60	27	19	83	58	23	16
South-Western Sydney	177	51	68	20	172	50	59	17	138	40	111	32	70	20	57	17	241	71	77	23	169	49	45	13
Central Coast	116	97	40	32	101	84	35	28	133	111	90	72	55	46	45	36	110	88	54	43	174	145	49	41
Hunter	161	64	43	17	151	60	43	17	161	64	107	42	66	26	74	29	220	86	70	27	237	94	77	30
Illawarra	96	60	47	29	99	62	36	23	109	68	85	53	43	27	30	19	131	82	53	33	150	93	47	29
Barwon	11	57	4	22	9	47	5	28	11	57	11	61	5	26	7	39	13	72	3	17	20	103	4	21
Castlereagh	13	90	2	14	13	90	2	14	9	63	7	49	2	14	2	14	10	71	4	28	15	104	2	14
Central West	16	51	4	13	14	45	7	22	21	67	14	44	10	32	9	28	32	100	11	34	30	96	15	48
Clarence	15	65	2	9	20	87	3	13	24	104	18	79	12	52	2	9	17	74	8	35	40	174	11	48
Evans	14	40	6	18	13	37	2	6	19	54	15	44	5	14	8	24	17	50	5	15	28	80	8	23
Far West	10	71	4	29	6	43	1	7	12	85	4	29	5	35	2	14	15	107	1	7	17	121	5	35
Hume	30	75	5	13	27	67	8	20	35	87	23	58	13	32	9	23	32	80	15	38	56	140	8	20
Lachlan	10	50	2	10	10	50	5	25	8	40	14	71	7	35	6	30	13	65	8	40	26	130	3	15
Lower North Coast	43	118	9	24	32	88	12	33	34	94	27	73	11	30	10	27	36	98	16	43	48	132	20	55
Macleay-Hastings	31	82	7	18	31	82	6	15	35	92	22	56	14	37	8	20	40	102	13	33	61	161	16	42
Macquarie	19	51	10	27	20	54	4	11	25	68	17	46	15	41	13	35	18	49	3	8	21	57	11	30
Mid North Coast	26	64	10	24	22	54	10	24	27	67	23	56	11	27	8	20	42	103	8	20	53	131	20	49
Monaro	13	48	5	19	9	33	3	12	12	44	15	58	6	22	8	31	14	54	7	27	17	63	6	22
Murray	10	47	9	45	6	28	8	40	13	61	11	55	4	19	3	15	15	75	4	20	15	71	4	19
Murrumbidgee	10	40	5	21	5	20	4	16	15	60	9	37	10	40	6	25	18	74	9	37	28	111	2	8
New England	20	58	10	28	20	58	5	14	19	55	16	45	11	32	6	17	33	93	12	34	35	101	9	26
North West	23	59	5	13	22	56	6	15	16	41	16	40	12	31	5	13	26	66	16	40	56	143	14	36
Orana	5	64	2	30	6	76	1	15	2	25	2	30	1	13	0	0	5	75	1	15	3	38	0	0
Richmond	40	62	7	11	37	57	8	12	53	82	33	51	20	31	15	23	56	87	20	31	90	139	27	42
Riverina	21	49	6	14	24	55	3	7	24	55	28	64	6	14	8	18	33	75	12	27	36	83	18	42
South Coast	20	73	5	18	15	54	5	18	31	112	23	84	11	40	4	15	22	80	9	33	34	123	13	47
Southern Tablelands	19	58	13	41	13	40	8	25	15	46	11	35	9	28	8	25	34	108	9	29	26	80	8	25
Tweed	24	87	5	18	18	66	4	14	32	117	28	100	8	29	5	18	30	107	6	21	40	146	12	4
Total	1749		693		1613		585		1869		1521		813		672		2643		869		2806		784	

Notes: N = Number of cases , CR=crude rate per 100,000 based on NSW estimated residential population as at 30 June 1992

Data source: NSW Central Cancer Registry data and population estimates (HOIST), Epidemiology Branch, NSW Health Department

Figure 6.13 Age-standardised incidence and mortality ratios for selected cancers by Area/District of residence compared with NSW, 1988-1992



6.4 Cancer control

Cancer control comprises activities ranging from prevention and early detection to treatment, rehabilitation and palliation.

6.4.1 Prevention and early detection

Lung cancer

Smoking is the single greatest risk factor for lung cancer. In 1993, 29 per cent of males and 20 per cent of females over 14 years of age were reported as currently smoking, compared with 29 per cent for males and 22 per cent for females nationally[5]. Progressive surveys of 12-16 year-old secondary school students in NSW have shown a reduction between 1983 and 1992 in the proportion of students who report smoking on an occasional basis from 22 per cent to 17 per cent among males and 29 per cent to 22 per cent among females.

As most smokers commence smoking before the age of 20 years, preventing smoking uptake in teenagers has been identified as a priority under the NSW Tobacco and Health Strategy 1995-1999[5]. The Strategy also aims to ensure that the marketing of cigarettes complies with tobacco advertising legislation, to increase the number of smoke-free areas in the community and to provide an increased range of options for smoking cessation services and improved access to them.

Skin cancer

The NSW Health Department and the NSW Cancer Council support programs which encourage protection of the skin against the sun and provide training in the early detection of skin cancer.

Skin protection programs include programs which encourage both personal protection such as wearing sun-screens, hats and sun-glasses, and changes to the environment such as provision of shaded areas.

There is evidence of a trend towards earlier detection of melanoma in NSW. A comparison between melanomas diagnosed in the 1983-87 period and the 1988-89 period showed an increase in those diagnosed at less than 0.76mm diameter (from about 42 per cent to 51 per cent) and concurrent decrease in those detected at later stages[6].

Cervical cancer

Control of cervical cancer is primarily targeted to early detection and treatment through a national program of Pap smear screening. It is recommended that all women aged 18-74 years have a Pap smear every two years.

In 1990-92, the age-specific incidence rates for cervical cancer were highest among women aged 55 years and over[2]. In order to improve the effectiveness of the cervical cancer screening program in NSW, a Pap Test Register is currently being developed. The Register will collect information on abnormal screening tests and their follow-up, and monitor the adequacy of cervical smear samples and the accuracy of diagnoses. It is also intended that the Register will provide a Pap smear reminder service for those women who choose to participate.

Breast cancer

In NSW since 1991, the National Program for the Early Detection of Breast Cancer has been managed by the NSW Cancer Council. The program offers two-yearly mammography for women aged over 40 years and particularly targets women aged 50-69 years. Between July 1993 and June 1995, only 30 per cent of women aged 50-69 had screening mammography through the National Program for the Early Detection of Breast Cancer (NSW Cancer Council, unpublished data). There are currently 10 Mammography Screening and Assessment Services in NSW, with 49 sites including fixed, mobile and relocatable units.

Screening for other cancers

Statewide screening programs are not yet available for cancers other than breast and cervical cancers. Population screening programs for colorectal[7], prostate[8] and skin[9] cancers are not recommended as there is insufficent evidence to support the effectiveness of current screening methods.

The future

Dietary factors have been identified as being associated with colorectal, breast, stomach and prostate cancers and it has been suggested that, in theory, up to 35 per cent of cancers may be prevented through dietary means[10]. In the future, cancer prevention may also be carried out through chemoprophylaxis and genetic screening.

6.4.2 Treatment services

Overall, there is very little information about access to cancer treatment services in NSW. It is currently not possible to relate screening tests to information on treatment and there are no statewide data on waiting lists for radiotherapy, chemotherapy and cancer-specific surgery. As most chemotherapy and radiotherapy services are on an outpatient basis, information on the their use is lacking.

Radiotherapy

The Health Department's *Strategic Plan for Radiotherapy Services in NSW 1995-2001* provides the direction for expansion of radiotherapy services and, in particular, aims to reduce waiting times for radiotherapy and improve accessibility to services. The plan also addresses the current lack of information on the use of radiotherapy services.

Palliative care

The are no statewide data on the use of palliative care services. The NSW Department's objectives in regard to palliative care are described in *The 1994 Palliative Care Working Party Report.* Current projects include development of clinical guidelines, outcome indicators and a relevant minimum data set. To date, a draft palliative care minimum data set has been pilot tested in four sites in NSW.

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CHAPTER 7
MENTAL DISORDERS

- There is currently no information on the prevalence of mental disorders in NSW.
- Of the 61,407 hospitalisations (including day-only) for mental disorders in 1993/94, 27 per cent were for depression and related disorders, 14 per cent were for schizophrenic disorders and 9 per cent were for alcohol abuse and dependence.
- Estimated hospitalisation rates for mental disorders varied substantially by type of disorder, sex, Aboriginality and ethnicity.
- Over the period 1988/89 to 1993/94, the number of day-only hospital admissions for mental disorders increased. The total number of hospitalisations and average length of hospital stay did not change substantially.
- In 1993/94, 28-day hospital readmission rates for day-only admissions varied from 40-50 per cent across the range of mental disorders, most likely reflecting the operation of day-only programs. For overnight admissions, readmission rates varied from 15-20 per cent.

The aim of the NSW Mental Health Act (1990) is to ensure that treatment of mental illness is delivered in the least restrictive environment consistent with the provision of effective care. Although hospital care is only part of the range of services provided by NSW Health Department to people with mental disorders, it is the only form of service that is routinely monitored and reported[1], and public interest in the adequacy of hospital care is high.

This chapter focuses on trends in hospitalisation for mental disorders over the six years 1988/89 to 1993/94, with more detail on hospitalisations in 1993/94. This six-year series covers an important period of change in the legislative basis for care provision, extending for some 3 years before and after the implementation of the new NSW Mental Health Act (September, 1990).

As most of the major changes in hospital care, such as the implementation of the recommendations of the Richmond Report[2], occurred well before 1988/89, the first section of the chapter presents a summary of the situation prior to 1988/89. The methods and definitions used in the chapter are also explained.

The remainder of the chapter focuses on recent trends in the rate and type of admission to hospital, and the lengths of hospital stays. It presents an overview of access and equity issues, by considering any differences in admission rates for males, females, people of non-English speaking background, and Aboriginal or Torres Strait Islander peoples. Readmission rates are reported as a crude indicator of quality of care, since it is generally considered that readmission for another episode of inpatient care within 28 days of discharge is not desirable. Since the Inpatient Statistics Collection (ISC) does not record the health status of the patient at admission and discharge, no information can currently be presented on the outcomes of care, or health gain resulting from care.

7.1 Historical perspective

In 1979 the Health Commission of NSW presented a report on 150 years of data (1825-1978)[3] showing that most of the trends in inpatient data associated with 'de-institutionalisation' occurred during the 1960s and 1970s. The resident population of institutions for the mentally ill rose from about 200 per 100,000 population in 1860 to a peak of about 400 per 100,000 in the 1940s, declined to about 350 per 100,000 by 1960, and dropped rapidly to about 120 per 100,000 population by 1978. Rates of admission (including readmission) also rose over the first 100 years, from about 50 per 100,000 population in 1860 to about 200 per 100,000 in 1960, and thereafter climbed rapidly to about 500 per 100,000 in 1978. Thus the period 1960-1978 was one of rapid change in the nature of hospital care, with a dramatic shift towards shorter residential stays and more separate episodes of inpatient care. This had an equally dramatic effect on inpatient:staff ratios, which dropped from about 4:1 in 1960 to 1:1 in 1978, and on the associated costs, which quadrupled over the same period.

In these circumstances, it is not surprising that the mid-1970s are remembered as a time of unusually high provision of hospital-based services. For many reasons, but mainly the availability of effective medications, the demand on inpatient services decreased, but the staff and facilities remained. The 'de-institutionalisation' of the 1980's mainly concerned staff and facilities. Relative to the changes between 1960 and 1978, very few patients were directly affected by the recommendations of the Richmond Report itself. There were 208 'previously unplaceable' long-stay psychiatric patients discharged to supported accommodation in the three years 1984-87[4], for example. Probably the impact of the Richmond Report's recommendations on institutions for the developmentally disabled, and the coincidental independent moving of resources from hospitals to the community, led to its being associated with changes in care which, from the patient's point of view, had already happened during the preceding twenty years.

Unfortunately, the data on inpatient care from 1975 onwards are hard to relate to previous or subsequent records. The last major report[5] covered the period 1965-75, and was based on very comprehensive data in the NSW Psychiatric Case Register, which annually recorded episodes of care for each identified patient. The Case Register was closed in 1977 and replaced by separate reporting of each episode of inpatient care in what was then the Hospital Morbidity Collection, and is now the Inpatient Statistics Collection (ISC).

7.2 Definitions and methods

7.2.1 The prevalence of mental illnesses in NSW

One of the major weaknesses in planning mental health services in Australia is the lack of accurate estimates of the prevalence and incidence of mental disorders, and the health service utilisation and requirements of those with mental disorders. Under the National Mental Health policy this will change over the next few years. A National Mental Health Survey of approximately 10,000 persons is planned for 1996/97, which will provide national incidence, prevalence, and utilisation data.

In the absence of local data, prevalence data obtained in the United States National Comorbidity Survey (USNCS) have been used in this report as a basis for estimating the proportion of patients with each disorder who are hospitalised each year. The USNCS was based on a stratified, multistage area probability sample of 8098 persons aged 15 to 54 years in the non-institutionalised civilian population, and was conducted between September 1990 and February 1992. The survey used the best available diagnostic interview procedures and employed extensive cross-validation and re-sampling techniques to ensure accuracy. It probably comprises the best data available on the prevalence of mental illness in a general population[6]. However, even in samples of this size, the estimates of prevalence for individual disorders have standard errors of 10-20 per cent. In addition, surveys do not span the full range of potential diagnoses of mental illness, only the more common ones. For these reasons, extrapolation of the USNCS data to NSW has been confined to broad groups of diagnoses which are summarised in Table 7.1.

No summary data on rates of hospitalisation for 'mental illnesses' have been presented here. The term 'mental illness' is no more than a summary label for a group of disorders which are very different in their origins, clinical course, treatment, and outcomes. It is no more informative to present data for mental illness in general than it would be to do so for physical illness in general.

It is also common for people to meet diagnostic criteria for more than one mental illness within a group, or between groups (especially drug and alcohol use disorders). Table 7.1 shows the prevalence of diagnostics groups according to the USNCS, ignoring co-morbidity, and thus cannot be added up to obtain an overall 'mental illness' prevalence.

Table 7.1 Estimated prevalence of mental illnesses by major diagnostic groupings, USA 1991[6]

Overall Group (US National Comorbidity Survey diagnostic labels)	12 month period prevalence (per 100,000 population)		
	Males	Females	Total
Nonaffective Psychosis (Schizophrenia, Schizophreniform disorder, Schizoaffective disorder, Delusional disorder, Atypical psychosis)	500	600	500
Affective Disorders (Major depressive episode, Manic episode, Dysthymia)	8,500	14,100	11,300
Anxiety Disorders (Panic disorder, agoraphobia, social phobia, simple phobia, generalised anxiety disorder)	11,800	22,600	17,200
Alcohol Use Disorders (Alcohol abuse without dependence, Alcohol dependence)	14,100	5,300	9,700
Drug Use Disorders (Drug abuse without dependence, Drug dependence)	5,100	2,200	3,600

7.2.2 Diagnostic groupings

This report uses the international definition of mental disorders, in accordance with Chapter 5 of the World Health Organization International Classification of Diseases (ICD9-CM)[7]. This international classification does not match the legal definition of 'mental illness and mental disorder' in the NSW Mental Health Act (1990). Broadly speaking, dementia, developmental disability, and drug and alcohol problems are not within the definition of mental disorders in NSW. However, for ease of reference they are included here.

Diagnoses have been grouped in the same way as in the Victorian Department of Health & Community Services, using a provisional version of the third Australian National Diagnosis Related Groups (AN-DRG 3) classification. This is largely consistent with the diagnostic groupings used in the USNCS and other prevalence studies.

In the 1993/94 ISC, a distinction is made between the main reason for attending hospital, and the main reason for the *duration* of the stay in hospital (stay diagnosis). Since only 'stay diagnoses' were available in previous years, these were used in all analyses.

7.2.3 Types of admissions and separations

A distinction is made between 'day-only' and 'overnight' admissions when considering trends in hospitalisation. Increasingly, many disorders are treated on a 'day-only' basis, where the patient attends for at least 4 hours, but is not admitted overnight. In physical medicine, specific procedures are performed on a day-only basis, and it is usually possible to identify the nature of the treatment. By contrast, the various forms of mental health treatments are not well specified in ICD9-CM, or recorded in the ISC. For many patients, the only information available about the treatment is the type of admission (day-only versus overnight) and the length of stay. In describing trends, overnight admissions are emphasised, and information on day-only admissions are included to show the changing pattern of care.

7.2.4 Geographical versus service populations

In general it is desirable to report data for residents of NSW, whether they are hospitalised in NSW or other States. At the time of reporting, however, the 1993/94 ISC did not include 'out of State' hospitalisation data for NSW residents. For this report, analysis was restricted to NSW residents treated in NSW hospitals. Reported State-wide rates will therefore slightly under estimate both the true rates for NSW residents, and the true workload of NSW hospitals.

Rates were calculated using the mid-year population estimates (as at 31 December) of the resident population for NSW in each financial year. Populations used in analyses of rates for persons of non-English speaking background, for Aboriginal and Torres Strait Islander people, and for the standard Australian population, were obtained from the 1991 Census.

7.2.5 Standard Separation Rates

Two sets of data are presented. The first is a 'standardised separation rate' for each diagnostic group. This was calculated by summing the number of separations with each diagnosis for each sex within 5-year age groups, dividing these by the number of persons of the same sex and age group in NSW at the relevant time to obtain a specific rate, and then multiplying that rate by the number of persons of that age and sex in the Australian population of 1991. This resulted in an estimate of the separation rate for a population with a standard age structure which is the same for both sexes, and constant over time. Any changes in separation rates thus reflect an increase or decrease in the proportion of the population being hospitalised, whereas the numbers of separations in a year reflect many other factors such as increases or decreases in population and the ageing of the NSW population.

7.2.6 Average Length of Stay

The second set of data comprise 'standard bed-days' per 100,000, based on the convention of excluding cases where the length of stay was longer than 365 days. In the case of mental illnesses this is particularly important because of the effect that a small number of separations of long-stay patients can have on length of stay statistics. Standard bed-days per 100,000 population was divided by the standard separation rate per 100,000 population to derive an average length of stay for each diagnostic group. This procedure allows the calculation of 'standard bed-days' from the graphs, by multiplying the separation rate by the corresponding average length of stay. For the graphs including day-only admissions, the length of stay was set as one day.

7.2.7 Measures of access and equity

Enabling equity of access to comprehensive health services is one of the three principal goals for the NSW Health system [8,9]. In this chapter measures of both absolute and relative equity of access are presented.

Absolute equity of access requires that *appropriate* care is *received* by *all* those who *need* it. Approximate indicators have been calculated by dividing the standard separation rate by the prevalence (if available), for each disorder, and expressing the result as admissions per prevalent case per year. This represents the proportion of people with the particular disorder who will be admitted during a year. Typically, this indicator shows that only a small proportion of those suffering a particular disorder were admitted in a year, and that these proportions vary considerably between diagnostic groups. Longitudinal studies of the clinical course of well-managed illness would be needed to set 'benchmarks' for this indicator. At present it provides a basis for discussion of the issues, and for comparison over time.

Discussions of *relative equity of access* are usually based on comparisons between the services received by different sociodemographic groups for the same disorder. Thus if the standard separation rate for men with major depressive disorder is found to be different from the rate for women, it might possibly reflect different access. However, it might also reflect different *need* for that form of care. Only a fraction of those who suffer a mental disorder in a year are admitted to hospital, and the diagnosis of a mental disorder *per se* does not normally necessitate admission. Factors such as the availability of treatments outside hospital and services provided by general practitioners, community mental health services, or other groups will influence the treatment decision.

In many cases, prevalence estimates for different disorders are unknown (for example, non-English speaking background, or Aboriginal and Torres Strait Islander people). In the case of immigrant communities who were selected on physical health, the positive association between physical and mental health could suggest a somewhat lower prevalence of mental disorder, and thus a lower than average service need. Alternatively, some immigrant groups are refugees, or victims of torture and trauma, and might have a greater than average service need. These matters cannot be resolved by service utilisation data alone.

Where specific prevalence data are not available, the standard separation rate has been expressed as a percentage of the separation rate for the same-sex diagnostic group in the NSW population as a whole. Since census population estimates for people of non-English speaking background, and for Aboriginal and Torres Strait Islander people were available only for 1991, these comparisons are based on an average of the rates for 1990/91 and 1991/92 in these groups in relation to their 1991 populations, as against the 'all NSW' rates for the same period. In general, people of non-English speaking background have fewer inpatient admissions than average, while Aboriginal and Torres Strait Islander peoples have higher rates than average. As 'access to services' is considered to be an issue for both of these groups, the limitations of the indicators are obvious. They provide only a measure of the relative *utilisation* of inpatient services to treat illness in different groups. In the absence of specific estimates of prevalence they are of limited value, and in the absence of estimates of all the other factors determining the need for inpatient admission as the most appropriate form of care, they should not be considered as measures of the extent to which services are meeting the criterion of absolute equity of access to appropriate care.

7.2.8 Measures of quality of care

The most important indicator of quality of care is the resulting improvement in a patient's health status - the health gain. This entails an assessment of health status on admission, and again on discharge or after a suitable follow-up period. These measures are not available in the ISC.

Treatments provided for patients with mental illness are also poorly documented in the ISC, with only 12 per cent of patients having a documented 'principal procedure' (Table 7.4). Even the best of care will not necessarily be equally beneficial to all patients. The quality improvement process includes the identification of patients whose illness may need a different form of management. For this reason the treatment, as well as its outcome, needs to be monitored.

However, since 1993/94 the ISC records whether the patient was admitted within 28 days of a previous admission to the same or a different hospital. This allows the calculation of 28-day readmission rates, a potentially useful indicator for assessment of quality of care. The 28-day readmission rates are described in this chapter for each diagnostic group, and separately for day-only and overnight admissions. The rates are surprisingly consistent across diagnostic groups, and are substantially higher than would be considered acceptable for admissions for physical illness. There are thus several general comments which should be made about them.

First, the 28-day readmission rates for day-only admissions are about 40-50 per cent, which are likely to reflect the operation of day-only programs, that is a planned sequence of admissions for several day-only sessions, rather than a series of independent admissions. Second, the readmission rates for overnight admissions are about 15-20 per cent, which suggests that patients are being discharged before they are well enough to maintain their mental health outside the hospital. Each of these results will be the subject of more detailed investigations and reports.

If the high rate of readmission to day-only care proves to be an artefact resulting from day-only programs being recorded as separate admissions, it would be beneficial if coding procedures could capture this information. It would also be necessary to consider the extent to which programs of this type differ from those offered on an outpatient basis, or in Community Mental Health.

It is possible that some proportion of the high readmission rates for overnight admissions also reflects programmed care which judiciously applies the 'least restrictive environment' principle in the NSW Mental Health Act. That is, patients are being progressively 'staged' into the community, and this is being recorded as a series of discharges and readmissions rather than as leave. It is also possible that they might reflect aspects of the Mental Health Act applied to involuntary detention in care, for example. Patients who are not demonstrably ill enough to be detained in care involuntarily might be discharged before they are well enough to maintain their health outside the hospital for 28 days. Another possibility is that the readmissions may be associated with adverse psychosocial situations.

In summary, 28-day readmission rates provide a useful starting point for exploring aspects of care, but are not a direct measure of 'quality'. Until the ISC is better able to capture the information of most relevance to the inpatient care of patients with mental disorders, analysis of State-wide data can only indicate areas for investigation at the local level by those responsible for quality assurance, rather than provide definitive answers.

7.3 Hospitalisation in NSW 1993/94

Table 7.2 shows the various Diagnosis Related Groups (DRG) groupings and their contribution to overall hospital separations during 1993/94. It also shows their contribution to inpatient separations, excluding day-only admissions.

Four groups of disorders account for more than half of all episodes of inpatient care. These are dementia (DRG 056), schizophrenia (DRG 841), major affective disorders (DRG 843) and alcohol abuse & dependence (DRG 862). Overall, there were 37,979 episodes of inpatient care for these disorders in 1993/94, almost equally divided between men and women (51.3 per cent male, 48.7 per cent female). In addition, there were 23,428 day-only admissions, so that the total number of separations was 61,407 (55.5 per cent male, 44.5 per cent female).

Dementia (DRG 056), schizophrenia (DRG 841), paranoid and acute psychotic disorders (DRG 842) and all the drug and alcohol disorders (DRG 860-863) have a higher proportion of inpatient separations than total separations, indicating that day-only admissions are relatively less common for these disorders.

Table 7.3 shows the most common diagnostic groupings within each DRG. It is possible to use these data in conjunction with Table 7.2 to estimate the number of separations for a particular diagnosis. For example, anorexia nervosa was diagnosed in 48.5 per cent of all inpatient episodes within DRG 846 (Table 7.3), and there were 646 inpatient separations in DRG 846 (Table 7.2), so there were about 313 (= 48.5 x 646 /100) episodes of inpatient care for anorexia nervosa in 1993/94.

A disturbing feature of Table 7.3 is the relatively high percentage of 'unspecified' diagnoses within DRGs. For example, more than half of the inpatient episodes of care for anxiety disorders (DRG 845) were for patients who received ICD9-CM code 300.00 for 'unspecified anxiety state'. This suggests that either specific diagnosis has a limited role in determining specific treatments, or documentation may be inadequate.

7.4 Hospital treatment 1993/94

In 1993/94, the ISC allowed the coding of up to ten specific treatments or procedures during an episode of hospitalisation. The ICD9-CM procedure codes provide only general descriptions for the treatments used for mental illnesses.

In 1993/94, no principal procedure at all was recorded for 54,006 of the 61,407 separations for mental illnesses. After excluding day-only admissions, procedures were recorded for less than 15 per cent of inpatient admissions averaging 10-20 days.

Table 7.4 shows this picture in more detail, by diagnostic group, and Table 7.5 shows the most common procedures reported for episodes of inpatient care. These can be read in conjunction with Table 7.2. For example, there were 2,130 inpatient episodes with a 'stay diagnosis' in the group of acute stress reactions (DRG 851, Table 7.2); procedures were recorded in only 2.9 per cent of these (Table 7.4); and the more common procedures amongst the 62 recorded are given in Table 7.5.

The data in Table 7.5 should be interpreted with caution. For procedures such as computerised axial tomography (CAT) scans and electroconvulsive therapy (ECT), as well as 'conventional' diagnostic and other procedures, it is likely that the numbers in Table 7.5 are complete. The administration of electroconvulsive therapy (ECT) in NSW is governed by provisions of the NSW Mental Health Act, 1990 (Chapter 7 - Division 2), and ECT can only be administered in a hospital, or other place approved by the Director-General of Health. Because of the associated requirements for documentation, it is extremely unlikely that case files would fail to contain the information from which this procedure could be recorded. For procedures in the 'psychiatric' code range (except ECT), numbers in Table 7.5 are unlikely to be complete. For example, there is a good range of descriptive procedure codes for drug and alcohol detoxification and rehabilitation (DRGs 860-863, Table 7.5), but there are no procedures recorded for the majority of separations in the relevant diagnostic groups (Table 7.4).

Table 7.2 Hospital separations for mental illness, NSW 1993/94

Diagnosis Related Group (DRG)		1993/94 separations, including day-only stays				1993/94 inpatient separations			
		Males	Females	Total	%	Males	Females	Total	%
056	Dementia & Disturbances of Cerebral Functioning	2768	2367	5135	8.4	2015	2138	4153	10.9
841	Schizophrenic Disorders	4921	3937	8858	14.4	3859	2702	6561	17.3
842	Paranoid & Acute Psychotic Disorders	796	816	1612	2.6	591	746	1337	3.5
843	Major Affective Disorders	4962	5889	10851	17.7	2212	3834	6046	15.9
844	Other Affective Disorders & Somatoform Disorders	2467	2971	5438	8.9	1098	1996	3094	8.1
845	Anxiety Disorders	1683	2088	3771	6.1	502	1197	1699	4.5
846	Eating & Obsessive Compulsive Disorders	181	1247	1428	2.3	98	548	646	1.7
848	Mental Disorders originating in childhood & adolescence	2505	441	2946	4.8	186	74	260	0.7
850	Personality Disorders	1035	1408	2443	4.0	511	975	1486	3.9
851	Acute Stress Reactions	1965	1648	3613	5.9	991	1139	2130	5.6
852	Conduct Disorders	557	101	658	1.1	190	91	281	0.7
854	Sexual Disorders	94	56	150	0.2	41	29	70	0.2
860	Alcohol Intoxication & Withdrawal	2835	983	3818	6.2	2079	684	2763	7.3
861	Other Drug Intoxication & Withdrawal	415	325	740	1.2	385	279	664	1.7
862	Alcohol Abuse & Dependence	4477	1318	5795	9.4	2960	921	3881	10.2
863	Other Drug Abuse & Dependence	2082	1483	3565	5.8	1614	951	2565	6.8
---	Others	316	270	586	1.0	148	195	343	0.9
	TOTAL	**34059**	**27348**	**61407**	**100.0**	**19480**	**18499**	**37979**	**100.0**

Data Source: NSW Inpatients Statistics Collection (HOIST), Epidemiology Branch, NSW Health Department.

Table 7.3 Inpatient admissions for most common mental illness diagnoses, NSW, 1993/94

Diagnosis Related Group (DRG)		Percentage of inpatient episodes in diagnostic group attributable to the most common diagnoses in that group
056	Dementia & Disturbances of Cerebral Functioning	Senile dementia 31.6%, Other senile psychotic conditions 12.3%, Acute delirium 10.8%, Arteriosclerotic dementia 10.5%, Alcohol-related 7.6%
841	Schizophrenic Disorders	Residual schizophrenia 25.8%, Paranoid type schizophrenia 24.5%, Schizoaffective type schizophrenia 15.0%
842	Paranoid & Acute Psychotic Disorders	Unspecified psychosis 63.0%, Unspecifiedparanoid state 17.7%, Other & unspecified reactive psychosis 11.1%
843	Major Affective Disorders	Major depressive disorder (53.9%; single episode 29.7%, recurrent 24.2%), Bipolar disorder (37.9%; manic 20.3%, depressive 6.8%, other 10.0%)
844	Other Affective Disorders & Somatoform Disorders	Unspecified depression 49.8%, Neurotic depression 37.6%, Unspecified neurotic disorder 8%
845	Anxiety Disorders	Unspecified anxiety state 52.6%, Panic disorder 12.7%, Conversion disorder 12.0%, Agoraphobia 4%, Social phobia 0.4%
846	Eating & Obsessive Compulsive Disorders	Anorexian nervosa 48.5%, Bulimia 14.4%, Unspecified eating disorder 8.7%, Obsessive-compulsive disorders 19.2%
848	Mental Disorders originating in childhood & adolescence	Oppositional disorder 28.1%, Unspecified developmental delay 19.2%, Attention deficit disorder 15.4%
850	Personality Disorders	Borderline 44.6%, Unspecified 26.2%, Dependent 8.4%, Antisocial 8.0%
851	Acute Stress Reactions	Adjustment reaction with brief depressive reaction 35.5%, Unspecified 33.4%, Prolonged post traumatic stress disorder 6.7%
852	Conduct Disorders	Unspecified 29.2%, Pathological gambling 17.8%, Undersocialised aggressive 16.0%, Mixed disturbance of conduct & emotions 15.7%
854	Sexual Disorders	Trans-sexualism 42.9%, Psychosexual dysfunction 34.3%
860	Alcohol Intoxication & Withdrawal	Non-dependent alcohol abuse 42.9%, Alcoholic psychoses 37.2%, Alcohol intoxication 19.9%
861	Other Drug Intoxication & Withdrawal	Withdrawal syndrome 34.5%, Unspecified drug-induced mental disorder 26.5%, Delirium 16.0%
862	Alcohol Abuse & Dependence	Other and unspecified alcohol dependence (continuous drinking behaviour 64.1%, episodic 5.8%, unspecified 28.6%)
863	Other Drug Abuse & Dependence	Polydrug 39.1%, Opioids 33.5%, Barbiturates 10.3%, Cannabis 7.3%, Amphetamines 4.9%, Tobacco 2.7%, Cocaine 0.9%

Data Source: NSW Inpatients Statistics Collection (HOIST), Epidemiology Branch, NSW Health Department.

Table 7.4 Percentages of hospital separations for mental illness where principal procedures were recorded, NSW 1993/94

Diagnosis Related Group (DRG)		Percentage of 1993/94 Separations with Principal Procedure recorded					
		With Day-only admissions			Without Day-only		
		Males	Females	Total	Males	Females	Total
056	Dementia & Disturbances of Cerebral Functioning	9.1	12.5	10.7	12.1	13.1	12.6
841	Schizophrenic Disorders	3.2	6.0	4.4	2.2	3.5	2.7
842	Paranoid & Acute Psychotic Disorders	5.3	5.0	5.1	5.9	5.4	5.6
843	Major Affective Disorders	10.2	14.3	12.4	10.5	12.6	11.9
844	Other Affective Disorders & Somatoform Disorders	3.3	8.1	6.0	3.9	4.0	4.0
845	Anxiety Disorders	5.2	12.4	9.2	7.2	5.8	6.2
846	Eating & Obsessive Compulsive Disorders	3.3	3.0	3.0	5.1	4.4	4.5
848	Mental Disorders originating in childhood & adolescence	13.1	4.5	11.8	10.8	9.5	10.4
850	Personality Disorders	1.2	3.3	2.4	1.8	1.8	1.8
851	Acute Stress Reactions	10.0	4.5	7.5	2.9	2.9	2.9
852	Conduct Disorders	8.4	3.0	7.6	3.2	3.3	3.2
854	Sexual Disorders	33.0	41.1	36.0	58.5	75.9	65.7
860	Alcohol Intoxication & Withdrawal	13.4	11.1	12.8	17.4	15.2	16.9
861	Other Drug Intoxication & Withdrawal	12.0	15.7	13.6	13.0	17.9	15.1
862	Alcohol Abuse & Dependence	28.0	33.7	29.3	37.6	39.8	38.2
863	Other Drug Abuse & Dependence	32.6	31.8	32.3	39.8	38.9	39.5
---	Others	11.7	22.2	16.6	11.5	16.4	14.3
	TOTAL	**12.2**	**11.9**	**12.1**	**15.2**	**11.2**	**13.3**

Data Source: NSW Inpatients Statistics Collection (HOIST), Epidemiology Branch, NSW Health Department.

Table 7.5 Most common recorded inpatient procedures for mental illness, NSW 1993/94

Diagnosis Related Group (DRG)		Total Number of Recorded Procedures	Most Common Procedures recorded for Inpatient admissions ECT, and selected other procedures (Number of separations)
056	Dementia & Disturbances of Cerebral Functioning	524	CAT scan of head (261), Spinal Tap (25), ECT (7), Other Psych Codes (13)
841	Schizophrenic Disorders	180	CAT scan of head (67), ECT (35), Other Psych Codes (16)
842	Paranoid & Acute Psychotic Disorders	75	CAT scan of head (35), ECT (2), Other Psych Codes (0)
843	Major Affective Disorders	718	CAT scan of head (84), ECT (517), Other Psych Codes (11)
844	Other Affective Disorders & Somatoform Disorders	123	CAT scan of head (19), ECT (23), Other Psych Codes (14)
845	Anxiety Disorders	106	CAT scan of head (20), Spinal Tap (10), ECT (2), Other Psych Codes (4)
846	Eating & Obsessive Compulsive Disorders	29	Diagnostic procedures on digestive system (5), ECT (3), Other Psych Codes (6)
848	Mental Disorders originating in childhood & adolescence	27	CAT scan of head (8), Other Psych Codes (8)
850	Personality Disorders	27	CAT scan of head (3), ECT (3), Other Psych Codes (3)
851	Acute Stress Reactions	62	CAT scan of head (11), ECT (2), Other Psych Codes (16)
852	Conduct Disorders	9	CAT scan of head (4), Other Psych Codes (2)
854	Sexual Disorders	46	Medical diagnostic procedures (1), Surgical procedures (45)
860	Alcohol Intoxication & Withdrawal	466	CAT scan of head (42), ECT (1), Alcohol detoxification (232), Alcohol detox & rehab (58), Other D&A (74), Other Psych (0)
861	Other Drug Intoxication & Withdrawal	100	CAT scan of head (23), Drug detoxification (34), Drug detox & rehab ((12) , Other D&A (8), Other Psych Codes (0)
862	Alcohol Abuse & Dependence	1481	CAT scan of head (17), Alcohol detoxification (895), Alcohol detox & rehab (194), Alcohol rehab (171), Other D&A (174), Other Psych Codes (4)
863	Other Drug Abuse & Dependence Other Psych Codes (1)	1012	CAT scan of head (3), Drug detoxification (677), Combined alcohol & drug detoxification (169), Other D&A (129),

Data source: NSW Inpatients Statistics Collection (HOIST), Epidemiology Branch, NSW Health Department.

7.5 General trends

Detailed data for each of the main diagnostic groups are presented below. The most obvious trend is a substantial rise over the period 1988/89 to 1993/94, for almost all groups, in the rate of day-only admissions. In all other respects, the main impression is one of a stable treatment system, in which the number of separations has not changed greatly over the last six years, and in which length of stay has remained much the same. This is an important result in itself, since there has been considerable debate about the availability of hospital care for those who need it. The evidence here suggests quite strongly that any such debate should focus on the actual levels of hospitalisation, rather than on changes over recent times. Questions remain concerning whether hospitalisation rates are appropriate, and the quality and outcomes of the care provided during hospital stay. The following sections provide the background information for these discussions.

7.6 Schizophrenia and related disorders

7.6.1 Trends in hospital care

Although patients with schizophrenia usually receive diagnoses which are grouped into DRG 841 (schizophrenic disorders, Figure 7.1), it is also possible that patients whose diagnostic picture is more complex or uncertain receive diagnoses grouped in DRG 842 (paranoid and acute psychotic disorders, Figure 7.2). Changes in diagnostic practice may therefore lead to changes in the apparent rate of both disorders. They are combined here as 'schizophrenia and related disorders' as has been done in the USNCS (Table 7.1) and other research studies[10].

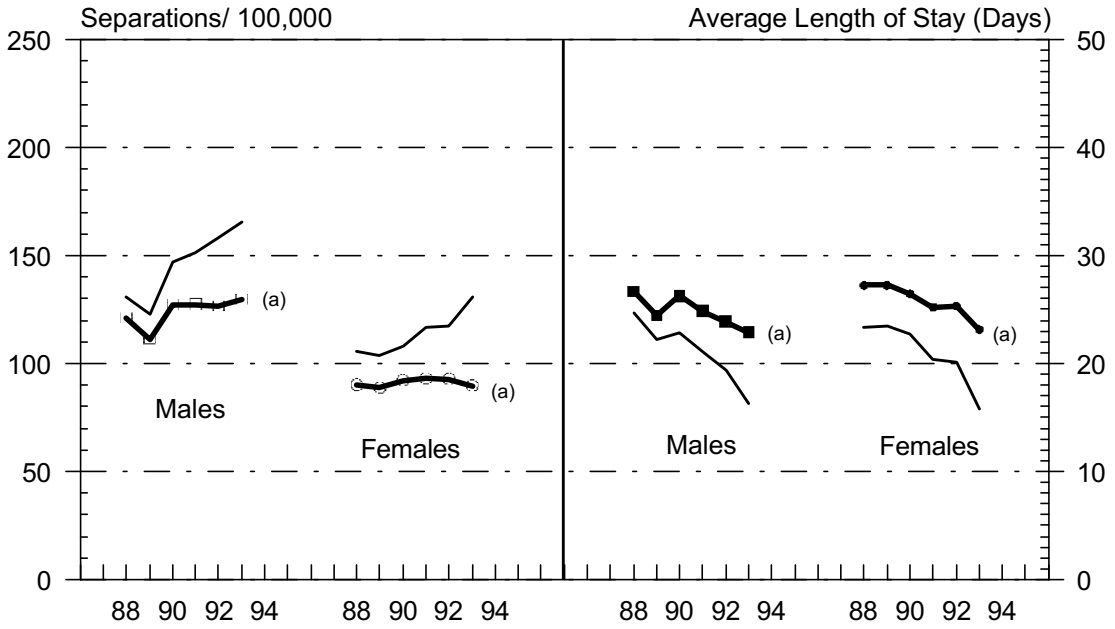
Together, these disorders accounted for 7,898 (20.8 per cent) inpatient episodes in 1993/94, and 17.0 per cent of all hospitalisations when day-only admissions were included (Table 7.2).

For men with schizophrenic disorders (Figure 7.1) there were about 130 inpatient episodes of care in 1993/94 per 100,000 population, and the average length of stay was 23 days. For women about 90 inpatient episodes occurred per 100,000 population, and the average length of stay was the same as for men. There was no substantial change in the rate of inpatient episodes since 1988/89, but length of stay decreased by about 15 per cent. For both men and women there was a large increase in the rate of day-only admissions.

In 1993/94 the rate of inpatient episodes for paranoid and acute psychotic disorders was about 20 per 100,000 for both men and women, and average length of stay was about 18 days for men and 20 days for women (Figure 7.2). Hospitalisation rates declined by about 30 per cent since 1988/89, but length of stay did not change substantially. Again, there was a increasing proportion of day-only admissions, mainly for men.

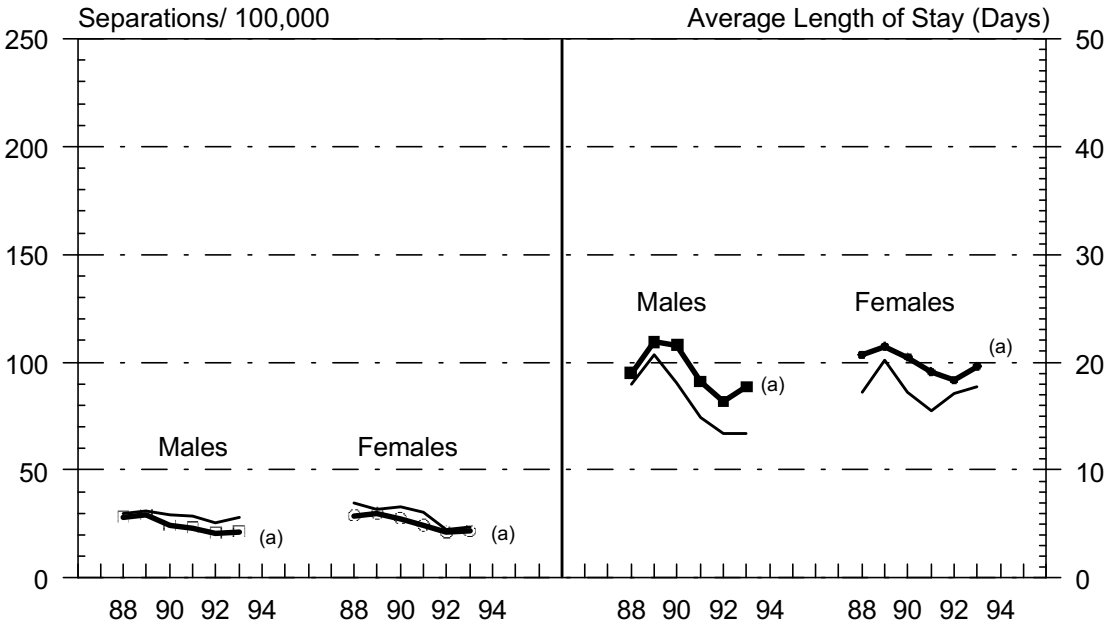
In summary, apart from an increase in day-only care and a small reduction in the average length of stay, there is no substantial evidence that inpatient care for these disorders has changed greatly since 1988/89 in NSW.

Figure 7.1 Age-standardised hospital separations and average length of stay for Schizophrenic Disorders (DRG 841) by sex, NSW 1988/89-1993/94



Note: (a) Day-only admissions excluded.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department .

Figure 7.2 Age-standardised hospital separations and average length of stay for Paranoid and Acute Psychotic Disorders (DRG 842) by sex, NSW 1988/89-1993/94



Note: (a) Day-only admissions excluded.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

7.6.2 Access and Equity

The USNCS estimated the 12-month prevalence of similar disorders at about 500 per 100,000 males and 600 per 100,000 females (Table 7.1). The lower figure of 500 per 100,000 has been used in estimating treated prevalence in Australia[11]. Estimates of the number of incident cases in NSW during the mid-1970s and early 1980s suggest a figure in the range 20-30 per 100,000 [12]. This would yield a 'lifetime' prevalence in a survey of the 15-54 year age range of about 400-600 per 100,000, which is consistent with the USNCS 'lifetime' data.

Using the USNCS prevalence data as an estimate of the overall prevalence of the disorders in DRG 841 and DRG 842, the inpatient treatment rate in NSW during 1993/94 for schizophrenia and related disorders was one episode of inpatient care per year for every three prevalent cases in men, and one episode of inpatient care per year for every six prevalent cases in women.

For men of non-English speaking background with schizophrenic disorders the average separation rate was about 25 per cent lower than the NSW average, and for women it was about 20 per cent lower. Separation rates for paranoid and acute psychotic disorders were about 15 per cent lower for men, but the same as the NSW average for women.

For Aboriginal and Torres Strait Islander men with schizophrenic disorders the average separation rate was about 25 per cent higher than the NSW average for men, and about 15 per cent higher for women, while for paranoid and acute psychotic disorders the rates were more than twice the corresponding NSW average, for both men and women.

Whether these differences reflect differences in need or differences in access cannot be determined from these data. A more extensive discussion of the issues is given in section 7.2.7. The most striking finding is the high rate of the relatively non-specific diagnoses in DRG 842 for Aboriginal and Torres Strait Islander people. Though there are relatively few patients involved, the relatively high rate is consistent from year to year. To the extent that improved precision of diagnosis may improve treatment, it would be desirable to ensure that more specific diagnoses are made.

7.6.3 Quality of Care

Readmission rates provide a useful, if crude, measure of how well chronic mental illness has been managed. There are no historical readmission rates in NSW. The evidence from the case register of public psychiatric patients in Victoria[13] is that 9,093 patients accounted for 12,869 inpatient episodes in 1993/94, or an average of 1.4 per patient per year . This is similar to the latest available data from the NSW psychiatric case register[14], which showed that 24,779 individuals accounted for 30,215 inpatient episodes in 1971/72, or an average of 1.2 episodes per patient per year. These data refer to all diagnostic groups.

More detailed data from the Western Australian case register of public psychiatric patients[15] suggest that annual readmission rates for schizophrenia and related disorders are probably higher than for other groups. For the period 1990-92, about 20 per cent of patients with schizophrenic disorders have four or more admissions in the course of a year, and another 20 per cent have three.

Using the Victorian estimate of an average of 1.4 admissions a year, about 40 per cent of patients would be expected to have a second admission within one year, and 3-4 per cent in the month immediately following the previous admission, assuming that each admission is an independent event.

However, the readmission rate reported for inpatients with these disorders was 18 per cent for both men and women in NSW in 1993/94. For day only admissions alone, 28-day readmission rates were 60 per cent for men and 72 per cent for women. This was much higher than expected and warrants investigation.

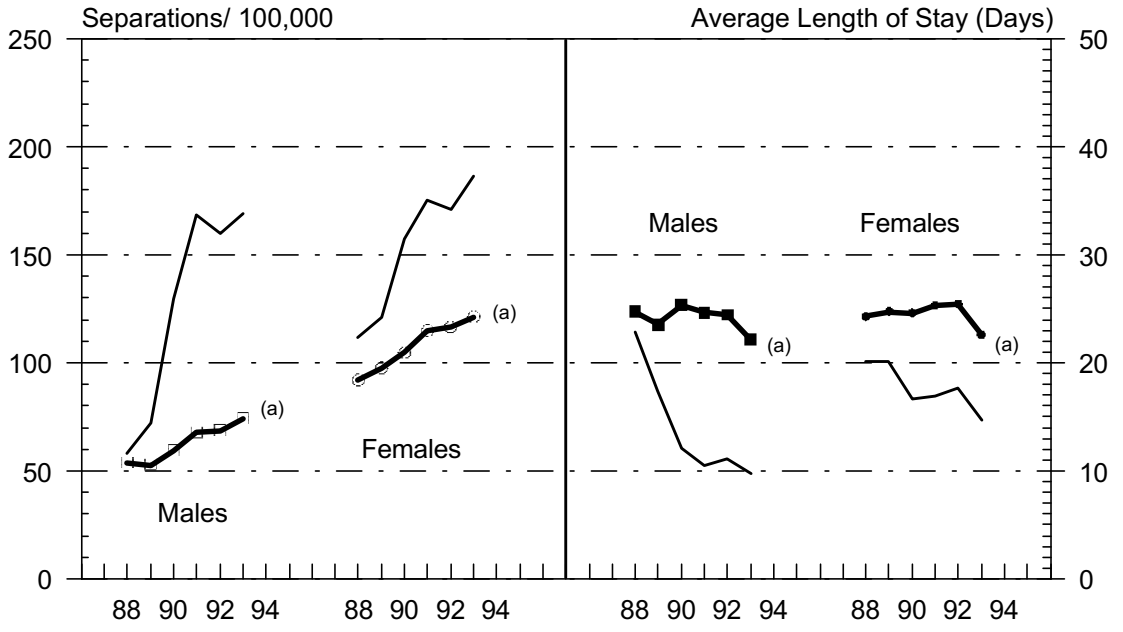
7.7 Depression and related disorders

7.7.1 Trends in hospital care

Although the diagnostic distinctions between major affective disorders (DRG 843) and other affective disorders (DRG 844) may be important[16], Table 7.3 shows that half the diagnoses in DRG 844 are 'unspecified depression'. Changes in diagnostic practice over time may thus produce apparent changes in one group at the expense of the other. These DRG groups are considered together as 'depression and related disorders' as in the USNCS prevalence data (Table 7.1).

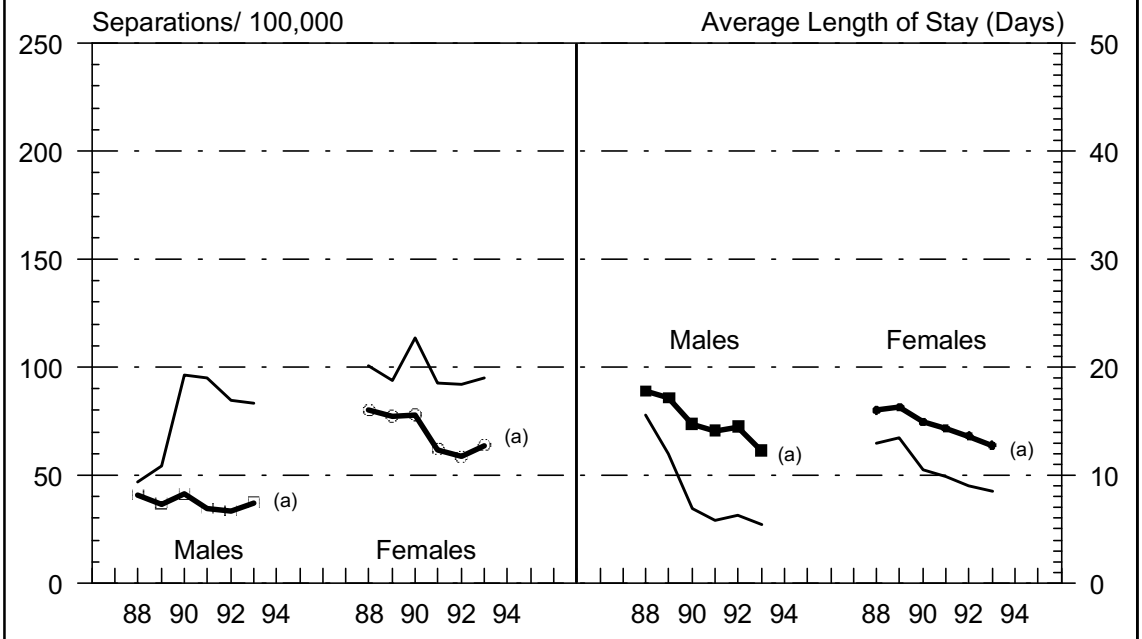
Depression and related disorders accounted for 9,140 (24.0 per cent) of inpatient episodes in 1993/94, and 26.6 per cent of all episodes when day-only admissions were included (Table 7.2).

Figure 7.3 Age-standardised hospital separations and average length of stay for Major Affective Disorders (DRG 843) by sex, NSW 1988/89-1993/94



Note: (a) Day-only admissions excluded.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

Figure 7.4 Age-standardised hospital separations and average length of stay for Other Affective Disorders and Somatoform Disorders (DRG 844) by sex, NSW 1988/89-1993/94



Note: (a) Day-only admissions excluded.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

In 1993/94, there were about 80 inpatient episodes of care per 100,000 population in men with major affective disorders, with an average length of stay of 22 days in 1993/94 (Figure 7.3). The rate for women was about 120 per 100,000 population, and the average length of stay was the same. Over the six years there was a 35 per cent increase in the rate of inpatient episodes, but the average length of stay remained the same. For both men and women there was an increase in the rate of day-only admissions. For men this has been particularly marked, so that since 1990/91 there have been more day-only admissions than other inpatient episodes.

For other affective disorders and somatoform disorders the rate of inpatient episodes was about 40 per 100,000 in men in 1993/94, and about 60 per 100,000 for women (Figure 7.4). The average length of stay was about 12 days for both sexes. The rates of inpatient care have remained stable for men and declined by about 35 per cent for women since 1988/89. The average length of stay decreased by about 20 per cent for men and 15 per cent for women. Again, the rate of day-only admissions increased since 1990/91, and outnumbered other inpatient episodes for men.

This suggests that there was a significant change in hospital care for depression and related disorders over the six year period. There were increases in admission rates for major affective disorders and decreases for the less well specified depressive disorders. These disorders were also very different in average length of stay, since inpatient episodes for major affective disorders are twice as long. However, it is also possible that the less precise diagnosis reflects the shorter admission - that it was not possible to fully clarify the nature of the affective disorder during the admission.

7.7.2 Access and Equity

The USNCS estimated the 12-month prevalence of depression and related disorders at about 8,500 per 100,000 males and 14,100 per 100,000 females (Table 7.1). The treatment rate in NSW during 1993/94 was therefore about one episode of inpatient care per year for every 75 prevalent cases in both men and women.

There is a wide range of variation of severity within these diagnostic groups, and it is likely that a large proportion of people with less severe disorders are dealt with in primary care settings rather than as inpatients. For example, depression is a presenting problem in 1 per cent of general practice encounters in Australia, is identified by GPs as a problem to be managed in 2 per cent of encounters, and antidepressants are prescribed in 2 per cent of encounters[17]. Typically these encounters would satisfy the criteria for depression as measured in the USNCS. As the number of GP attendances per episode of depression is unknown, it is not possible to estimate treated prevalence of these disorders. However, there is a substantial amount of GP treatment and antidepressant medication being delivered to the population, and this presumably limits the need for inpatient treatment.

If day-only admissions are included in the calculation of the estimated treatment rate, the rate for males would more than double and the rate for females rise by more than 50 per cent. While it is possible that a single episode of illness could result in several day-only admissions, a single day-only admission would generally meet the criteria for a prevalent case of depression using the USNCS criteria. Factors of this kind make it difficult to relate data based on occasions of service to the prevalence of episodes of illness.

Andrews[14] followed the US National Advisory Mental Health Council Report[18] in considering 20 per cent of affective disorders to be 'serious' and warranting specialist treatment, a further 25 per cent to be 'chronic' and manageable in general practice, and the remainder to be 'mild and transient'. By contrast, 100 per cent of schizophrenic disorders fall into the first category. Using these estimates in the NSW setting, the inpatient treatment rate is about one episode of care for every 15 prevalent cases of 'severe' affective disorder, in both men and women. This is still well below the inpatient treatment rate for prevalent cases of schizophrenia, and assumes that all inpatient episodes of care are for those with a 'severe' affective disorder.

In summary, it appears that the majority of people with these disorders are either untreated, or are treated by parts of the NSW Health system which do not currently report statistical data to the NSW Health Department. It is not known if the treatment gap is being filled by appropriate specialist services.

The relative utilisation of inpatient services (excluding day-only admissions) by men and women of non-English speaking background was lower than average. Standardised separation rates for both men and women were about 30 per cent below the NSW average for major affective disorders (DRG 843) and about half the average rate for other affective disorders (DRG 844). The separation rate for major affective disorders in Aboriginal and Torres Strait Islander men was half the NSW rate, and 15 per cent lower in women. By contrast, for other affective disorders, Aboriginal and Torres Strait Islander men had twice the NSW average rate of hospital admission, and the rate for women was almost three times higher.

This latter group were less well specified diagnoses of depression, with the shorter hospital stays. To the extent that improved diagnosis may improve treatment, more specific diagnoses would be desirable. Whether these variations in rates of hospitalisation reflect differences in need or differences in access cannot be determined from these data.

7.7.3 Quality of Care

The issues associated with multiple admissions are essentially the same for these disorders as for schizophrenia and related disorders. That is, 28-day readmission rates above 3-4 per cent may warrant investigation. There are, however, some additional considerations which apply to inpatient admission for major affective disorders.

First, the disorders tend to be recurrent. Second, there is evidence from overseas[19] as well as NSW[20] that males with these diagnoses are at about 500 times the population risk of suicide in the month after discharge from an episode of inpatient care.

In NSW, the 28-day readmission rates for inpatients are much the same as those for schizophrenic disorders: 18 per cent in men and 19 per cent in women with major affective disorders, and 15 per cent and 17 per cent respectively for men and women with other affective disorders. The readmission rates were slightly higher for major affective disorders, where the average length of stay was 22 days, compared with other affective disorders, where the average length of stay was 12 days.

Considering day-only admissions alone, the 28-day readmission rates were 46 per cent and 65 per cent for men and women respectively for major affective disorders, and 47 per cent and 48 per cent respectively for other affective disorders. Therefore, as in the case of schizophrenic disorders, these day-only admissions probably included planned programs of care as well as separate episodes.

7.8 Anxiety disorders

7.8.1 Trends in hospital care

Anxiety disorders (DRG 845) accounted for 1,699 (4.5 per cent) inpatient episodes in 1993/94, and 6.1 per cent of all episodes when day-only admissions were included (Table 7.2).

For men there were about 20 inpatient episodes of care per 100,000 population, averaging 10 days in 1993/94 (Figure 7.5). The rate for women was about 40 per 100,000 population, and the average length of stay was 9 days. Between 1988/89 and 1993/94 there was a 20 per cent decrease in the rate of inpatient episodes. Length of stay was stable for men and decreased by about 10 per cent for women. For both men and women there was an increase in the rate of day-only admissions. For men this has been particularly marked, so that since 1990/91 there were more day-only admissions than other inpatient episodes.

7.8.2 Access and Equity

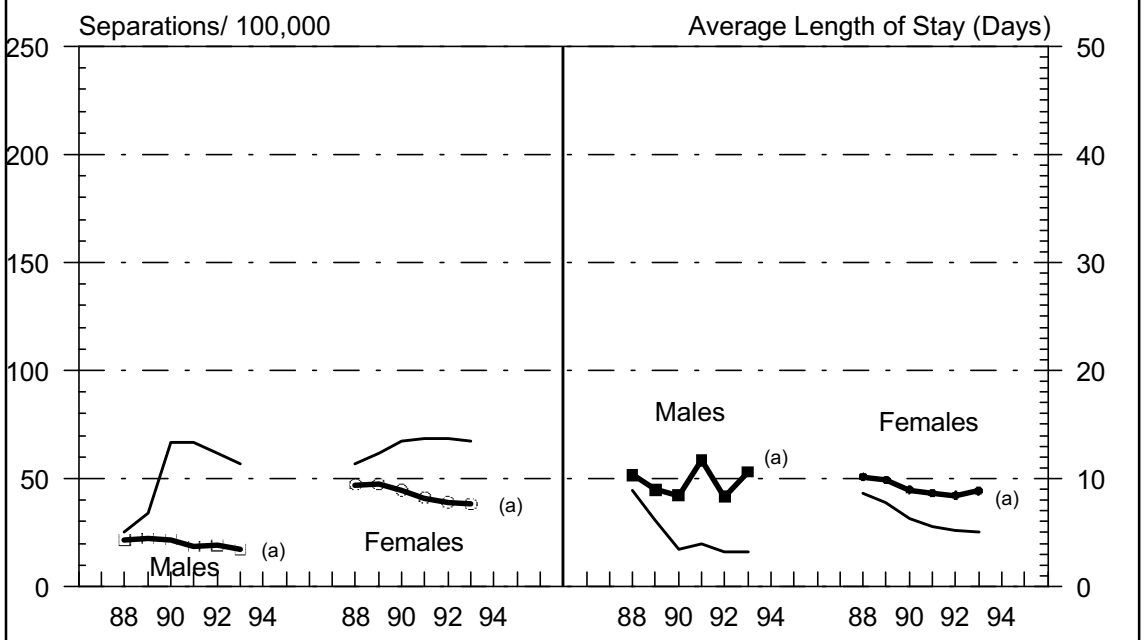
The USNCS estimated the 12-month prevalence of 'Any Anxiety Disorder' at about 11,800 per 100,000 population males and 22,600 per 100,000 population females (Table 7.1). Hence the treatment rate in NSW in 1993/94 was about one episode of inpatient care per year for every 550 prevalent cases in both men and women.

As in the case of depression, there is a considerable range of variation of severity between and within the group of anxiety disorders, and it is likely that a large proportion of people with less severe disorders are dealt with in primary care settings rather than as inpatients. For example, anxiety is a presenting problem in 1 per cent of general practice encounters in Australia. It is identified by GPs as a problem to be managed in 2.5 per cent of encounters, and anti-anxiety medications are prescribed in 2 per cent of encounters[20]. Typically these encounters would satisfy the criteria for anxiety disorders as measured by the USNCS methods.

If day-only admissions are included in the calculation of treatment rates, the treatment rate for males would more than doubled, and the treatment rate for females would increase by more than 75 per cent. While it is possible that a single episode of illness could result in several day-only admissions, a single day-only admission would generally meet the criteria for a prevalent case of depression using the USNCS criteria.

Andrews[14] followed the US National Advisory Mental Health Council Report in considering 20 per cent of panic disorder and 10 per cent of social phobia to be 'serious' and warranting specialist treatment, a further 17 per cent of all anxiety disorders to be 'chronic' and manageable in general practice, and the remainder to be 'mild and transient'.

Figure 7.5 Age-standardised hospital separations and average length of stay for Anxiety Disorders (DRG 845) by sex, NSW 1988/89-1993/94



Note: (a) Day-only admissions excluded.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

In NSW in 1993/94, panic disorder accounted for only 12.7 per cent of admissions, and social phobia for 0.4 per cent. If all these admissions were regarded as "severe" cases and related to the 'severe' proportions of the corresponding diagnoses in the USNCS data, the inpatient treatment rate is about one admission for every 400 prevalent cases of 'severe' anxiety disorder, whereas the corresponding rate for 'severe' depressive disorders is one per 15 prevalent cases.

As in the case of depressive disorders, it appears that the majority of people with these disorders are either untreated, or are treated by parts of the NSW Health system which do not currently report statistical data to the NSW Health Department. Certainly there is a need to find out if the treatment gap is being filled by appropriate non-hospital services.

For inpatient services (excluding day-only admissions), the hospital separation rate for anxiety disorders in men and women of non-English speaking background is about half the NSW rate. The separation rate in Aboriginal and Torres Strait Islander men was about 60 per cent higher than the NSW average rate, and for women was five times higher. Whether these variations reflect differences in need or differences in access cannot be determined from these data.

7.8.3 Quality of Care

In more than 50 per cent of all inpatient episodes, the diagnosis was 'unspecified anxiety state' . In the light of the low hospital treatment rate, and the fact that this diagnosis accounts for an average length of stay of 10 days in hospital, the lack of more specific diagnoses is disturbing.

The rate of readmission within 28 days for these disorders followed the pattern already found for schizophrenic disorders and affective disorders. For day-only admissions the readmission rates were 42 per cent in men and 48 per cent in women, and for inpatient admissions the rate was 19 per cent for both sexes.

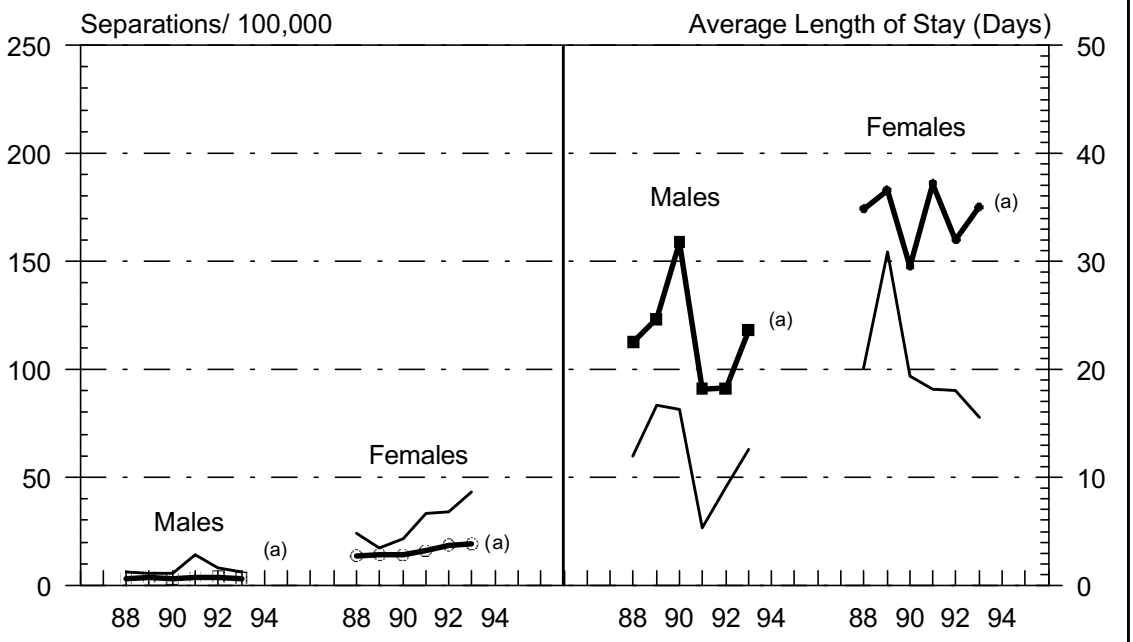
7.9 Other anxiety-related disorders

7.9.1 Trends in hospital care

Other anxiety disorders comprise eating disorders and obsessive compulsive disorders (DRG 846) and acute stress reactions (DRG 851).

People with eating disorders and obsessive compulsive disorders are rarely admitted to hospital, accounted for 646 episodes (1.7 per cent) of inpatient care in 1993/94, and 2.3 per cent when day-only admissions were included (Table 7. 2).

Figure 7.6 Age-standardised hospital separations and average length of stay for Eating Disorders and Obsessive Compulsive Disorders (DRG 846), by sex, NSW 1988/89-1993/94



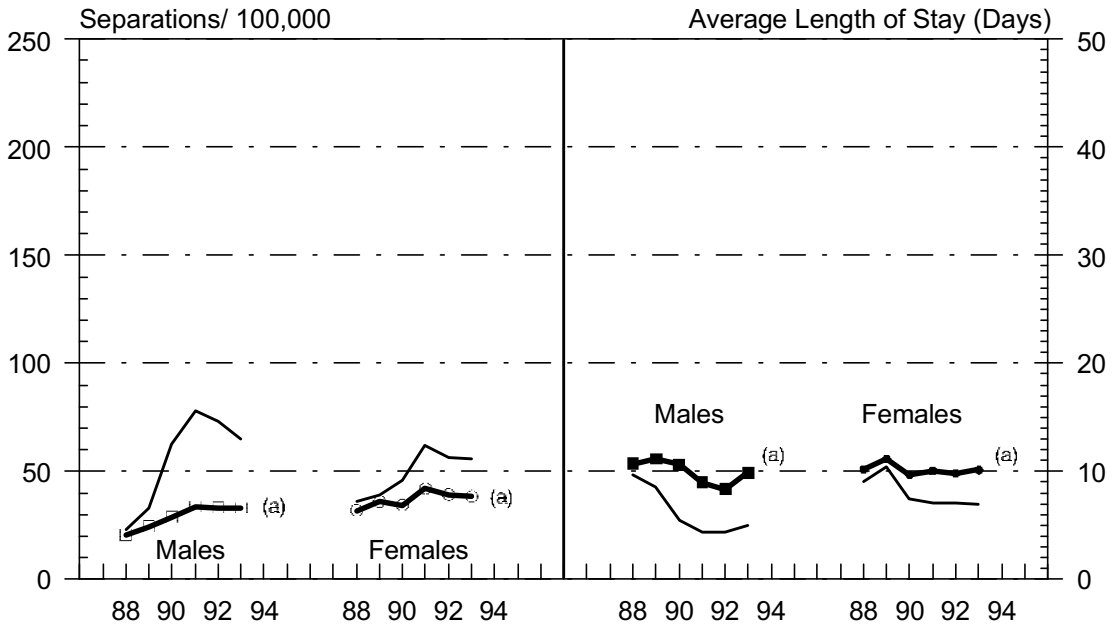
Note: (a) Day-only admissions excluded.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

Apart from an increase in day-only admissions for women, there were no other clear trends in the data for eating disorders and obsessive-compulsive disorders (Figure 7.6). The difference in the rates for men and women is mainly due to the higher frequency of eating disorders in women. The relatively long lengths of stay may reflect the severity of illness in hospitalised patients.

Acute stress reactions are mainly defined in terms of their aetiology, namely the existence of identified stressful situations to which the mental disorder is a disproportionate reaction. Many of the diagnoses in this group were poorly defined (see Table 7.3). These disorders accounted for 2,130 episodes (5.6 per cent) of inpatient care in 1993/94, and 5.9 per cent when day-only admissions were included.

In 1993/94, the rates of hospitalisation for acute stress reaction were almost the same for men and women: 35 and 40 per 100,000 population respectively. The average length of stay was 10 days. Over the six-year period there was an increase of 75 per cent in the rate of inpatient episodes for men and a 30 per cent increase for women, but average length of stay remained stable for both sexes. For both men and women there was a large increase in the rate of day-only admissions. For men this was particularly marked: since 1990/91 there have been as many or more day-only admissions than other inpatient episodes.

Figure 7.7 Age-standardised Hospital Separations and Average Length of Stay for Acute Stress Reactions (DRG 851), by sex, NSW 1988/89-1993/94



Note: (a) Day-only admissions excluded.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

7.9.2 Access and equity

There are no suitable prevalence data on which to estimate the absolute access to care.

The inpatient separation rate (excluding day-only admissions) for eating disorders and obsessive compulsive disorders by men of non-English speaking background is about 40 per cent lower, and by women about 75 per cent lower than the NSW average rate. The separation rate in Aboriginal and Torres Strait Islander men was about 10 per cent higher than the NSW average rate, and for women was about 70 percent lower.

The inpatient separation rate (excluding day-only admissions) for acute stress reactions in people of non-English speaking background was about 20 per cent higher, and in women about 15 per cent lower than the NSW average rate. The separation rate for Aboriginal and Torres Strait Islander men was about 10 per cent higher than the NSW rate, and in women were more than twice the NSW rate.

It is not possible to determine from these data whether these variations reflect differences in need or differences in access. The most striking finding is that the relative separation rate for men of non-English speaking background for acute stress reactions is the only rate for either men or women in this group which exceeds the state average for any diagnosis.

7.9.3 Quality of Care

For eating disorders and obsessive compulsive disorders the 28-day readmission rates were 20 per cent in men and 80 per cent in women for day only admissions. As most admissions in women were for eating disorders, these admissions are likely to have occurred within programs or as regular follow-up visits. For acute stress reactions the day-only readmission rates were 51 per cent for men and 49 per cent for women, and are very similar to those for other disorders already considered.

The 28-day inpatient readmission rates for eating disorders and obsessive compulsive disorders were 10 per cent for men and 16 per cent for women, and for acute stress reactions were 13 per cent for men and 17 per cent for women.

7.10 Child and adolescent disorders

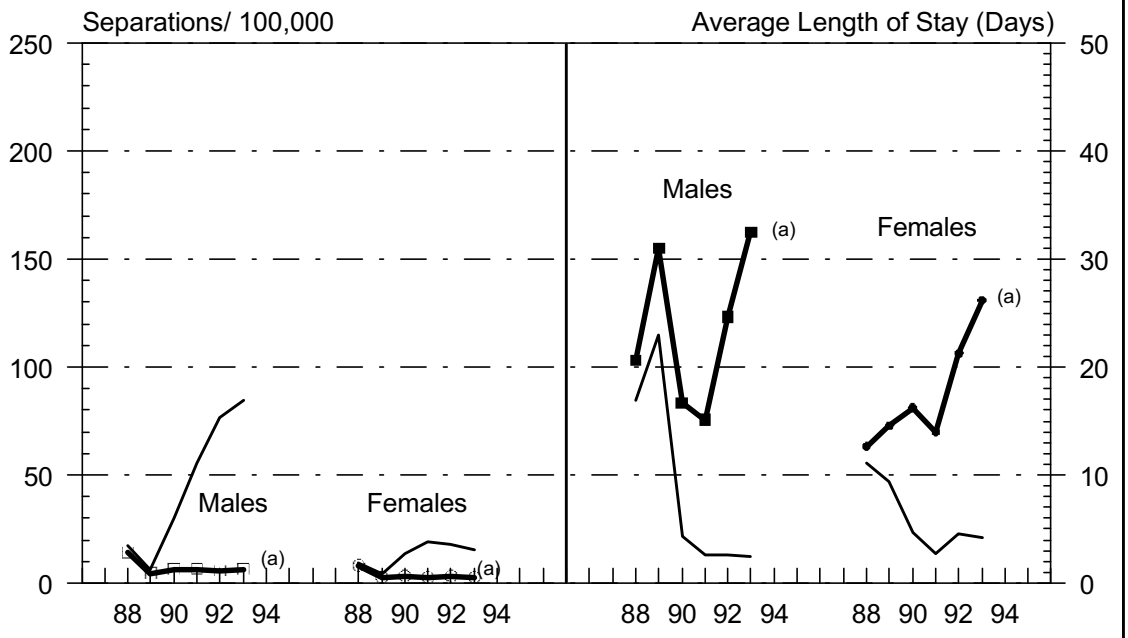
7.10.1 Trends in hospital care

Hospitalisation is rarely the treatment of choice for child and adolescent disorders, and most inpatient care is provided by a small number of specialist units.

Figure 7.8 shows the data for DRG 848 (Disorders originating in childhood and adolescence), mainly to demonstrate that this DRG is unsatisfactory. Most child and adolescent inpatients fall into other diagnostic groups. This group excludes conduct disorders but includes oppositional disorder and attention deficit disorder, even though these disorders are similar on clinical grounds[21]. This DRG also includes adults, such as those with developmental delay.

Details on the number of admissions are found in Tables 7.2 and 7.3. The main features of Figure 7.8 are the low inpatient admission rates, the high rate of day-only admissions, and the relatively long stays for those admitted.

Figure 7.8 Age-standardised hospital separations and average length of stay for Disorders originating in Childhood and Adolescence (DRG 848), by sex, NSW 1988/89-1993/94



Note: (a) Day-only admissions excluded.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

7.10.2 Access and Equity

Prevalence data for child and adolescent disorders should be interpreted with a great deal of caution. The best available data in Australia on the rate of emotional and behavioural problems in children and adolescents comes from the recently completed Western Australian Child Health Survey[22] (WACHS). The WACHS found that 17.7 per cent of children and adolescents have emotional and/or behavioural problems warranting attention, and this is consistent with the often reported rate of 20 per cent.

The instruments used for this in the WACHS were the Achenbach Child Behavior Checklists (CBCL) which effectively define 'abnormal' as a total number of recorded problems more than one standard deviation above the mean of a US 'normal' population. There is not a great deal of cross-cultural variation in these scores, and since 16 per cent of a Normal distribution lies more than one standard deviation above the mean, it is largely a matter of definition that about 16 per cent of children and adolescents are found to have an 'abnormal' level of problems. Of these 16 per cent of children, about one-third (about 5 per cent) are considered, by caregivers or teachers who provide the information, as in need of professional help. By contrast, the 'clinical' range on the CBCL is set at a problem level shown by only 2 per cent of children and adolescents.

Using this criterion for need of specialist services, and even limiting the population to these between 5-17, there are approximately 2 per cent of 1.1 million, or 22,000 children and adolescents with detectable problems warranting specialist attention. The hospitalisation rate is an extremely small proportion of this figure and it is necessary to find other evidence that care is being provided.

There were 526 occasions of service by Child and Family Mental Health teams reported on the day of the Community Mental Health Census in 1991[1]. This may be translated into an estimated 137,000 occasions of service per year, or 12,400 per 100,000 children aged 5-17 years. However, as there is no information on the problem severity levels of the children seen, the data cannot be directly related to treatment prevalence. This illustrates the need for standard assessment of severity in service data. On the assumption that all the cases seen required professional attention, the services provided amount to 6 sessions with a Child and Family Mental Health Team per case per year.

The only other source of information is the Department of School Education which reported 520 students with emotional disturbance and 79 students with behavioural disturbance in support classes and schools for specific purposes at mid-year 1994, a rate of 79 per 100,000 total students[23].

In summary, although a wide range of facilities provide a wide variety of services for children and adolescents with problems, with the currently available data it is not possible to establish a clear relationship between the severity of the problems and the services provided for them. That is, whether an appropriate service is being provided for children and adolescents meeting the criterion for 'severe' disturbance (2 per cent), or for problems judged by parents and teachers to warrant attention (5 per cent) or the criterion-based figure of 17.7 per cent provided by the WACHS.

7.11 Personality disorders

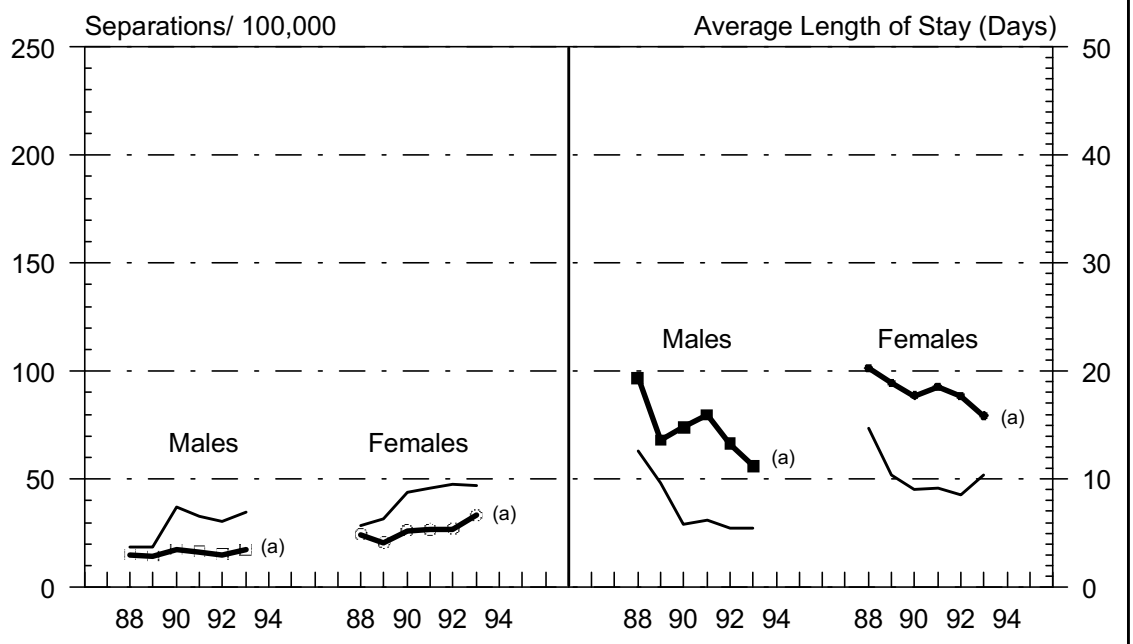
7.11.1 Trends in hospital care

The diagnostic criteria for any of the personality disorders require a five-year history of disability attributable to the disorder. The diagnosis thus describes a chronic pattern of emotional, social, and/or occupational dysfunction, rather than an acute state. Although personality disorders are common as co-morbid diagnoses, they are not expected to be a common primary reason for hospitalisation. Nevertheless. these disorders accounted for 1,486 episodes (3.9 per cent) of inpatient care in 1993/94, and 4.0 per cent of all episodes when day-only admissions are included (Table 7.2). More than a quarter of inpatient admissions for 'personality disorder' were not otherwise specified (Table 7.3).

For men with personality disorders there were 20 inpatient episodes of care per 100,000 population in 1993/94, and this rate remained unchanged from 1988/89. For women there were 35 episodes of inpatient care per 100,000 in 1993/94 and this rate was 25 per cent higher than in 1988/89. In 1993/94, the average length of stay was about 11 days for men and 16 days for women, and had decreased by 40 per cent for men and 20 per cent for women since 1988/89.

As with most other diagnostic groups, there has been a substantial increase in day-only admissions over the 6 years. For men there were at least as many day-only admissions as inpatient admissions since 1990/91.

Figure 7.9 Age-standardised hospital separations and average length of stay for Personality Disorders (DRG 850) by sex, NSW 1988/89-1993/94



Note: (a) Day-only admissions excluded.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

7.11.2 Access and Equity

The USNCS and the US Epidemiological Catchment Area (ECA) studies[24] provide estimates of prevalence for only one of the personality disorders, antisocial personality disorder (ASPD). The only estimate available is lifetime prevalence, which was 5,800 per 100,000 for men, and 1,200 per 100,000 for women. Since ASPD accounts for only about 8 per cent of inpatient episodes, the inpatient treatment rates are very low - about one inpatient episode for a thousand or more prevalent cases. However, inpatient care would not ordinarily be considered as either necessary or appropriate for most cases of ASPD, and there is no way to judge the appropriateness of the inpatient treatment rate.

The relative utilisation of inpatient services (excluding day-only admissions) for personality disorders (DRG 850) by men of non-English speaking background was about one-third, and by women about half the NSW average separation rate. The separation rate for Aboriginal and Torres Strait Islander men was about 80 per cent higher than NSW average separation rate, and for women was about 35 per cent lower. It is not possible to determine from ISC data whether these variations reflect differences in need or differences in access.

7.11.3 Quality of Care

For day-only admissions the 28-day readmission rates were 39 per cent in men and 57 per cent in women. For inpatient admissions, the readmission rates were 24 per cent for men and 30 per cent for women. The diagnosis of 'unspecified personality disorder', which was assigned in more than 25 per cent of all inpatient admissions (Table 7.3), is a poor explanation of a reason for inpatient care, particularly as inpatient care is rare for the group as a whole.

As was found for schizophrenic disorders, affective disorders, and anxiety disorders, the 28-day readmission rates were very high for day-only admissions, suggesting that these were day-only programs of care, and for inpatients the readmission rates were high enough to warrant further investigation.

7.12 Attempted suicide

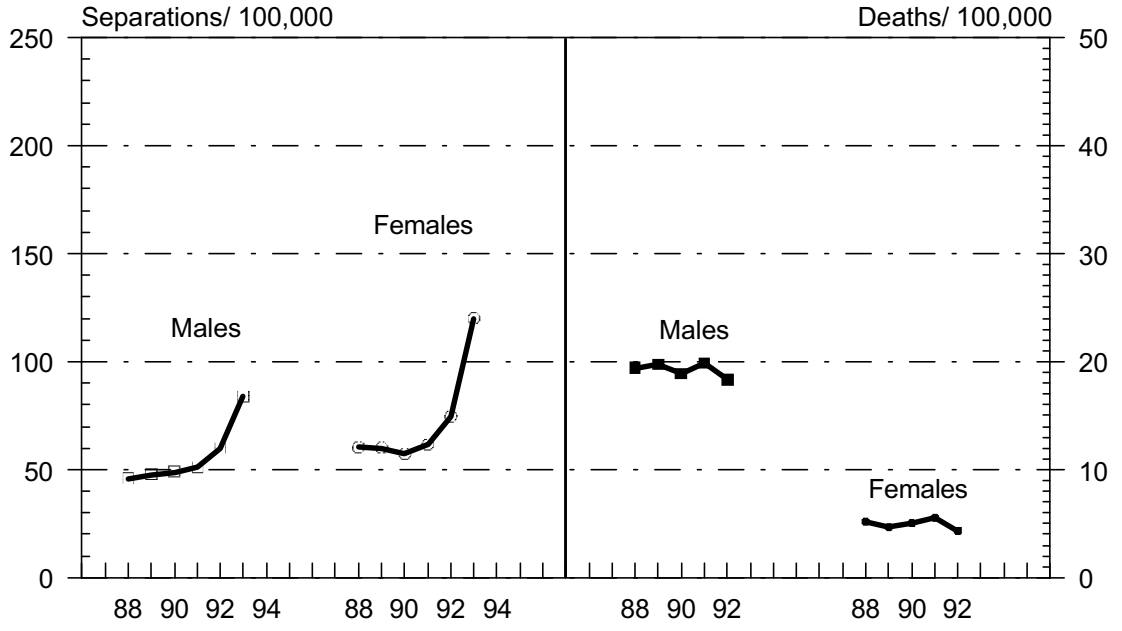
7.12.1 Trends in hospital care

Attempted suicide is not a mental health problem in itself. Nevertheless, it is perceived to be so by the public, and is addressed by mental health plans in NSW[25]. Information on suicide attempts and deaths in NSW is shown in Figure 7.10.

Only about 7 percent of those who make a fatal suicide attempt reach hospital before they die. Most die before they are found. The total attempt rate may be estimated by summing the rate of attempts resulting in death and the rate of attempts resulting in hospitalistion. This total attempt rate is an underestimate, as an unknown number of people attempt suicide, are not hospitalised, and nevertheless survive.

Suicide attempts accounted for 2,475 episodes of inpatient care in 1993/94 for males, and 3,494 for females. The length of stay for these episodes was very short: 1-2 days. The rate of inpatient episodes in 1993/94 was about 80 per 100,000 persons for men, and about 120 per 100,000 for women. This represented an increase of about 60 per cent for men, and 100 per cent for women since 1991/92. Prior to 1991/92 the rates were stable.

Figure 7.10 Age-standardised hospital separations for suicide attempts, NSW 1988/89-1993/94, and age-standardised deaths by suicide, NSW 1988-92



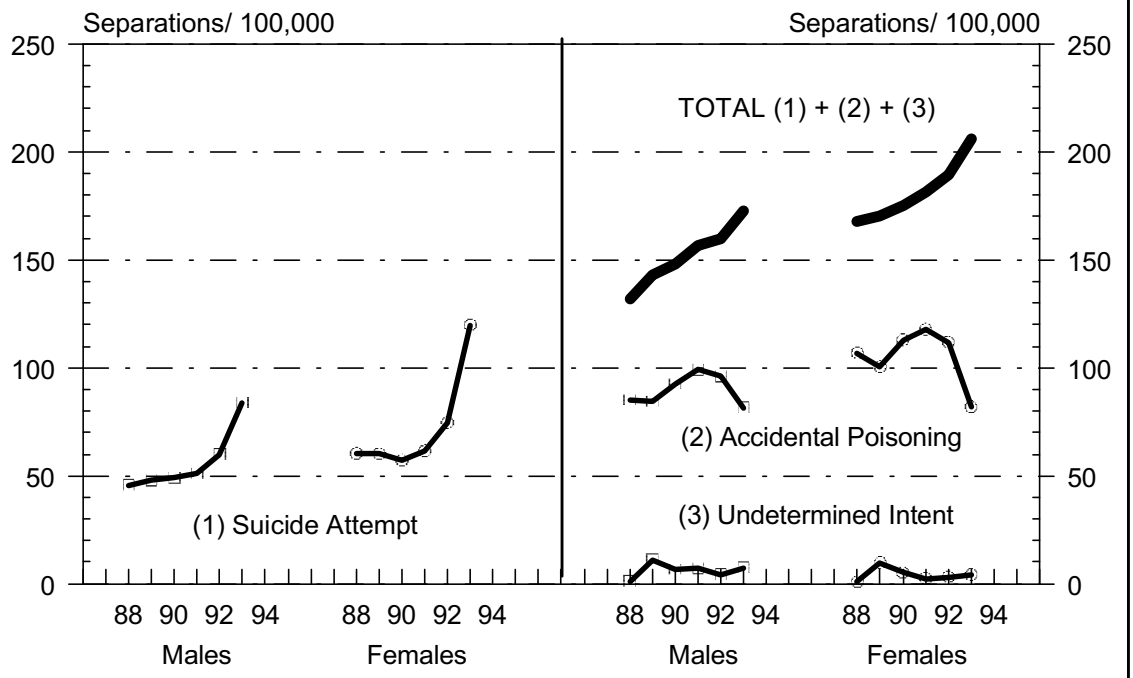
Data source: Australian Bureau of Statistics mortality data, NSW Inpatient Statistics Collection, and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

The possible reasons for this dramatic change include changes in hospital admission policy, or a change in the determination of the patient's intention. Figure 7.11 shows the trends for suicide attempts, self-poisonings coded as 'accidental' rather than 'intentional', and all injuries where intent was not determined. There was a substantial decrease in the rates of 'accidental self-poisoning' over the same period as the increase in the suicide attempt rate occurred. Some of the change in rates may reflect better ascertainment of intention. However, there was no change in the rate of admissions with 'undetermined intent', and the overall rate for all three classes of injury rose by about 5 per cent per annum since 1988/89.

The rate of suicide attempts resulting in death remained stable at about 20 per 100,000 in men, and 5 per 100,000 in women, between 1988 and 1992.

Further information on suicide and attempted suicide may be found in Chapter 8.

Figure 7.11 Age-standardised hospital separations for Suicide Attempts, Accidental Poisonings, and Injuries where Intent is Undetermined by sex, NSW 1988/89 to 1993/94



Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department .

7.13 Alcohol abuse, and dependence

7.13.1 Trends in hospital care

Alcohol abuse and dependence accounted for 6,664 episodes (17.5 per cent) of inpatient care in 1993/94, and 15.6 per cent of all episodes when day-only admissions were included (Table 7.2).

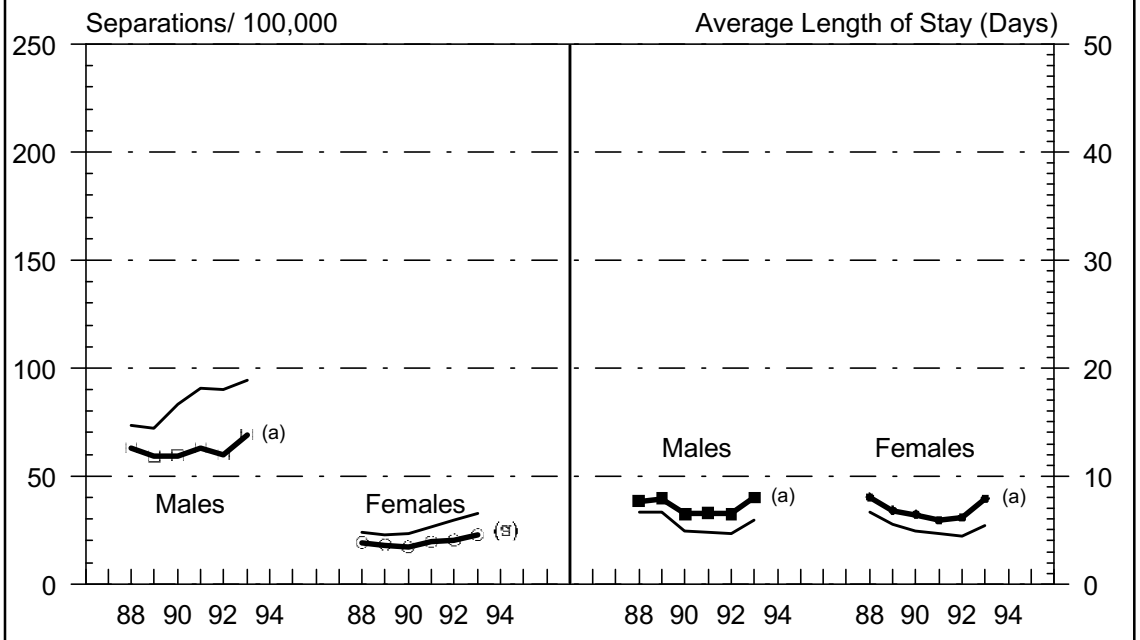
In 1993/94, for men there were about 70 inpatient episodes of care per 100,000 population, averaging 8 days, for the treatment of intoxication and withdrawal (Figure 7.12), and 100 episodes, averaging 13 days, for the treatment of abuse and dependence (Figure 7.13). The corresponding rates for women were about one-third those for men, at 25 and 30 per 100,000 population respectively, and lengths of stay were about the same as men.

Over the six years there was no net change in either the rate of hospitalisation or the average length of stay. There was a 25 per cent rise in the rate of hospitalisation for abuse and dependence in men between 1988/89 and 1990/91, after which the rates declined to the former level. For both men and women there was a large increase in the rate of day-only admissions.

7.13.2 Access and Equity

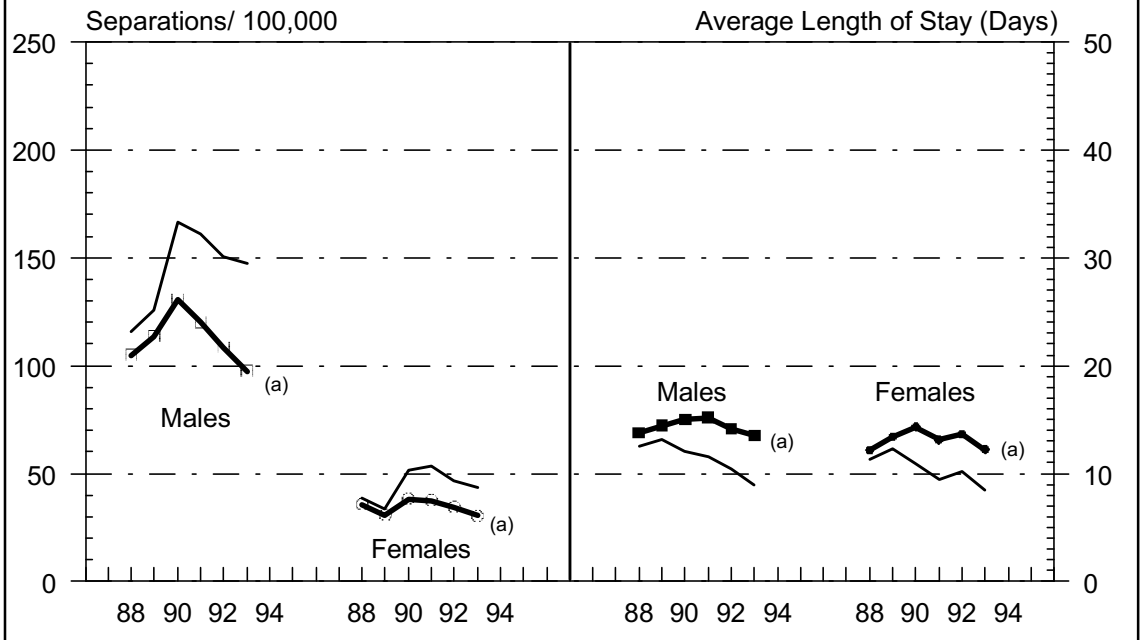
The USNCS provides estimates of prevalence only for a composite group of alcohol use disorders (Table 7.1), of 14,100 per 100,000 for men and 5,300 per 100,000 for women. It is perhaps less justifiable to apply these figures to NSW than it is to apply the prevalences for mental illness diagnoses, as alcohol consumption levels differ between cultural groups. If USNCS figures are applied the estimated treatment rates are one admission (for acute intoxication and withdrawal or abuse and dependence) per 80 prevalent cases in men, compared with one per 100 prevalent cases in women.

Figure 7.12 Age-standardised hospital separations and average length of stay for Alcohol Intoxication and Withdrawal (DRG 860) by sex, NSW 1988/89-1993/94



Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

Figure 7.13 Age-standardised hospital separations and average length of stay for Alcohol Abuse and Dependence (DRG 862) by sex, NSW 1988/89-1993/94



Note: (a) Day-only admissions excluded.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

This appears to be a low treatment rate but, as with depression and anxiety, the USNCS diagnosis has a relatively low 'threshold' which identifies cases of a wide range of severity. There is evidence that 'patients with low dependence severity may be better candidates for outpatient of less intensive therapies than persons with high severity [and] since severity of dependence is usually correlated with associated problems, it may also indicate which patients need a wide range of services and which will progress with only drug-focused treatment'[26]. As there is currently no standard procedure for estimating the need for inpatient services, it is not possible to clearly relate service utilisation to access.

The relative utilisation of inpatient services (excluding day-only admissions) for acute alcohol intoxication and withdrawal (DRG 860) by men and women of non- English speaking background was about 60 per cent lower than the NSW average separation rate. The hospital separation rate for Aboriginal and Torres Strait Islander men and women was about 14 times the NSW average separation rate.

The relative utilisation of inpatient services (excluding day-only admissions) for alcohol abuse and dependence (DRG 862) by men and women of non-English speaking background was about one-third of the NSW average separation rate. The separation rate for Aboriginal and Torres Strait Islander men was about 11 times the NSW average separation rate, and women had a rate about 7 times the average.

It is not possible to determine from these data whether these differences reflect differences in need or differences in access. The very high rates for Aboriginal and Torres Strait Islander men and women indicate a high level of treatment, and presumably a high level of need.

7.13.3 Quality of Care

For the more 'acute' disorders of intoxication and withdrawal, the readmission rates within 28 days were low for day-only admissions (19 per cent for men, 18 per cent for women) and high enough to warrant investigation for inpatient admissions (12 per cent for men, 11 per cent for women).

For abuse and dependence, the readmission rates within 28 days of discharge followed the pattern found in schizophrenic disorders, affective disorders, and anxiety disorders. The readmission rates were very high for day-only admissions (42 per cent for men, 50 per cent for women), suggesting that these were at least partly due day-only programs of care. For inpatients the readmission rates are high enough to warrant investigation (13 per cent for men and women).

7.14 Drug abuse and dependence

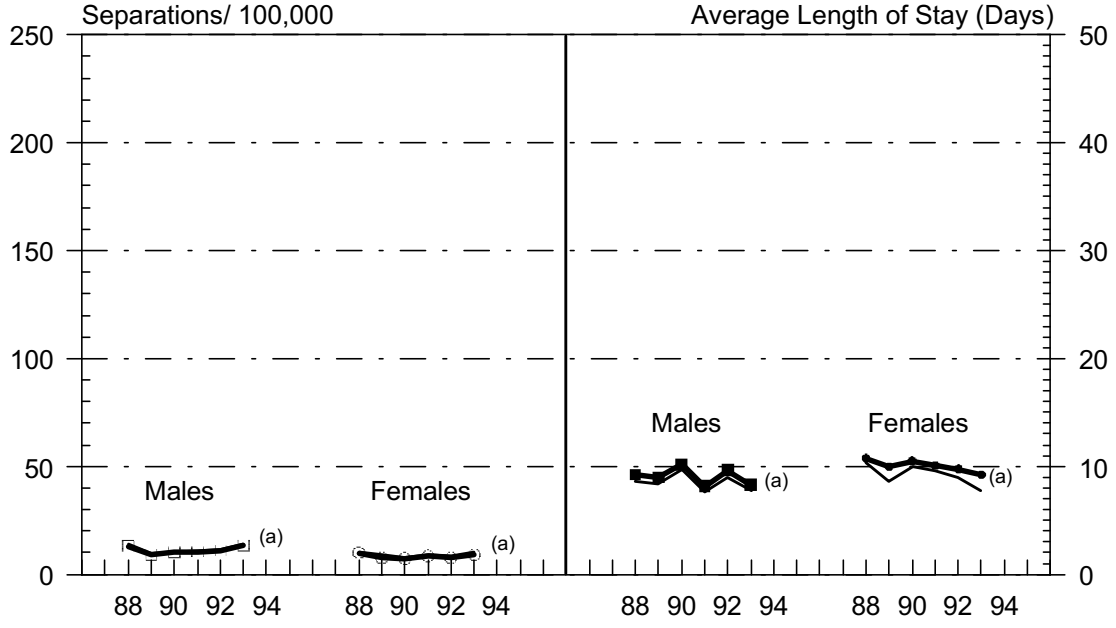
7.14.1 Trends in hospital care

Drug abuse and dependence, including treatment for intoxication and withdrawal, accounted for 3,229 episodes (8.5 per cent) of inpatient care in 1993/94, and 7.0 per cent of all episodes when day-only admissions were included (Table 7.2).

In 1993/94, for men there were about 10 inpatient episodes of care per 100,000 population, averaging 8 days, for the treatment of intoxication and withdrawal (Figure 7.14), and 50 episodes, averaging 9 days, for the treatment of drug abuse and dependence (Figure 7.15). The corresponding rates for women were 10 and 30 per 100,000 population, and lengths of stay were about the same as for men.

Over the six years there was no net change in either the rate of hospitalisation or the average length of stay. Day-only admissions were not common for the treatment of intoxication and withdrawal, and increased gradually for the treatment of abuse and dependence. For both men and women there was a large increase in the rate of day-only admissions.

Figure 7.14 Age-standardised hospital separations and average length of stay for Drug (other than alcohol) Intoxication and Withdrawal (DRG 861), by sex, NSW 1988/89-1993/94



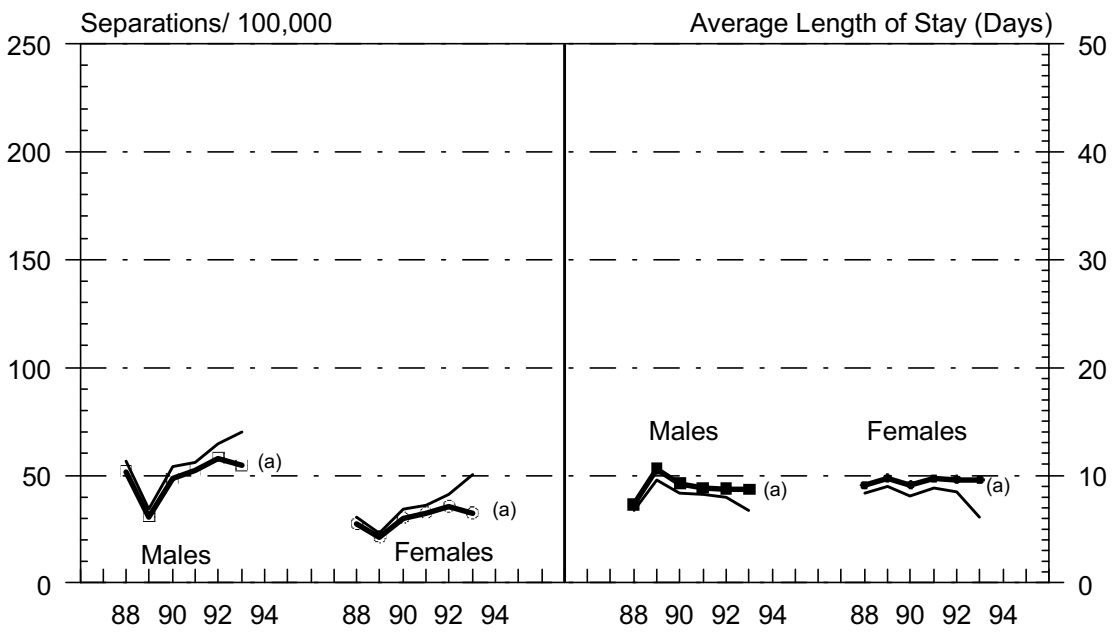
Note: (a) Day-only admissions excluded.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

7.14.2 Access and Equity

The USNCS provides estimates of prevalence for a composite group of non-alcohol drug use disorders of 5,100 per 100,000 for men and 2,200 per 100,000 for women (Table 7.1). It is perhaps not justifiable to apply these figures to the NSW population, since cultural patterns of drug use tend to differ even more than those for alcohol. However, with this qualification, estimates of the treatment rate are one admission (for acute intoxication and withdrawal or abuse and dependence) per 85 prevalent cases in men, compared with 55 in women.

These rates raise the same issues of severity as were discussed for alcohol in the previous section (7.13). In addition, there were 9,700 clients on methadone programs in NSW in mid-1995, which would yield a treated prevalence of about 280 per 100,000 if they were all in the 15-54 age group. With current data it is not possible to determine whether supply of services is appropriate to the need.

Figure 7.15 Age-standardised hospital separations and average length of stay for Drug (other than alcohol) Abuse and Dependence (DRG 863) by sex, NSW 1988/89-1993/94.



Note: (a) Day-only admissions excluded.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

The relative utilisation of inpatient services (excluding day-only admissions) for non-alcohol drug intoxication and withdrawal (DRG 861) by men of non-English speaking background was about one-third, and by women about 40 per cent of the NSW average separation rate. The separation rate of Aboriginal and Torres Strait Islander men was about 35 per cent higher than NSW average separation rate, and 45 per cent higher for women.

The relative utilisation of inpatient services (excluding day-only admissions) for non-alcohol drug abuse and dependence (DRG 863) by men of non-English speaking background was about 45 per cent of the NSW average separation rate. Women had a rate about 35 per cent of the average. Separation rates for Aboriginal and Torres Strait Islander men and women were more than twice the NSW average separation rate. It is not possible to determine from these data whether these variations reflect differences in need or differences in access.

7.14.3 Quality of Care

For the more 'acute' disorders of intoxication and withdrawal, the readmission rates within 28 days were low for day-only admissions (zero per cent for men, 15 per cent for women) and high enough to warrant investigation for inpatient admissions (12 per cent for men, 11 per cent for women).

For the more 'chronic' disorders of abuse and dependence, the readmission rates within 28 days of discharge followed the pattern found in schizophrenic disorders, affective disorders, and anxiety disorders. The readmission rates were very high for day-only admissions (32 per cent for men, 47 per cent for women), suggesting that these were partly due to day-only programs of care. For inpatients the readmission rates were high enough to warrant investigation (9 per cent for men, 12 per cent for women) though lower than for other disorders.

7.15 Dementia and disturbances of cerebral function

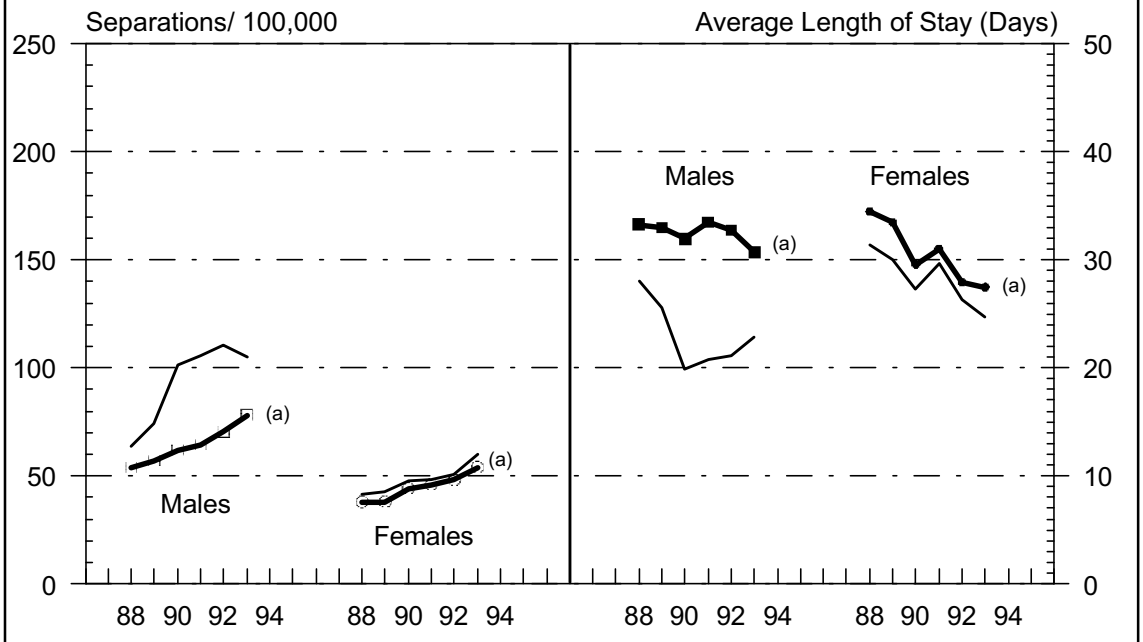
7.15.1 Trends in hospital care

This group of disorders accounted for 4,153 episodes (10.9 per cent) of inpatient care in 1993/94, and 8.4 per cent of all episodes when day-only admissions were included (Table 7.2).

In 1993/94, for men there were about 80 inpatient episodes of care per 100,000 population, averaging 30 days, and for women about 50 inpatient episodes per 100,000, averaging 28 days.

Over the six years from 1988/89 there was a 50 per cent increase in the rate of hospitalisation. Average length of stay decreased by 10 per cent for men and 20 per cent for women over that time. For men there was a large increase in the rate of day-only admissions, and for women there was a slight increase, and day-only admissions were common.

Figure 7.16 Age-standardised hospital separations and average length of stay for Dementia and Disturbances of Cerebral Function (DRG 056), by sex, NSW, 1988/89 to 1993/94



Note: (a) Day-only admissions excluded.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

7.15.2 Access and Equity

As there is no reliable information on the prevalence of dementia, there are no estimates of absolute equity of access.

The relative utilisation of inpatient services (excluding day-only admissions) for dementia and disorders of cerebral function (DRG 056) by men of non-English speaking background was about 30 per cent lower than the NSW average separation rate, and by women about 40 per cent lower. The separation rate for Aboriginal and Torres Strait Islander men was about twice the NSW average separation rate, and women had a rate about 50 per cent higher. It is not possible to determine from these data whether these variations reflect differences in need or in access. Further information on dementia may be found in chapter 13.

7.15.3 Quality of Care

For day-only admissions the readmission rates within 28 days of discharge were 36 per cent in men and 24 per cent in women. For inpatient admissions the readmission rates were 20 per cent for men and 18 per cent for women.

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CHAPTER 8
INJURY

- Injury is a leading cause of preventable morbidity and mortality in NSW. In 1992, 6 per cent of all deaths were due to injuries and in the financial year 1992/93, 10 per cent of all hospital separations were due to injuries.
- The mortality rate due to injury has been falling since the early 1970s, to 36.5 per 100,000 in 1992. The standardised hospital separation rate, however, increased from 14 per 1,000 in 1988 to 18 per 1,000 in 1992/93.
- Overall, males had higher death and hospital separation rates than females.
- Hospital separation rates for injury in Aboriginal and Torres Strait Islander peoples were twice the rate for the total population for both males and females.
- The death rate due to injury in Aboriginal and Torres Strait Islander males was higher than the total population but the rate for females was lower then the total population.
- Overall, the commonest causes of death due to injury regardless of intent were motor vehicle accidents and falls, followed by poisoning, suffocation and firearm injuries.
- The commonest causes of hospital separation regardless of intent were falls and poisoning, followed by sport related, injuries caused by being struck by an object, and cutting and piercing injuries.
- Of the deaths due to injury, 64 per cent were reported as accidental, 31 per cent as self-inflicted and 4 per cent as inflicted by others.
- Of the hospital separations due to injury, 91 per cent were reported as accidental, 4 per cent as self-inflicted and 5 per cent as inflicted by others.
- Most rural Districts had significantly higher death rates due to injury.

8.1 The scope of injury

Injury is defined as *bodily harm resulting from some external force or energy acting on a person*. Injuries may be intentional or unintentional (accidental). Intentional injuries, may be self-inflicted, or inflicted by others. The types of injuries which may result in physical damage include cuts, abrasions, sprains, fractures, stings or bites, burns (including sunburn and flashburn), electrocution, concussion and poisoning.

Bodily harm resulting from the absence of essential elements, such as heat or oxygen, is also classified as injury. Examples include drowning, frostbite, hypothermia and dehydration. Physical harm caused by long term exposure to low levels of energy, as occurs in overuse injuries and back pain, is included in the definition of injury. Medical misadventure and injury due to post operative complications are also usually included.

8.2 Injury in NSW and Australia

Injury is a leading cause of preventable morbidity and mortality in NSW. In 1992, 2,370 people in NSW died following an injury and these deaths accounted for 6 per cent of all deaths. The crude mortality rate for injury in NSW was 40.1 per 100,000 population in 1992, compared with the Australia-wide figure of 42.8 per 100,000.

Between July 1992 and June 1993, there were 156,176 hospitalisations due to injury, including medical misadventure and post operative complications. This accounted for 10 per cent of all hospitalisations. The crude hospital separation rate due to injury in NSW was 25.8 per 1,000 population, compared with 24.6 per 100,000 Australia-wide.

Across all age groups and overall NSW had a slightly lower death rate due to injury than Australia as a whole (Table 8.1, Figure 8.1). However, NSW hospital separation rates for injury were slightly higher than those for Australia as a whole (Table 8.1, Figure 8.2).

Table 8.1 Injury: standardised hospital separation and mortality rates, NSW and Australia 1992

	Standardised hospital separation rate per 1,000 population	Standardised mortality rate per 100,000 population
NSW	28	81
Australia	25	85

Note: Rates are age- and sex-standardised to the 1991 Australian Census population.
Data sources: Mortality data, NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

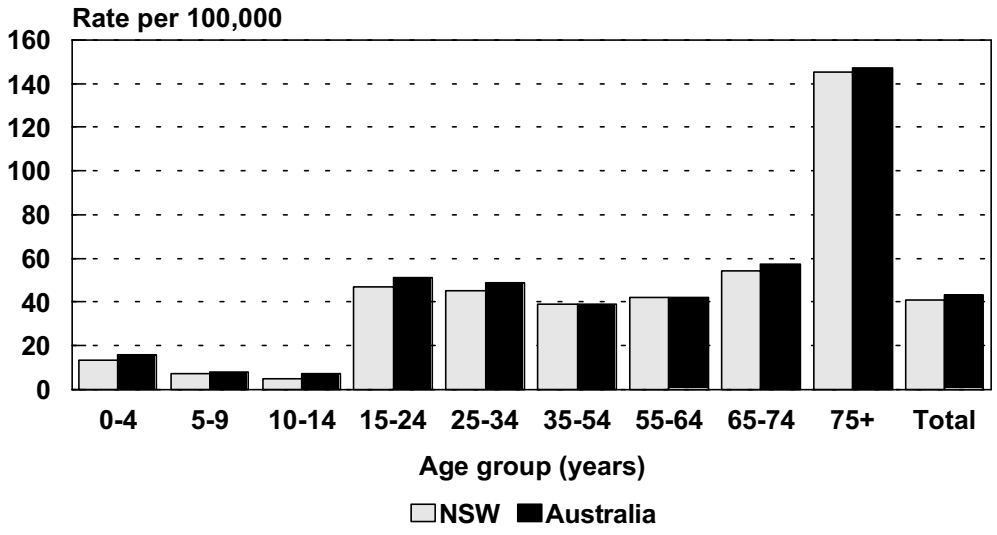
8.3 Trends in injury occurrence

The mortality rate due to injury has been falling since the early 1970s, from a standardised mortality rate in 1972 of 67.6 per 100,000 population to 36.5 per 100,000 population in 1992 (Figure 8.3). However, hospital separations due to injury showed the opposite trend, increasing since 1988 from a standardised separation rate of 14 per 1,000 to 18 per 1,000 population in the financial year 1992/93 (Figure 8.4).

Males had higher death rates due to injury than females at all ages (Figure 8.5). Overall, the death rate for males in 1992 was 53.9 per 100,000 compared with 19.1 per 100,000 for women.

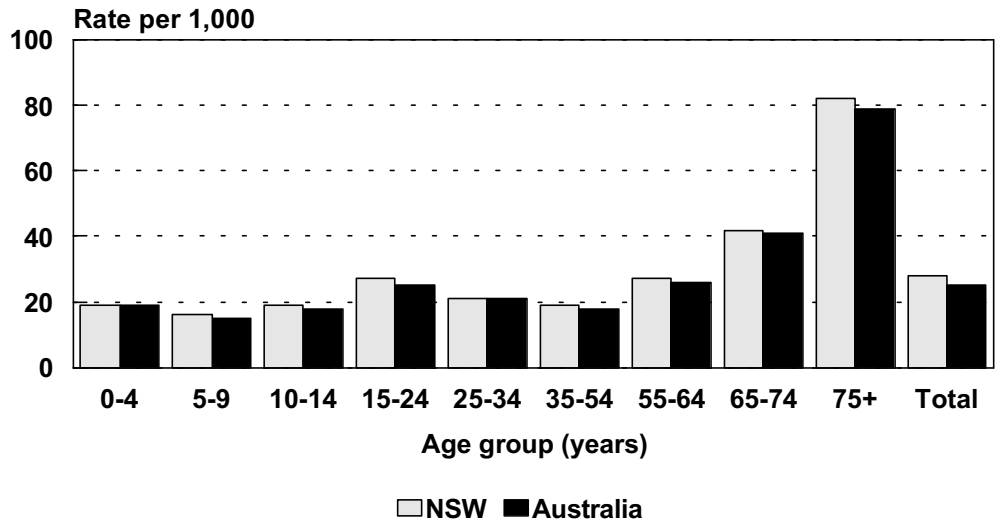
Hospitalisations for injury were more common among males up to 65 years of age and among females after 65 years of age (Figure 8.6). Overall, the rate for males was 22 per 1,000 for males and 14 per 1,000 for females.

Figure 8.1 Sex-standardised injury mortality rates by age, NSW and Australia 1992



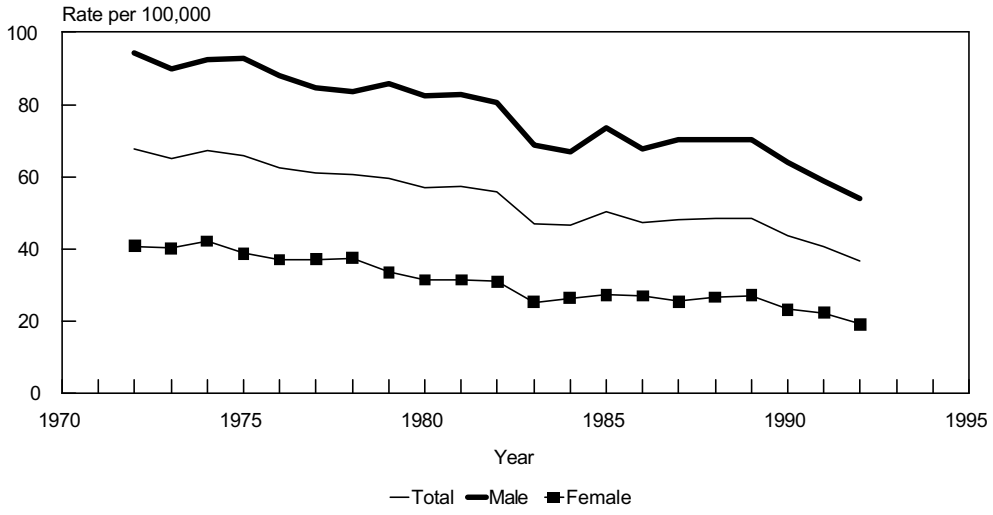
Note: Rates standardised to the 1991 Australian Census population.
Data source: Austrailan Bureau of Statistics mortality data and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

Figure 8.2 Sex-standardised injury hospitalisation rates by age, NSW and Australia 1992



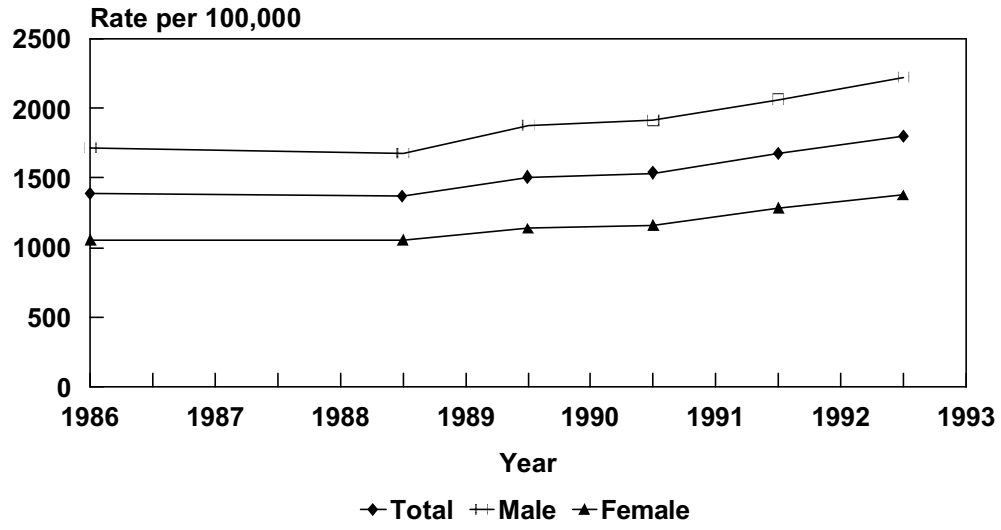
Note: Rates standardised to the 1991 Australian Census population.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

Figure 8.3 Age-standardised injury mortality rates by sex, NSW 1972-92



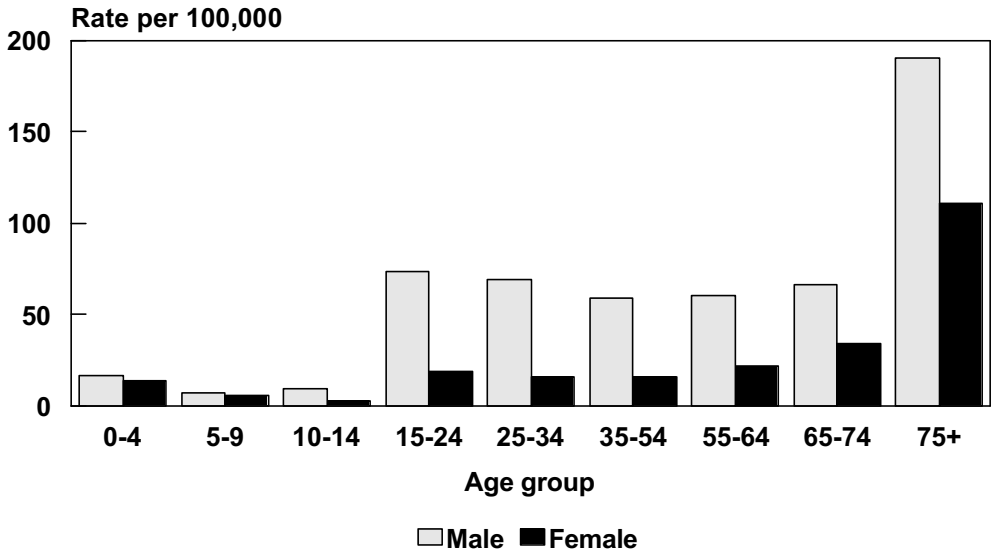
Note: Rates standardised to the 1991 Ausralian Census population.
Data source: Australian Bureau of Statistics mortality data and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

Figure 8.4 Age-standardised injury hospital separation rates by sex, NSW 1972-92



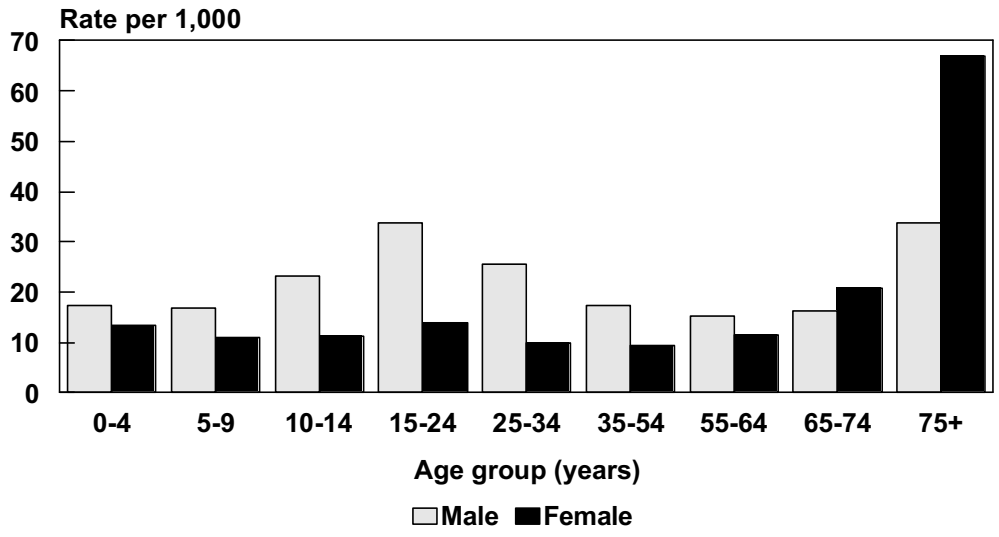
Note: Rates standardised the the 1991 Australian Census population.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

Figure 8.5 Mortality due to injury by age and sex, NSW 1992



Data source: Australian Bureau of Statistics mortality data and population estimates (HOIST) Epidemiology Branch, NSW Health Department.

Figure 8.6 Hospital separations due to injury by age and sex, NSW 1992-93



Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

8.4 Causes of injury

The causes of deaths and hospital separations due to injury are coded using external cause classifications from the 9th revision of the International Classification of Diseases Clinical Modification (ICD9-CM) manual. In this report, these injury causes have been reported by the major causes of injury using a grouping proposed by the National Injury Surveillance Unit[1].

Overall, the most common causes of death from injury were motor vehicle accidents and falls, followed by poisoning, suffocation and firearm injuries (Table 8.2). For all the most common causes of injury, deaths rates were higher among males than females. In addition to these deaths, a further 43 deaths were attributed to medical misadventure or post operative complications.

The most common reasons for hospitalisation due to injury were falls followed by poisoning and sport related injuries. Hospitalisation was more common among males than females for most causes of injury. Females were more frequently hospitalised for falls, poisoning and horse-related injuries. In addition to these injuries, 42,062 hospitalisations were due to post operative complications and medical misadventure.

8.5 Injury occurrence and intention to harm

Most injuries were unintentional or accidental (Table 8.3). A large proportion of injury deaths (31 per cent) were self-inflicted, but self-inflicted injuries accounted for only 4 per cent of hospitalisations. Injuries inflicted by others accounted for 4 per cent of deaths and 5 per cent of hospitalisations.

8.5.1 Accidental injuries

Overall, the most common causes of accidental injury deaths were motor vehicle accidents (30 per cent), followed by falls (22 per cent) and pedestrian injuries (10 per cent) (Table 8.4). Although males had a greater number of accidental injuries overall, the pattern of causes was similar for both genders.

The most common causes of hospital separation due to accidental injury for all ages were falls (37 per cent), followed by sports-related injuries (10 per cent) and poisoning (6 per cent). Intentionality for poisoning is not well reported and a large proportion of the cases reported as accidental may have been self-inflicted.

Table 8.2 Mortality and hospital separations for the most common cause of injury, by sex

Cause of Injury	Deaths, 1992						Hospital separations 1992/93					
	Male		Female		Total		Male		Female		Total	
	No.	Rate/ 100, 000	No.	Rate/ 100, 000	No.	Rate/ 100, 000	No.	Rate 100, 000	No.	Rate/ 100, 000	No.	Rate/ 100, 000
Motor vehicle related	301	10.2	159	5.2	460	7.7	3713	127.1	2812	93.6	6525	110.4
Pedestrian	119	4.2	38	1.2	157	2.7	1172	40.3	739	24.0	1911	32.1
Motorcyclist	56	1.9	2	0.1	58	1.0	2209	75.1	208	7.3	2417	41.2
Pedal cyclist	9	0.3	2	0.1	11	0.2	1409	47.6	3.76	13.2	1785	30.4
Horse related	6	0.2	1	0.03	7	0.1	626	21.1	842	29.6	1468	25.4
Other transport	57	2.0	6	0.2	63	1.1	2365	80.2	1225	41.5	3590	60.8
Machinery	20	0.7	2	0.1	22	0.4	2460	82.5	248	8.4	2708	45.4
Poisoning	264	8.9	85	2.8	349	5.8	7237	250	9381	305.5	16618	277.7
Falls	203	8.2	182	4.6	385	6.4	16014	571.3	20448	587.5	36462	579.4
Burns	33	1.2	19	0.5	52	0.9	1063	36.0	496	16.5	1559	26.2
Drowning	93	3.1	48	1.6	141	2.3	143	4.8	68	2.3	211	3.6
Suffocation	170	5.8	32	1.1	202	3.4	59	2.0	9	0.3	68	1.2
Cutting, piercing	40	1.3	18	0.6	58	1.0	4828	163.4	1717	58.3	6545	110.8
Firearms	162	5.5	11	0.4	173	2.9	168	5.7	16	0.6	184	3.1
Sport related	0	0.0	0	0.0	0	0.0	7704	261.8	1984	67.1	9688	164.4
Struck by person/object	41	1.4	11	0.4	52	0.9	6385	216.2	1821	61.4	8206	138.8
Other	48	1.6	36	1.1	84	1.4	7710	261.1	4074	133.3	11784	197.2
Total	**1695**	**59.0**	**677**	**20.6**	**2372**	**39.8**	**64685**	**2221.7**	**43960**	**1378.7**	**108645**	**1800.2**

Data source: Australian Bureau of Statistics mortality data, NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

Table 8.3 Injury mortality and hospital separations by intent, NSW

Injury intent	Deaths, 1992		Hospital separations, 1992/93	
	No.	(%)	No.	(%)
Accidental	1,518	64	103,793	91
Self-inflicted	741	31	4,139	4
Inflicted by others	93	4	5,919	5
Other	18	1	272	0
Total	2,370	100	114,123	100

Data source: Australian Bureau of Statistics mortality data, NSW Inpatient Statistics Collection (HOIST), NSW Health Department.

Table 8.4 Most common causes of injury mortality and hospitalisation by intent (a)

	Deaths, 1992				Hospital separations, 1992/93			
Intent	Most common causes of injury, by intent	No.	Rate/ 1,000	(%)	Most common causes of injury, by intent	No.	Rate/ 1,000	(%)
Accidental	Motor vehicle accidents	460	7.7	30	Falls	36462	579	37
	Falls	328	5.4	22	Sports related	9688	164	10
	Pedestrian	157	2.7	10	Poisoning	6228	105	6
Self-inflicted	Poisoning	251	4.2	34	Poisoning	3435	58	83
	Suffocation	198	3.4	27	Cutting, piercing	592	10	14
	Firearms	133	2.3	18	Suffocation	59	1	1
Inflicted by others	Cutting, piercing	36	0.6	39	Struck by object	4084	69	69
	Firearms	27	0.5	29	Cutting, piercing	769	13	13
	Suffocation	3	0.0	3	Poisoning	118	2	2

Note: (a) Only major intent groups are included. Cases with undetermined or unspecified intent or legal intervention are not presented.

Data source: Australian Bureau of Statistics mortality data, NSW Inpatient Statistics Collection and population estimates(HOIST), Epidemiology and Health Services Evaluation Branch, NSW Health Department.

8.5.2 Self-inflicted injuries

Deaths due to self-inflicted injuries accounted for a greater proportion of injury deaths among males than females (35 per cent of male deaths compared with 21 per cent of female deaths) (Figure 8.7 and Figure 8.8). This difference was seen at almost all ages, except in the 25 to 44 age range where males and females had the same proportion of self-inflicted injuries. Of the self-inflicted injury deaths, the most common cause was poisoning (34 per cent), followed by suffocation (27 per cent) and firearms (18 per cent).

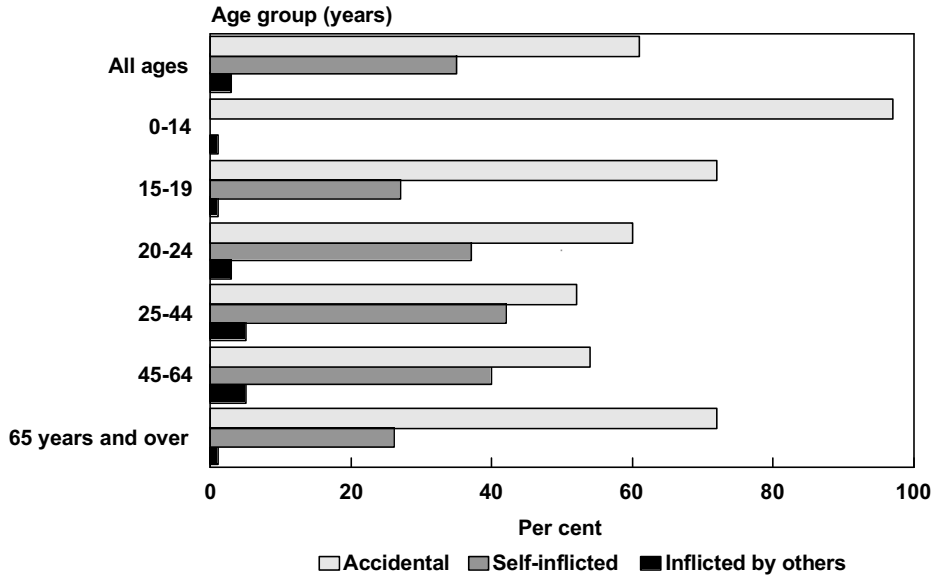
Self-inflicted injuries account for a greater proportion of injury hospitalisations in females than males aged 15 to 44 years (Figures 8.9 and 8.10). The commonest causes of self-inflicted injuries requiring hospitalisation were poisoning (83 per cent), cutting or piercing (14 per cent) or suffocation (1 per cent).

8.5.3 Injuries inflicted by others

Deaths due to injuries inflicted by others were more likely to occur among females than males up to 44 years of age. The main causes of the injury deaths inflicted by others were cutting and piercing (39 per cent), firearm related (29 per cent) and suffocation (3 per cent).

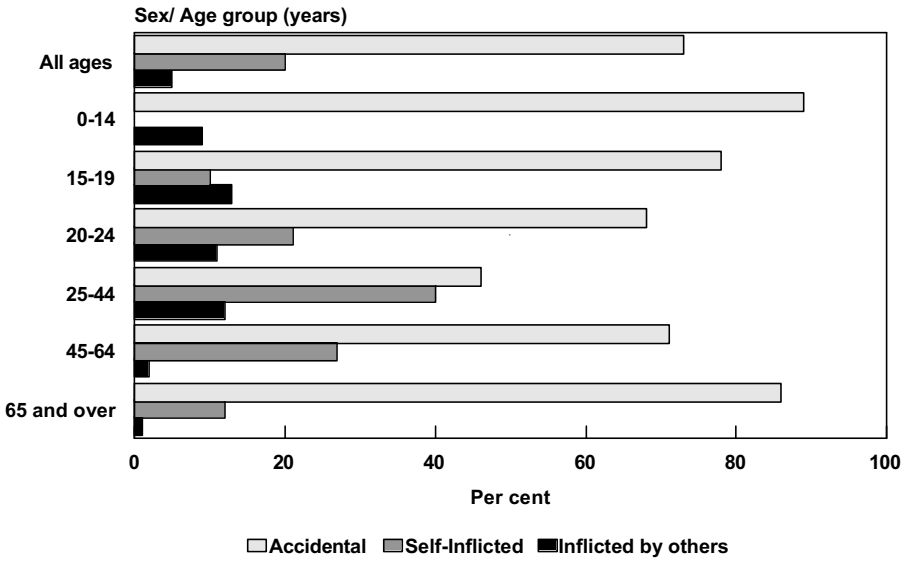
Overall, injuries inflicted by others were the second commonest intention type among injuries requiring hospitalisation (Figure 8.9 and Figure 8.10). This was particularly so for males aged 15 to 44 years. The main causes overall were struck by object (69 per cent), cutting or piercing (13 per cent) and poisoning (2 per cent).

Figure 8.7 Injury deaths by intention, males, NSW 1992



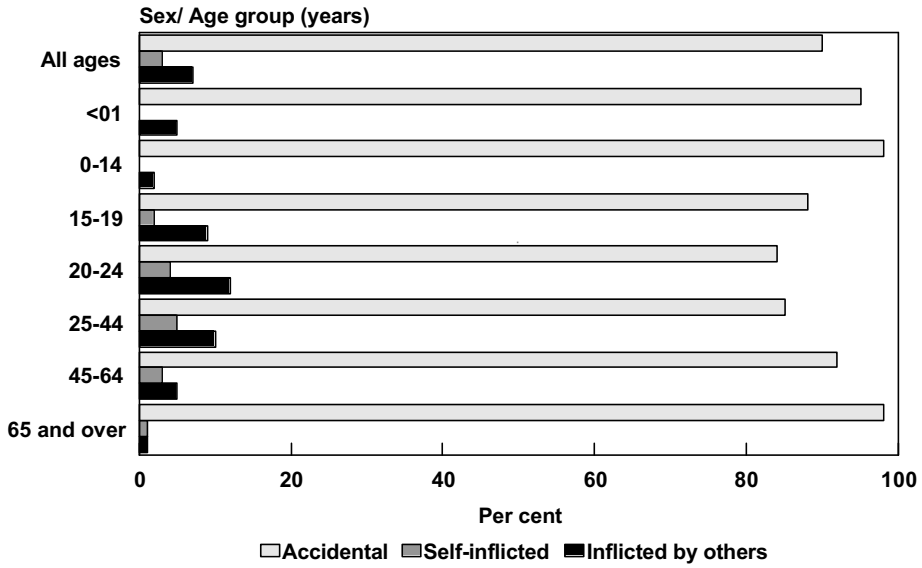
Data source: Australian Bureau of Statistics mortality data (HOIST), Epidemiology Branch, NSW Health Department.

Figure 8.8 Injury deaths by intention, females, NSW 1992



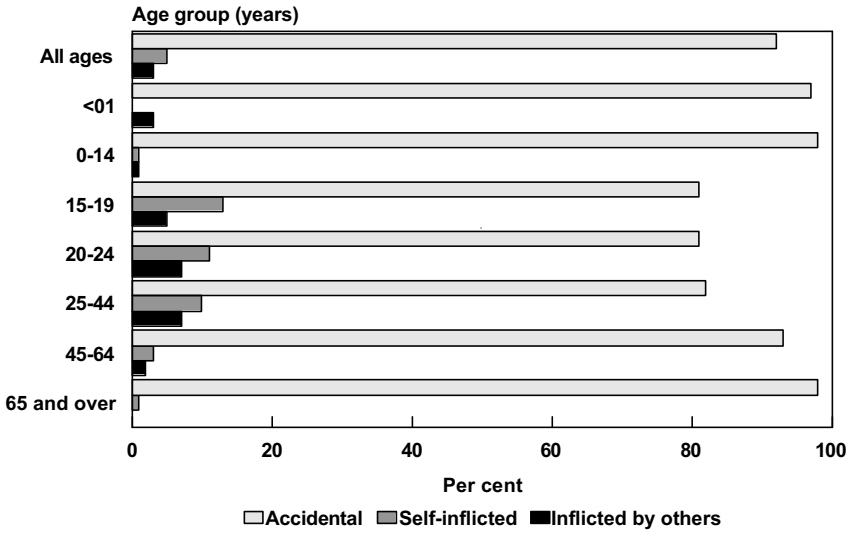
Data source: Australian Bureau of Statistics mortality data (HOIST), Epidemiology Branch, NSW Health Department

Figure 8.9 Hospitalisations due to injury by intention, males, NSW 1992/93



Data source: NSW Inpatient Statistics Collection, (HOIST), Epidemiology Branch,NSW Health Department.

Figure 8.10 Hospitalisations due to injury by intention, females NSW, 1992/93



Data source: NSW Inpatient Statistics Collection (HOIST), Epidemiology Branch, NSW Health Department.

8.6 Injury among Aboriginal and Torres Strait Islander peoples

Overall rates of injury deaths and hospital separations were higher among Aboriginal and Torres Strait Islander peoples than the total population. However, death rates in Aboriginal females were lower than females for the whole population. The death rate for all injuries in Aboriginal males was 68.9 per 100,000, compared with 53.9 per 100 000 for the total population. The rate for Aboriginal females was 10.5 per 100,000, compared with 19.1 per 100,000 for the total population. The hospitalisation rate for all injuries was 48 per 1,000 for Aboriginal males, compared with 22 per 1,000 for the total population, and 32 per 1,000 for Aboriginal females, compared with 14 per 1,000 for the total population.

8.7 Trauma

Over 20,000 trauma cases were treated at Major Trauma Services in NSW in 1992/93 and an estimated further 11,755 cases were treated at large local hospitals (Table 8.7). The largest number of trauma cases were treated at Royal North Shore Hospital.

Table 8.7 Trauma separations from Area Major Trauma Services and larger urban hospitals, 1992/93

		Mode of presentation			
Hospital	**Area**	**Emergency**	**Routine**	**Not stated**	**Total**
Major trauma services					
Royal North Shore	Northern Sydney	2728	403	---	3131
Gosford	Central Coast	2495	222	---	2717
John Hunter	Hunter	2436	34	4	2474
Westmead	Western Sydney	2236	177	---	2413
Liverpool	South-Western Sydney	1965	98	---	2063
Prince of Wales (inc. POW Children)	Eastern Sydney	1844	137	---	1981
Wollongong	Illawarra	1821	347	---	2168
St George	Southern Sydney	1557	107	---	1664
Royal Prince Alfred	Central Sydney	1395	147	---	1542
St Vincents	Eastern Sydney	1184	57	---	1241
Penrith	Wentworth	1177	120	---	1297
Royal Alexandra	Central Sydney	843	43	---	886
Major trauma services total		21681	1892	4	23577
Larger urban hospitals					
Hornsby	Northern Sydney	1562	97	---	1659
Sutherland	Southern Sydney	1299	79	---	1378
Blacktown	Western Sydney	1078	105	---	1183
Ryde District	Northern Sydney	1095	67	---	1162
Mona Vale	Northern Sydney	895	185	---	1080
Bankstown	South-Western Sydney	965	69	---	1034
Concord	Central Sydney	---	---	942	942
Mount Druitt	Western Sydney	828	90	---	918
Auburn	Western Sydney	812	75	---	887
Sydney	Eastern Sydney	651	22	---	673
Campbelltown	South-Western Sydney	559	79	---	638
Newcastle Mater	Hunter	183	18	---	201
Larger urban hospitals total		**9927**	**886**	**942**	**11755**

Data source: Inpatient Statistics Collection (HOIST), Epidemiology Branch, NSW Health Department.

8.8 Geographic variations in injury occurrence

When the age and sex distribution of the population were taken into account, there were substantially higher death rates due to motor vehicle injuries in most rural Districts than NSW as a whole in the period 1983-92 (Figure 8.11). Most rural Districts also had significantly higher death rates due to injury overall compared with NSW. Central and Eastern Sydney Areas had significantly higher death rates due to poisoning, homicide, suicide, falls and total injuries than the State as a whole.

Similarly, in 1992/93, most rural Districts had significantly higher rates of hospitalisation following burns and scalds, poisoning, sports related injuries and total injuries than the State as a whole. Residents of Central, Northern and Eastern Sydney had higher rates of hospitalisation due to falls and total injuries (Figure 8.12).

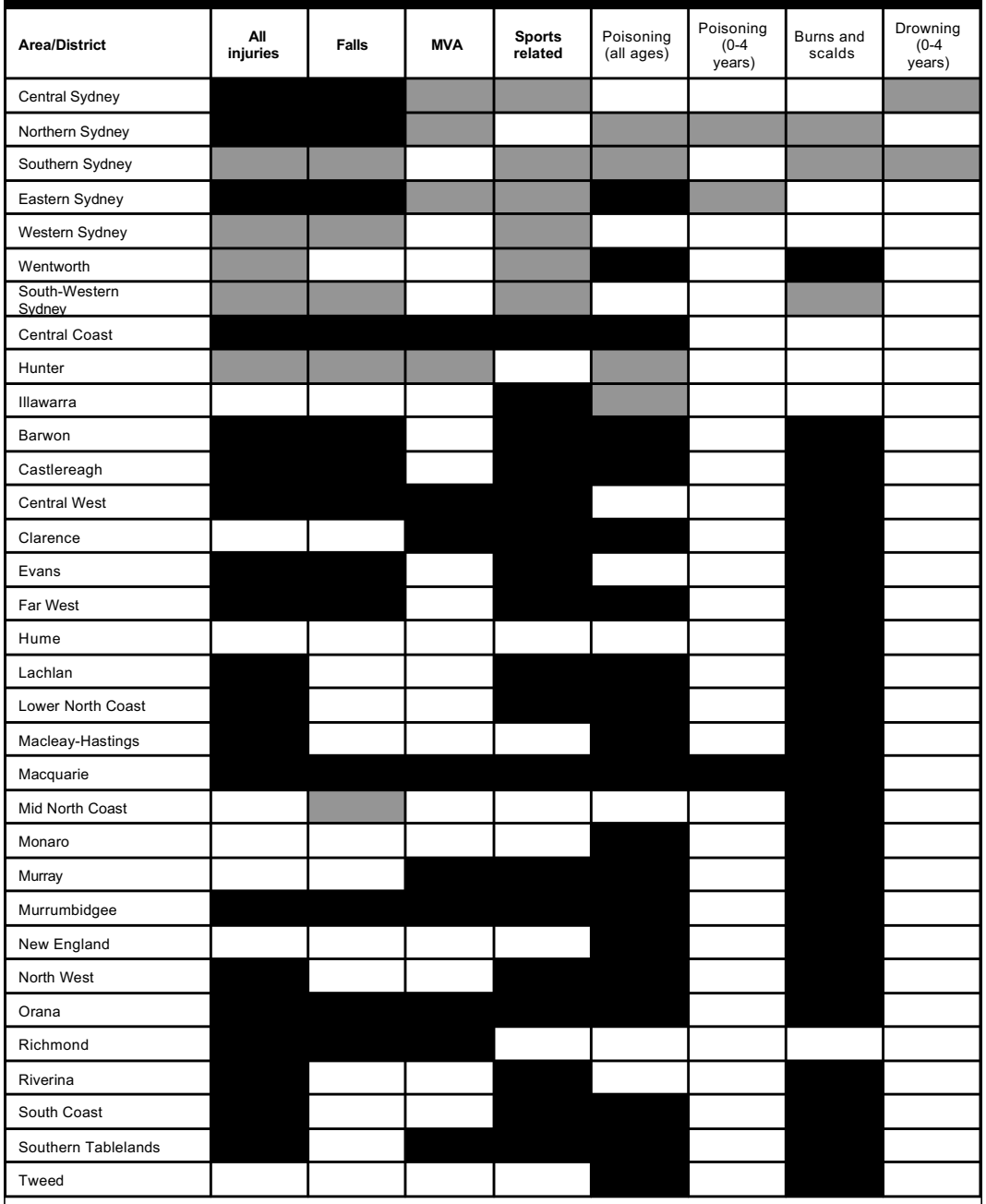
Figure 8.11 Standardised mortality rates for injury by Health Area/District of residence, NSW 1983-92

Health Area/District	All injuries	Falls	MVA	Pedestrian	Poisoning	Homicide	Suicide
Central Sydney	■	■	▒	■	■	■	■
Northern Sydney	▒		▒	▒		▒	
Southern Sydney	▒		▒				▒
Eastern Sydney	■	■	▒		■	■	■
Western Sydney				■			
Wentworth			■				
South-Western Sydney				■			▒
Central Coast	▒	▒		▒			
Hunter				▒		▒	
Illawarra							
Barwon	■		■				
Castlereagh		▒	■				
Central West	■		■		▒		
Clarence	■		■		▒		
Evans		▒				▒	
Far West	■		■			■	■
Hume	■		■				
Lachlan	■		■	▒	▒		
Lower North Coast			■		▒		
Macleay-Hastings	■		■				
Macquarie	■		■				
Mid North Coast	■		■				
Monaro			■				
Murray	■		■		▒		
Murrumbidgee	■		■	▒			
New England	■		■	▒			
North West		▒		▒		▒	
Orana	■		■			■	
Richmond			■	▒			
Riverina			■				
South Coast			■				
Southern Tablelands			■				
Tweed		▒		▒			

Notes: Suicide data are for 1979-1992.
Black boxes indicate that the standardised mortality rate is significantly higher than NSW at the 1% level for selected injury.
Grey boxes indicate that the standardised mortality rate is significantly lower than NSW at the 1% level for selected injury.

Data source: Australian Bureau of Statistics mortality data and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

Figure 8.12 Standardised hospital separation rates for injury by Health Area/ District of residence, NSW 1983-92



Area/District	All injuries	Falls	MVA	Sports related	Poisoning (all ages)	Poisoning (0-4 years)	Burns and scalds	Drowning (0-4 years)
Central Sydney								
Northern Sydney								
Southern Sydney								
Eastern Sydney								
Western Sydney								
Wentworth								
South-Western Sydney								
Central Coast								
Hunter								
Illawarra								
Barwon								
Castlereagh								
Central West								
Clarence								
Evans								
Far West								
Hume								
Lachlan								
Lower North Coast								
Macleay-Hastings								
Macquarie								
Mid North Coast								
Monaro								
Murray								
Murrumbidgee								
New England								
North West								
Orana								
Richmond								
Riverina								
South Coast								
Southern Tablelands								
Tweed								

Notes: Suicide data are for 1979-1992.
Black boxes indicate that the standardised mortality rate is significantly higher than NSW at the 1% level for selected injury.
Grey boxes indicate that the standardised mortality rate is significantly lower than NSW at the 1% level for selected injury.

Data source: Australian Bureau of Statistics mortality data and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

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CHAPTER 9
ASTHMA

- Eight per cent of the NSW population (approximately 443,000 people) reported having asthma as a long term condition in 1989/90
- Children are more likely to have asthma than adults.
- In 1993/94 there were 20,371 hospitalisations due to asthma.
- While asthma is a common condition, it is an uncommon cause of death. In 1992, there were 307 deaths due to asthma.

Asthma is an important clinical and public health problem in Australia, and is the most common cause of non-infectious, non-smoking related chronic respiratory disease in NSW.

Factors such as an allergic tendency, exposure to house dust mite and fungal and plant allergens, viral infections and parental smoking are the major risk factors for this disease. Air pollutants are unlikely to be a major cause of asthma in the community but can trigger attacks of asthma in susceptible individuals. Sydney's level of chronic exposure to house dust mite allergen is amongst the highest in the world due to climate and housing design.

The cost of asthma to the NSW community is high. A recent report estimated that asthma is currently costing NSW around $769 per asthmatic per year in direct and indirect costs[1].

9.1 Asthma prevalence

The prevalence of asthma has been measured in several studies, and results vary depending on the definition used. The ABS National Health Survey in 1989/90 found that 7.6 per cent of the NSW population (an estimated 443,400 people) reported asthma as a long term condition[2] .

Children under the age of 15 years are much more likely to have asthma than adults, and there is evidence that prevalence rates of childhood asthma have increased in Australia over the last decade[3] . A 1990 comparison of asthma prevalence among children aged 5 to 12 years in three Australian cities estimated that 18.6 per cent of children in Sydney had asthma compared with 21.0 per cent in Melbourne and 23.1 per cent in Brisbane[4]. Within NSW, a recent study of children aged 8 to 11 years in seven coastal and inland areas found that the prevalence of current asthma (recent wheeze and airway hyper-responsiveness) ranged from 7.1 to 13.0 per cent while the prevalence of reported wheeze in the previous 12 months ranged from 21.6 to 29.2 per cent[5].

There have been fewer studies of the prevalence of asthma in adults. The NSW Health Department's 1994 Health Promotion Survey found that 9 per cent of people aged 18 years and over reported that they had been diagnosed as having asthma by a doctor or at a hospital, and that the condition was current. A further 5 per cent of these adults reported that while they had been diagnosed with asthma at some time in the past, they were no longer asthmatic[6].

9.2 Hospitalisation

In 1993/94 there were 20,371 hospitalisations due to asthma in NSW. Hospitalisation rates varied from 229 per 100,000 in the Eastern Sydney Area to 1,304 per 100,000 in the Orana District (Table 9.1).

Four per cent of hospitalisations among children under 15 years were attributed to asthma, while the proportion among people aged 65 years and over was 0.6 per cent. As the rate of hospital admission for asthma is age-dependent, and the age structures of the Areas and Districts differ, variations in rates of hospital separation for asthma in different Areas/Districts may be due, in part, to variations in the age distribution of the population.

In 1985-1990, the frequency of hospitalisation for asthma varied by season and geographical area. The highest number of hospitalisations occurred during the autumn months (March, April, May) and lower numbers were found during spring and summer[7].

A 1991 study investigated the possible link between asthma attendences at hospitals and visible air pollution/high particulate levels, caused by the burning of firebreaks to the west and the southwest of Sydney. The data provided weak support for a link between the episode of pollution and asthma attendances at five Sydney Metropolitan Hospitals over the same period[7]. A similar but more comprehensive study following the January 1994 bushfires in NSW is currently being carried out.

9.3 Mortality

There was a stable asthma mortality rate from 1911 to 1940, with a gradual and continued rise since then. The asthma death rate in Australia more than doubled between 1979 and 1985 to approximately 5 deaths per 100,000 population, one of the highest in the world[8].

While both the prevalence of asthma and the rate of hospital admission for asthma is far higher in children under the age of 15, asthma is not a common cause of death in young people. There were 307 deaths due to asthma in 1992, of which 212 (almost 70 per cent) occurred in people aged 65 years and over. The death rate due to asthma is 5.2 per 100,000 people overall; ranging from 0.5 per 100,000 population in children under 15 years to 29.5 per 100,000 in people aged 65 and over[9].

Table 9.1 Hospital separations with a primary diagnosis of asthma by Area/District of residence, NSW 1993/94

Area/District of residence	No.	Rate/ 100,000	Area/District of residence	No.	Rate/ 100,000
Central Sydney	1176	366.2	Lachlan District	268	674.6
Northern Sydney	2115	289.1	Lower North Coast District	293	394.2
Southern Sydney	1411	263.9	Macleay-HastingsDistrict	213	271.8
Eastern Sydney	712	228.9	Macquarie District	426	571.7
Western Sydney	2471	400.5	Mid North Coast District	289	347.3
Wentworth	976	336.4	Monaro District	145	268.2
South Western Sydney	1917	276.8	Murray District	161	390.2
Central Coast	1257	503.8	Murrumbidgee District	435	880.7
Hunter	1464	285.4	New England District	258	365.1
Illawarra	804	248.2	North West District	390	493.9
Barwon District	214	574.6	Orana District	191	1304.6
Castlereagh District	148	514.3	Richmond District	500	379.7
Central West District	232	365.3	Riverina District	407	457.9
Clarence District	178	382.3	South Coast District	285	506.9
Evans District	253	365.7	Southern Tablelands District	219	339.3
Far West District	107	383.3	Tweed District	196	342.2
Hume District	260	324.1	**New South Wales**	**20371**	**339.8**

Note: Data refer to hospital separations of NSW residents from NSW hospitals.
Data source: NSW Inpatients Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

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CHAPTER 10
DIABETES MELLITUS

- In 1989/90, 4.8 per cent of NSW adults reported having diabetes or high blood sugar. It was estimated that, statewide, 110,000 adults had diabetes and 88,500 had high blood glucose.
- In 1992, 684 deaths occurred where diabetes was reported as the underlying cause of death.
- People with diabetes are 15 times more likely to have a lower extremity amputation (LEA) than the population as a whole. Between 1989/90 and 1993/94, age-standardised hospitalisation rates for LEAs increased in males from 10.8 to 15.0 per 100,000 population and in females from 4.5 to 5.9 per 100,000.
- Diabetic retinopathy is the leading cause of new cases of blindness. Up to 36 per cent of people with diabetes have retinopathy and 8-15 per cent have retinopathy which is vision threatening.
- Between 1989/90 and 1993/94 age-standardised hospitalisation rates for diabetic ketoacidosis increased by 50 per cent in both males and females.

Diabetes mellitus is a common, chronic and costly condition, affecting 3-4 per cent of the population, at least 10 per cent of older people, and up to 20 per cent of Aboriginal people in NSW. People from Southern Europe, Pacific Islands, South East Asia, India and the Middle East are at a higher risk of developing diabetes. In addition to those people known to have diabetes, another 50 per cent of people with diabetes may be undiagnosed.

The three main types of diabetes are insulin dependent diabetes mellitus, non-insulin dependent diabetes mellitus and gestational diabetes. However, for the purpose of monitoring, most of the available information does not differentiate between these different types of diabetes.

Diabetes is a significant cause of illness, disability and death in NSW. In 1992 diabetes was recorded as the cause of death in 684 people and in 1993/94 there were 5,115 hospitalisations where diabetes was the principal reason for admission.

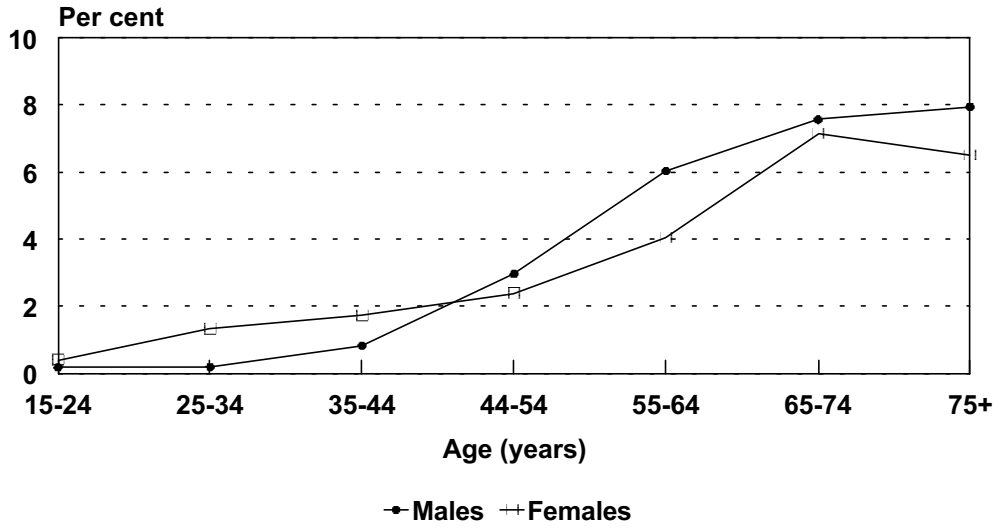
10.1 Incidence and prevalence

The incidence of insulin dependent diabetes mellitus among under 15 year-olds in NSW has been estimated at 15 per 100,000 [1]. No information is available on the incidence of diabetes in adults.

The 1989/90 ABS National Health Survey found that 4.8 per cent of adults reported having diabetes or high blood sugar. It was estimated that, statewide, 110,000 adults have diabetes and 88,500 have high blood glucose [2]. The same proportion of people reported having either diabetes or high blood sugar in the recent NSW Health Promotion Survey[3].

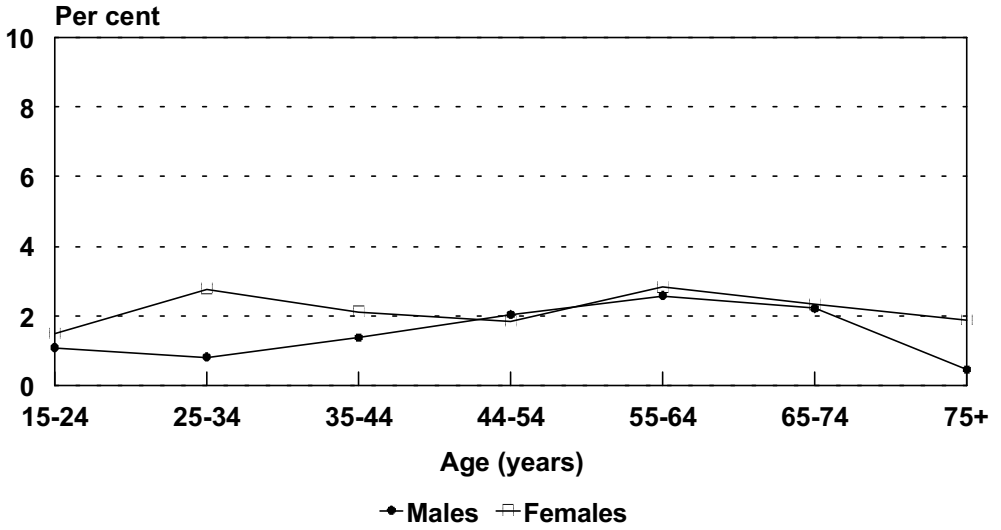
In 1989/90 the prevalence of self-reported diabetes in males increased from 0.2 per cent in 15-24 year-olds to 7.9 per cent in those aged 75 years and older; and in females from 0.4 per cent to 6.5 per cent (Figure 10.1). The prevalence of self-reported high blood sugar in males increased from 1.1 per cent among 15-24 year-olds to 2.6 per cent among 55-64 year-olds and then decreased to 0.5 per cent among those aged 75 years and older; and in females increased from 1.5 per cent to 2.8 per cent and decreased to 1.9 per cent for the same age groups (Figure 10.2). The higher prevalence of self-reported diabetes and high blood sugar in females during the child-bearing years may be related to the development of gestational diabetes which is estimated to affect 6 per cent of pregnant women[4].

Figure 10.1 Prevalence of self-reported diabetes by sex, NSW 1989/90



Data sourve: ABS National Health Survey data 1989/90 and population estimates (HOIST), Epidemiology Branch, NSW Health Department

Figure 10.2 Prevalence of self-reported high blood sugar by sex, NSW 1989/90



Data source: ABS National Health Survey data 1989/90 and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

10.2 Mortality

The number of deaths for which diabetes was reported as the underlying cause increased from 621 in 1969 to 695 in 1974, followed by a drop to 492 in 1982. Subsequently, the annual number of deaths gradually increased to 684 in 1992. However, age-standardised mortality rates between 1979 and 1992 remained relatively stable at about 11 per 100,000 population in males and 8 per 100,000 in females (Figure 10.3).

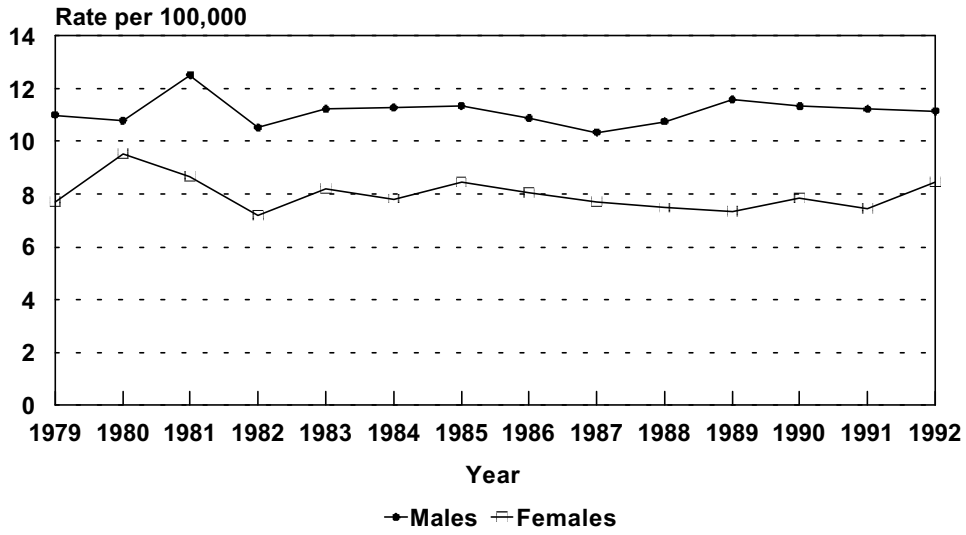
In 1985-89, the mortality rate due to diabetes mellitus in NSW was 12.3 per 100,000 population. Standardised mortality rates in the South Western Sydney and Hunter Areas, and the Orana & Far West and New England Health Regions were significantly higher than the NSW average, while rates for the Southern Sydney, Northern Sydney and Wentworth Areas were significantly lower than the NSW average (Figure 10.4). The variation in mortality between metropolitan Areas may be due to the varying prevalence of diabetes between different ethnic groups. The higher mortality rates in the Orana and Far West and New England Regions may be due to the higher prevalence of diabetes in Aboriginal populations.

People with diabetes experience higher mortality rates than the general population[5,6]. This excess risk of mortality decreases with age. The life expectancy of people with diabetes is reduced by 5 to 25 year[7, 8, 9]. This is due to an increased risk of premature death due to diabetic complications such as heart disease, cerebrovascular disease and renal disease[6, 10].

As deaths related to diabetes are frequently caused by diabetic complications such as ischaemic heart disease, stroke, and renal disease, current mortality data underestimates the real contribution of diabetes to total mortality. Also, information from Australian and overseas studies has shown that diabetes is under-reported in both death certificates and single cause death statistics[11,12,13,14,15,16]. The true contribution of diabetes to overall mortality is estimated to be four to six times greater than when diabetes is reported only as the underlying cause of death[13,16,17,18]. If the information from these studies is extrapolated to the NSW population, an additional 1,800 diabetes related deaths would be identified from full-text death certificate data and a further 1,600 deaths of people with diabetes would be identified if diabetes were consistently reported on death certificates of all people with diabetes.

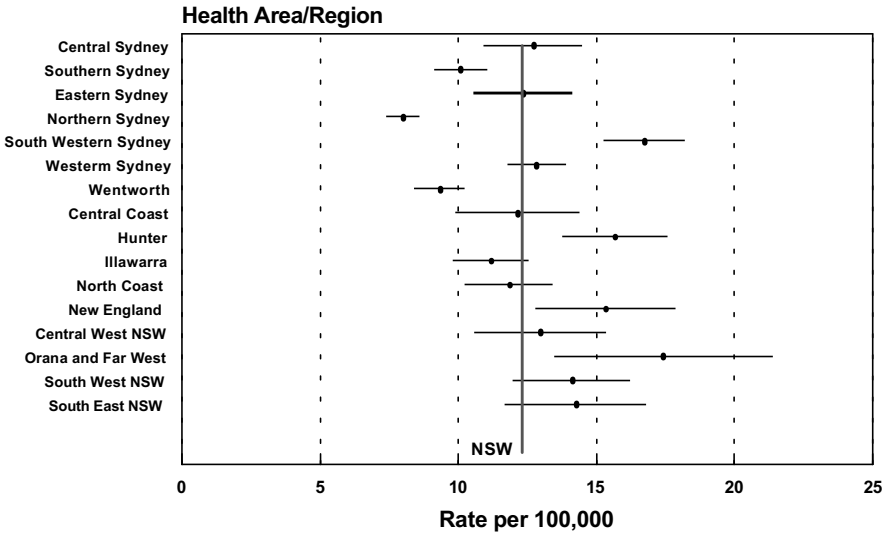
Given, the limitations of current mortality data, care must be taken in the use of these data to evaluate the effectiveness of diabetes health care services and prevention strategies[19].

Figure 10.3 Age-standardised mortality rates for diabetes by sex, NSW 1979-1992



Note: Rates directly age-standardised to the Australian 1991 Census population
Data source: ABS mortality data and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

Figure 10.4 Standardised mortality rates by Health Area/Region of residence, NSW 1985-89



Note: Rates directly age- and sex- standardised to the Australian 1991 Census population. 95% confidence intervals shown.

Data source: Australian Bureau of Statistics mortality data and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

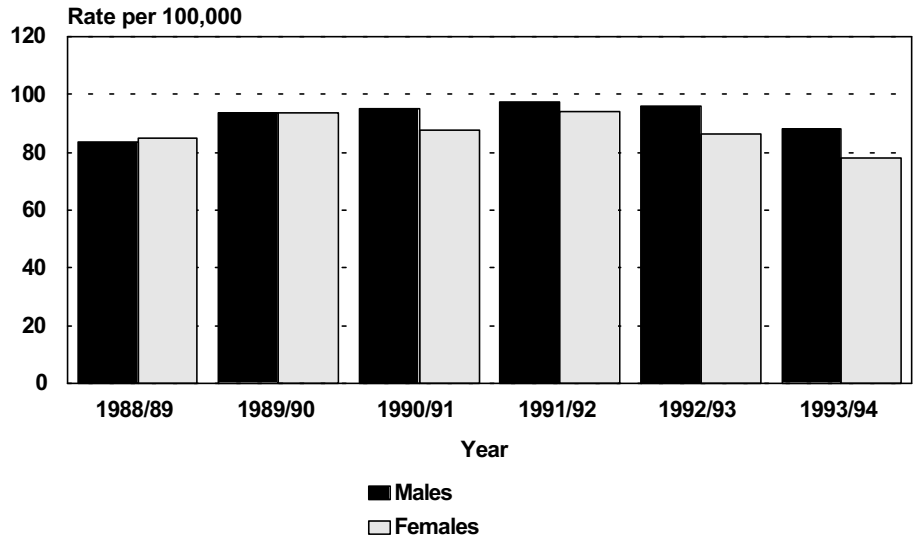
10.3 Hospitalisation

Diabetes was reported as the principal diagnosis in 5,115 hospitalisations in NSW in 1993/94. The age-standardised hospitalisation rate for diabetes as a principal diagnosis was higher among males (88.3 per 100,000) than females (78.2 per 100,000). From 1988/89 there was a gradual increase in the hospitalisation rate until 1991/92, when the rate began to fall (Figure 10.5).

During 1993/94, there were 60,533 episodes of care where diabetes was reported as any diagnosis (ie primary diagnosis or co-morbidity). This represents an age-standardised hospital separation rate of 11.1 per 1,000 for males and 8.3 per 1,000 for females. The average length of hospital stay for patients where diabetes is reported as any diagnosis was twice that of patients where diabetes was not reported.

This may be an underestimate of the impact of diabetes as studies of the validity of hospital statistics to assess the burden of chronic diseases such as diabetes have found significant error rates in coding, ambiguities in determining principal diagnosis[20] and under-reporting of diabetes. While overseas studies show that people with diabetes are two to five times more likely to be hospitalised than those without diabetes after adjustment for differences in age[21,22]. People with diabetes on average spend up to five times the average number of days in hospital[22]. This increased use of hospital care is a reflection of the increased morbidity associated with diabetes and its accompanying complications.

Figure 10.5 Standardised hospitalisation rate for diabetes (principal diagnosis) by sex, NSW 1988/89-1993/94



Note: Rates age-standardised to the Australian 1991 Census population.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department

10.4 Complications of diabetes

People with diabetes experience both acute and long term complications. The long term complications of diabetes account for much of the illness, disability and mortality experienced by people with diabetes. These complications affect the eyes, leading to diabetic retinopathy and blindness; the kidneys, causing renal failure; and the nervous system, leading to neuropathy, lower limb amputation and impotence in men. Diabetes also accelerates atherosclerosis leading to ischaemic heart disease, stroke and peripheral vascular disease. Peripheral vascular disease contributes to disability associated with skin ulceration and lower limb amputation**.** There is strong evidence that the complications of diabetes can be prevented or reduced. There is compelling evidence that access to routine care and education for optimal blood glucose control, and the early identification and appropriate management of complications, will slow the development of or prevent many of the long term complications of diabetes.

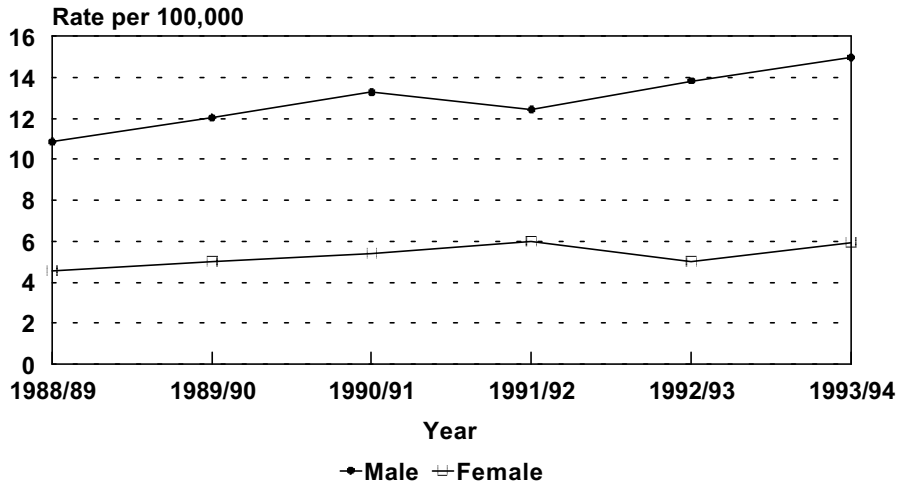
Currently, information concerning the incidence and prevalence of complications of diabetes is scarce. Information is presented on lower extremity amputations assocated with diabetes, diabetic retinopathy, and diabetic ketoacidosis. A system to collect more comprehensive information about the quality and outcomes of diabetes care in various clinical settings, is currently under development.

10.4.1 Amputation

People with diabetes are 15 times more likely to have a lower extremity amputation (LEA) than the rest of the population[23]. This increased risk is a result of neuropathy, peripheral vascular disease and infection. LEAs in people with diabetes lead to significant disability, reduced quality of life and a significantly increased risk of dying within 5 years of surgery[23]. There is some evidence and general consensus among diabetes experts that 30-50 per cent of LEAs can be prevented by improved glycaemic control, footcare education and appropriate treatment of foot problems[24].

Between 1988/89 and 1993/94 the number of LEAs recorded for men and women with diabetes has increased from 422 to 640. Age-standardised hospitalisation rates for LEAs increased in men with diabetes from 10.8 per 100,000 in 1988/89 to 15.0 per 100,000 in 1993/94, and in females from 4.5 to 5.9 per 100,000 (Figure 10.6). In 1993/94 males had more than twice the hospitalisation rate for LEAs of females. A similar difference in the rates between sexes has been reported elsewhere[24,25].

Figure 10.6 Standardised hospitalisation rates for lower extremity amputations by sex, NSW 1988/89-1993/94



Note: Rates directly age-standardised to the Australian 1991 Census population.
Data refer to amputations with diabetes reported as primary diagnosis or co-morbidity.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

10.4.2 Diabetic Retinopathy

Diabetic retinopathy is the leading cause of new cases of blindness in Britain and USA and probably Australia. The incidence of blindness due to diabetes in Australia is difficult to estimate as there are no data sources which provide complete information on the number of people who are blind and the reason for their vision loss. US studies estimate that blindness is 25 times more common in people with diabetes compared with the non-diabetic population and around 5-10 per cent of people who have had diabetes for more than 20 years are blind[26]. Maculopathy and proliferative retinopathy are the more severe forms of retinopathy and their presence is associated with vision loss and progression to blindness. Proliferative retinopathy is more common among persons with IDDM, while maculopathy is commoner among those with NIDDM. The development of retinopathy, in IDDM, is associated with duration of diabetes and the presence of hyperglycaemia and hypertension[27]. In persons with NIDDM, retinopathy may be present at diagnosis or develop in the first few years of diabetes.

Based on four studies of diabetic retinopathy in Australia, the prevalence of retinopathy in people with diabetes is estimated to be 28-36 per cent[28, 29,30,31] (Table 10.1). Australian studies showed an 8-15 per cent prevalence of vision threatening retinopathy, while studies in the US have shown a 3-10 per cent prevalence of serious retinopathy[10,32]. In people newly diagnosed with NIDDM, the prevalence of retinopathy is around 12 per cent[28,30].

Table 10.1 Prevalence of diabetic retinopathy in Australia, selected studies

Study	Number	Any retinopathy (%)	Vision-threatening retinopathy (%)	
			Proliferative (%)	Macular (%)
Singleton Group	99	36	3	6
W.A. Rural	1238	28	3	10
Newcastle	5519	35	5	10
Blue Mountains*	251	32	2	6

* For people with known diabetes or people identified in the study with fasting blood glucose of ≥8 mmol/L

The early identification and treatment of macular oedema and diabetic retinopathy can reduce the occurrence and progression of visual impairment and blindness. Based on the benefits of photocoagulation treatment results from overseas studies[33,34,35,36], strategies to ensure the early identification and appropriate management of retinopathy could produce a 66-75 per cent reduction in the number of new cases of blindness caused by diabetic retinopathy in NSW each year (Table 10.2). There is considerable evidence from overseas studies[37,38] that strategies to ensure that people with diabetes have optimal blood glucose control will prevent the development of retinopathy and substantially decrease the progression of existing retinopathy, thus resulting in the prevention of additional cases of blindness.

Table 10.2 Estimating the effect of early detection and appropriate management of diabetic retinopathy in NSW[a]

	No of persons per year
Expected no. of new cases of blindness in NSW due to diabetic retinopathy [b]	48
Estimated no of cases which can be detected (88%)	42
Estimated no of cases of retinopathy which are treatable (87%)	37
Estimated no of cases of blindness caused by diabetes retinopathy which could be prevented each year with appropriate screening and treatment (73%[39]-98%[40])	27 - 36

[a] Estimates based on calculations used by Rohan et al[39]

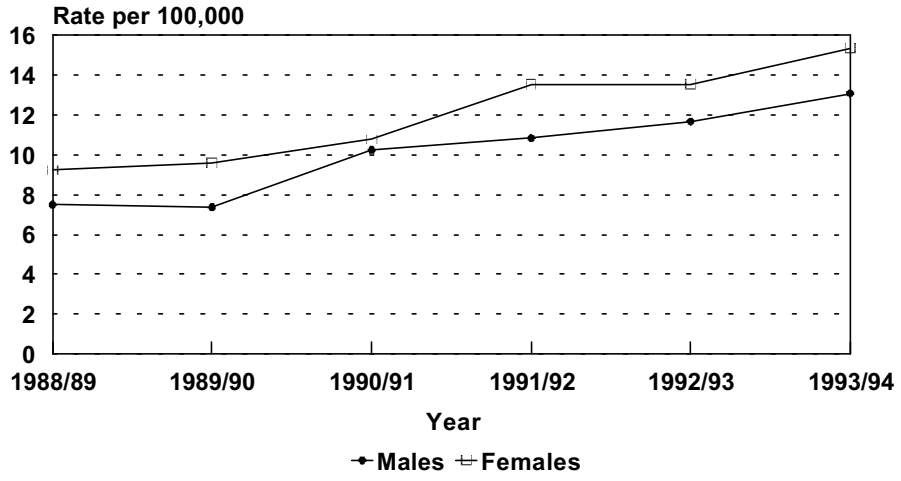
[b] Calculations based on the annual incident rates of diabetic retinopathy in England and Wales and ABS NSW Resident Population 1991.

10.4.3 Diabetic Ketoacidosis

Ketoacidosis is an acute complication of insulin dependent diabetes mellitus and results from an absolute or relative deficiency of insulin. It may lead to altered consciousness, coma and death if untreated. Although some cases of ketoacidosis are not preventable, many cases may be prevented by improving compliance with blood glucose control practices, the appropriate management of diabetes during illnesses and surgery, the timely treatment of infections and the early recognition of its symptoms[41].

There has been a significant increase in the number and rate of hospitalisations where diabetic ketoacidosis was recorded as the principal diagnosis between 1988/89 and 1993/94 in both males and females. Age-standardised hospitalisation rates for diabetic ketoacidosis increased in females from 9.2 per 100,000 in 1988/89 to 15.3 per 100,000 in 1993/94, and in males from 7.5 to 13.1 per 100,000 (Figure 10.7).

Figure 10.7 Standardised hospitalisation rates for diabetic ketoacidosis by sex, NSW 1988/89-1993/94



Note: Rates directly age standardised to the Australian 1991 Census population.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

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CHAPTER 11
THE HEALTH OF ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLES IN NSW

- It is estimated that the NSW Aboriginal and Torres Strait Islander population was 80,437 in 1994.
- 26.5 per cent of the national Aboriginal and Torres Strait Islander population live in NSW.
- Compared with non-Aboriginal people, Aboriginal and Torres Strait Islander peoples have:
  - lower levels of education, employment and income, which contribute to lower levels of physical health
  - a lower overall life expectancy
  - higher mortality rates after adjustment for differences in age distribution
- Aboriginal and Torres Strait Islander babies are twice as likely as non-Aboriginal babies to be of low birthweight, and their perinatal mortality is twice as high.
- Compared with the NSW general community, Aboriginal and Torres Strait Islander peoples have:
  - two and a half times the prevalence of diabetes overall and almost five times the level among those aged 35 years and over
  - over five times the prevalence of ear or hearing problems in children aged less than 15 years
  - about four and a half times the prevalence of kidney disease among those aged 35 years and over
  - up to twice the prevalence of high blood pressure among men aged 45 years or older and 70 per cent higher prevalence among women in the same age group
  - about 35 per cent and 45 per cent more asthma respectively among males and females aged under 25 years

11.1 Introduction

To monitor improvement of the health status of Aboriginal people it is necessary to establish baseline information. However, it is widely acknowledged that current national information on the health status and use of health services by Aboriginal and Torres Strait Islander peoples is unreliable. The 1994 National Health Information Forum[1] proposed a number of strategic directions for improvement of this information base, including

- improved consultation with Aboriginal and Torres Strait Islander peoples in the development of this information base
- improved accuracy and completeness of identification of indigenous people in health related data collections.

Existing sources of information on the health status and risk behaviour of the general community, such as the 1989/90 National Health Survey (NHS), are often not designed to provide representative information on the health of Aboriginal communities[2]. In an attempt to address this lack of statistical information, and as part of the Commonwealth Government's response to the Royal Commission into Aboriginal Deaths in Custody, the National Aboriginal and Torres Strait Islander Survey 1994 (NATSIS)[3] was recently completed. This survey contains information on self-reported illness, risk factors and health related actions taken by individuals. In addition, the 1995 National Health Survey will obtain information from an increased sample of Aboriginal people in an attempt to address the shortcomings of previous surveys[4].

The available information on the health of Aboriginal peoples in NSW is also often of poor quality and in many instances less reliable than information on that in other States. Even the most basic data such as population estimates[5] and births and deaths[6] suffer from substantial underenumeration.

Where information is available there is clear evidence of the considerable disadvantages suffered by Aboriginal and Torres Strait Islander peoples and the ruinous impact these have on the health of individuals and communities[7]. The following summary of available information on the socioeconomic circumstances and health of Aboriginal people in NSW demonstrates why Aboriginal health is the most challenging health care issue in Australia[1].

11.2 Demography

11.2.1 Population size and structure

NSW has the largest population of indigenous people in Australia, with 26.5 per cent of the national Aboriginal and Torres Strait Islander population living in this State. The ABS estimated that the NSW Aboriginal and Torres Strait Islander population was 80,437 on 30 June 1994[6], having risen from 75,204 estimated following the 1991 Census[3]. These figures indicate that Aboriginal and Torres Strait Islander peoples make up approximately 1.2 per cent of the NSW population. Only Victoria, Tasmania and the ACT have lower proportions of Aboriginal and Torres Strait Islander peoples.

The structure of the Aboriginal and Torres Strait Islander population is quite different from that of the general population of NSW, with proportionally more younger persons and fewer older community members. In 1994, while 7 per cent of the general male and female populations were aged less than 5 years, this group accounted for 15 per cent of the indigenous population. Aboriginal men and women aged 45 years or older comprised 12 per cent and 13 per cent of the indigenous population and 32 per cent and 35 per cent respectively in the general community. Over the age of 64 years the contrast is more marked with only 2 per cent and 3 per cent of Aboriginal men and women in this age group and 11 per cent and 14 per cent of men and women respectively in the general community. These differences reflect the higher birth and mortality rates experienced by the Aboriginal community and are illustrated clearly in population pyramids (Figures 11.1 and 11.2).

11.2.2 Births, neonatal morbidity and perinatal mortality

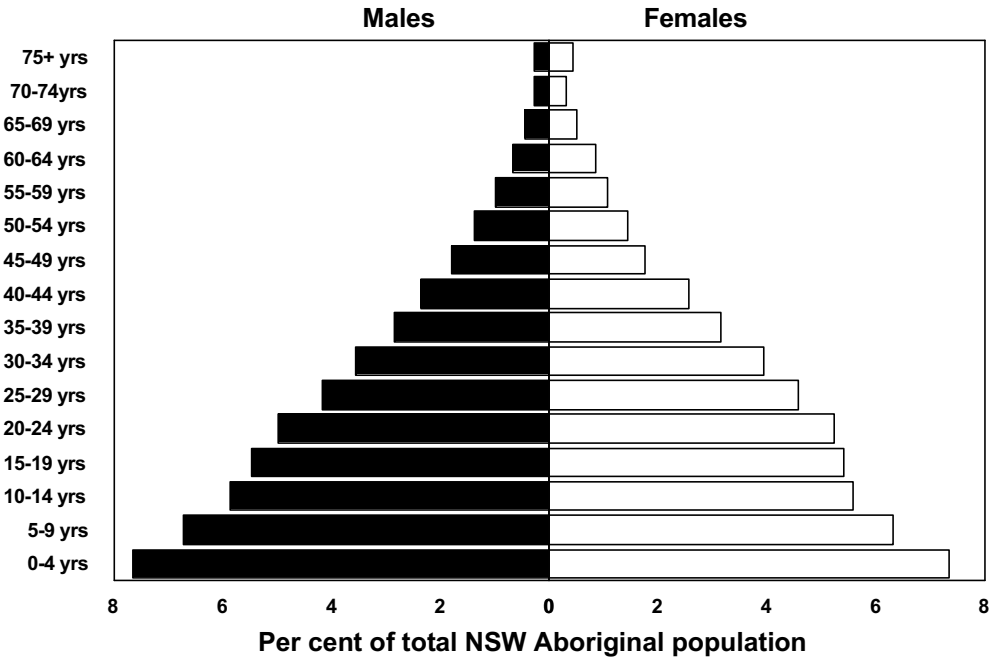
Based on information from the NSW Midwives Data Collection (MDC) between 1986 and 1991[8], the total fertility rate for NSW Aboriginal women was about 30 per cent higher than that observed in the non-Aboriginal community. However, outcomes for Aboriginal babies were worse than for non-Aboriginal babies. Aboriginal full-term babies (ie 37 weeks gestation or more) were 2.1 times more likely to be of low birthweight (under 2500 grams) than non-Aboriginal babies, with this relative risk being observed across all maternal age groups and increasing with maternal age. Aboriginal babies were 1.7 times more likely to have a five-minute Apgar score less than 7, and 1.3 times more likely to have a morbid condition (as recorded in the MDC). However, the reported rate of birth defects in Aboriginal babies born during 1986-91 was lower than among non-Aboriginal babies (2.3 per cent versus 3.0 per cent respectively).

Perinatal mortality of Aboriginal babies far exceeds that seen in the general community. Data from the period 1987-1990 show that the risk of perinatal death for Aboriginal infants was nearly twice that among non-Aboriginal babies[9]. Each year approximately 60 more Aboriginal babies die in the perinatal period than would be the case if they had the same perinatal mortality rate as the rest of NSW.

11.2.3 Mortality and life expectancy

NSW death data substantially underestimate the mortality of Aboriginal and Torres Islander males and females[4], with only 0.43 per cent of deaths recorded between 1990 and 1992 being identified as Aboriginal or Torres Strait Islander[9]. ABS estimates indicate that while registration of Aboriginal deaths in Western Australia and the Northern Territory are over 90 per cent complete, NSW data identify only 61 per cent of male and 55 per cent of female Aboriginal deaths[4]. Reliance on this vast under-ascertainment of Aboriginal mortality would lead to the erroneous conclusion that there is no difference between the mortality experienced by the Aboriginal and non-Aboriginal communities of NSW. However, this is totally inconsistent with the story told by population pyramids (Figures 11.1 and 11.2).

Figure 11.1 Aboriginal & Torres Strait Islander population, NSW 1991

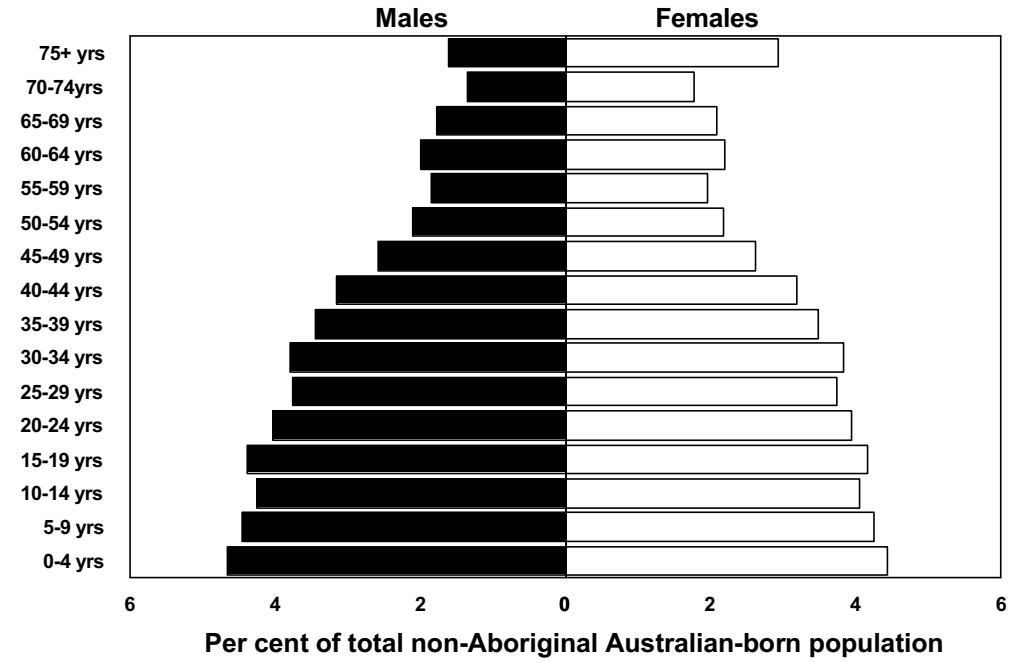


Data source: Australian Bureau of Statistics Census of Population & Housing 1991, Census Applications Pty Ltd.

The vast difference between the mortality experienced by Aboriginal and non-Aboriginal residents of NSW is clearly shown by the very rapid decline of the Aboriginal population with age compared to the more gradual decline for Australian-born non-Aboriginal people. Differences between the population pyramids for residents of Botswana[10] (Figure 11.3) and the NSW Aboriginal population are not nearly as marked - a solemn picture of the similarities between the health experienced in that impoverished country and by our local Aboriginal communities.

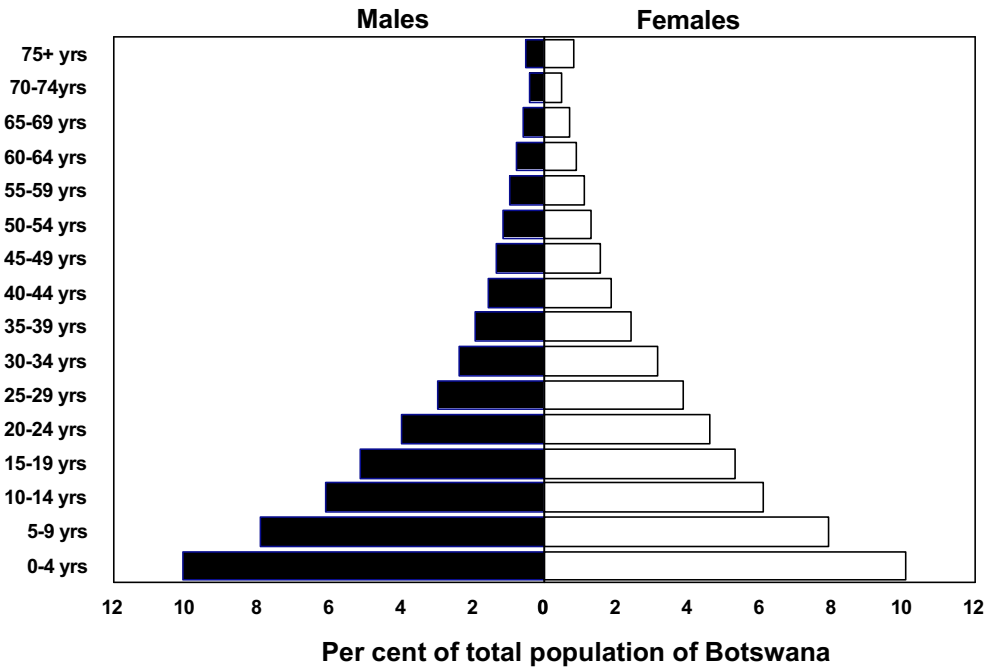
Poor identification of Aboriginal and Torres Strait Islander peoples in NSW mortality data does not permit calculation of mortality rates or life expectancies for comparisons. However, a study in western NSW[11] covering the period 1984-87 found that the expectation of life at birth was 54.3 years for Aboriginal males and 64.8 years for Aboriginal females. In comparison, in 1986 the expectation of life at birth for males in NSW was 73.2 years (some 19 years longer) and 78.8 years for females in NSW (a difference of 14 years). National estimates indicate differences in expectation of life at birth of 18.2 years less for Aboriginal males and 19.8 years less for Aboriginal females than for non-Aboriginal people[7].

Figure 11.2 Non-Aboriginal Australia-born population, NSW 1991



Data source: Australian Bureau of Statistics Census of Population & Housing 1991, Census Applications Pty Ltd.

Figure 11.3 Population of Botswana, 1986



Source: United Nations 1989 Demographic Yearbook

Gray and Hogg[11] reported that in western NSW the age-standardised death rate amongst Aboriginal males was 3.6 times that of the total Australian male population in 1986 and that the rate for Aboriginal females in western NSW was 3.2 times that of all Australian females in 1986. Bhatia and Anderson[12] reported age-standardised male Aboriginal death rates being 2.8 times the non-Aboriginal Australian rate and 3.3 times the non-Aboriginal rate for females, based on data from Northern Territory, Western Australia and South Australia during 1990-1992. The western NSW study found that Aboriginal males and females aged 25-34 years had death rates 6.7 and 6.4 times those of the general NSW male and female populations in this age range respectively, with Bhatia and Anderson reporting similar rate ratios.

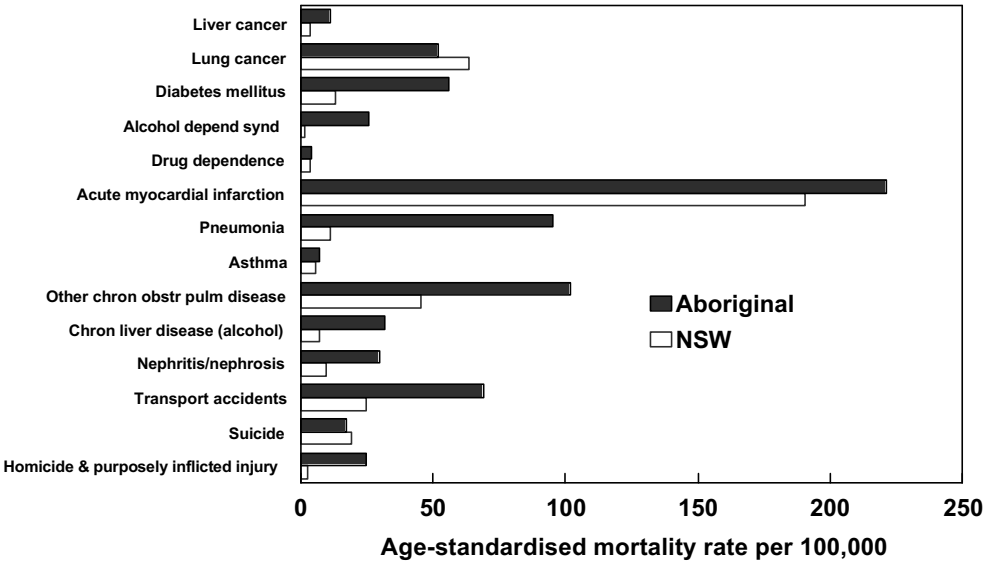
In western NSW Aboriginal age-standardised death rates due to circulatory diseases were found to be 4.1 times higher for males and 3.3 times higher for females while age-standardised death rates due to injuries and poisoning were 2.9 times higher for Aboriginal males and 3.8 times higher for Aboriginal females than in the total NSW population. Again, Bhatia and Anderson report similar rate ratios for Aboriginal people in Western Australia, South Australia and Northern Territory when compared with the total Australian population.

Excess mortality within the western NSW Aboriginal community in 1984-87 was due to:

- circulatory disease - which accounted for 44 per cent of excess male deaths and 39 per cent of excess female deaths
- injury and poisoning - 13 per cent (males) and 15 per cent (females)
- cancer - 6 per cent (males) and 1 per cent (females)
- liver disease - 10 per cent of excess male deaths (often associated with alcohol abuse)
- respiratory disease - 4 per cent (males) and 10 per cent (females)

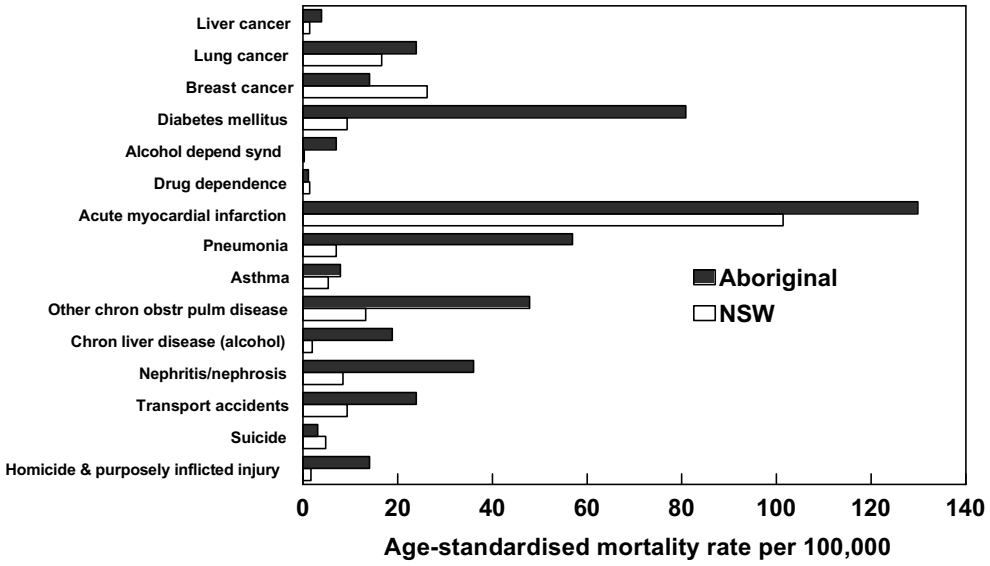
Figures 11.4 and 11.5 illustrate the striking differences in age-standardised mortality rates for selected causes of death between Aboriginal Australians and the general NSW population during the period 1985-92 and highlight Aboriginal health issues which demand urgent attention.

Figure 11.4 Age-standardised mortality rates for selected conditions, males, NSW Aboriginal and NSW general population 1985-1992



Note: Aboriginal mortality rates are average of NSW, SA, WA and NT
Data source: Aboriginal data: Bhatia K, Anderson P. An overview of Aboriginal and Torres Strait Islander health:present status and future trends. Australian Institute of Health and Welfare, Canberra 1995
NSW data: Australian Bureau of Statistics mortality data (HOIST), Epidemiology Branch, NSW Health Department.

Figure 11.5 Age-standardised mortality rates for selected conditions, females, Aboriginal and NSW populations, 1985-1992



Note: Aboriginal mortality rates are average of NSW, SA, WA and NT.
Data source: Aboriginal data: Bhatia K, Anderson P. An overview of Aboriginal and Torres Strait Islander health: present status and future trends. Australian Institute of Health and Welfare, Canberra 1995. NSW data: Australian Bureau of Statistics mortality data (HOIST), Epidemiology Branch, NSW Health Department.

11.3 The socio economic environment

The link between socio economic conditions and health is now generally accepted. The National Aboriginal Health Strategy defines health for Aboriginal people as 'not just the physical well-being of the individual but the social, emotional and cultural well-being of the whole community'[1].

Aboriginal people in NSW endure significantly lower living standards than the rest of the community with devastating consequences for their health. Addressing these inequities is the first priority of the NSW Government's Social Justice Strategy[13]. Any attempts to improve the health of the NSW Aboriginal community must also seek to address these broader social issues.

The statistical information presented below is drawn from community profiles derived from the 1991 Census of Population and Housing[14].

11.3.1 Education

The 1991 Census indicated that Aboriginal males and females were 5 times more likely not to have attended school than other Australian-born NSW residents. Of those who have completed their schooling, Aboriginal men were 28 per cent more likely than other Australian-born men to have left school at age 15 years or younger. Aboriginal women who completed their schooling were 14 per cent more likely to have left at age 15 years or younger than other Australian-born women. Aboriginal women who finished their schooling were 10 per cent more likely to have left at or before age 15 years than Aboriginal men.

Non-Aboriginal Australian-born residents of NSW with educational or vocational qualifications were almost 3 times more likely to have a bachelor degree or higher university degree than Aboriginal residents. Among educationally or vocationally qualified men, 6.6 per cent of Aboriginal residents had a bachelor degree or higher university qualification, compared with 23.1 per cent of Australian-born non-Aboriginal men. Among qualified women, 12.5 per cent of Aboriginal residents had a bachelor degree or higher university qualification, compared with 30.6 per cent of Australian-born non-Aboriginal women. Among qualified men, 7.9 per cent of Australian-born non-Aboriginal men had basic vocational qualifications as their highest educational achievement compared with 13.5 per cent for Aboriginal men. Corresponding figures for women were 25.9 per cent for Australian-born non-Aboriginal women and 40.8 per cent for Aboriginal women.

In summary, Aboriginal people had less schooling and, among those who had obtained educational or vocational qualifications, were less highly qualified than other Australian-born residents of NSW.

11.3.2 Employment

Education is widely held to be the key to employment. The connection between educational attainment and employment becomes quite clear when we consider the results of a recent study of this link[15]: 26.3 per cent of persons who had never attended school were part of the labour force compared with 64.9 per cent of those without post-school qualifications and 81.9 per cent of those with post-school qualifications.

The labour force is defined as people in jobs or looking for, and available for, work ie the employed and the unemployed. The labour force participation rate is the number of people in the labour force (employed and unemployed) expressed as a percentage of the civilian population aged 15 years or over. The employment/population ratio is the number of employed persons expressed as a percentage of the civilian population aged 15 years or over.

In NSW the inequities in educational attainment between the Aboriginal and non-Aboriginal communities undoubtedly contribute to the higher unemployment rates and lower labour force participation rates experienced by the Aboriginal community.

Table 11.1 Unemployment rates in the Australian Aboriginal and NSW general communities by age, 1994

Age (years)	Aboriginal		Non-Aboriginal	
	Males (%)	Females (%)	Males (%)	Females (%)
15-19	48.0	52.7	22.7	19.9
20-24	42.7	50.0	15.6	11.2
25-44	36.4	36.2	9.2	7.0
45+	25.2	14.1	7.5	5.9
Total	37.7	39.0	10.3	8.3

Sources: Australian Bureau of Statistics: National Aboriginal & Torres Strait Islander Survey (February 1994) Catalogue No. 4190.0 and The Labour Force New South Wales and Australian Capital Territory (May 1994) Catalogue No. 6201.1

Although data specific to the NSW Aboriginal population are not readily available, Table 11.1 shows that, in all age groups, in 1994 Aboriginal men and women were at least twice as likely to be out of work as their counterparts in the general community[3,16]. Of particular concern is that almost half of Australia's young Aboriginal men and women were unemployed, as were a third of those aged 25-44 years, where unemployment rates were 4 to 5 times those of the general community.

Statistics from the 1991 Census of Population and Housing show that the employment/population ratio was 42.8 per cent for Aboriginal males, 28.3 per cent for Aboriginal females, 64.7 per cent for non-Aboriginal males and 45.9 per cent for non-Aboriginal females. The Census also revealed that the labour force participation rate was 68.2 per cent for Aboriginal males, 42.0 per cent for Aboriginal females, 73.2 per cent for non-Aboriginal males and 50.9 per cent for non-Aboriginal females. These statistics show that the NSW Aboriginal community had a relatively small labour force which had higher unemployment rates than the NSW general community in 1991.

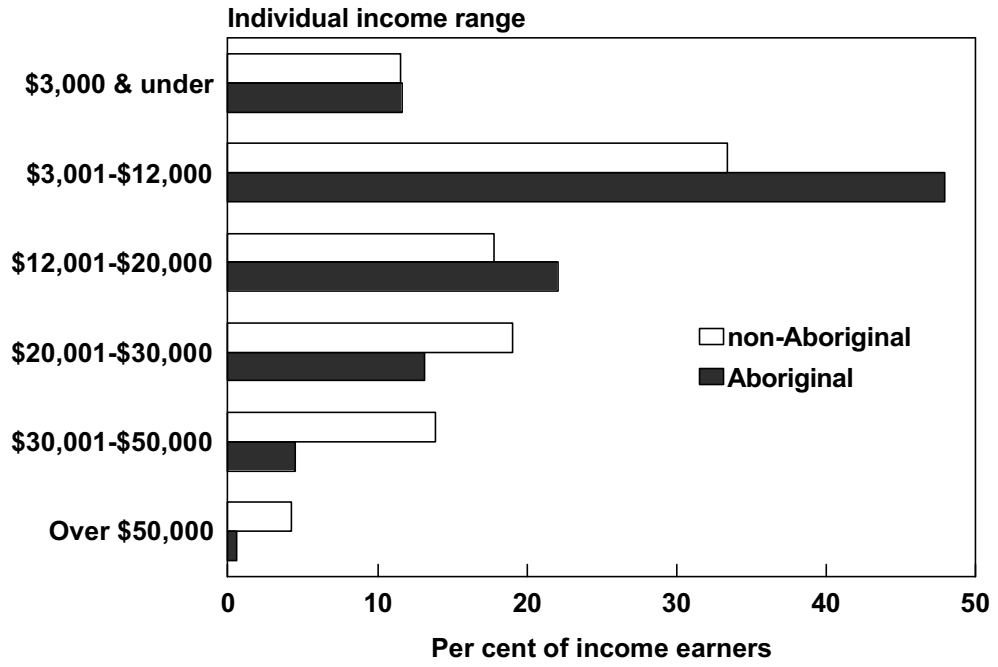
These stark contrasts identify unemployment as one of the major social imbalances between the Aboriginal and non-Aboriginal communities.

11.3.3 Income

As one of the major consequences of lower educational attainment levels, higher unemployment rates and lower labour force participation rates, the Aboriginal community has lower individual income levels.

Figure 11.6 shows the different income distributions of the Aboriginal and Australian-born non-Aboriginal communities during 1991. Non-Aboriginal Australian-born males and females were twice as likely as Aboriginal men and women to have an individual income greater than $20,000 per year. Those earning more than $50,000 per year were three and half times more likely to be Australian-born non-Aboriginal than Aboriginal men or women. These differences in income levels demonstrate the impact of the differences in educational attainment and employment status described earlier.

Figure 11.6 Individual incomes for Aboriginal and non-Aboriginal Australian-born residents, NSW 1991



Data source: Australian Bureau of Statistics Census of Population and Housing 1991, Census Applications Pty Ltd.

11.4 Health Status

The 1994 National Aboriginal and Torres Strait Islander Survey (NATSIS)[3] provides estimates of the health status and health actions for the NSW Aboriginal community unavailable from other surveys. Because there was no corresponding survey of the general community, directly comparable information about the health status and health actions of the general community is not available. Comparisons with the general community presented here are based on the findings of the 1989/90 National Health Survey (NHS).

11.4.1 Self-assessed health status

The NATSIS survey found that 85.7 per cent of NSW Aboriginal and Torres Strait Islander peoples considered themselves to be in good or excellent health[17]. Little difference was found between indigenous men and women with 84.4 per cent of men and 86.9 per cent of women saying their health was either excellent or good. Rural Aboriginal residents of NSW reported lower levels of excellent or good health, with 80.6 per cent of rural residents compared with 86.3 per cent of capital city and other urban residents reporting good or excellent health.

From the NATSIS results, 78.3 per cent of NSW indigenous people aged 15 years or over considered that they had good or excellent health. National estimates from the NHS showed lower self-assessed health status among Aboriginal people aged 18 years and over than in the general community (65.7 per cent versus 79.2 per cent respectively).

As expected, self-assessed health status declined with age, with 92.9 per cent of NSW Aboriginal persons aged 15-24 years and 52.5 per cent of those aged 55 years or older reporting excellent or good health.

11.4.2 Prevalence of selected self-reported chronic diseases

Table 11.2 summarises NATSIS findings for selected self-reported chronic diseases among NSW Aboriginal and Torres Strait Islander peoples. Of particular interest are the findings that among NSW Aboriginal people aged 45 years or more:

- one in three had high blood pressure
- one in seven had diabetes

- one in five had asthma, a heart problem and/or ear or hearing problems

Direct comparisons with the general population are problematic due to the lack of comparable recent data for the general NSW population. These problems arise from differences in some of the definitions used and the design and delivery of the two surveys (eg the NHS placed greater emphasis on prompting to elicit all health actions and conditions than was possible during the conduct of NATSIS[3]). However, notwithstanding the technical problems associated with strict comparisons between the 1989/90 National Health Survey and the 1994 NATSIS, some comparisons identify the stark contrasts in health status between the general population and the Aboriginal and Torres Strait Islander communities of NSW. These surveys show that, when compared with the NSW general community, indigenous residents of NSW have:

- two and a half times the prevalence of diabetes overall and almost five times the level among those aged 35 years and over
- over five times the prevalence of ear or hearing problems in children aged less than 15 years
- about four and a half times the prevalence of kidney disease among those aged 35 years and over
- up to twice the prevalence of high blood pressure among men aged 45 years or older and 70 per cent higher prevalence among women in the same age group
- about 35 per cent and 45 per cent more asthma respectively among males and females aged under 25 years

The gender difference seen in hypertension prevalence in the general community (with high blood pressure being 26 per cent more common among women over 45 years than among men of the same age group) is not as marked in the indigenous population (Aboriginal women have 9 per cent higher prevalence than Aboriginal men in the same age range).

No adjustment has been made for differences in population structures in these prevalence comparisons. However, the contrasts are unlikely to be diminished by such statistical adjustment.

Figures 11.7 and 11.8 highlight these contrasts and, in specifying the respective prevalence rates, highlight the burden of illness suffered by Aboriginal men and women when compared to their counterparts in the general community.

Table 11.2 Prevalence of self-reported chronic conditions, NSW Aboriginal and Torres Strait Islander Peoples 1994 (a)

Condition	Males (%)	Females (%)	Persons (%)	Persons aged <15 years (%)	Persons aged 45+ years (%)
Asthma	15.3	16.2	15.8	18.4	22.6
Diabetes	2.7	3.0	2.8	n.a	14.1
Heart problems	5.8	5.1	5.5	2.6**	19.6
Chest problems	6.5	7.7	7.1	4.7	9.9**
Skin problems	6.2	6.3	6.2	6.6	5.6**
High blood pressure	6.5	8.1	7.3	n.a**	34.9
Ear or hearing problems	13.0	9.4	11.2	10.9	22.9
Eye problems not correctable by glasses	2.4	2.0	2.2	1.4**	4.9**
Kidney problems	2.6	4.1	3.3	1.3**	8.1**

Notes: (a) Percentages are crude (unadjusted for age-sex) prevalence estimates.
** Indicates information may be unreliable as is based on a small number of responses.
Source: Australian Bureau of Statistics, National Aboriginal and Torres Strait Islander Survey 1994, NSW data (unpublished).

Figure 11.7 Selected health status indicators, NSW Aboriginal (1994) and total NSW males (1989/90)

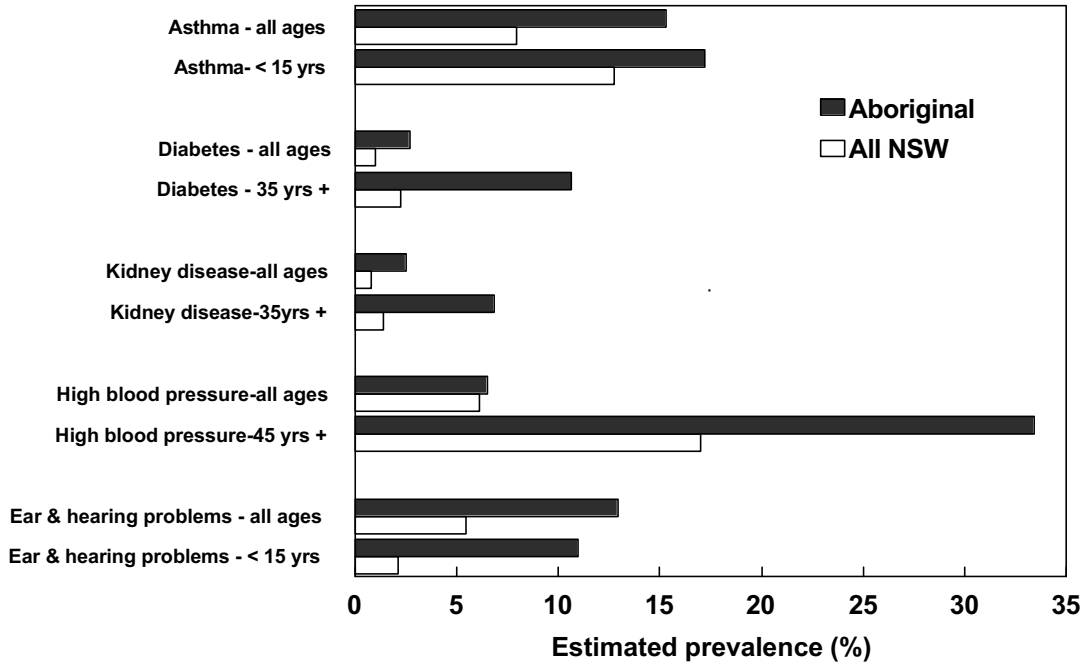
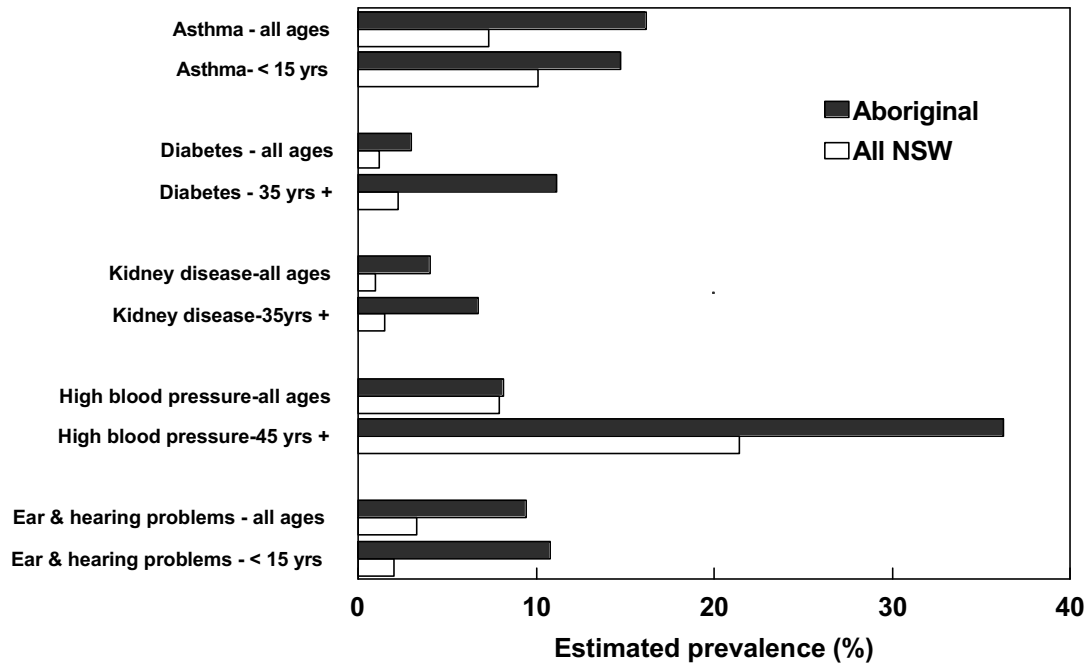


Figure 11.8 Selected health status indicators, NSW Aboriginal (1994) and total NSW females (1989/90)



Sources: Australian Bureau of Statistics National Health Survey 1989/90 and National Aboriginal and Torres Strait Islander Survey 1994

11.5 Health Risk Factors

11.5.1 Cigarette smoking

The NATSIS provides some information about health risk factor levels within the NSW Aboriginal and Torres Strait Islander community. The survey found, among those aged 13 years or more, 52.0 per cent of males and 49.6 per cent of females were cigarette smokers. Information from the NHS indicated that, among persons aged 18 years or more, 31.6 per cent of males and 25.3 per cent of females in the general NSW community were smokers. Over the age of 25 years, Aboriginal people were around twice as likely to be cigarette smokers as others of the same age. Table 11.3 provides further comparisons of cigarette smoking prevalence in the NSW general and indigenous communities.

In addition to higher cigarette smoking prevalence, the NSW Aboriginal population had higher levels of cigarette consumption (Table 11.4) except at very high consumption levels (over 30 cigarettes per day) where cost may be a major deterrent. US studies indicate that, overall, a 10 per cent increase in the price of a tobacco product will result in a 4 per cent decrease in the quantity demanded and, among children, the same increase will decrease consumption by 14 per cent[18]. Any recent decreases in tobacco intake due to increases in the price of cigarettes over time may slightly distort the comparisons below which are based on the NATSIS 1994 survey for estimates of cigarette consumption for the NSW Aboriginal population and the 1989/90 NHS for estimates within the general NSW population. However, any decreases in smoking prevalence and cigarette consumption within the general community which may have occurred between 1989/90 and 1994 would result in increased differences from the Aboriginal population's smoking behaviour.

Table 11.3 Prevalence of current cigarette smoking in NSW Aboriginal (1994) and general population (1989/90)

	NSW Aboriginal & Torres Strait Islanders (1994) (%)	NSW general population (1989/90) (%)
All persons*	50.8	28.4
All males*	52.0	31.6
All females*	49.6	25.3
Persons aged 15-24/18-24**	47.6	34.0
Persons aged 25-44	63.0	33.0
Persons aged 45 & over	40.5	21.9

Notes: *Figures based on the NATSIS survey include all persons aged 13 years and over while the NHS figures are for those aged 18 years or more. This will underestimate the proportion of Aboriginal people aged 18 years or more who are smokers because of the relatively low prevalence of smoking in younger people (NATSIS estimates for percentage of Aboriginal persons aged 13-14 years who smoke are 10.2% for Australia and 12.4% in NSW)
**NATSIS figure is for 15-24yrs and NHS figure is for 18-24yrs.

Source: Australian Bureau of Statistics National Aboriginal and Torres Strait Islander Survey (1994) and National Health Survey (1989/90)

Table 11.4 Daily Cigarette Consumption: Population smoking 20 or more cigarettes per day, NSW Aboriginal (1994) and general population (1989/90)

	NSW Aboriginal & Torres Strait Islanders (1994) (%)	NSW general population (1989/90) (%)
Persons	16.5	14.3
Males	19.3	18.9
Females	13.6	9.8
25-44 years	23.3	16.0
45+ years	17.4	15.0

Source: Australian Bureau of Statistics National Aboriginal and Torres Strait Islander Survey (1994) and National Health Survey (1989/90)

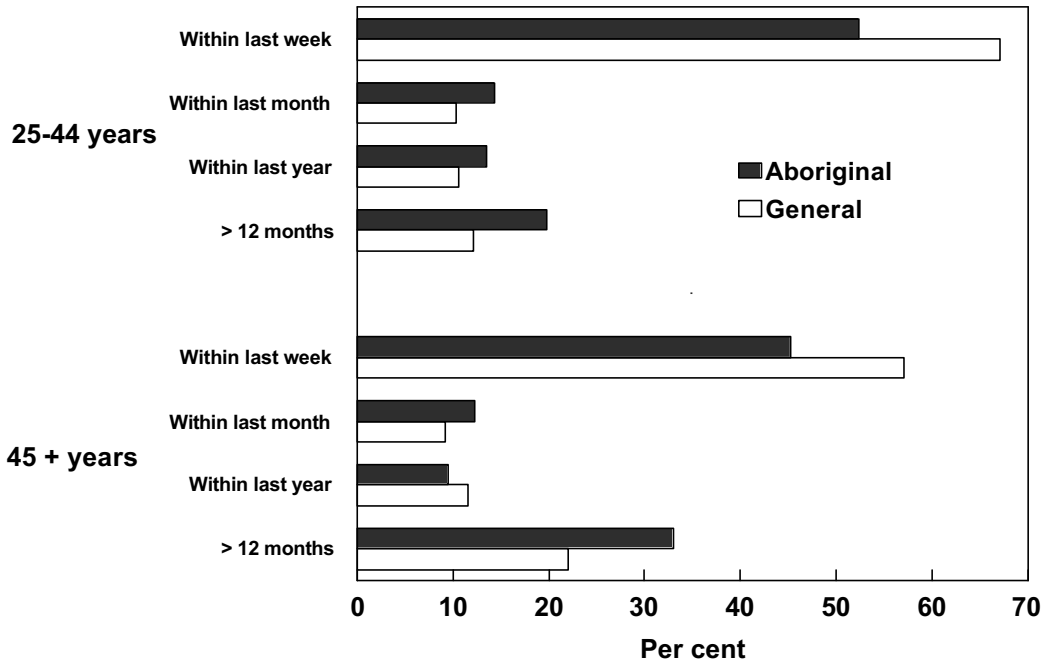
Some of the differences shown in Table 11.4 are understated because of the inclusion of young Aboriginal people aged between 13 and 17 years in the denominators of the NATSIS figures while the NHS figures are for persons aged 18 years or over. Despite these definitional differences, higher proportions of Aboriginal people smoked 20 or more cigarettes per day, particularly in the 25-44 years age group. The NATSIS (1994) shows that 4.8 per cent of NSW Aboriginal people aged 25 years or more smoked 30 or more cigarettes per day and 2.4 per cent smoked 40 or more each day. The NHS (1989/90) showed that, in the same age range, 5.7 per cent of the general population smoked 30 or more cigarettes per day and 2.6 per cent smoked 40 or more each day.

11.5.2 Alcohol consumption

Comparisons of alcohol consumption patterns within the Aboriginal and general NSW communities are complicated, in additional to the temporal differences, by definitional differences between the NATSIS and NHS surveys - the former including all persons aged 13 years and over and the latter restricting statistics on alcohol to those aged 18 years and over. However, age-specific comparisons of drinking behaviour yield an interesting picture (Figure 11.9). The NHS reports lower proportions of non-drinkers (12 months or more since last drank alcohol) in the NSW general community than NATSIS reports among NSW Aboriginal people in all broad age groups. Bhatia and Anderson[4] report similar findings nationally.

It is difficult to reconcile these figures with the up to 30-fold differences in mortality rates from alcohol related illnesses seen within the Aboriginal population. One possible explanation may be that, although there are proportionally fewer drinkers within the Aboriginal population, many of those who do drink are heavy drinkers and that, in combination with other risk factors, this is reflected in the very high alcohol related mortality rates. No information is available from NATSIS regarding quantities of alcohol consumed.

Figure 11.9 Period since last drank alcohol, NSW Aboriginal (1994) and general population (1989/90)

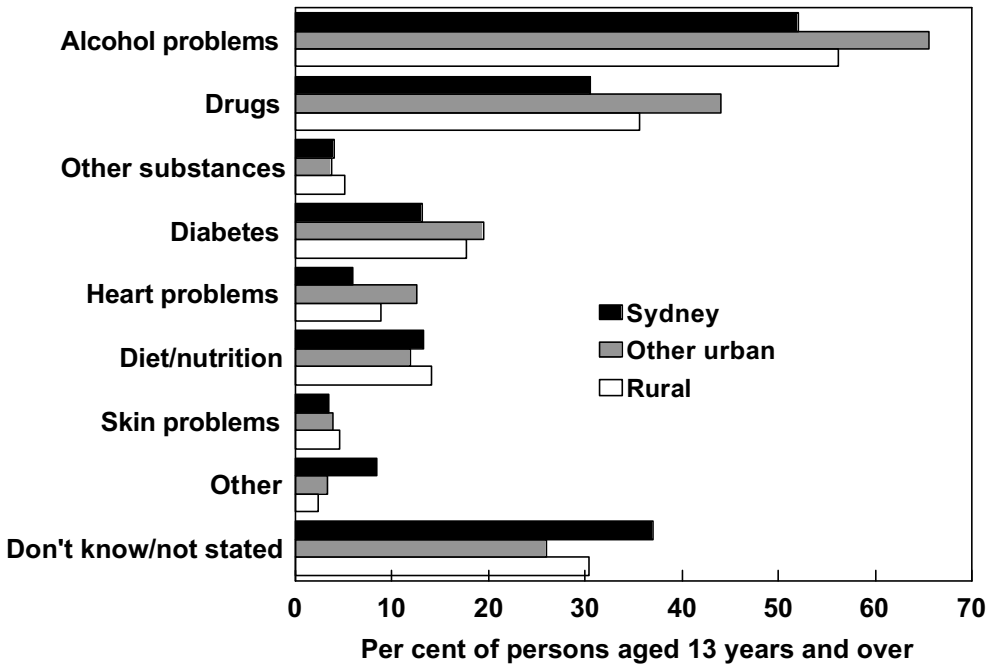


Source: Australian Bureau of Statistics National Aboriginal and Torres Strait Islander Survey (1994) and National Health Survey (1989/90)

11.5.3 Perceived health and substance use problems

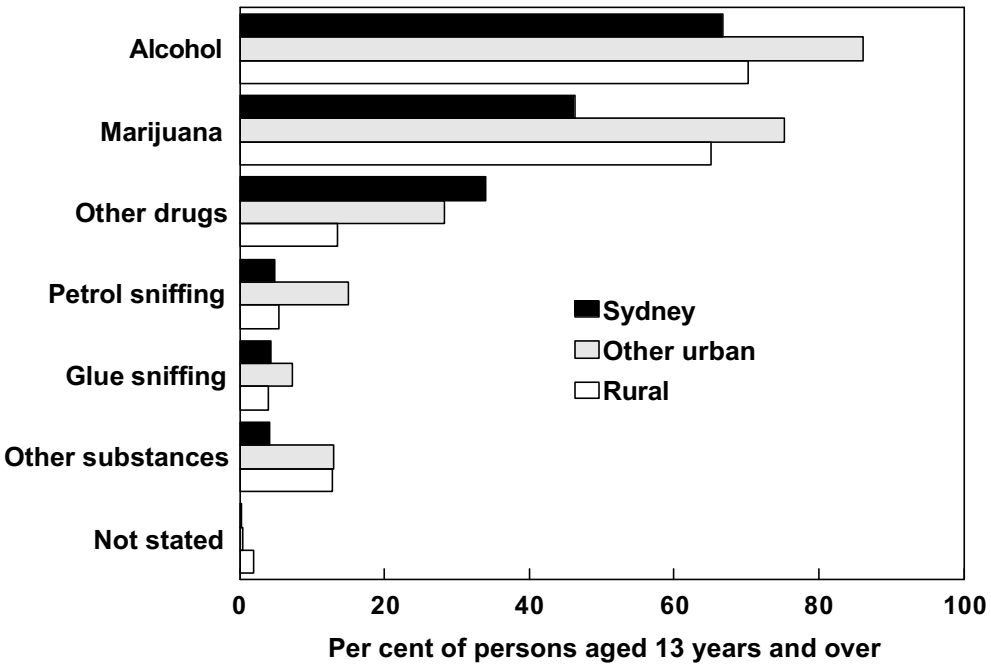
NATSIS reported that 59.9 per cent of the NSW Aboriginal community believed alcohol to be a health problem in the local area and 77.6 per cent believed alcohol was a substance use problem locally. Alcohol and drugs (marijuana) were widely perceived to be the largest health and substance use problems within local NSW Aboriginal communities. (Figures 11.10 and 11.11). Comparative figures for the general population are not readily available.

Figure 11.10 Perceived health problems in NSW Aboriginal communities, 1994



Source: Australian Bureau of Statistics. National Aboriginal & Torres Strait Islander Survey 1994.

Figure 11.11 Perceived substance use problems in NSW Aboriginal communities, 1994



Source: Australian Bureau of Statistics. National Aboriginal & Torres Strait Islander Survey 1994

11.6 Health related actions

11.6.1 NATSIS survey findings

The NATSIS and NHS[19] surveys provide information on self-reported health related actions taken during the two weeks prior to interview (Table 11.5).

Table 11.5 Health related actions in two weeks prior to interview NSW Aboriginal (1994) and general communities (1989/90) by age

	Aboriginal & Torres Strait Islander Peoples (1994)			NSW total population (1989/90)		
	< 25 years (%)	45+ years (%)	Total (%)	< 25 years (%)	45+ years (%)	Total (%)
Took no action	61.3	27.8	55.6	33.6	14.6	24.7
Hospitalised	1.5	3.6	1.6	0.8	1.2	1.0
Visited casualty or outpatient department	3.6	10.3	4.8	1.9	2.2	1.9
Consult doctor	18.7	29.4	19.6	17.3	28.0	21.0
Used medication	29.3	68.3	34.0	68.0	85.9	76.4
Reduced daily activities	14.5	14.3	14.7	16.8	14.1	15.7
Took any action	38.7	72.2	44.4	66.4	85.4	75.3

Note: Persons may have taken more than one type of action
Source: Australian Bureau of Statistics, unpublished NATSIS results for NSW residents
ABS National Health Survey data, Epidemiology Branch, NSW Health Department

While the proportions in the table above have not been age-adjusted, they do highlight a number of important differences between the health related actions of NSW Aboriginal people and the general population:

- overall Aboriginal people are about as likely to either consult a doctor or reduce daily activities for health reasons as NSW residents on average
- Aboriginal people are more likely to be hospitalised (three times more likely for those over 45 years) or visit a casualty department or outpatient clinic (more than twice as likely overall and nearly 5 times more likely if aged 45 years or more)
- Aboriginal people are about half as likely to use medication (excluding bush medicine).

Other health actions reported as taken by Aboriginal people in the NATSIS survey included the following:

- About 1,870 (2.3 per cent) Aboriginal people living in NSW reported using bush medicine within the two weeks before the NATSIS survey, with 5.8 per cent of those aged 45 years or older reporting use of traditional Aboriginal remedies. Minor (but not statistically significant) differences were reported between usage of bush medicine in Sydney, other urban centres and rural areas with highest usage being reported among Aboriginal residents of Sydney. Inclusion of bush medicine in use of medication comparisons does not materially change the observation of lower usage of medications by Aboriginal people.
- Some 2.5 per cent reported consulting a nurse in the two weeks prior to interview, with lower rates reported by Sydney residents (1.5 per cent) than other urban or rural residents (2.9 per cent).
- Slightly fewer (2.3 per cent) reported seeing an Aboriginal health worker, with similar geographic patterns to those described for nurse consultations.

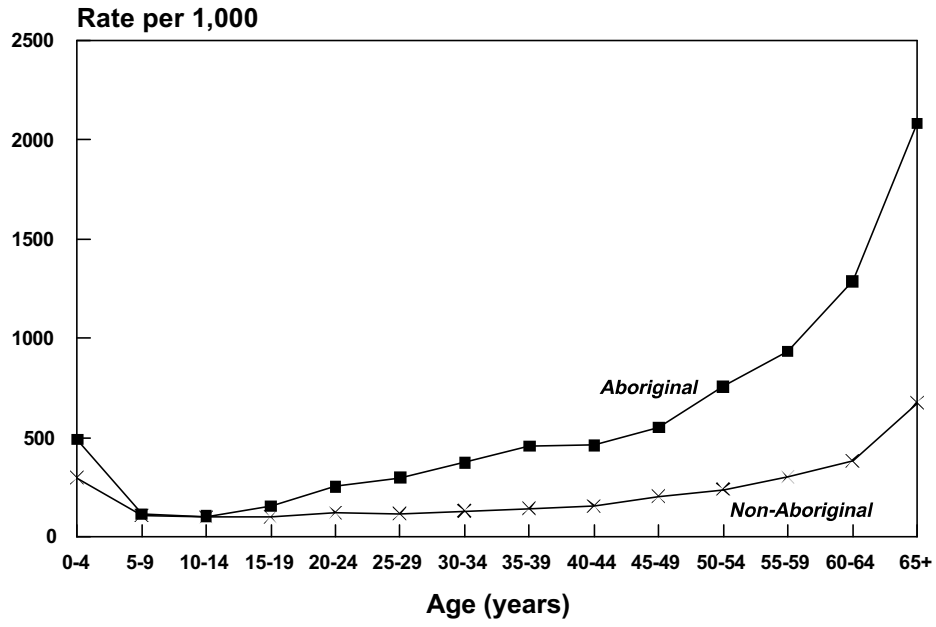
11.6.2 Hospitalisation

Although the NSW Inpatient Statistics Collection (ISC) provides for the identification of Aboriginal people in the reporting of admissions to hospital, there is believed to be considerable under-reporting of hospitalisation of Aboriginal people particularly in the Sydney metropolitan area. Not much progress appears to have been made in this regard since 1984[20] when it was reported that reluctance on the part of admissions staff to ask patients about Aboriginality lead to reliance on visual assessment. Failures in administrative procedures and lack of awareness about the reasons for collecting this information (among hospital staff, the general community and the Aboriginal community) also contribute to poor identification within the ISC.

Despite the difficulties posed by under-reporting, the ISC does reflect considerable differences in hospital utilisation by Aboriginal and non-Aboriginal residents of NSW.

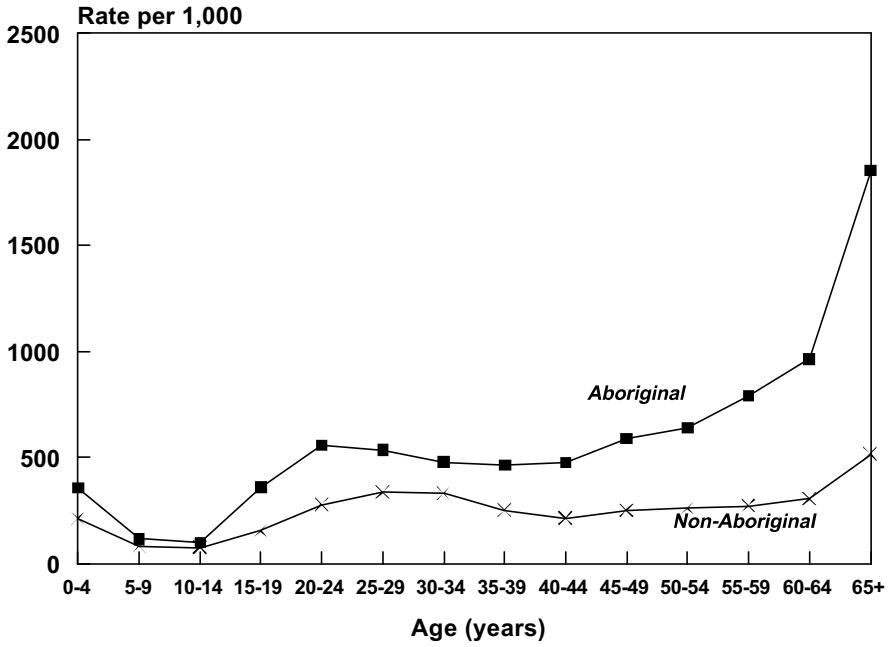
ISC data show that hospitalisation rates among the Aboriginal community exceed those of the non-Aboriginal NSW population in most, if not all, age groups for both males and females (Figures 11.12 and 11.13) . While age-specific hospital admission rates are higher for Aboriginal children aged under 5 years and similar to those of the general population between 5 and 14 years, thereafter the gap continues to widen until at age 50-54 years the male Aboriginal:non-Aboriginal hospitalisation rate ratio is approximately 3 and the female rate ratio is approximately 2.5. Beyond this age the rate differences persist, increasing slightly with age. The figures presenting age-specific admission rates exclude hospitalisation for dialysis due to the relatively large impact of regular hospitalisation for a relatively small number of individuals.

Figure 11.12 Hospitalisation among males by Aboriginality, NSW 1992/93



Note: Rates exclude hospitalisations for renal dialysis.
Data source: NSW Inpatient Statistics Collection 1992/93 and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

Figure 11.13 Hospitalisation among females by Aboriginality, NSW 1992/93



Note: Rates exclude hospitalisations for renal dialysis
Data source: NSW Inpatient Statistics Collection 1992/93 and population estimates (HOIST) Epidemiology Branch, NSW Health Department

Overall the NSW ISC indicates that:

- Hospital separation rates among Aboriginal males in 1992/93 were 690 per 1,000 and 238 per 1,000 among non-Aboriginal males; thus hospitalisation rates among Aboriginal males were 2.9 times those of their non-Aboriginal counterparts.
- Hospital separation rates among Aboriginal females in 1992/93 were 666 per 1,000 and 274 per 1,000 among non-Aboriginal females; thus hospitalisation rates among Aboriginal females were 2.4 times those of their non-Aboriginal counterparts.

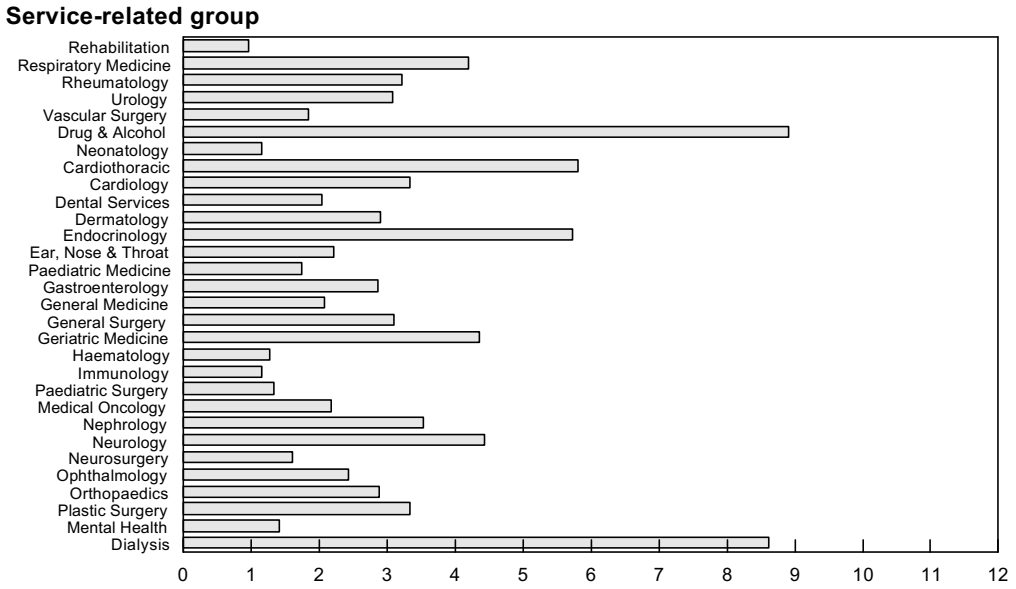
These hospital separation rates were directly standardised using the 1991 Australian total population.

The diagnostic information contained within the ISC allows categorisation of reasons for admission and treatment delivered according to many different classifications. The Service Related Group (SRG) classification, developed by NSW Health Department, groups patients into entities resembling hospital departments, using Australian National Diagnosis Related Groups (AN-DRGs) in most cases. While most SRGs are self-explanatory, it is worth noting that the Cardiothoracic Surgery group includes patients admitted with multiple fractured ribs as they would often be referred to a cardiothoracic surgeon who would check for internal chest injuries. Figures 11.14 and 11.15 compare hospitalisation rates by SRG for Aboriginal and non-Aboriginal males and females in NSW during 1992/93.

Comparison of cause-specific hospitalisations reveals:

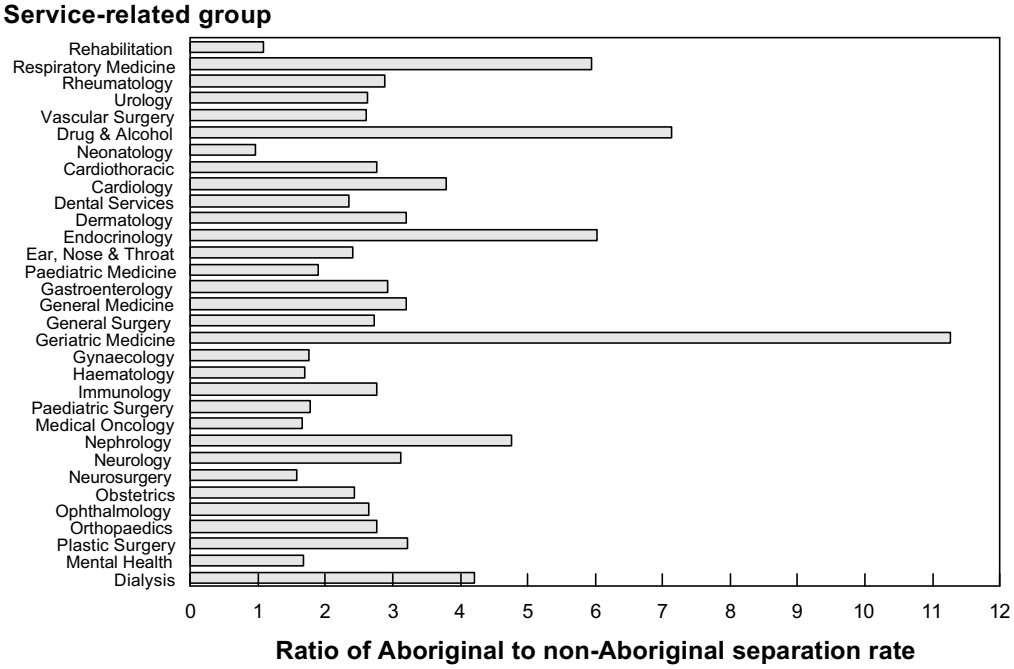
- Hospitalisation rates for Aboriginal males for treatment of drug and alcohol problems are 8.9 times higher than for non-Aboriginal males, and Aboriginal females 7.1 times higher than for non-Aboriginal females.
- Hospitalisation rates of Aboriginal men and women for renal dialysis were 8.6 and 4.2 times higher respectively than their non-Aboriginal counterparts, although these rate ratios are likely to vary considerably from year to year, depending upon the hospitalisation patterns of individuals and data quality.
- Aboriginal males were between 3 and 6 times more likely to be hospitalised than non-Aboriginal males for conditions classified to Cardiothoracic Surgery (5.8 times more likely) Endocrinology (5.7), Neurology (4.4), Geriatric Medicine (4.4), Respiratory Medicine (4.2), Nephrology (3.5), Plastic Surgery (3.3), Cardiology (3.3), Rheumatology (3.2), General Surgery (3.1) and Urology (3.1)

Figure 11.14 Hospitalisation rate ratios by service-related group Aboriginal vs non-Aboriginal males, NSW 1992/93



Note: Rates were standardised to 1991 Australian Census Population
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department

Figure 11.15 Hospitalisation rate ratios by service related group Aboriginal vs non-Aboriginal females, NSW 1992/93



Note: Rates were standardised to 1991 Australian Census PopulationData Data source:
Data source: NSW Inpatient Statistics Collection 1992/93 and population estimates (HOIST), Epidemiology Branch, NSW Health Department

- Aboriginal females were 11 times more likely than non-Aboriginal females to be hospitalised for conditions classified to Geriatric Medicine and between 3 and 6 times more likely to be hospitalised for Endocrinology (6.0 times), Respiratory Medicine (5.9), Nephrology (4.8), Cardiology (3.8), Plastic Surgery (3.2), General Medicine (3.2), Dermatology (3.2) and Neurology (3.1).
- Aboriginal males were between 2 and 3 times more likely than non-Aboriginal males to be hospitalised for conditions classified to Dermatology (2.9), Orthopaedics (2.9), Gastroenterology (2.9), Ophthalmology (2.4), Ear Nose and Throat (2.2), Medical Oncology (2.2), General Medicine (2.1) and Dental Services (2.0).
- Aboriginal females were between 2 and 3 times more likely than non-Aboriginal females to be hospitalised for conditions classified to Gastroenterology (2.9), Rheumatology (2.9), Cardiothoracic Surgery (2.8), Orthopaedics (2.8), Immunology (2.8), General Surgery (2.7), Ophthalmology (2.6), Vascular Surgery (2.6), Obstetrics (2.4), Ear Nose and Throat (2.4), and Dental Services (2.3).
- Aboriginal male children (aged between 1 month and 15 years) were hospitalised at 1.7 times the rate of non-Aboriginal males for Paediatric Medicine and 1.3 times the non-Aboriginal male rate for Paediatric Surgery. Aboriginal female children were hospitalised at 1.9 times the non-Aboriginal female rate for Paediatric Medicine and 1.8 times higher for Paediatric Surgery.

Because of poor identification of indigenous people in routine statistical collections, these data are likely to represent conservative estimates of comparative hospitalisation rates for Aboriginal residents of NSW. While hospitalisation rates reflect the combined action of many variables including underlying morbidity, hospital admission policy, access to alternative treatment facilities, medical record documentation, coding quality and local clinical practice the great differences reported again provide compelling evidence of the size and extent of the health problems facing the NSW Aboriginal community.

11.7 How are these problems being addressed?

In November 1993, the NSW Health Department published Aboriginal Health Goals for New South Wales[21] in which goals and targets were established under two broad headings:

- preventable mortality and morbidity; and
- healthy lifestyles and risk factors.

The *Goals and Targets* document acknowledged the paucity of reliable data on the health status of Aboriginal people in NSW and heralded two projects aimed at addressing this perennial problem:

- the development of an agreement between NSW Health and the NSW Aboriginal Health Resource Cooperative regarding the collection and use of health data relating to Aboriginal people and the development of an Aboriginal community health database; and
- an awareness and training program for health service staff on the reasons for and importance of collecting information on Aboriginality in existing health data collections.

A partnership between NSW Health and the Aboriginal Health Resource Cooperative has now been established and will jointly advise the Minister on health policy, strategic planning and broad resource allocation issues. In addition the partnership will:

- develop an Aboriginal Health Policy and Strategic Plan for NSW
- implement recommendations of the National Aboriginal Health Strategy and develop a bilateral agreement with the Commonwealth Department of Human Services and Health
- implement the Aboriginal Family Health Strategy
- develop appropriate health strategies and programs to address the major health problems facing Aboriginal people
- implement the Aboriginal HIV/AIDS Health Promotion Strategy
- develop a coordinated and staged approach to improving environmental health infrastructure in Aboriginal communities, particularly water supply and sewage systems, and including provision of skills to enable local communities to maintain and repair these systems
- increase the number of Aboriginal people employed within the health system and appoint more Aboriginal people to Area and District Boards
- develop and implement an Aboriginal Mental Health Strategy

- implement a cultural awareness training package for non-Aboriginal health employees
- improve drug and alcohol services for Aboriginal people

The Goals and Targets document also listed a set of principles which must be embraced and actively pursued in the planning and delivery of health services to improve the health of Aboriginal and Torres Strait Islander peoples. These principles include acknowledgment of the existence of disadvantage and need to correct the inequities in health status and resource allocation for Aboriginal health, the need for cooperative effort within the public health system in delivering appropriate health services to Aboriginal people, the need to improve Aboriginal participation and control in health care delivery and the need to take a holistic view when addressing Aboriginal health issues by involving all sectors and agencies.

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CHAPTER 12
CHILDREN AND YOUNG PEOPLE

- At the 1991 Census children and young people comprised 37 per cent of the NSW population
- Between 1982 and 1992, infant mortality decreased from 9.8 to 6.9 per 1,000 live births
- The most common causes of serious ill health and death among children and young people are injury and cancer.
- In 1990-94, over 8,000 cases of vaccine preventable diseases were reported
- In 1994, over 25,000 children under 15 years of age had a disability and over 8,000 had an intellectual disability
- In 1994, there were over 13,000 confirmed cases of abuse or neglect in children and young people.

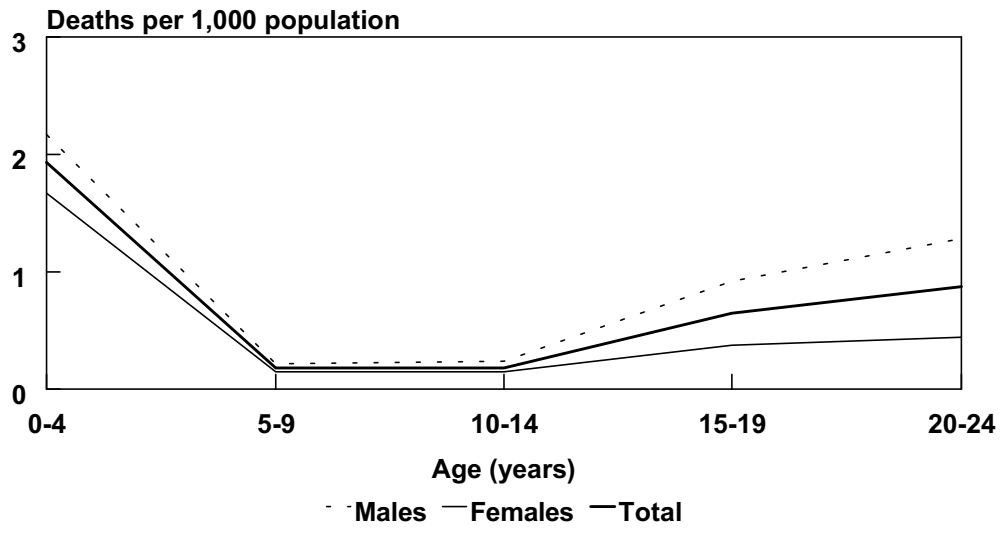
In 1991 children and young people under 25 years of age comprised 37 per cent of the NSW population: 14 per cent were aged 0-10 years and 23 per cent were aged 10-24 years[1].

In 1991, 2 per cent of children and young people were reported to be Aboriginal or Torres Strait Islander[2], while 19 per cent spoke a language other than English at home. The most common non-English speaking languages were Chinese (10.6 per cent), Arabic (10.0 per cent), Greek (8.5 per cent), Italian (7.4 per cent), Vietnamese (4.7 per cent) and Spanish (4.5 per cent)[3].

12.1 Mortality

Mortality is relatively high in early childhood, decreases during late childhood and increases in adolescence and early adulthood (Figure 12.1). The overall mortality rate among males (1.0 per 1,000) was higher than for females (0.6 per 1,000) over the five years from 1988 to 1992, and this difference was greatest in early childhood, adolescence and early adulthood (Figure 12.1).

Figure 12.1 Mortality among children and young people by sex and age, NSW 1988-92



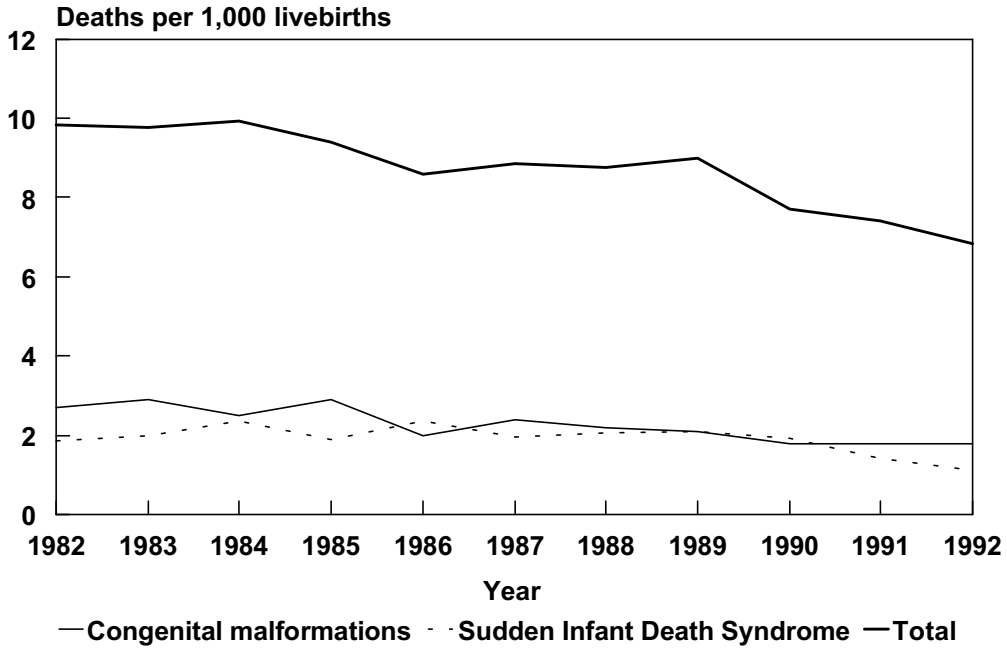
Data source: Australian Bureau of Statistics mortality data, and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

In the period 1988 to 1992, on average 831 deaths per year occurred among 0-4 year-olds - a rate of 1.9 per 1,000. Of these deaths, 699 (84.1 per cent) occurred among infants and 132 (15.9 per cent) among 1-4 year-olds.

The most common causes of infant mortality were congenital malformations (24.3 per cent) and sudden infant death syndrome (SIDS) (21.6 per cent). Between 1982 and 1992, infant mortality decreased from 9.8 to 6.9 per 1,000 (Figure 12.2). The death rate due to congenital malformations decreased from 2.7 to 1.8 per 1,000. The reported death rate due to SIDS was 1.8 per 1,000 in 1982, rose to 2.4 per 1,000 in 1986 and then decreased to 1.1 per 1,000 in 1992.

The most common causes of death among 1-4 year-olds were injuries (43.9 per cent) and congenital malformations (16.5 per cent); among 5-9 year olds, injuries (48.4 per cent) and cancer (19.3 per cent); among 10-14 year-olds, injuries (46.2 per cent) and cancer (18.9 per cent); among 15-19 year-olds, injuries (73.4 per cent) and cancer (8.5 per cent); and among 20-24 year-olds, injuries (69.7 per cent), drugs and alcohol (8.1 per cent) and cancer (6.1 per cent).

Figure 12.2 Trends in infant mortality due to congenital malformations, Sudden Infant Death Syndrome and all causes, NSW 1982-92



Source: Mortality data: Australian Bureau of Statistics mortality data (HOIST), Epidemiology Branch, NSW Health Department.
Birth data: Australian Bureau of Statistics. Births New South Wales 1987, Catalogue No. 3306.1, and 1993 Demography NSW, Catalogue No 3311.1.

12.2 Injury

Injury was the most common cause of death and hospitalisation among children and young people; 640 (38.0 per cent) deaths among children and young people in the five year period 1988-1992 were caused by injury, while 48,523 (11.6 per cent) hospitalisations in the 1993-94 financial period were identified as following injuries.

Deaths due to injury were more common among males than females, and the difference increased with age: overall, 75.2 per cent of injury related deaths occurred among males, and this proportion increased from 58.6 per cent among 0-4 year olds to 79.9 per cent among 20-24 year olds. Similarly, injury related hospitalisations were more common among males with 74.2 per cent of these hospitalisations occurring among males.

Among 0-4 year-olds, the most common causes of injury related death were drownings (31.3 per cent of injury deaths), followed by traffic accidents (30.0 per cent). The most common causes of hospitalisation were falls (30.5 per cent) and poisoning (12.8 per cent) (Table 12.1).

Among 5-14 year-olds, injury deaths were most commonly due to traffic accidents (65.3 per cent) followed by drowning (9.7 per cent); while hospitalisations were most commonly due to falls (33.8 per cent) and traffic accidents (21.1 per cent).

Among 15-24 year-olds, traffic accidents were the most common cause of injury deaths (56.1 per cent), with 75.6 per cent of these occurring among males. Suicide contributed 25.4 per cent of deaths in this age group: 84.9 per cent of suicides occurred among males. Hospitalisations were most commonly due to traffic accidents (21.1 per cent) and falls (10.4 per cent).

Among hospitalisations due to falls, the type of fall varied with age. Falls from playground equipment represented 12.2 per cent of all hospitalisations following falls, and represented 10.8 per cent of hospitalisations following falls for children aged 0-4 years, 24.1 per cent for 5-9 year-olds and 10.0 per cent for 10-14 year-olds. Overall, falls from slipping, tripping or stumbling (on the same level) contributed 14.0 per cent of hospitalisations due to falls, and were most common among 10-14 year-olds. Falls from a bed or chair contributed 12.8 per cent of hospitalisations due to falls; 15.6 per cent of these occurred among 0-4 year-olds and 53.3 per cent among 5-14 year-olds.

Table 12.1 Hospitalisations due to injury by age and cause, NSW 1993/94

	Age (years)											
	0-4		5-9		10-14		15-19		20-24		Total	
Cause of injury	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000
Motor vehicle-occupant	148	0.3	161	0.4	186	0.4	988	2.3	1223	2.6	2706	1.2
Motorcyclist	10	0.0	36	0.1	172	0.4	427	1.0	515	1.1	1160	0.5
Motor vehicle-pedal cycle	3	0.0	43	0.1	69	0.2	50	0.1	49	0.1	214	0.1
Motor vehicle-pedestrian	129	0.3	152	0.4	150	0.4	162	0.4	158	0.3	751	0.3
Off-Road MVA	11	0.0	29	0.1	67	0.2	97	0.2	74	0.2	278	0.1
Non-motor vehicle	120	0.3	391	0.9	501	1.2	208	0.5	100	0.2	1320	0.6
Other transport	145	0.3	377	0.9	863	2.0	626	1.5	589	1.2	2600	1.2
Drowning	106	0.2	16	0.0	17	0.0	20	0.0	26	0.1	185	0.1
Poisoning	1085	2.5	61	0.1	165	0.4	504	1.2	538	1.1	2353	1.1
Post-operative complications	951	2.2	543	1.3	496	1.2	741	1.7	1093	2.3	3824	1.7
Falls	2576	5.9	2990	7.0	2129	5.1	1249	2.9	1344	2.8	10288	4.7
Burns	594	1.4	108	0.3	85	0.2	132	0.3	148	0.3	1067	0.5
Environmental	334	0.8	234	0.5	209	0.5	181	0.4	246	0.5	1204	0.5
Suffocation	88	0.2	13	0.0	4	0.0	4	0.0	2	0.0	111	0.1
Foreign body	340	0.8	172	0.4	67	0.2	47	0.1	54	0.1	680	0.3
Struck by object	447	1.0	330	0.8	372	0.9	327	0.8	362	0.8	1838	0.8
Machinery	27	0.1	21	0.0	22	0.1	173	0.4	260	0.5	503	0.2
Cutting, piercing	373	0.9	383	0.9	405	1.0	722	1.7	971	2.0	2854	1.3
Explosives	2	0.0	10	0.0	24	0.1	28	0.1	10	0.0	74	0.0
Firearms	0	0.0	4	0.0	8	0.0	21	0.0	19	0.0	52	0.0
Electricity	23	0.1	16	0.0	16	0.0	44	0.1	38	0.1	137	0.1
Overexertion	37	0.1	301	0.7	1374	3.3	1938	4.5	1779	3.7	5429	2.5
Self-inflicted injury	1	0.0	2	0.0	160	0.4	889	2.1	962	2.0	2014	0.9
Inflicted by others	94	0.2	36	0.1	142	0.3	805	1.9	1335	2.8	2412	1.1
Other	804	1.9	454	1.1	571	1.3	1071	2.5	1569	3.3	4469	2.0
Total	**8448**	**19.3**	**6883**	**16.1**	**8274**	**19.6**	**11454**	**26.7**	**13464**	**28.2**	**48523**	**22.1**

Note: Hospitalisations refer to all separations from NSW hospitals.
Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

12.3 Cancer

Cancer was the second most common cause of death among children and young people: 95 (5.6 per cent) deaths in the five year period 1988-92 were due to cancer. Deaths due to cancer are more common among males than females and increase with age (Table 12.2). Lymphomas and leukaumias accounted for 44.2 per cent of deaths due to cancer in NSW children and young people in the period from 1988-92.

Table 12.2 Cancer mortality by age and sex, NSW 1988-92

	Age (years) 0-4		5-9		10-14		15-19		20-24		Total	
	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000
Male	8	3.7	8	3.9	8	3.7	16	6.6	15	6.6	55	5.0
Female	8	3.8	6	3.0	7	3.3	9	4.1	9	4.3	39	3.7
Total	**16**	**3.7**	**14**	**3.4**	**14**	**3.5**	**25**	**5.4**	**24**	**5.5**	**94**	**4.3**

Note: Number of deaths refers to average number of deaths per year.
Excludes one death where sex was not stated.
Data Source: Australian Bureau of Statistics mortality data and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

Cancer incidence for people younger than 15 years is classified by cell type, and by site for people aged 15 years and over. Leukaumias, histiocytoses and lymphomas comprise almost two-thirds of cancers among under 15 year-olds (Table 12.3). Among 15-24 year-olds, melanoma was the most common cancer, accounting for 29.4 per cent of reported cancers, followed by the lymphomas and leukemias (Table 12.4).

Table 12.3 Cancer incidence among 0-14 year-olds by type of cancer and age, NSW 1988-92

Type of cancer	Age (years) 0-4 No.	0-4 Rate/ 1,000	5-9 No.	5-9 Rate/ 1,000	10-14 No.	10-14 Rate/ 1,000	Total No.	Total Rate/ 1,000
Leukemias	35.2	8.2	16.6	3.9	11.8	2.9	63.6	5.0
Lymphomas	4.8	1.1	8.4	2.0	7.4	1.8	20.6	1.6
Hystiocytoses	1.8	0.4	0.6	0.1	0.0	0.0	2.4	0.2
Tumours of central nervous system	13.6	3.2	11.4	2.7	10.6	2.6	35.6	2.8
Tumours of sympathetic nervous tissue	9.2	2.2	2.0	0.5	0.6	0.1	11.8	0.9
Retinoblastoma	6.4	1.5	0.0	0.0	0.0	0.0	6.4	0.5
Wilm's tumour	8.0	1.9	1.2	0.3	0.0	0.0	9.2	0.7
Bone tumours	1.4	0.3	1.2	0.3	3.4	0.8	6.0	0.5
Soft tissue sarcoma	3.2	0.7	0.6	0.1	1.6	0.4	5.4	0.4
Rhabdomyo-sarcoma	4.8	1.1	2.2	0.5	0.8	0.2	7.8	0.6
Melanoma	0.6	0.1	0.6	0.1	4.0	1.0	5.2	0.4
Other	5.2	-	1.0	-	6.4	-	13.6	-
Total	**94.2**	**22.0**	**46.8**	**11.0**	**46.6**	**11.3**	**187.6**	**14.8**

Note: Number of deaths refers to average number of deaths per year.
Of the tumours of sympathetic nervous tissue, all but one were neuroblastomas.
Data source: NSW Central Cancer Registry data and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

Table 12.4 Cancer incidence among 15-24 year-olds by site of cancer and age, NSW 1988-92

Site of cancer	Age (years) 15-19 No.	15-19 Rate/ 1,000	20-24 No.	20-24 Rate/ 1,000	Total No.	Total Rate/ 1,000
Testis (a)	1.6	0.7	3.2	1.4	4.8	1.0
Brain	2.0	0.4	2.0	0.4	4.0	0.4
Leukemias	2.6	0.6	1.6	0.4	4.2	0.5
Lymphomas	3.2	0.7	4.2	0.9	7.4	0.8
Melanoma	5.0	1.1	10.6	2.4	15.6	1.7
Other	5.4	-	9.6	-	15.0	-
Total	**19.8**	**4.2**	**31.2**	**7.0**	**51.0**	**5.6**

Notes: Number of deaths refers to average number of deaths per year.
(a) Rates for cancer of the testis are for males, other rates are for both sexes combined.
Data source: NSW Central Cancer Registry and population estimates, Epidemiology Branch, NSW Health Department

12.4 Vaccine preventable diseases

The overall occurrence of vaccine preventable diseases in NSW and current childhood immunisation status are described in Chapter 4. This section provides more detailed information on the occurrence of vaccine preventable diseases among children and young people.

Measles was the most commonly notified vaccine preventable disease among children and young people in NSW over the five years 1990-94, followed by whooping cough and rubella (Table 12.5). All vaccine preventable diseases were more commonly notified in children and young people than in adults.

Rubella infection is of particular concern during pregnancy, as it may result in congenital heart disease and hearing loss in the infant. In the period May 1993 to October 1994, seven cases of congenital rubella among under 16 year-olds in NSW were identified by the Australian Paediatric Surveillance Unit[4]. In 1993, rubella was most commonly notified among males aged 15-19 years[5]. As a result of this increased incidence of rubella among teenage males, the measles, mumps and rubella vaccination program for year 7 students was extended to include males in 1995.

Table 12.5 Notifications of selected vaccine preventable diseases, NSW 1990-94

Disease	Age (years) 0-4 No.	5-9 No.	10-14 No.	15-19 No.	20-24 No.	Total No.
Measles	1826	1672	1367	622	182	5669
Whooping cough	281	398	349	127	80	1235
Rubella	57	146	201	319	218	941
H influenzae type B infection	182	14	0	0	0	196
Mumps	12	0	7	9	0	34
Tetanus	0	0	0	0	0	0
Total	**2423**	**2251**	**1934**	**1090**	**489**	**8187**

Source: Infectious Diseases Surveillance System, AIDS/Infectious Diseases Branch, NSW Health Department.

In the 1993/94 financial year, there were almost 400 admissions to hospitals in NSW with a principal diagnosis of pertussis among children and young people, and a similar number for measles (Table 12.6). In addition, there were 7 admissions for mumps and 2 for diphtheria. Admissions for vaccine preventable diseases were more common among the very young.

Table 12.6 Hospital separations for selected vaccine preventable diseases, NSW 1993/94

Disease	Age (Years) 0-4 No.	5-9 No.	10-14 No.	15-19 No.	20-24 No.	Total No.
Measles	180	93	46	52	14	385
Pertussis	342	33	19	2	2	398
H influenzae type B infection	62	7	3	2	2	76
Rubella	15	2	4	4	0	25

Note: Separations refer to NSW hospitals and may include residents of other States.
Data source: Inpatient Statistics Collection (HOIST), Epidemiology Branch, NSW Health Department.

12.5 Disability

At the end of 1994, over 25,000 children less than 15 years of age were receiving the Child Disability Allowance (Table 12.7), eligibility for which is based on the level of care and attention provided by carers. These figures underestimate the prevalence of disability, as those who do not require frequent care from others are not represented.

Table 12.7 Children receiving the Child Disability Allowance, NSW 1994

Age (years)	Male No.	Male Rate/ 1,000	Female No.	Female Rate/ 1,000	Total No.	Total Rate/ 1,000
0-4	4016	17.8	2607	12.2	6623	15.1
5-9	6436	29.6	3517	16.8	9953	23.3
10-14	5609	25.8	2957	14.3	8566	20.2
Total	**16061**	**24.3**	**9081**	**14.4**	**25142**	**19.5**

Source: Department of Social Security Family Payments Survey 1994.
Population estimates, Epidemiology Branch, NSW Health Department.

Intellectual disability

There were 8,421 children less than 15 years of age attending school in 1994 who had been identified as having an intellectual disability (Table 12.8). Of these, 57.9 per cent were reported to have a mild disability, 27.6 per cent a moderate disability and 14.5 per cent a severe disability. These figures underestimate the number of mildly disabled children because not all children with mild disabilities require or receive special services. The increase in the rates of intellectual disability reported at ages 8 and 9 years compared with earlier ages may be due to a delay in the detection of mild levels of intellectual disability. Approximately 72.6 per cent of boys and 79.2 per cent of girls with identified intellectual disabilities attended support classes in ordinary schools. The remainder attended special purpose schools..

Hearing impairment

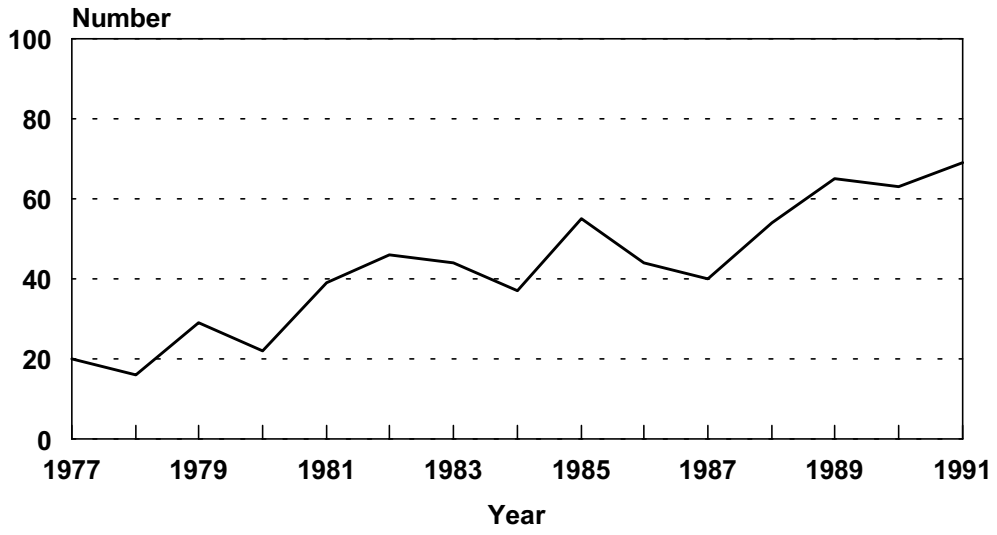
There is no information on the true prevalence of hearing impairment among children and young people in NSW. Among people aged less than 17 years, 2.2 per 1,000 are fitted with hearing aids. Of these, about 60 per cent are currently fitted before 2 years of age. The number of children who are fitted with hearing aids at less than 2 years of age has increased in recent years, indicating a trend towards earlier detection of hearing impairment (Figure 12.3). There is no information on the occurrence of hearing loss which is not severe enough to require a hearing aid, and this includes most cases of conductive hearing loss.

Table 12.8 Intellectually disabled children attending school, NSW 1994

Age (years)	Level of intellectual disability: Mild No.	Mild Rate/ 1,000	Moderate No.	Moderate Rate/ 1,000	Severe No.	Severe Rate/ 1,000	Total No.	Total Rate/ 1,000
5	13	0.2	170	3.0	128	2.3	311	5.6
6	43	0.7	247	3.9	111	1.8	401	6.3
7	112	1.8	249	3.9	133	2.1	494	7.8
8	499	7.9	266	4.2	122	1.9	887	14.1
9	726	11.6	221	3.5	120	1.9	1067	17.1
10	810	13.0	248	4.0	119	1.9	1177	18.8
11	756	12.1	236	3.8	123	2.0	1115	17.8
12	659	11.2	230	3.9	125	2.1	1014	17.2
13	649	11.2	227	3.9	131	2.3	1007	17.3
14	611	10.8	229	4.1	107	1.9	947	16.8
Total	**4878**	**8.0**	**2323**	**3.8**	**1219**	**2.0**	**8420**	**13.9**

Data Source: Corporate Data Analysis, Department of School Education. Population estimates (HOIST), Epidemiology Branch, NSW Health Department.

Figure 12.3 Children under 2 years of age fitted with a hearing aid, NSW 1977-91



Data source: National Acoustics Laboratories

12.6 Congenital malformations

Congenital malformations were reported in about 2.1 per cent of livebirths in NSW between 1990 and 1992[6]. The most common malformations include defects of the heart (atrial and ventricular septal defects, valvular defects and patent ductus arteriosus), hypospadias, congenital dislocation of the hips, cleft lip/ cleft palate, and Down Syndrome (Table 12.9).

Table 12.9 Congenital malformations among livebirths by type of malformation, NSW 1990-92

Type of congenital malformation	No. / year	Rate/ 1,000	Type of congenital malformation	No. / year	Rate/ 1,000
Nervous system	121	1.4	Genito-urinary system	528	6.1
Neural tube defects	37	0.5	Undescended testis	63	0.7
Congenital hydrocephalus	31	0.4	Hypospadias	205	2.4
Eye	59	0.7	Chordee	50	0.6
Ear, face and neck	44	0.5	Obstructive defects of renal pelvis/ureter	68	0.8
Cardiovascular system	734	8.4	Musculo-skeletal system	654	7.5
Ventricular septal defect	169	1.9	Congenital dislocation of the hips	186	2.1
Atrial septal defect	130	1.5	Polydactyly	73	0.8
Heart valve defects	105	1.2	Reduction deformities of limbs	59	0.7
Patent ductus arteriosus (< 37 weeks)	111	1.3	Craniosynostosis	94	1.1
Respiratory system	35	0.4	Integumentary system	21	0.2
Gastrointestinal system	281	3.2	Chromosomal defects	128	1.5
Cleft palate only	61	0.7	Trisomy 21 (Down's Syndrome)	90	1.0
Cleft lip only	33	0.4	Other	60	0.7
Cleft lip/palate	38	0.4	**Total**	**2667**	**30.6**

Notes: Congenital malformations detected up to one year of age.
For infants with more than one malformation, each malformation is counted separately.
Data source: NSW Birth Defects Register, Epidemiology Branch, NSW Health Department.

12.7 Attention deficit disorder

The true prevalence of attention deficit disorder (ADD) in NSW is not known. In 1994, drugs for the treatment of ADD were prescribed for the first time in 2.7 per 1,000 people less than 25 years of age (Table 12.10). The highest rate was among 5-9 year-olds and rates were over four times higher for males than females.

The prescription of drugs for attention deficit disorder increased over five-fold since 1990: from a rate of 0.5/1,000 in 1990 to 2.7/1,000 in 1994. This increase may have been due to greater awareness of attention deficit disorder or changing practice in the management of this condition.

Table 12.10 New authorities for drugs to treat attention deficit disorder, NSW 1994

Age (years)	Male		Female		Total	
	No.	Rate/ 1,000	No	Rate/ 1,000	No.	Rate/ 1,000
0-4	238	1.1	50	0.2	288	0.7
5-9	2402	11.0	509	2.4	2911	6.7
10-14	1868	8.6	331	1.6	2199	5.1
15-19	310	1.4	87	0.4	397	0.9
20-24	49	0.2	19	0.1	68	0.2
Total	**4867**	**4.3**	**996**	**0.9**	**5863**	**2.7**

Source: Pharmaceutical Services Branch, NSW Health Department. Population estimates (HOIST), Epidemiology Branch, NSW Health Department.

12.8 Violence, abuse and neglect

Many occurrences of child abuse and neglect go unreported. Those that are reported come to the attention of the NSW Department of Community Services.

In 1994 the Department of Community Services received and investigated reports on 22,049 children less than 18 years of age. These reports ranged from requests from parents concerned about their parenting to instances of actual harm or injury, for example bruising. For 13,305 (60.3 per cent) children, concerns were confirmed (Table 12.11).

Confirmed emotional abuse and neglect was most commonly found in younger children and decreased in frequency as children became older. The rates of confirmed physical abuse in both sexes and sexual abuse among females increased up to 10-14 years and then decreased.

The rate of hospitalisation for injuries inflicted by others increased with age and was over four times more common for males than females for 20-24 year olds (Table 12.12).

Table 12.11 Reported abuse among children and young people by type of actual abuse, NSW 1994

Type of actual abuse	0-4		5-9		10-14		15-19		Total	
	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000
Neglect	988	3.2	788.0	3.0	480.0	1.9	52.0	0.4	2308	2.4
Emotional	1691	5.5	1289.0	4.9	1237.0	4.9	211.0	1.5	4428	4.5
Physical	864	2.8	859.0	3.2	1351.0	5.4	315.0	2.2	3389	3.5
Sexual	487	1.6	1026.0	3.9	1293	5.1	374.0	2.6	3180	3.3
No abuse	3397	11.1	2930.0	11.1	2065.0	8.2	352.0	2.5	8744	9.1
Total	**7427**	**24.3**	**6892.0**	**26**	**6426.0**	**25.4**	**1304.0**	**9.2**	**22049**	**22.9**

Note: Children notified more than once in the same year are included once.
No abuse: abuse not confirmed on investigation.

Data source: Child Protection Database, NSW Department of Community Services.
Population estimates: Australian Bureau of Statistics, 1993 Demography New South Wales, Catalogue No. 3311.1, 1995.

Table 12.12: Hospital separations for injury caused by others by age and sex, NSW 1993/94

Sex	Age (years) 0-4		5-9		10-14		15-19		20-24		Total	
	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000
Male	56	0.3	23	0.1	117	0.5	645	2.9	1094	4.5	1935	1.7
Female	38	0.2	13	0.1	25	0.1	160	0.8	241	1.0	477	0.4
Total	94	0.2	36	0.1	142	0.3	805	1.9	1335	2.8	2412	1.1

Data source: NSW Inpatient Statistics Collection 1993/94 and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

12.9 Mental Health

There is no population based information on the mental health of children and young people in NSW. The available information concerning drug and alcohol abuse has been discussed in Chapter 1.

Suicide and self-inflicted injury

In the period 1988-1992, suicides accounted for an average 128 deaths per year among people aged less than 25 years, representing 20.0 per cent of all deaths in this age group. Of these 128 deaths, all but 2 occurred among young people aged 15-24 years, and suicide accounted for 25.4 per cent of all deaths in this age group. Suicide was more common among males who accounted for 85.2 per cent of all suicide deaths.

Hospitalisation for self-inflicted injury, on the other hand, was more common among females than males. Of the 2,014 hospitalisations in NSW for self-inflicted injury in the 1993/94 financial year, 1,272 (63.2 per cent) were among females. In the 15-14 year age group there were 1,851 hospitalisations for self-inflicted injury, accounting for 7.4 per cent of all admissions for this age group.

Eating disorders

In the financial year 1993/94, there were 623 hospitalisations for anorexia nervosa and bulemia among young people in NSW (Table 12.13). Of hospitalisations for anorexia nervosa, 95.6 per cent were among females and for bulimia, 98.9 per cent were among females.

Table 12.13 Hospitalisations due to eating disorders, 1993/94

Eating disorder	Age (years) 10-14 No.	10-14 Rate/ 1,000	15-19 No.	15-19 Rate/ 1,000	20-24 No.	20-24 Rate/ 1,000	Total No.	Total Rate/ 1,000
Anorexia nervosa	90	0.2	153	0.3	198	0.4	441	0.3
Bulimia	0	0.0	44	0.1	138	0.2	182	0.1

Note: Multiple hospitalisations for the same person counted more than once.
Data source: Inpatient Statistics Collection 1993/94 and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

12.10 Dental health

There is no population based information on the dental health of children and young people. Some information is available through the NSW Health Department's Child Dental Health Survey, which collects annual demographic, dental service and dental status information on a random sample of NSW primary school children attending school dental clinics. Currently, it is not known whether children attending school dental clinics are representative of all children.

Children's dental health is usually reported at 6 years of age to monitor the state of primary teeth and at 12 years of age for secondary teeth. The two major indicators of children's dental health are the number of decayed, missing and filled teeth and the proportion of children with no decayed teeth.

Overall, the dental health of children has improved since 1977. The mean number of decayed missing and filled primary teeth for 6 year olds decreased from 2.7 in 1977 to 2.0 in 1993, and the mean number of decayed, missing and filled permanent teeth among 12 year-olds decreased from 4.0 in 1977 to 1.0 in 1993[7].

The proportion of children with no decayed teeth has increased since 1977. Among 6 year-old children, 60 per cent were caries free in 1993 compared with 46 per cent in 1977. For 12 year-olds the figures were 68 per cent and 34 per cent respectively.

In the 1993/94 financial year, 12,914 under 25 year-olds were hospitalised primarily for removal or restoration of teeth and 9,646 (74.7 per cent) of these were aged 15-24 years.

12.11 Insulin dependent diabetes mellitis

Insulin dependent diabetes mellitus (IDDM) is an important health issue for children and young people because good control of diabetes in early life will delay the onset of complications in later life. The prevalence of IDDM among under 15 year-olds in NSW is about 15 per 100,000 (Table 12.14). This figure falls in the middle of the range reported by other countries.

The incidence of IDDM was found in one study to be similar among Aboriginal and non-Aboriginal children and young people in NSW[8]. Hospitalisation rates over the period from 1988/89 to 1993/94 were between 63.8-151.5 per 100,000 for Aboriginal children and 145.4-159.2 per 100,000 for non-Aboriginal children[9].

Table 12.14 Insulin dependent diabetes mellitis by age and sex, NSW 1991

Age (years)	Males			Females			Total		
	No.	Rate/ 100,000	(95% CI)	No.	Rate/ 100,000	(95% CI)	No.	Rate/ 100,000	(95% CI)
0-4	15	7.1	(4.0-11.8)	17	8.5	(5.0-13.6)	32	7.8	(5.4-11.0)
5-9	31	14.0	(9.5-19.9)	37	17.6	(12.4-24.3	68	15.8	(12.3-20.1)
10-1	44	421.0	(15.3-28)	44	22.1	(16.1-29.7)	88	21.6	(17.4-26.7)
Total	**90**	**14.2**	**(11.5-17.5)**	**98**	**16.1**	**(13.1-19.7)**	**188**	**15.0**	**(13.0-17.4)**

Source: Verge CF, Silink M, Howard NJ. The incidence of childhood IDDM in New South Wales, Australia. *Diabetes Care*, 1994;17:693-696.

12.12 Asthma

Australia and New Zealand have the highest prevalence of asthma in the world and the highest death rates. Estimates of the prevalence of asthma in children vary from 10 to 24 per cent in Australia[10]. A two-fold increase in prevalence has been reported in some areas of NSW since 1992. It has been suggested that this increase in prevalence is due to an increase in airway hyper-responsiveness in atopic children, or changing environmental allergens[11].

In the financial period 1993/94, 13,077 children and young people were admitted to hospital with a primary diagnosis of asthma - a rate of 6.0 per 1,000 (Table 12.15). While asthma is a common condition, deaths due to asthma are uncommon in childhood: in the four year period 1989-1992, there were 90 deaths among people aged less than 25 years in NSW.

Geographic variations in the prevalence of asthma have been attributed to variations in the distribution of environmental allergens. The higher prevalence of asthma in coastal areas compared with inland areas may be related to the higher levels of household dustmite in coastal areas. Variations in asthma prevalence among inland areas may be related to varying levels of outdoor allergens such as pollens and moulds[12].

Table 12.15 Hospital separations for asthma by age and sex, NSW 1993/94

Sex	Age (years) 0-4		5-9		10-14		15-19		20-24		Total	
	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000
Male	4331	19.4	1575	7.2	969	4.4	422	1.9	287	1.1	7584	6.8
Female	2227	10.5	1080	5.2	851	4.1	735	3.5	600	2.6	5493	5.1
Total	**6558**	**15.0**	**2655**	**6.2**	**1820**	**4.3**	**1157**	**2.7**	**887**	**1.9**	**13077**	**6.0**

Data source: NSW Inpatient Statistics Collection and population estimates (HOIST), Epidemiology Branch, NSW Health Department.

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CHAPTER 13
THE HEALTH OF OLDER PEOPLE

- In 1993, older people comprised 12 per cent of the population. This proportion is predicted to increase to between 20.5 and 22.0 per cent of the total population by the year 2041.
- In 1989/90, the ABS estimated that 54 per cent of older people in NSW population had cardiovascular conditions as a recent and/or long term condition. In 1992, 52 per cent of deaths among older people were from cardiovascular diseases.
- In 1992, 24 per cent of deaths among older people were from cancer. The most common sites for new cases of cancer in people aged 60 years and over were prostate, lung and colon cancer in men, and breast, colon and lung cancer in women.

- In 1989/90, 89 per cent of older people reported an illness in the two weeks prior to interview. The most commonly reported conditions were hypertension (34 per cent of older people) and arthritis (19 per cent).
- 94 per cent of older people reported long term conditions. Disorders of eyesight were reported by 62 per cent of older people and arthritis was reported by 37 per cent.
- In 1993, 43 per cent of people aged 60-74 years had a disability, and 82 per cent of these had a handicap. In those aged 75 years and over, 65 per cent had a disability, and 90 per cent of these had a handicap.

13.1 The older population

In this chapter, the term 'older people' refers to those aged 65 years and over unless otherwise specified. In 1993, older people comprised 12 per cent of the population. Two per cent of the population were aged 85 years and over.

Females accounted for the majority of older people (57 per cent). The proportion of females increased with age, from 52 per cent of people in the 65-69 year age range to 72 per cent in the 85 years-plus range[1].

The proportion of older people in the Australian population is predicted to increase to between 20.5 and 22.0 per cent of the total population by the year 2041, and the proportion of the population aged 85 years and over will rise to between 6.5 and 6.9 per cent. The ageing of the population will be reflected in a rise in the dependency ratio (the ratio of older people to the population aged 15-64) which is predicted to increase from 0.18 in 1991 to 0.37 in 2041[2].

The proportion of older people who are from a non-English speaking background is also expected to increase from 11 per cent in 1981 to 22 per cent in 2001[1]. In 1991, 13.9 per cent of older people in NSW were from a non-English speaking background, with the main countries of birth being Italy (2.1 per cent), the former USSR (1.2 per cent), Poland (1.1 per cent), China (0.9 per cent), Germany, Greece and the former Yugoslavia (0.8 per cent each), and the Netherlands (0.7 per cent)[2]. The composition of this group reflects historic immigration trends, and will therefore change over time.

13.2 Housing and income

In 1991, over 72.5 per cent of older people lived in homes which they owned, 7.0 per cent in homes they were purchasing and 13.6 per cent in rented accommodation. Of people aged 60 years and over, 59.3 per cent lived in a separate house, 26.7 per cent lived in a flat and 10.6 per cent lived in a terrace. Twenty-three per cent were living alone[2].

In August 1994, the workforce participation rate for older people was 5.1 per cent. Older people's incomes are markedly affected by movement out of the workforce; in 1991, 45 per cent had an annual income of $8,000 or less compared with 29 per cent of people aged 15 years and over[2].

13.3 Health-related behaviours

The 1989/90 ABS National Health Survey found that 68 per cent of older people took some form of exercise in the two weeks preceding the survey. The proportion of people who took recent exercise decreased from 64 per cent of those aged 65-74 years to 49 per cent of those aged 75 years and over[3].

Fifteen per cent of older people smoked. Smoking was more common among males than females (17 per cent and 13 per cent respectively). Among smokers, males tended to smoke more heavily than females, with 28 per cent of male smokers smoking more than 20 cigarettes per day compared with 21 per cent of female smokers.

Forty-seven per cent of older people consumed alcohol. Alcohol consumption was more common among males than females (62 per cent and 36 per cent respectively). Seven per cent of older males consumed alcohol at a medium or high risk level compared with 5 per cent of older females.

Thirty-seven per cent of older people were assessed as being overweight or obese on self-reported height and weight. Older males were more commonly overweight or obese (43 per cent) than older females (34 per cent).

13.4 Self-reported health status

The 1989-90 ABS National Health Survey found that 13 per cent of older people in NSW assessed their health as being poor, compared with 7 per cent of people aged 45-64.

Eighty-nine per cent of older people reported an illness in the two weeks prior to interview. The most commonly reported conditions were hypertension (34 per cent of older people) and arthritis (19 per cent).

Ninety-four per cent of older people reported experiencing conditions which had lasted or were expected to last six months or more. Disorders of eyesight were reported by 62 per cent of older people and arthritis was reported by 37 per cent.

13.5 Mortality

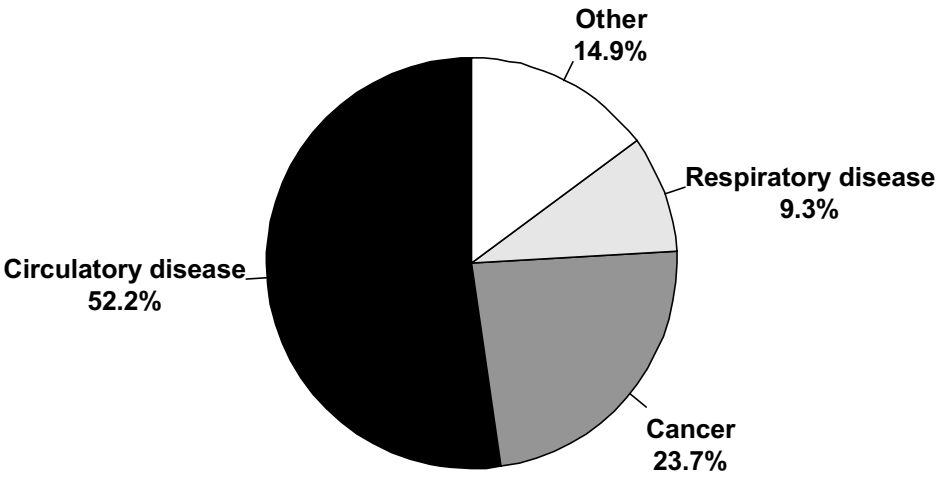
Older people experienced 76 per cent of all deaths in NSW in 1992. The mortality rate among older people was 46.3 per 1,000 population compared with 7.4 per 1,000 for the NSW population as a whole.

In 1992, the major causes of death among older people were cardiovascular diseases (52 per cent), cancer (24 per cent), and respiratory diseases (9.3 per cent) (Figure 13.1). Cardiovascular disease and cancer are discussed in Sections 13.8 and 13.9 respectively.

13.6 Hospitalisation

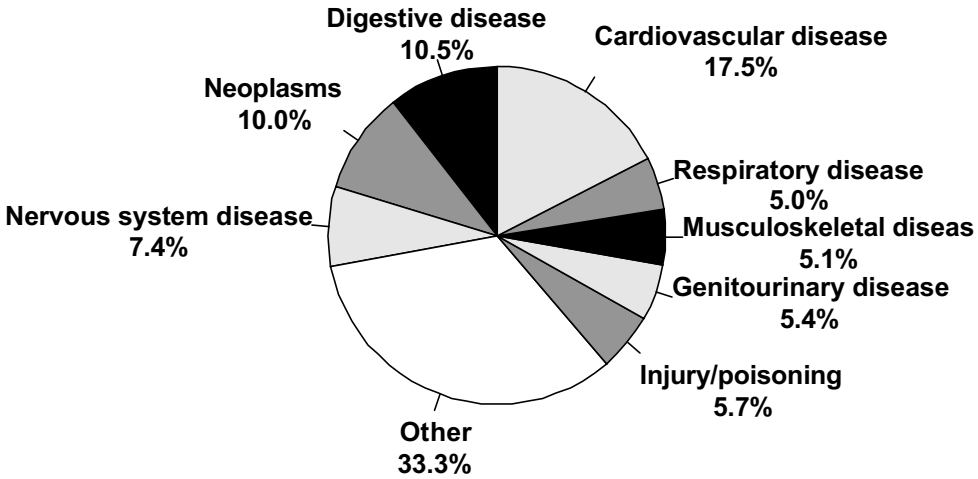
Older people experienced 468,771 hospitalisations (28 per cent of all hospitalisations) in 1993/94. Eighteen per cent of hospitalisations among older people were for cardiovascular disease, 11 per cent for digestive diseases, 10 per cent for neoplasms (tumours), and 7 per cent for diseases of the nervous system (Figure 13.2).

Figure 13.1 Mortality in people aged 65 years and over by cause, NSW 1992



Data source: Australian Bureau of Statistics mortality data (HOIST), Epidemiology Branch, NSW Health Department.

Figure 13.2 Hospitalisation of people aged 65 years and over by cause, NSW 1993/94



Data source: Inpatient Statistics Collection (HOIST), Epidemiology Branch, NSW Health Department.

13.7 Disability

The ABS 1993 Survey of Disability, Ageing and Carers estimated that 17 per cent of the NSW population had some form of disability. The rate of disability was much higher in older people, and a large proportion of older people had a functional handicap as a result of their disability. In 1993, 43 per cent of people aged 60-74 years had a disability, and 82 per cent of these had a handicap. Among people aged 75 years and over, 65 per cent had a disability, and 90 per cent of these had a handicap[2].

Arthritis was the main disabling condition among disabled people aged 60 years and over in 1993, affecting 31 per cent of women and 16 per cent of men. Circulatory diseases were the main disabling condition in 15 per cent of disabled people aged 60 years and over, and diseases of the ear and mastoid processes were the main disabling conditions for a further 14 per cent. Mental disorders were the main disabling condition for 8 per cent of females and 5 per cent of males[2].

13.8 Cardiovascular disease

Based on responses to its National Health Survey in 1989-90, the ABS estimated that 54 per cent of older people in NSW population had cardiovascular conditions as a recent and/or long term condition. This compares with a rate of 14 per cent in the NSW population as a whole, indicating the importance of this disease in older people[3].

Despite a reduction in mortality rates from cardiovascular disease in all age groups over the years 1968 to 1990[3], cardiovascular disease remains the most common cause of mortality in NSW and accounted for 37 per cent of all deaths in 1992. Seventy per cent of these deaths were caused by coronary heart disease (CHD) and the remainder were due to stroke[4].

The burden of cardiovascular and cerebrovascular deaths falls on the elderly. In 1992, most mortality due to cardiovascular disease occurred among those aged 75 years and older. At least half the cardiovascular disease mortality in females occurred after 85 years of age (Table 13.1).

Table 13.1 Cumulative mortality for coronary heart disease and cerebrovascular disease by sex, NSW 1992

Cause of death	Sex	Cumulative mortality (%)		
		To 65 years	To 75 years	To 85 years
Coronary heart disease	Females	14	17	50
	Males	14	37	74
Cerebrovascular disease	Females	4	12	41
	Males	7	24	63

Data source: Australian Bureau of Statistics Mortality Data (HOIST), Epidemiology Branch, NSW Health Department.

Though CHD mortality has been decreasing since the late 1960s, the community burden of chronic heart disease has been increasing. This is reflected in dramatic increases in rates of hospital separation for non-infarct related coronary heart disease[4]. Congestive heart failure (CCF) is an important manifestation of chronic heart disease. In 1992-93, CCF accounted for 7.5 per cent of all hospitalisations for cardiovascular disease among people aged 65 to 69 years. The proportion of hospitalisations due to CCF increased with increasing age and accounted for 27.9 per cent of hospitalisations for cardiovascular disease among people aged 85 years and over. The number of hospitalisations for coronary catheter/ angiogram, coronary artery bypass graft, and percutaneous coronary angioplasty for older people has also increased substantially among older people between 1989/90 and 1993/94 (Table 13.2).

Overall, stroke is at least as important a cause of morbidity among older people as CHD. With improvements in survival and the increase in the number of elderly people in the population, it will have an increasing impact on disability in the community. It has been estimated that up to 75 per cent of survivors at one to three weeks after a stroke have a persisting significant disability[5]. Though there is a paucity of information about population changes in incidence of stroke, the best evidence from Australasian studies indicates that, though the incidence of fatal stroke is falling (probably due to improvements in treatment), non-fatal incidence rates are increasing over time[6].

Table 13.2 Hospitalisations for selected procedures, NSW Residents 65 years and older 1989/90 and 1993/94

Procedure	ICD-9-CM	1989/90 Male		1989/90 Female		1993/94 Male		1993/94 Female	
		No.	Rate/ 100,000	No.	Rate/ 100,000	No.	Rate/ 100,000	No.	Rate/ 100,000
Catheter/ angiogram	37.21-37.23, 88.55-88.57	2294	760.7	1421	385.5	5857	1973.0	3212	862.8
Coronary artery bypass graft	36.1-36.19	1321	435.1	526	142.6	2310	779.5	974	261.0
Percutaneous coronary angioplasty	36.01, 36.05, 36.09	196	64.3	163	44.3	930	310.7	463	124.6

Note: Data refer to separations from NSW Hospitals.
Rates standardised to the Australian Census population 1991.
Data source: NSW Inpatient Statistics Collection 1989/90 and 1993/94 (HOIST), Epidemiology Branch, NSW Health Department

13.9 Cancer

Age is the most important risk factor for cancer, with the highest incidence and mortality rates for most cancers occurring among older people. In 1992, the median age for diagnosis of cancer in NSW was 68 years for males and 65 years for females and the median age at death for all cancers was 70 years for males and 71 years for females[7]. The ten most frequently occurring cancers in NSW in 1992 are listed in chapter 6 (Table 6.1). The median age for deaths was over 65 years in all cases. The median age for new cases of cancer was over 65 for most types of cancer, except new cases of melanoma of the skin and lymphomas for males, and new cases of cancer of the breast, melanoma of the skin, uterus, cervix and ovary in females.

The most common sites for new cases of cancer in people aged 60 years and over in 1992 were, in rank order, prostate, lung and colon cancer in men, and breast, colon and lung cancer in women. This also held for all age groups except women aged 80 years and over where colon cancers ranked first, followed by breast cancer and cancer of unknown primary site.

Age-specific incidence and mortality rates for the most common cancer sites among older people in 1992 are shown in Table 13.3. Incidence rates were highest for prostate cancer in all older age groups, while both incidence and mortality rates generally increased sharply with increasing age. The exceptions to this were rates for lung cancer and breast cancer in females, which peaked in the 75-79 year age group and tapered off thereafter. Prostate cancer is a rare disease before age 50 but the most common cancer in males after age 60, making the crude incidence and mortality rates calculated for all ages more comparable to the other common cancers.

Table 13.3 Cancers in older people, NSW 1992

Site	Sex	Incidence/ mortality per 100,000	Age (years)					
			65-69	70-74	75-79	80-84	85+	All ages (a)
Prostate	Males	Incidence	454	727	1104	1170	1408	95
		Mortality	80	191	287	547	789	27
Lung	Males	Incidence	315	390	448	462	373	59
		Mortality	282	362	459	452	467	55
	Females	Incidence	91	112	146	109	99	23
		Mortality	86	82	127	100	89	19
Colon	Males	Incidence	168	221	258	366	366	39
		Mortality	75	111	123	214	291	17
	Females	Incidence	113	143	173	248	259	35
		Mortality	45	73	83	159	193	17
Breast	Females	Incidence	244	253	277	253	249	88
		Mortality	87	97.1	131	127	227	29

Note: (a) Includes less than 65 years.
Source: Coates M, Day P, McCredie M and Taylor R. Cancer in NSW. Incidence and Mortality 1992. NSW Cancer Council and NSW Health Department, 1995.

13.10 Mental health

This report uses the international definition of mental disorders, in accordance with Chapter 5 of the World Health Organization's International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM). This international classification does not match the legal definition of 'mental illness and mental disorder' in the NSW Mental Health Act (1990). Broadly, dementia is not within the legal definition of mental disorders in NSW and is included here for ease of reference.

Dementia and affective disorders (e.g. depression) are recognised as the most important mental health problems for older people as they result in significant morbidity and loss of quality of life. There is no reliable information on the prevalence of these illnesses. There are, however, two major sources of data currently available on the mental health of older people: the Aged Care Assessment Program collects information on referrals to 52 Geriatric and Aged Care Services across NSW and the ACT; and the Inpatient Statistics Collection collects information on older people admitted to hospital.

There were 24,012 referrals to Geriatric and Aged Care Services which were assessed in the period 1 January to 30 June 1994[8]. Of these, 4,134 (17 per cent) had a primary diagnosis of dementia - by far the most important primary diagnosis - while a further 1,657 (7 per cent) were diagnosed as having dementia or dementia/delirium in addition to some other primary diagnosis. Of those with any diagnosis of dementia, almost two-thirds were women, and more than 80 per cent were aged 75 and above. The Aged Care Assessment Program does not publish information specifically on affective disorders.

In 1993/94, 25 per cent of all hospital separations for mental illness were among older people. As older people represented only 12 per cent of the population at this time, they have a higher risk of hospitalisation for mental ill-health than younger people. Two-thirds of all hospital separations for mental health among older people were due to either dementia or affective disorders.

In 1993/94, there were 4,232 hospital separations where the main reason for admission was a diagnosis of dementia among older people (82 per cent of all hospital separations for this diagnosis). Hospital separation rates for dementia were 233 per 100,000 people aged 64-74 years and 1,102 per 100,000 people aged 75 years and over compared with 86 per 100,000 population overall. Men had a slightly higher rate of hospitalisation for dementia than women.

There were 16,289 hospital separations in 1993/94 where the main reason for admission was a diagnosis of affective disorder, and 5,774 of these (35 per cent) were among older people. The rate of hospital separation for affective disorders was slightly higher for women in the population as a whole, but among older people the rate was 1,120 per 100,000 population for men and 537 per 100,000 population among women.

13.11 Injury

In NSW in 1992, injuries caused 2 per cent of all deaths among older people. Falls were responsible for 43 per cent of injury deaths while transport related injuries and suicide accounted for 19 per cent each. The rate of deaths due to falls in older people declined from 73 per 100,000 population in 1970 to 36 per 100,000 population in 1992, and this decrease is thought to be the result of improved treatment and rehabilitation services[9].

In NSW in 1992/93, 6.2 per cent of all hospital separations among older people were due to injuries. Forty-two per cent of these injuries were the result of falls, and 35 per cent were due to post operative complications. The rate of hospital separation due to falls remained stable from 1983 to 1988/89, but increased from 19 per 1,000 population in 1988/89 to 25 per 1,000 population in 1992/93. The rate of hospitalisation for women was about twice that for men (32 per 1,000 population and 15 per 1,000 population respectively).

The rate of injury related mortality and morbidity increases with age, with the highest rates of injury related deaths and hospital separations being found in people aged 75 years and over. Women aged 75 years and over have higher rates of injury related hospital separation than men, but men have higher rates of injury related hospital separation in every other age group. Falls, particularly in women, are the most important cause of these major injuries. Older women have a higher risk of falls related fracture than men because of the reduction of bone mass which accompanies post-menopausal decreases in oestrogen levels[10].

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