Appendix 1

# NHPA indicators for general health

This appendix presents detailed information on cardiovascular and general health indicators for which data are available. The relevance, interpretation, trends where possible, and the most recent data are shown for each indicator. Where available, a comparison of data for States and Territories is provided. Data issues such as definitions, coverage and availability are also discussed.

The indicators highlight the major modifiable behavioural and physiological risk factors for heart, stroke and vascular disease (ie tobacco smoking, physical inactivity, overweight, hypertension, high blood cholesterol and a high dietary intake of saturated fat). These risk factors are relevant to chronic conditions other than heart, stroke and vascular disease. For example, physical inactivity is considered a risk factor relevant to all five of the NHPAs (heart, stroke and vascular disease, cancer, diabetes, injury and mental health). Overweight, high cholesterol levels and hypertension are associated with risk of Type 2 diabetes, and smoking and saturated fat intake are associated with an increased risk for some cancers.

# Indicator 1.1: Proportion of adults who smoke regularly, ages 18 or more


| Sex | 1989–90 | 1995 |
|---|---|---|
| Males | 31.6 | 27.1 |
| Females | 25.1 | 20.8 |

*Note:* Rates, age standardised to the 1991 Australian population, are given as percentages.

*Source:* AIHW analysis of data from ABS National Health Surveys.

- Tobacco smoking is associated with an increase in risk for coronary heart disease, stroke and peripheral heart disease, some cancers and other diseases and conditions.
- One in four males and one in five females are at an increased risk of heart, stroke and vascular disease due to tobacco smoking, corresponding to some 3.2 million people.
- The prevalence of smoking has been declining since the early 1980s and this trend has continued into the 1990s. Time series data from the Anti-Cancer Council of Victoria show that the rate of decline in current smoking has slowed in more recent years (Hill et al 1998).
- The decline in proportion of adults smoking between 1989–90 and 1995 was greater for females (17.1 per cent) than for males (14.2 per cent).
- The prevalence of smoking is almost twice as high among both sexes in lower socio-economic groups and among Indigenous Australians.
- Tobacco smoking varies with age, with the highest rates among 25–29 year olds for both males (34.7 per cent) and females (35.0 per cent), after which the prevalence of smoking decreases with age for both sexes (AIHW 1998a).

## State and Territory comparisons

- There are no major differences between the States and Territories in the prevalence of tobacco smoking, except for the Northern Territory where the proportion of males and females who smoke is higher.
- The proportion of males and females smoking tobacco declined between 1989–90 and 1995 for each State and Territory.
- Largest declines in smoking were noted among males in the Northern Territory and the Australian Capital Territory, and among females in Western Australia and New South Wales.

### Regional variations in smoking prevalence, ages 18 or more

| State/ Territory | Males | | | Females | | |
|---|---|---|---|---|---|---|
| | 1989–90 | 1995 | % change | 1989–90 | 1995 | % change |
| NSW | 32.0 | 27.0 | –15.6 | 25.8 | 20.4 | –20.9 |
| Vic | 30.8 | 26.5 | –14.0 | 24.5 | 20.5 | –16.3 |
| Qld | 31.7 | 28.7 | –9.5 | 24.8 | 22.1 | –10.9 |
| WA | 30.3 | 26.5 | –12.5 | 25.0 | 19.3 | –22.8 |
| SA | 32.6 | 26.5 | –18.7 | 23.6 | 20.6 | –12.7 |
| Tas | 31.2 | 26.9 | –13.8 | 26.9 | 25.1 | –6.7 |
| ACT | 34.8 | 23.6 | –32.2 | 21.9 | 19.9 | –9.1 |
| NT | 43.3 | 33.6 | –22.4 | 29.9 | 29.0 | –3.0 |
| **Australia** | **31.6** | **27.1** | **–14.2** | **25.1** | **20.8** | **–17.1** |

*Note:* Rates, age standardised to the 1991 Australian population, are given as percentages.

*Source:* AIHW analysis of data from ABS National Health Surveys.

## Data issues

### Data definition

- Current smoker defined as having smoked one or more cigarettes per day on average for ages 18 and above.

### Data availability

- ABS National Health Surveys; ABS Population Survey Monitor; NHF Risk Factor Prevalence Surveys; Anti-Cancer Council of Victoria Patterns of Tobacco Smoking; National Campaign Against Drug Abuse National Household Surveys.

### Data coverage

- Frequency is variable; national, States and Territories.

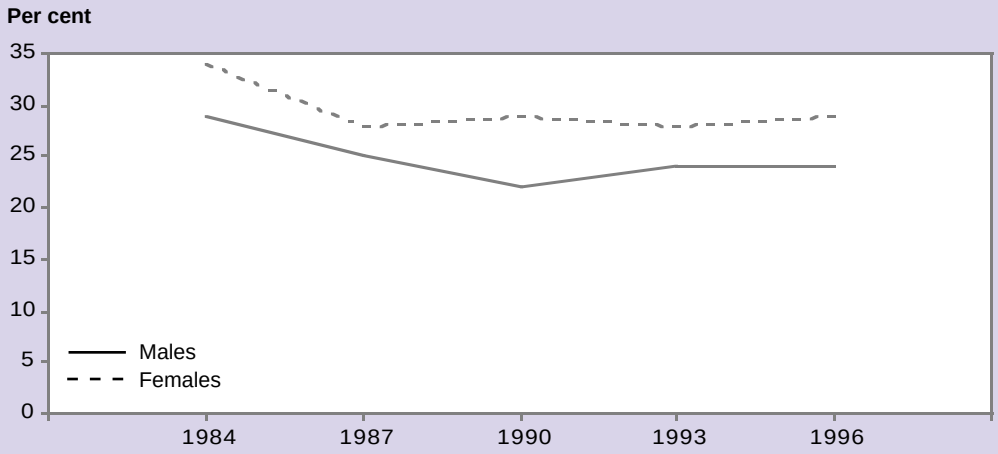
### Data reliability

- Self-reported data may produce underestimates of smoking prevalence.

### Data deficiencies

- Standard methodologies for monitoring smoking prevalence rates are currently being developed by the AIHW.

# Indicator 1.2: Proportion of secondary school students who smoke, age 15




| Sex | 1984 | 1987 | 1990 | 1993 | 1996 |
|---|---|---|---|---|---|
| Males | 29 | 25 | 22 | 24 | 24 |
| Females | 34 | 28 | 29 | 28 | 29 |

*Notes:* Rates are given as percentages.

1984 Australian Capital Territory not sampled; 1987 South Australia not sampled.

*Sources:* Hill et al (1987; 1990; 1993; unpublished); Hill & White (1995).

- Tobacco smoking is related to an increase in risk for coronary heart disease, stroke and peripheral disease, some cancers and other diseases and conditions.
- About 70,000 Australian teenagers start smoking each year. Surveys conducted by the Australian Cancer Society show that more than one-quarter of 15-year-old secondary school students smoked in those years. Girls were more likely to have smoked at least one cigarette in the week before interview (Hill et al 1987; 1990; 1993; Hill & White 1995; Hill et al, unpublished data).
- Between 1987 and 1996, the proportion of 15-year-old students who smoked in the week before the interview stayed relatively stable. This trend indicates that the propensity of 15-year-old students to start smoking has not decreased during the past 10 years.
- In 1993, the proportion of current smokers among male students varied by State. For females, wide variation was noted in the rate of change between 1990 and 1993 across the States and Territories (AIHW & DHFS 1997).
- Significantly fewer secondary school children of Asian ethnic origin were current smokers compared to secondary school children of other ethnic origins (Gliksman et al 1989).

# Data issues

## Data definition

- This indicator is defined as age-specific smoking rate among 15-year-old secondary school students.
- 'Current smoking' was defined as having smoked at least one cigarette in the week prior to the survey.

## Data availability

- Anti-Cancer Council of Victoria; National Campaign Against Drug Abuse National Household Surveys.

## Data coverage

- Frequency is variable; national, States and Territories (excepting 1984 — ACT not sampled; 1987 — SA not sampled).

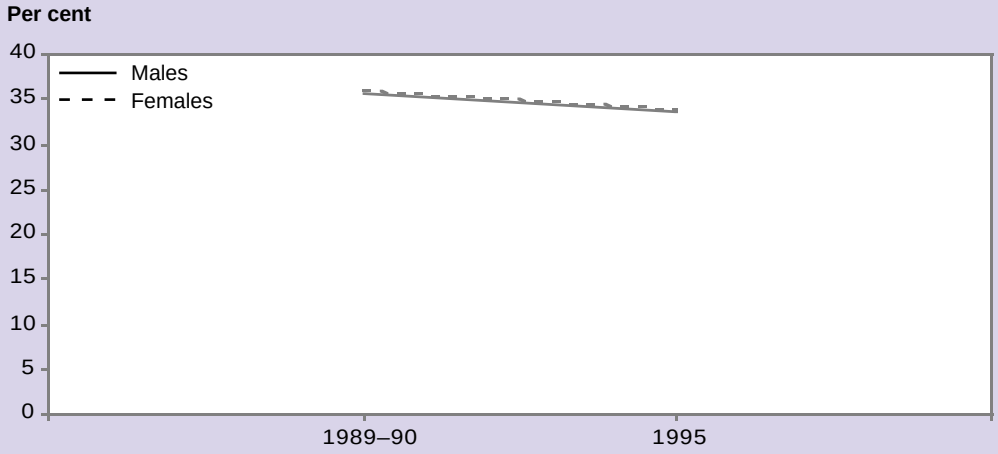
## Data reliability

- Self-reported data may produce underestimates of smoking prevalence.

## Data deficiencies

- There is a need to develop standard methods and definitions for monitoring smoking prevalence among young people for use in population surveys.

## Indicator 1.3: Proportion of adults not engaged in regular physical activity, ages 18 or more




| Sex | 1989–90 | 1995 |
|---|---|---|
| Males | 35.6 | 33.5 |
| Females | 36.0 | 33.8 |

*Note:* Rates, age standardised to the 1991 Australian population, are given as percentages.

*Source:* AIHW analysis of data from ABS National Health Surveys.

- Physical inactivity is a risk factor for coronary heart disease, some cancers, diabetes, injury, osteoporosis, and mental health. Physical inactivity is recognised as at least as important as high blood pressure or high blood cholesterol in contributing to cardiovascular conditions.
- Over one-third of adult Australians are at an increased risk of several health-related conditions due to a sedentary lifestyle. Between 1989–90 and 1995 there was only a slight increase in the prevalence of adults participating in physical activity for sport, recreation or fitness.
- Physical inactivity is more prevalent among males and females in lower socio-economic groups and among those living in remote regions (Chapter 6).
- Walking for recreation or exercise continued to increase in popularity during the 1990s with 45 per cent of males and 53 per cent of females reporting walking (a moderate-intensity activity) in 1995 compared with 41 per cent and 49 per cent respectively in 1989–90. Despite this increase, the overall proportions of people undertaking physical activity at moderate intensities remained fairly similar between 1989–90 and 1995, suggesting that walking may have replaced other forms of moderate physical activity (Armstrong 1998).
- Rates of physical inactivity generally increased with increasing age, however high rates of physical inactivity were seen among males aged 45–59 years.

## State and Territory comparisons

- The prevalence of physical inactivity for males was highest in the Northern Territory and lowest in the Australian Capital Territory. There was less variation for females, although the Australian Capital Territory and Western Australia had lower rates than the other States and the Northern Territory.
- For males and females in the Northern Territory, and for females in Tasmania, the prevalence of physical inactivity increased between 1989–90 and 1995.

**Regional variation in proportion not engaged in physical activity, ages 18 or more**

| State/ Territory | Males | | | Females | | |
|---|---|---|---|---|---|---|
| | 1989–90 | 1995 | % change | 1989–90 | 1995 | % change |
| NSW | 34.7 | 34.3 | –1.2 | 37.5 | 36.7 | –2.1 |
| Vic | 35.7 | 34.2 | –4.2 | 35.5 | 31.9 | –10.1 |
| Qld | 37.1 | 33.7 | –9.2 | 36.7 | 34.2 | –6.8 |
| WA | 33.2 | 29.5 | –11.1 | 32.4 | 28.0 | –13.6 |
| SA | 38.9 | 34.0 | –12.6 | 36.4 | 34.1 | –6.3 |
| Tas | 36.4 | 33.6 | –7.7 | 33.5 | 35.5 | 6.0 |
| ACT | 29.8 | 22.7 | –23.8 | 30.2 | 27.4 | –9.3 |
| NT | 36.8 | 42.7 | 16.0 | 25.8 | 35.1 | 36.0 |
| **Australia** | **35.6** | **33.5** | **–5.9** | **36.0** | **33.8** | **–6.1** |

*Note:* Rates, age standardised to the 1991 Australian population, are given as percentages.

*Source:* AIHW analysis of data from ABS National Health Surveys.

## Data issues

### Data definition

- Proportion of adults not engaged in physical activity was defined as those not participating in any vigorous exercise, moderate exercise or walking for sport, recreation or fitness in the two weeks prior to interview. This definition does not reflect current recognition that a level of regular, moderate intensity physical activity is required to obtain health benefits.

### Data availability

- ABS National Health Surveys; National Physical Activity Survey; ABS Population Survey Monitor; NHF Risk Factor Prevalence Surveys; Australian Health and Fitness Survey; Department of the Arts, Sport, the Environment, Tourism and Territories Physical Activity Survey.

### Data coverage

- Frequency is variable; national, States and Territories for ages 18 and above.

### Data reliability

- Self-reported data reflect the respondent's perception of the activity undertaken, its intensity, the respondent's level of fitness etc.

### Data deficiencies

- Standard methodologies for monitoring physical activity prevalence rates and development of a measure of physical activity to obtain health benefit are currently being developed by the AIHW.

## Indicator 1.4: Proportion of adults who are overweight, ages 18 or more


| Sex | 1989–90 | 1995 |
|---|---|---|
| Males | 44.4 | 51.0 |
| Females | 30.9 | 36.1 |

*Note:* Rates, age standardised to the 1991 Australian population, are given as percentages.

*Source:* AIHW analysis of data from ABS National Health Surveys.

- Overweight is associated with an increased risk for cardiovascular conditions, diabetes and high blood pressure.
- The proportion of adults at increased risk of illness and health-related conditions through being overweight is increasing.
- The steady increase in the prevalence of overweight seen during the 1980s has continued with a greater rate of increase during the first half of the 1990s (AIHW 1998a).
- Between 1989–90 and 1995, the proportion of overweight adults rose 6.6 per cent among males and 5.2 per cent among females.
- Overweight is more prevalent among people living in remote areas, and among females in lower socio-economic groups (Chapter 6).
- The estimates are based on self-reported data and may therefore underestimate the true prevalence of overweight people. Analysis of the 1995 National Nutrition Survey (ABS & HEALTH 1998) based on measured height and weight shows that an estimated 63.1 per cent of men and 47.8 per cent of women aged over 18 years could be classified as overweight.

## State and Territory comparisons

- In 1995, the proportions of overweight adults were greatest among males in the Northern Territory, and among females in Tasmania, the Northern Territory and South Australia.
- Between 1989–90 and 1995, an increase in the proportion of overweight males occurred in all States and Territories. However, the rate of change varied considerably, with large increases noted in the Northern Territory, the Australian Capital Territory, New South Wales, Queensland and Tasmania.
- Between 1989–90 and 1995, large increases in the proportion of overweight females occurred in all States and Territories.

**Regional variation in proportion of persons overweight, ages 18 or more**

| State/ Territory | Males | | | Females | | |
|---|---|---|---|---|---|---|
| | 1989–90 | 1995 | % change | 1989–90 | 1995 | % change |
| NSW | 43.5 | 51.0 | 17.2 | 29.9 | 35.2 | 17.7 |
| Vic | 45.5 | 51.2 | 12.5 | 32.1 | 35.7 | 11.2 |
| Qld | 44.5 | 51.8 | 16.4 | 31.0 | 36.3 | 17.1 |
| WA | 43.0 | 48.9 | 13.7 | 30.4 | 36.4 | 19.7 |
| SA | 47.2 | 51.9 | 10.0 | 32.1 | 38.8 | 20.9 |
| Tas | 44.5 | 51.5 | 15.7 | 31.4 | 40.0 | 27.4 |
| ACT | 42.2 | 49.8 | 18.0 | 25.6 | 35.0 | 36.7 |
| NT | 44.8 | 53.6 | 19.6 | 28.8 | 39.7 | 37.8 |
| **Australia** | **44.4** | **51.0** | **14.9** | **30.9** | **36.1** | **16.8** |

*Note:* Rates, age standardised to the 1991 Australian population, are given as percentages.

*Source:* AIHW analysis of data from ABS National Health Surveys.

## Data issues

### Data definition

- Overweight refers to persons with a BMI of greater than 25.0 (BMI is a person's weight in kilograms divided by the square of the person's height in metres).

### Data availability

- Self-reported height and weight: ABS National Health Surveys; ABS Population Survey Monitor; National Physical Activity Survey.
- Measured height and weight: National Nutrition Survey (ABS & HEALTH 1998); NHF Risk Factor Prevalence Surveys; Australian Health and Fitness Survey; Department of the Arts, Sport, the Environment, Tourism and Territories Physical Activity Survey.

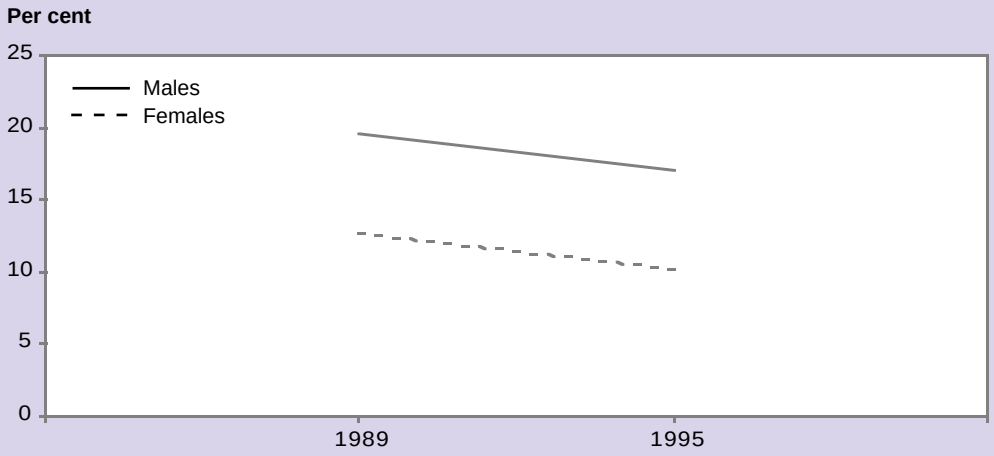
### Data coverage

- Frequency is variable; national, States and Territories for ages 18 and above.

### Data reliability

- Self-reported estimates of height and weight underestimate the prevalence of overweight adults.

# Indicator 1.5: Proportion of adults with high blood pressure and/or on antihypertensive treatment, ages 20–69




| Sex | 1989 | 1995 |
|---|---|---|
| Males | 19.5 | 17.1 |
| Females | 12.6 | 10.1 |

*Notes:* Rates, age standardised to the 1991 Australian population, are given as percentages.
All estimates are for State and Territory capital cities only.

*Sources:* AIHW analysis of data from the 1989 NHF Risk Factor Prevalence Study and the 1995 ABS National Nutrition Survey (ABS & HEALTH 1998).

- Hypertension is a risk factor for coronary heart disease, stroke and peripheral vascular disease. The risk of stroke or coronary heart disease is up to four times greater among people with high blood pressure than among non-affected people of the same age. People on treatment for high blood pressure are also at an increased risk.
- The proportion of people at risk of heart, stroke and vascular disease from hypertension declined during the first half of the 1990s. This trend continues the significant decline in the proportion of males and females with hypertension seen during the 1980s (AIHW 1998a).
- The proportion of males and females with hypertension increases with age. For example, in 1995, among people aged 65–69 years, 40 per cent of men and 35 per cent of women had high blood pressure and/or were on treatment for the condition.
- High blood pressure is known to be more prevalent in lower socio-economic groups (Bennett 1995; 1996).

# Data issues

## Data definition

- Hypertension is defined as systolic blood pressure ≥ 160 mmHg and/or diastolic blood pressure ≥ 95mmHg and/or receiving treatment for high blood pressure.

## Data availability

- 1995 National Nutrition Survey (ABS & HEALTH 1998); NHF Risk Factor Prevalence Surveys.

## Data coverage

- Frequency is variable — for trend analyses, States and Territory capital cities for ages 20–69; for 1995, national, State and Territories for ages 16 and above.

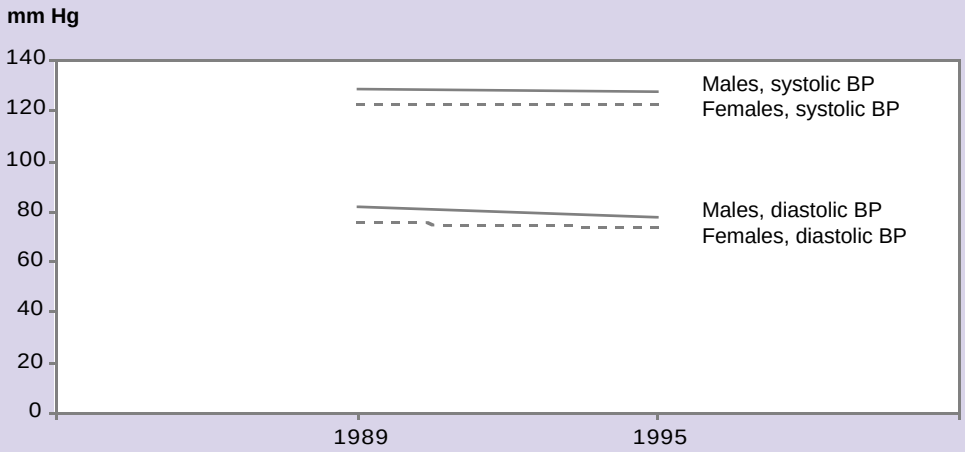
## Data reliability

- Blood pressure is liable to measurement error, dependent as it is upon observer skill in objective and accurate reading and recording.

## Data deficiencies

- Standard methodologies for measuring blood pressure in population surveys are to be developed by the AIHW.

## Indicator 1.6: Mean blood pressure levels, ages 20–69




| | 1989 | | 1995 | |
|---|---|---|---|---|
| **Sex** | **Systolic BP** | **Diastolic BP** | **Systolic BP** | **Diastolic BP** |
| Males | 129 | 82 | 128 | 78 |
| Females | 122 | 76 | 122 | 74 |

*Notes:* Mean levels, age standardised to the 1991 Australian population, are given as mm Hg.

All estimates are for State and Territory capital cities only.

BP = blood pressure.

*Sources:* AIHW analysis of data from the 1989 NHF Risk Factor Prevalence Study and the 1995 ABS National Nutrition Survey (ABS & HEALTH 1998).

- High blood pressure is a risk factor for heart, stroke and vascular disease.
- The population risk of heart, stroke and vascular disease from high diastolic blood pressure decreased during the first half of the 1990s.
- This trend continues the significant declines in mean blood pressure levels seen during the 1980s that occurred equally among those not on antihypertensive medication as among those on treatment (Bennett & Magnus 1994).
- Both systolic and diastolic blood pressures are predictors of cardiovascular disease at all ages, although systolic blood pressure is a stronger predictor of death due to coronary heart disease.
- Mean systolic blood pressure is higher in Eastern European males than in Australian-born males but higher in Australian-born females than in those born in the Middle East, South-East Asia, England and Wales.
- Mean systolic blood pressure among migrants generally increases with length of residency in Australia (Bennett 1993).

# Data issues

## Data definition

- The mean blood pressure levels of the population, ages 20–69 (excluding pregnant women).

## Data availability

- 1995 National Nutrition Survey (ABS & HEALTH 1998); NHF Risk Factor Prevalence Surveys.

## Data coverage

- Frequency is variable — for trend analyses, States and Territory capital cities for ages 20–69; for 1995, national, State and Territories for ages 16 and above.

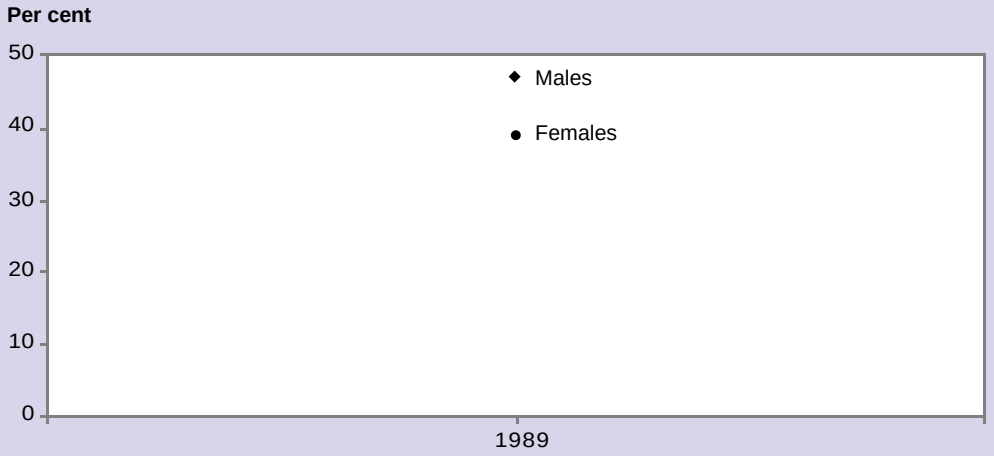
## Data reliability

- Blood pressure is liable to measurement error, as it is dependent upon observer skill in objective and accurate reading and recording.

## Data deficiencies

- Standard methodologies for measuring blood pressure in population surveys are to be developed by the AIHW.

# Indicator 1.7: Proportion of adults with high blood cholesterol, ages 20–69




| Sex | 1989 |
|---|---|
| Males | 46.6 |
| Females | 38.6 |

*Notes:* Estimates, age standardised to the 1991 Australian population, are given as percentages.
Estimates are for State and Territory capital cities only.

*Source:* AIHW analysis of data from the 1989 NHF Risk Factor Prevalence Study.

- High blood cholesterol levels are a major risk factor for coronary heart disease and stroke. Total blood cholesterol levels above 5.5 mmol/L are an indication of increased risk of developing coronary heart disease. Levels above 6.5 mmol/L are considered to indicate very high risk.
- There are no data to determine if the proportion of people at risk of coronary heart disease and stroke from high blood cholesterol levels is decreasing.
- There were no clear time trends in the blood cholesterol levels of Australian men and women during the 1980s (Bennett & Magnus 1994) and there are no later data on trends during the 1990s.
- The 1989 National Heart Foundation (NHF) Risk Factor Prevalence Survey found that 16.0 per cent of males and 15.4 per cent of females (aged 20–69) had blood cholesterol levels of 6.5 mmol/L or more (Risk Factor Prevalence Management Committee 1990).
- The prevalence of high blood cholesterol tends to increase with increasing age, and is more common in males than females in most age groups (Risk Factor Prevalence Management Committee 1990).
- Among males aged 25–64 years, those living alone or previously married had around 1.5 times higher rate for elevated blood cholesterol than did those with partners or dependents (Mathers 1994).
- High blood cholesterol is known to be more prevalent among females in lower socio-economic groups (Bennett 1995; 1996).

# Data issues

## Data definition

- High blood cholesterol is defined as a level equal to or greater than 5.5 mmol/L.

## Data availability

- NHF Risk Factor Prevalence Surveys.

## Data coverage

- Frequency is variable; State and Territory capital cities for ages 20–69 (25–64 only for 1980 and 1983).

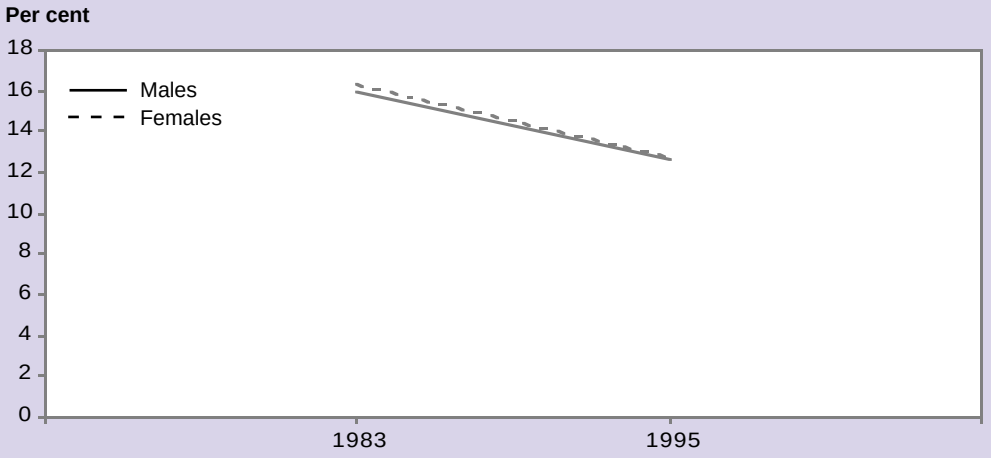
## Data reliability

- Good.

## Data deficiencies

- There is no national collection strategy for regular population monitoring of blood cholesterol levels.

## Indicator 1.8: Contribution of saturated fat as a proportion of total energy intake, ages 25–64




| Sex | 1983 | 1995 |
|---|---|---|
| Males | 15.9 | 12.7 |
| Females | 16.3 | 12.8 |

*Notes:* Estimates, age standardised to the 1991 Australian population, are given as percentages.

1983 estimates are for State and Territory capital cities only.

*Sources:* 1983 National Dietary Survey of Adults (NHF 1986; 1987) and AIHW analysis of data from the 1995 ABS National Nutrition Survey (ABS & HEALTH 1998).

- Diets high in saturated fatty acids, particularly trans-fatty acids, and total intake of fat are considered to be among the dietary risk factors for heart, stroke and vascular disease. Although trans-fatty acids tend to raise blood cholesterol levels, heart, stroke and vascular disease results from a complex of individual dietary factors rather than any one dietary component.
- The risk of heart, stroke and vascular disease from a high contribution of saturated fat as a proportion of total energy intake has declined over the past decade.
- Diet can exert its effect not only through the types of food consumed and the resultant energy intake, but also through different processes for its metabolism at different ages. Disease risk may also vary with sex.

# Data issues

## Data definition

- Energy (in kJ) contributed by saturated fat taken as a percentage of total energy (kJ) intake:

  $E_{sf}/E_t * 100$

  where Esf = energy in saturated fat given as [saturated fat (g) * 37kJ], and $E_t$ = total energy.

## Data availability

- 1983 National Dietary Survey of Adults (NHF 1986; 1987); 1995 National Nutrition Survey (ABS & HEALTH 1998).

## Data coverage

- Frequency is variable — State and Territory capital cities (1983), national (1995).

## Data reliability

- Good. Comparisons between 1983 and 1995 are to be interpreted with caution as data were collected from State capital cities only in 1983.

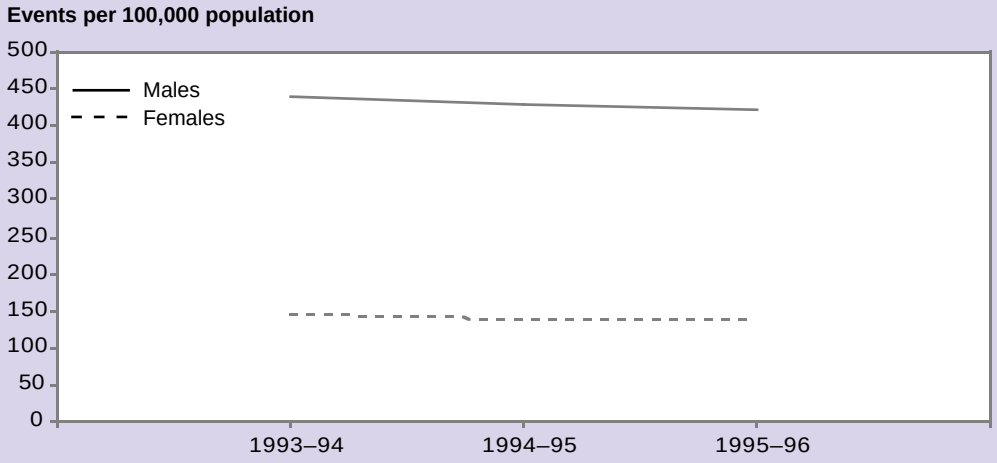
Appendix 2

# NHPA indicators for cardiovascular health

This appendix presents detailed information on cardiovascular health indicators for which data are currently available. The relevance, interpretation, trends where possible, and the most recent data are shown for each indicator. Where available, a comparison of data for States and Territories is provided. Data issues such as definitions, coverage and availability are also covered.

Several of the indicators are based on hospitalisation separations. These are proxy indicators of morbidity, since the rates are influenced by availability of beds, admission policies and social factors. Also, data are based on events rather than individuals and re-admissions are not distinguished from first admissions. As such, hospitalisation rates are best interpreted as an indicator of the use of hospital resources.

# Indicator 2.1: Incidence rates for myocardial infarction, ages 30–79




| Sex | 1993–94 | 1994–95 | 1995–96 |
|---|---|---|---|
| Males | 441 | 428 | 421 |
| Females | 144 | 139 | 137 |

*Notes:* Although the indicator definition refers to the age range 30–79 years, currently data are available for ages 30–69 only.

Rates, age standardised to the December 1993 Australian population, are given per 100,000 population.

Includes fatal and non-fatal myocardial infarction events.

Methodology developed by Universities of Newcastle and Western Australia and Queensland Department of Health.

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

- Myocardial infarction describes damage to the heart that results from a heart attack, an acute event that occurs when a vessel supplying blood to the heart muscle is suddenly blocked by a blood clot.
- The incidence rate for myocardial infarction (heart attack) is useful for monitoring the effectiveness of prevention of coronary heart disease.
- National estimates are available for three years only, so a clear national trend of the incidence of myocardial infarction cannot be determined with certainty. However, local studies in Newcastle and Perth show that, between 1984 and 1993, the rate of first heart attack fell, indicating a decline in incidence of heart attacks (Beaglehole et al 1997).
- Heart attacks are almost three times more common among males (421 per 100,000 population) than among females (137 per 100,000 population) for the ages 35–69.
- Non-fatal heart attacks represented about 60 per cent of the total number of events over the period 1993–1996.

# Data issues

## Data definition

- Age-standardised number of fatal and non-fatal myocardial infarction events (ICD-9 410) per 100,000 population, ages 30–79 years.
- Rates of heart attack were estimated from numbers of coronary deaths and hospital separations, and applying adjustment factors determined from regional studies in New South Wales, Queensland and Western Australia.

## Data availability

- AIHW data based on information collected by State and Territory registrars of births, deaths and marriages; AIHW data based on information collected by State and Territory public and private hospitals; and adjustment factors from regional studies in New South Wales, Queensland and Western Australia. These factors are currently available for ages 35–69 only.

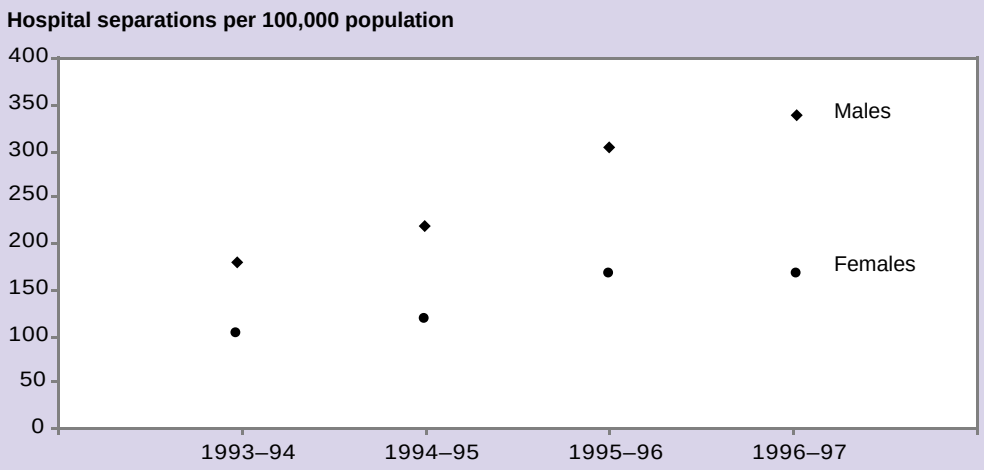
## Data coverage

- Annual

## Data reliability

- Good

# Indicator 2.4: Hospital separation rates for principal diagnosis of unstable angina, ages 0–79




| Sex | 1993–94 | 1994–95 | 1995–96 | 1996–97 |
|---|---|---|---|---|
| Males | 178 | 216 | 302 | 337 |
| Females | 100 | 117 | 164 | 166 |

*Note:* Rates, age standardised to the 1991 Australian population, are given per 100,000 population.

*Source:* AIHW National Hospital Morbidity Database.

- Angina is temporary chest pain or discomfort caused by a reduced blood supply to the heart muscle. In unstable angina, the pain occurs at rest; or occurs more easily, more often or for longer.
- Unstable angina carries an important risk of death. Admissions to hospital for definite or suspected unstable angina outnumber those for myocardial infarction. The indicator reflects the use of hospital resources (caseload, throughput) for unstable angina.
- There was an apparent increase in the rate of hospitalisation for this diagnosis in the period 1993–1997. However, it should be noted that a new coding standard concerning angina was introduced in July 1995, so any comparisons between years should be made with caution.
- In 1996–97, the age-standardised hospital separation rate for unstable angina was 337 per 100,000 population among males aged 0–79 and 166 per 100,000 population in females of the same age.
- In 1996–97, there were 33,782 hospitalisations for unstable angina in males of all ages, 30,438 of these among those aged 0–79. Among females of all ages there were 21,137 separations, 16,349 among those aged 0–79.
- People aged 65 years and above account for over 50 per cent of hospital separations for this diagnosis among males and 70 per cent among females.
- Males were almost twice as likely as females to be hospitalised for unstable angina in 1996–97.

# Data issues

## Data definition

- Age-standardised number of separations with a principal diagnosis of unstable angina (ICD-9 411.1) per 100,000 population, ages 0–79.

## Data availability

- AIHW data based on information collected by State and Territory public and private hospitals.

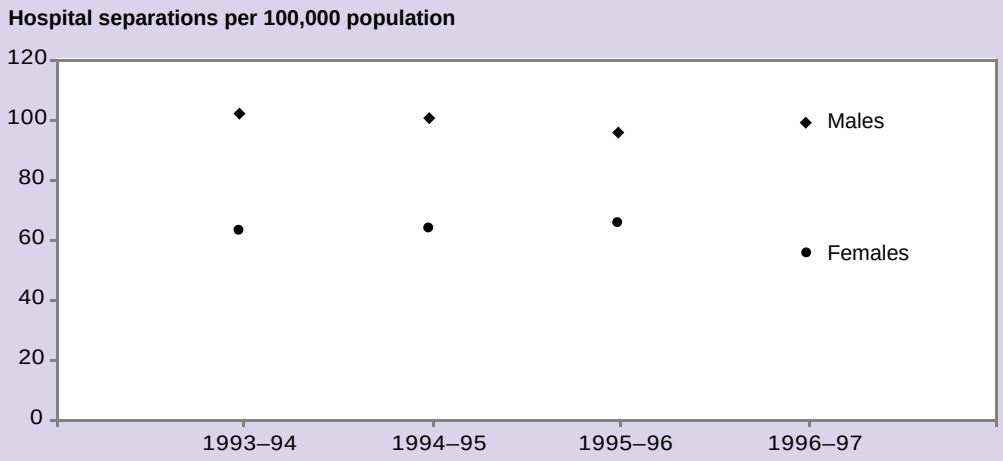
## Data coverage

- Annual; States and Territories.

## Data reliability

- A new coding standard for angina was introduced in July 1995, making comparisons between years difficult.

## Indicator 2.5: Hospital separation rates for principal diagnosis of congestive heart failure, ages 0–79




| Sex | 1993–94 | 1994–95 | 1995–96 | 1996–97 |
|---|---|---|---|---|
| Males | 102 | 100 | 96 | 98 |
| Females | 63 | 63 | 65 | 55 |

*Note:* Rates, age standardised to the 1991 Australian population, are given per 100,000 population.

*Source:* AIHW National Hospital Morbidity Database.

- Heart failure occurs when the heart is unable to pump blood adequately to the rest of the body. The term congestive heart failure is often used as an alternative term, with the congestion referring to an associated build up of fluid in the lungs, liver or legs.
- The indicator reflects the use of hospital resources (caseload, throughput) for congestive heart failure.
- The rate of hospitalisation for this diagnosis in the period 1993–1997 has remained fairly stable.
- The age-standardised hospital separation rate for congestive heart failure was 98 per 100,000 males aged 0–79 and 55 per 100,000 females of the same age in 1996–97.
- In 1996–97, there were 12,844 separations for congestive heart failure in males of all ages, 8,514 of which were in people aged 0–79. Among females of all ages there were 12,423 episodes, 5,593 of which occurred in those aged 0–79.
- Heart failure is a disease of older people. People aged 65 years and above account for over 80 per cent of hospital separations for this diagnosis.
- Males were 75 per cent more likely than females to be hospitalised for congestive heart failure in 1996–97.
- Heart failure and shock is the leading cardiovascular AN-DRG in terms of public hospital admissions. It accounts for the largest number of patient days among cardiovascular conditions and ranks eighth highest for public hospital patient days overall.

# Data issues

## Data definition

- Age-standardised number of separations with a principal diagnosis of congestive heart failure (ICD-9 428.0) per 100,000 population, ages 0–79.

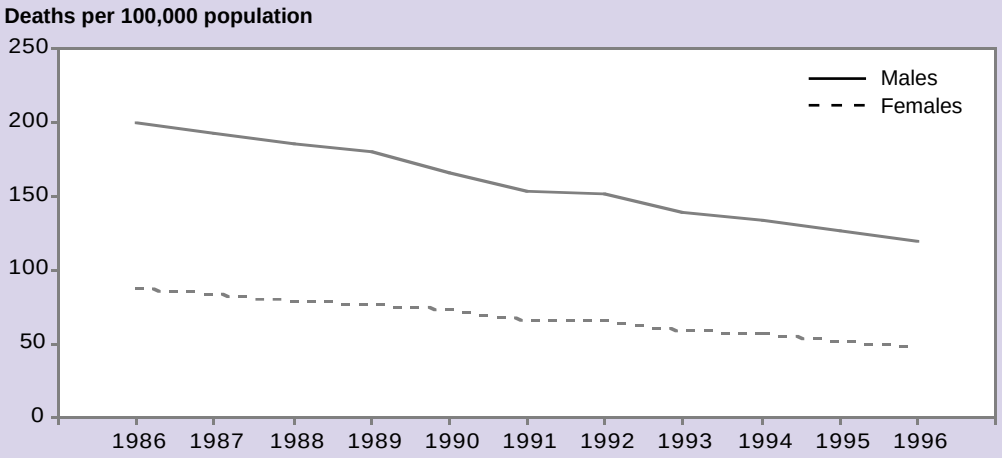
## Data availability

- AIHW data based on information collected by State and Territory public and private hospitals.

## Data coverage

- Annual; States and Territories.

## Indicator 2.10: Death rates for coronary heart disease, ages 0–79




| Sex | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Males | 200.8 | 192.8 | 185.8 | 179.9 | 165.9 | 154.3 | 151.4 | 139.9 | 134.2 | 125.9 | 118.8 |
| Females | 87.9 | 84.2 | 78.5 | 77.2 | 73.0 | 66.7 | 65.3 | 59.6 | 56.8 | 52.1 | 48.5 |

*Note:* Rates, age standardised to the 1991 Australian population, are given per 100,000 population.

*Source:* AIHW National Mortality Database.

- Coronary heart disease includes diseases such as heart attack and angina, caused by blockages in the coronary arteries that supply blood to the heart muscle.
- The indicator represents the net effect of prevention and management of coronary heart disease.
- Coronary heart disease death rates have declined substantially over the past 30 years. Between 1985 and 1996 mortality from coronary heart disease fell annually at 5.2 per cent among males and 5.4 per cent among females in the 0–79 age range.
- Coronary heart disease is the leading cause of death in Australia. In 1996, it represented 23 per cent of all deaths and 55 per cent of all cardiovascular deaths.
- Total deaths in 1996 for coronary heart disease were 29,637, representing age-standardised death rates of 195.5 per 100,000 population for males and 105.5 per 100,000 population for females.
- Death rates from coronary heart disease among the Indigenous population in 1994–96 were 1.6 times higher than for other Australians. For the 25–64 age group, the difference was even more marked, with Indigenous males and females having five and seven times the death rates of their non-Indigenous counterparts (Mathur & Gajanayake 1998).
- Mortality from coronary heart disease is higher among people who are socio-economically disadvantaged. For example, males in manual occupations are at least 35 per cent more likely to die from coronary heart disease than males in professional occupations (Bennett 1996).

## State and Territory comparisons

- In 1994–1996, in the age group 0–79, coronary heart disease death rates were greatest in Tasmania among males and in the Northern Territory among females.
- Between 1985 and 1996, there was a decrease in death rates from coronary heart disease in all States and Territories. However, the rate of change varied, with slower declines in the Northern Territory than other States and Territories, for both males and females.

**Regional variations in coronary heart disease deaths per 100,000 population, ages 0–79**

| State/ Territory | Males | | Females | |
|---|---|---|---|---|
| | Average 1994–1996 | Annual % change 1985–1996 | Average 1994–1996 | Annual % change 1985–1996 |
| NSW | 127.8 | –5.5 | 55.2 | –5.6 |
| Vic | 119.1 | –5.3 | 47.4 | –5.6 |
| Qld | 132.2 | –4.6 | 57.2 | –4.8 |
| WA | 122.6 | –4.7 | 47.2 | –5.2 |
| SA | 130.6 | –4.7 | 50.3 | –5.8 |
| Tas | 137.2 | –5.3 | 61.8 | –4.6 |
| ACT | 108.4 | –4.9 | 43.3 | –5.5 |
| NT | 133.8 | –2.3 | 64.2 | –1.1 |
| **Australia** | **126.3** | **–5.1** | **52.5** | **–5.4** |

*Note:* Rates, age standardised to the 1991 Australian population, are given per 100,000 population.

*Source:* AIHW National Mortality Database.

## Data issues

### Data definition

- Age-standardised number of deaths from coronary heart disease (ICD-9 410–414) per 100,000 population, ages 0–79.

### Data availability

- AIHW data based on information collected by State and Territory registrars of births, deaths and marriages.

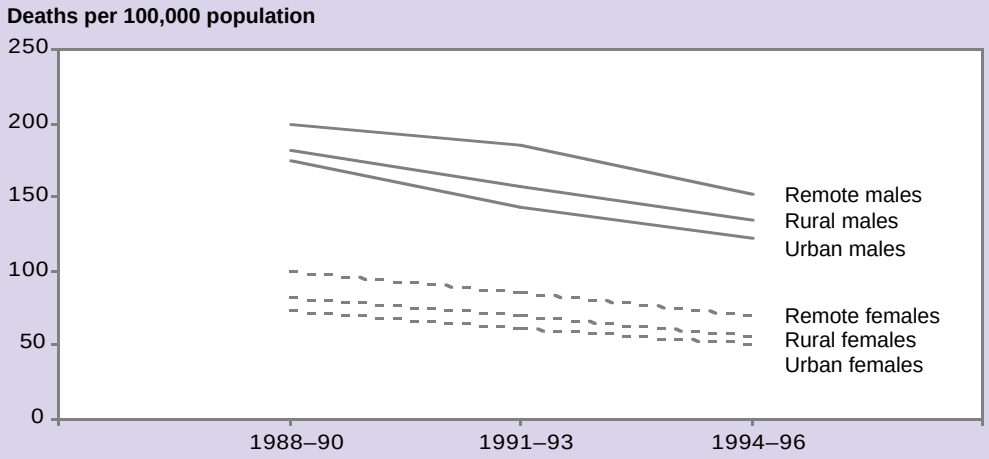
### Data coverage

- Annual; States and Territories.

### Data reliability

- The identification of Indigenous people in death registrations is not accurately recorded in all States and Territories. Only data recorded in South Australia, Western Australia and the Northern Territory are reliable in terms of identifying Indigenous status in death certificates.

# Indicator 2.11: Death rates for coronary heart disease among rural and remote area residents, ages 0–79




| Sex | 1988–90 | | | 1991–93 | | | 1994–96 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Remote | Rural | Urban | Remote | Rural | Urban | Remote | Rural | Urban |
| Males | 199.9 | 182.3 | 174.3 | 185.2 | 158.2 | 143.1 | 152.8 | 134.3 | 122.0 |
| Females | 100.3 | 81.5 | 73.6 | 86.0 | 69.9 | 61.0 | 70.0 | 56.6 | 50.5 |

*Note:* Rates, age standardised to the 1991 Australian population, are given per 100,000 population.

*Source:* AIHW National Hospital Morbidity Database.

- The indicator represents the net effect of prevention and management of coronary heart disease in rural and remote areas, for comparison with urban areas.
- Death rates from coronary heart disease are higher in rural and remote areas than in urban areas.
- The differences partly reflect the high mortality rates among Indigenous people who make up a higher proportion of the population in rural and remote areas. Access to health services may also be an influencing factor.
- The decline in coronary heart disease death rates over the past decades has been less marked in rural and remote areas than in urban areas. In rural areas, between 1986 and 1996, mortality from coronary heart disease has been falling annually at 4.7 per cent among males and 5.2 per cent among females in the 0–79 age range. In remote areas, the corresponding annual falls have been 3.7 per cent for males and 4.5 per cent for females.
- By comparison, in urban areas the annual falls have been 5.5 per cent for males and 5.9 per cent for females.

# Data issues

## Data definition

- Age-standardised number of deaths from coronary heart disease (ICD-9 410–414) per 100,000 rural or remote population, ages 0–79.
- The Rural, Remote and Metropolitan Areas classification, based on population numbers and an index of remoteness, was used to categorise deaths by area (see Appendix 3).

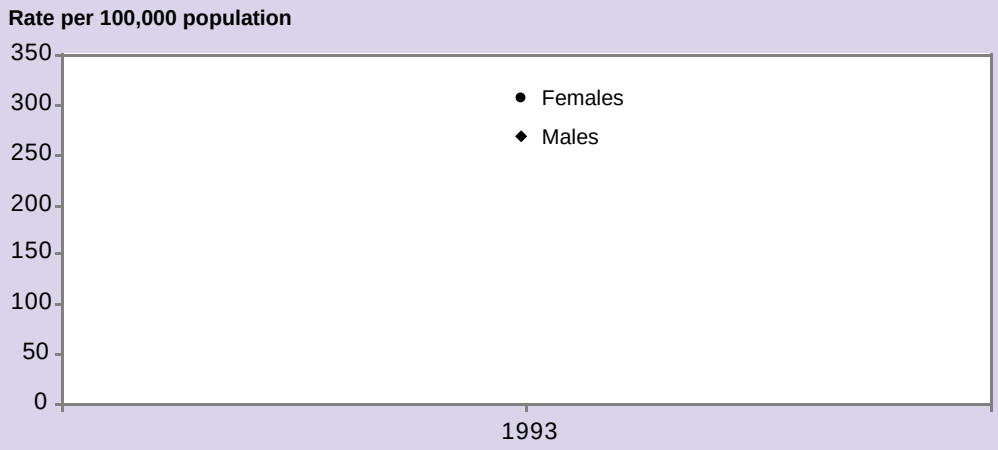
## Data availability

- AIHW data based on information collected by State and Territory registrars of births, deaths and marriages.

## Data coverage

- Annual; States and Territories.

## Indicator 3.4: Proportion of people whose main/underlying disabling condition is stroke, ages 25 or more




| Sex | Number | Rate |
|---|---|---|
| Males | 14,500 | 268 |
| Females | 17,100 | 304 |

*Note:* Rates, age standardised to the 1991 Australian population, are given per 100,000 population.

*Source:* AIHW analysis of data from ABS 1993 Survey of Disability, Ageing and Carers.

- The indicator reflects the burden of stroke in the adult population in terms of disability.
- In 1993, there were 31,600 males and females who identified stroke as the cause of their main disabling condition. Paralysis and physical activity restrictions are prevalent among one in three stroke sufferers, and almost two in three require assistance with mobility tasks.
- About one-third of stroke sufferers are permanently disabled. Stroke is the cause of almost 25 per cent of all chronic disability in Australia (Stroke Australia Taskforce 1997).
- The prevalence of stroke in the community is 20 per cent higher among females than among males.
- The prevalence of stroke increases markedly with age. The risk of stroke doubles with each decade of life. For example, in the 25–44 age group the proportion of stroke sufferers was 42 per 100,000 population compared to 1,236 among the 65 years and over population.
- The vast majority of stroke sufferers are therefore older people. In 1993, 80 per cent of stroke sufferers were aged 65 and over.
- Males and females born in Europe are more likely to have suffered a stroke than their Australian born counterparts.

# Data issues

## Data definition

- Number of people whose main underlying disabling condition is stroke per 100,000 population, aged 25 and above.

## Data availability

- The 1993 Survey of Disability, Ageing and Carers conducted by the Australian Bureau of Statistics is the source for this data. A similar survey was conducted in 1998 and data will become available in 1999.

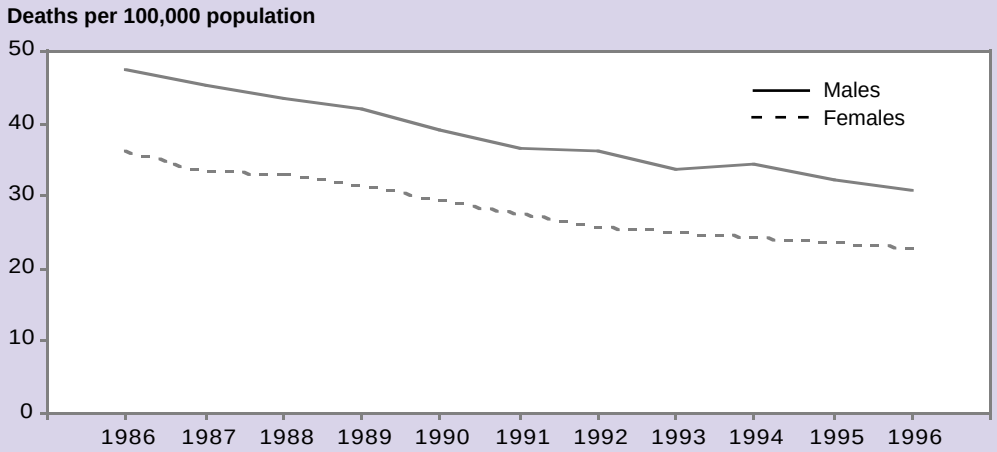
## Data coverage

- The coverage of the Disability, Ageing and Carers Survey includes all Australian households as well as health, aged care and disability support establishments.

## Data reliability

- Information on disabling conditions from the Survey is self reported and the underlying cause of the main disabling condition has been used to obtain the prevalence of disabling stroke in the community.

## Indicator 3.7: Death rates for stroke, ages 0–79




| Sex | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Males | 47.4 | 45.4 | 43.4 | 42.2 | 39.1 | 36.6 | 36.1 | 33.6 | 34.6 | 32.1 | 30.8 |
| Females | 36.4 | 33.4 | 32.9 | 31.4 | 29.3 | 27.5 | 25.7 | 24.9 | 24.1 | 23.6 | 22.9 |

*Note:* Rates, age standardised to the 1991 Australian population, are given per 100,000 population.

*Source:* AIHW National Mortality Database.

- A stroke occurs when an artery supplying blood to the brain suddenly becomes blocked or bleeds, often causing paralysis of parts of the body or speech problems.
- The indicator represents the net effect of prevention, treatment and management of stroke.
- Stroke is the third leading cause of death in Australia. In 1996, it represented 10 per cent of all deaths and 24 per cent of all cardio-vascular deaths.
- In 1996, there were 12,806 deaths due to stroke, with an age-standardised death rate of 65.5 per 100,000 population for males of all ages and 57.7 per 100,000 population for females of all ages.
- Stroke death rates have declined steadily over the past 30 years. Between 1985 and 1996 mortality from stroke fell annually at 4.4 per cent among males and 5.1 per cent among females aged 0–79.
- Among the Indigenous population there are relatively few deaths attributable to stroke. This may be a reflection of the younger age structure of this group compared to the total Australian population overall. However, the age-standardised death rates from stroke in the Indigenous population are about double those of the rest of Australians.
- Mortality from stroke is higher among people who are socio-economically disadvantaged. On average, males in manual occupations are at least 60 per cent more likely to die from stroke than males in professional occupations (Bennett 1996).

## State and Territory comparisons

- In 1994–1996, stroke death rates were greatest among males and females in the Northern Territory.
- Between 1985 and 1996, there was a decrease in death rates from stroke in all States and Territories except the Northern Territory. The largest decreases were observed in the Australian Capital Territory for males and in Victoria for females.

**Regional variation in death rate for stroke, ages 0–79**

| State/ Territory | Males | | Females | |
|---|---|---|---|---|
| | Average 1994–96 | Annual % change 1985–1996 | Average 1994–96 | Annual % change 1985–1996 |
| NSW | 34.3 | –5.3 | 25.0 | –5.5 |
| Vic | 30.8 | –4.1 | 21.1 | –5.8 |
| Qld | 31.6 | –3.7 | 24.2 | –4.7 |
| WA | 30.5 | –3.7 | 21.6 | –3.5 |
| SA | 33.2 | –3.7 | 23.8 | –3.9 |
| Tas | 34.9 | –3.8 | 26.2 | –4.9 |
| ACT | 24.3 | –5.7 | 23.4 | –1.2 |
| NT | 58.4 | 0.9 | 33.1 | 0.5 |
| **Australia** | **32.5** | **–4.4** | **23.5** | **–5.1** |

*Note:* Rates, age standardised to the 1991 Australian population, are given per 100,000 population.

*Source:* AIHW National Mortality Database.

## Data issues

### Data definition

- Age-standardised number of deaths from stroke (ICD-9 430–438) per 100,000 population, ages 0–79.

### Data availability

- AIHW data based on information collected by State and Territory registrars of births, deaths and marriages.

### Data coverage

- Annual; States and Territories.

### Data reliability

- The identification of Indigenous people in death registrations is not accurately recorded in all States and Territories. Only data recorded in South Australia, Western Australia and the Northern Territory are reliable in terms of identifying Indigenous status in death certificates.

## Indicator 3.8: Death rates for stroke among rural and remote area residents, ages 0–79


| | 1988–90 | | | 1991–93 | | | 1994–96 | | |
|---|---|---|---|---|---|---|---|---|---|
| **Sex** | **Remote** | **Rural** | **Urban** | **Remote** | **Rural** | **Urban** | **Remote** | **Rural** | **Urban** |
| Males | 49.7 | 42.0 | 41.0 | 46.5 | 35.4 | 35.2 | 36.3 | 33.3 | 32.0 |
| Females | 37.7 | 31.6 | 30.9 | 32.9 | 27.8 | 25.2 | 30.2 | 24.5 | 23.0 |

*Note:* Rates, age standardised to the 1991 Australian population, are given per 100,000 population.

*Source:* AIHW National Mortality Database.

- The indicator reflects the net effect of prevention, treatment and management of stroke in rural and remote areas for comparison with urban areas.
- Stroke death rates have declined in all areas over past decades. In rural areas, between 1986 and 1996 mortality from stroke has been falling annually at 4.0 per cent among males and 4.5 per cent among females aged 0–79. In remote areas, the corresponding annual falls have been 5.0 per cent for males and 2.3 per cent for females, whereas in urban areas the respective figures are 4.3 for males and 4.9 for females.
- Death rates from stroke are higher in remote areas than in rural or urban areas.

# Data issues

## Data definition

- Age-standardised number of deaths from stroke (ICD-9 430–438) per 100,000 population, ages 0–79.
- The Rural, Remote and Metropolitan Areas classification, based on population numbers and an index of remoteness, was used to categorise deaths by area (refer to Appendix 3 for details).

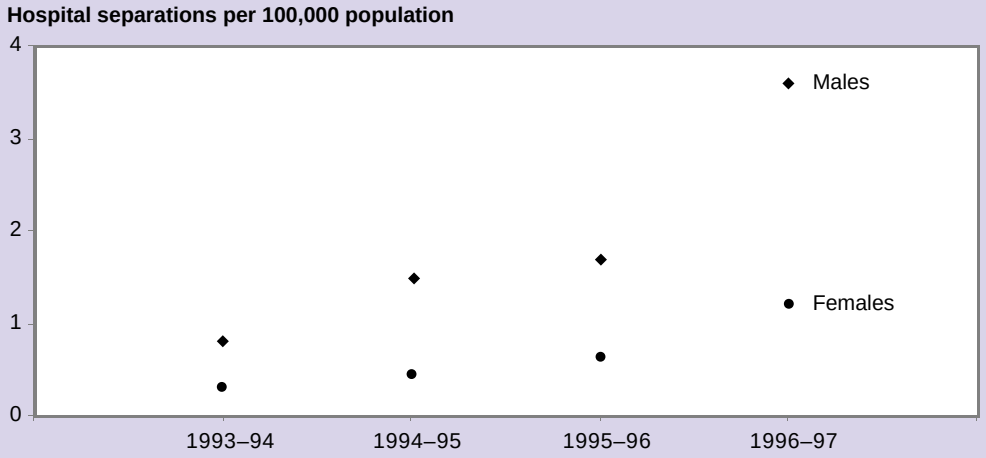
## Data availability

- AIHW data based on information collected by State and Territory registrars of births, deaths and marriages.

## Data coverage

- Annual; States and Territories.

# Indicator 4.1: Hospital separation rates for major amputation for peripheral vascular disease, ages 0–79




| Sex | 1993–94 | 1994–95 | 1995–96 | 1996–97 |
|---|---|---|---|---|
| Males | 0.8 | 1.5 | 1.7 | 3.6 |
| Females | 0.3 | 0.4 | 0.6 | 1.2 |

*Note:* Rates, age standardised to the 1991 Australian population, are given per 100,000 population.

*Source:* AIHW National Hospital Morbidity Database.

- Peripheral vascular disease involves a reduced blood supply to the legs, causing pain when walking.
- This is an indicator of the incidence of major amputation for peripheral vascular disease. It also gives a measure of the incidence of severe cases of peripheral vascular disease.
- The rate of hospitalisation for this procedure increased in the period 1993–1997.
- Males were three times as likely as females to be hospitalised for amputation for peripheral vascular disease in 1996–97.
- In 1996–97, there were 422 separations for amputation for peripheral vascular disease in males of all ages, 310 of which were in people aged 0–79. Among females of all ages, there were 260 hospital episodes, 118 of which occurred among those aged 0–79.
- People aged 65 years and above account for over 80 per cent of hospital separations for this procedure.
- Peripheral vascular disease manifests in severe cases as limb-threatening ischaemia. Significant morbidity and amputations are an increasing problem in older people, especially those aged over 80 (Mattes et al 1997).

# Data issues

## Data definition

- Age-standardised number of separations with principal diagnosis codes of peripheral vascular disease (ICD-9 440.0 or 440.2) and procedure codes (ICD-9 84.15 or 84.16 or 84.17), per 100,000 population, ages 0–79.

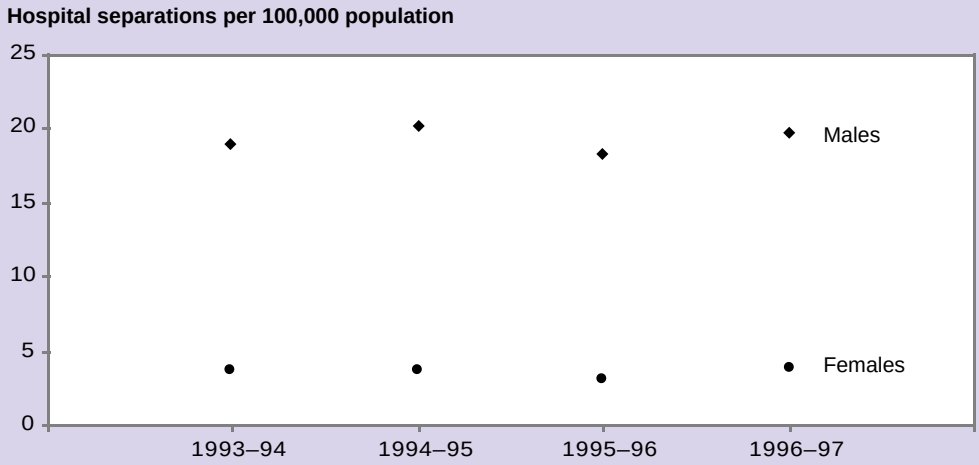
## Data availability

- AIHW data based on information collected by State and Territory public and private hospitals.

## Data coverage

- Annual; States and Territories.

## Indicator 4.2: Hospital separation rates for emergency and elective surgery for abdominal aortic aneurysm, ages 0–79




| Sex | 1993–94 | 1994–95 | 1995–96 | 1996–97 |
|---|---|---|---|---|
| Males | 19.0 | 20.1 | 18.3 | 19.5 |
| Females | 3.4 | 3.4 | 3.0 | 3.7 |

*Note:* Rates, age standardised to the 1991 Australian population, are given per 100,000 population.

*Source:* AIHW National Hospital Morbidity Database.

- Abdominal aortic aneurysm refers to a ballooning-out of the main artery in the abdomen, the abdominal aorta, through a weakening of its wall.
- This is an indicator of the incidence of major surgery for abdominal aortic aneurysm. It also gives a measure of the incidence of severe cases of abdominal aortic aneurysm.
- The rate of hospitalisation for this procedure has remained fairly constant in the period 1993–1997.
- Males were five times more likely than females to be hospitalised for abdominal aortic aneurysm in 1996–97.
- In 1996–97, there were 1,972 separations for abdominal aortic aneurysm in males of all ages, 1,684 of which were in people aged 0–79. Among females of all ages, there were 456 hospital episodes, 368 of which occurred in those aged 0–79.
- People aged 65 years and above account for over 80 per cent of hospital separations for this procedure.
- Large abdominal aortic aneurysms pose a significant life risk if they rupture and elective surgery before rupture is standard practice. As most aneurysms are asymptomatic, they may rupture, requiring emergency surgery. Abdominal aortic aneurysms are five times more common in males than in females and their prevalence increases steadily from around age 60.

# Data issues

## Data definition

- Age-standardised number of separations with principal diagnosis codes ICD-9 441.3 or 441.4 and procedure code 38.44 per 100,000 population, ages 0–79.

## Data availability

- AIHW data based on information collected by State and Territory public and private hospitals.

## Data coverage

- Annual; States and Territories.

## Appendix 3

# Data issues

## Sources of national data

Data for the indicators of cardiovascular health used in this report were extracted primarily from national mortality and morbidity databases and from health surveys, by the National Centre for Monitoring Cardiovascular Disease. A list of the principal data sources used in the national cardiovascular monitoring system are shown in Table A3.1.

## Data gaps and developments

A general discussion of gaps and deficiencies in Australian health statistics is given in *Australia's Health 1998* (AIHW 1998a). Data issues concerning individual indicators have been discussed in relevant sections of the report. This section discusses issues that are particularly relevant to monitoring heart, stroke and vascular disease. Some specific issues are being addressed by projects on the work program for the National Centre for Monitoring Cardiovascular Disease. Other generic issues are being addressed at a broader level.

### Data requirements for indicators of cardiovascular health

The indicator set for cardiovascular health has been recently revised. New indicators for coronary heart disease have been included and indicators for stroke and vascular disease have been introduced. Indicators for which there are data have been reported against in Appendix 2. There are 15 indicators for which there are either no data or data are inadequate for estimating trends. These are:

1.7 Proportion of adults with high blood cholesterol, ages 20–69

2.1 Incidence rates for myocardial infarction, ages 30–79

2.2 Median delay between the onset of chest pain and presentation for emergency care at hospital, all ages

2.3 Time from presentation at emergency departments to clinical and ECG assessment and administration of appropriate reperfusion therapy (thrombolysis or angioplasty), all ages

2.6 Proportion of cardiac patients who enter and complete a rehabilitation program, all ages

2.7 Proportion of patients who die, suffer myocardial infarction or undergo further revascularisation procedure (angioplasty or bypass surgery) within 12 months of angioplasty treatment for coronary heart disease, all ages

2.8 Proportion of patients who die, suffer myocardial infarction or undergo revascularisation at 28 days and 1 year after having undergone surgical treatment for coronary heart disease, all ages

2.9 Proportion of people with mild/moderate/severe disability at six months following diagnosis of initial cardiac event, all ages

3.1 Incidence rates for stroke, all ages

3.2 Median delay between the onset of stroke symptoms and presentation for emergency care at hospital, all ages

3.3 Proportion of patients admitted to hospital with acute stroke who are managed in specialised stroke units (dedicated multidisciplinary teams), all ages

3.4 Proportion of people whose main/underlying disabling condition is stroke, ages 25 or more

3.5 Proportion of people with mild/moderate/severe disability at six months following diagnosis of initial stroke event, all ages

3.6 Case fatality rate for stroke within 28 days, all ages

4.3 Proportion of people with mild/moderate/severe disability at six months following diagnosis of initial vascular event, all ages

Several projects are underway to address the data needs for some of these indicators. For example, the National Centre for Monitoring Cardiovascular Disease has commissioned a project to develop methods for estimating the incidence of heart attacks and stroke based on morbidity and mortality statistics, and is supporting the development of a national ambulance database that will provide data on pre-hospital emergency care. The National Centre is also examining the feasibility of monitoring treatment outcomes for revascularisation procedures and case fatality rates for stroke by using record linkage techniques to follow-up long-term outcomes. The proposed national biomedical risk factor survey and the survey of disability recently conducted by the ABS will enable trends to be estimated for several indicators.

### Proposal for a national biomedical risk factor survey

Ongoing monitoring of risk factors by national population surveys is necessary if preventive activities are to be appropriately directed and adequately evaluated. Risk factor indicators feature strongly in the NHPAs program and strategies are aimed at affecting favourable trends in these indicators. Many risk factors have relevance to more than one priority area and therefore have great public health significance. Some important biological risk factors can only be measured from a blood sample, and without regular data monitoring is not possible and targets cannot be set with any confidence.

Accordingly, a proposal for a national biomedical survey is being developed which will address areas of major public health significance for which there are established risk factors that can be assessed from a blood sample. These include heart, stroke and vascular disease, diabetes, nutrition and communicable diseases. The NPHP supports the development of a proposal for such a survey.

### Development of data standards for risk factors

National data standards and definitions have been developed for monitoring the prevalence of overweight or obese people, and included in the *National Health Data Dictionary*. The process, conducted under the National Health Information Agreement, involved the development of standards by an expert committee and demonstration of national consensus. A similar process is nearing completion for smoking and physical activity. The process is commencing for high blood pressure and high total cholesterol for use in epidemiological and health care settings.

## Quality of Indigenous death registrations

Australia's vital statistics system remains the most comprehensively collected national data of relevance to health. Mortality data is particularly important for monitoring cardiovascular health. However, the identification of the Indigenous population in the death registration process is not satisfactory in several States.

The need to improve the quality of Indigenous health information, including mortality data, has been identified as a national health information priority (AIHW & AHMAC 1995), and a plan was presented to the October 1997 AHMAC meeting (AIHW & AHMAC 1998). The Plan's major recommendations include:

- development of specific protocols for the sensitive handling of data concerning Indigenous peoples, with the active involvement of communities;
- establishment of permanent and long-term positions for Indigenous personnel, to facilitate substantial improvements in the quality of information;
- ensuring all major health and related collections in all jurisdictions have the capacity to differentiate between Indigenous and other Australians; and
- use of common identification classifications and collection protocols in all major collections.

Representatives from the National Health Information Management Group and relevant Indigenous health organisations are working together to help implement the plan. The ABS and AIHW have accepted lead roles in working with organisations to implement Indigenous identification in priority information systems. ABS has this role for vital statistics and AIHW for hospital separations, perinatal data and cancer registrations.

## Use of hospital separations data

Hospital separation data measure the use of hospital resources but have limitations for measuring disease incidence. They do not identify multiple admissions for the same condition, and the number and pattern of hospitalisations can be affected by differing admission practices, differing levels and patterns of service provision, and differences in coding standards over time. Records are based on events rather than individuals and first admissions are not distinguished from re-admissions.

In addition, there are currently no national data on long-term outcomes of care for cardiovascular conditions, which makes it difficult to assess the effect of health services and interventions on changes in health status.

The feasibility of addressing these deficiencies by linking records from different data collections is being investigated.

## Introduction of ICD-10

ICD-10 is the tenth revision of the *International Statistical Classification of Diseases and Related Health Problems*, produced by the WHO as the most recent in its series of ICD classifications (WHO 1998a). The subject matter of each chapter of the ICD-10 is generally the same as in the ICD-9 although there has been some relocation of diseases and conditions to make their placement within the classification consistent with current medical knowledge. The Australian Bureau of Statistics will implement the WHO version of ICD-10 from 1 January 1999 for coding causes of death.

## Data issues

For morbidity coding in Australia, the National Centre for Classification in Health, has produced the tenth revision of the International Statistical Classification of Diseases and Related Health Problems æ Australian Modification (ICD-10-AM). This was done with the input of Australian clinicians and coding specialists, and in close collaboration with the WHO to ensure that international comparability is maintained (NCCH 1997). Hospitals in some States and Territories began using ICD-10-AM in July 1998, with the others to follow in July 1999.

The introduction of ICD-10 and ICD-10-AM will improve the completeness, accuracy and integrity of coded mortality and morbidity data.

### Calculations of risk reduction

Calculations of potential risk reductions for stroke in Chapter 5 used the following methods. The odds ratio (or relative odds) of an event was calculated by dividing the odds in the treatment group (the number of individuals who experienced the event divided by the number who do not) by the odds in the control group, and was expressed as a number from zero (event will never happen) to infinity (event is certain to happen). The relative odds reduction (or increase) is the difference between the odds in the control group (unity) and the treatment group, multiplied by 100. Absolute risk reduction was calculated by subtracting the risk in the treatment group from the risk in the control group. 'Lives benefited' is the number of patients who have been saved from death and dependency by the treatment, for every 1,000 patients treated. The number of patients needed to treat to prevent one event is the reciprocal of the absolute risk difference.

### Rural, remote and metropolitan areas classification

To compare trends in mortality for coronary heart disease and stroke among people living in rural, remote and metropolitan areas of Australia, deaths were cross-categorised using the Rural, Remote and Metropolitan Areas classification. The classification was developed by the Commonwealth Departments of Primary Industries and Energy and Human Services and Health, based primarily on population numbers and an index of remoteness. The Rural, Remote and Metropolitan Areas categories show a natural hierarchy, providing a model for incremental health disadvantage with rurality and remoteness as risk factors. Based on population density, the following three zones and seven area categories are recognised.

| Zone | Category |
|---|---|
| Metropolitan | Capital cities<br>Other metropolitan centres (urban centres population ≥100,000) |
| Rural<br>(Index of remoteness < 10.5) | Large rural centres (urban centres population 25,000–99,999)<br>Small rural centres (urban centres population 10,000–24,999)<br>Other rural areas (urban centres < 10,000) |
| Remote<br>(Index of remoteness > 10.5) | Remote centres (urban centres population ≥5,000)<br>Other remote areas (urban centres population < 5,000) |

**Table A3.1: National Cardiovascular Monitoring System — principal data sources**

| Data source | Agency | Principal measures for monitoring | Scope of data | Frequency/ availability |
|---|---|---|---|---|
| **Risk factors** | | | | |
| *Smoking* | | | | |
| National Health Survey | ABS | Smoking levels, status and quantity | National 18+ | 5-yearly 1989–90, 95 |
| Patterns of Tobacco Smoking | ACCV | Smoking prevalence | National 16+ | 3-yearly 1974–95 |
| Alcohol and Smoking Survey of Secondary Students | ACCV | Smoking prevalence | National 12–17 | 3-yearly 1984–96 |
| Population Survey Monitor | ABS | Smoking prevalence | National 18+ | Quarterly, May 94–May 95 |
| National Household Survey | NCADA/ DHFS | Smoking prevalence | National 14+ | 2–3 yearly 1985, 88, 91, 93, 95 |
| National Household Survey: Indigenous supplement | NDS/ DHFS | Smoking prevalence | Urban Indigenous 14+ | 1994 |
| National Aboriginal & Torres Strait Islander Survey | ABS | Smoking prevalence | Indigenous 13+ | 5-yearly 1994 |
| *Poor lipid profile* | | | | |
| Risk Factor Prevalence Survey | NHF | Raised cholesterol, lipid levels, lipid fractions | Capital cities 20–69 | Irregular 1980, 83, 89 |
| Australian Health and Fitness Survey | ACHPER | Raised cholesterol, lipid levels, lipid fractions | National 9,12,15 | Irregular 1985 |
| National Health Survey | ABS | High cholesterol (self reported) | National 18+ | 5-yearly 1989–90, 95 |
| *High blood pressure* | | | | |
| National Nutrition Survey | ABS/ DHFS | Hypertension, blood pressure levels | National 16+ | Irregular 1995 |
| Risk Factor Prevalence Survey | NHF | Hypertension, blood pressure levels | Capital cities 20–69 | Irregular 1980, 83, 89 |
| Australian Health & Fitness Survey | ACHPER | Hypertension, blood pressure levels | National 9,12,15 | Irregular 1985 |
| National Health Survey | ABS | Hypertension (self reported) | National 18+ | 5-yearly 1989–90, 95 |
| National Aboriginal & Torres Strait Islander Survey | ABS | Hypertension (self reported) | Indigenous 13+ | 5-yearly 1994 |

*continued*

**Table A3.1: National Cardiovascular Monitoring System — principal data sources (continued)**

| Data source | Agency | Principal measures for monitoring | Scope of data | Frequency/ availability |
|---|---|---|---|---|
| **Risk factors** | | | | |
| *Inadequate physical activity* | | | | |
| National Health Survey | ABS | Self-reported activity | National 15+ | 5-yearly 1989–90, 95 |
| Population Survey Monitor | ABS | Self-reported activity | National 18+ | Quarterly May 94–May 95 |
| Risk Factor Prevalence Survey | NHF | Self-reported activity | Capital cities 20–69 | Irregular 1980, 83, 89 |
| Australian Health and Fitness Survey | ACHPER | Self-reported activity Measured fitness | National 9,12,15 | Irregular 1985 |
| Active Australia Benchmark Physical Activity Survey | Active Aust NSW Health | Self-reported activity | National | Benchmark 1997 |
| *Overweight/ obesity* | | | | |
| National Nutrition Survey | ABS/ DHFS | Overweight/obesity (BMI) | National 2+ | Irregular 1995 |
| Risk Factor Prevalence Survey | NHF | Measured height and weight | Capital cities 20–69 | Irregular 1980, 83, 89 |
| National Health Survey | ABS | Self-reported height and weight | National 15+ | 5-yearly 1989–90, 95 |
| Population Survey Monitor | ABS | Height and weight (self reported) | National 18+ | Quarterly, May 94–May 95 |
| *Inappropriate nutrition* | | | | |
| National Nutrition Survey | ABS/ DHFS | Fat to total energy intake Salt use | National 2+ | Irregular 1995 |
| National Dietary Survey of Adults | DHFS | Fat to total energy intake | Capital cities 25–64 | Irregular 1983 |
| National Dietary Survey of Schoolchildren | DHFS | Fat to total energy intake | National 10–15 | Irregular 1985 |
| Apparent Consumption of Foodstuffs and Nutrients | ABS | Fat to total energy in the food supply | National | Annual 1936–37 to 1993–94 |
| Risk Factor Prevalence Survey | NHF | Salt use | Capital cities 20–69 | Irregular 1983, 89 |
| **Disease incidence** | | | | |
| National Hospital Morbidity Database | AIHW | Non-fatal heart attacks | National 25–69 | New 1995–96 |
| Mortality database | AIHW | Fatal heart attacks | National 35–69 | New 1996 |
| Rheumatic Heart Disease Register | Territory Health | Rheumatic heart disease incidence | Top End, NT | New 1998 |
| **Pre-hospital & emergency care** | | | | |
| National ambulance database | ARC/ Curtin University | Time between onset and presentation for emergency care | National State & Territory | New 1999 |

*continued*

**Table A3.1: National Cardiovascular Monitoring System — principal data sources (continued)**

| Data source | Agency | Principal measures for monitoring | Scope of data | Frequency/ availability |
|---|---|---|---|---|
| **Medical & surgical care** | | | | |
| National Hospital Morbidity Database | AIHW | Use of surgical and medical procedures performed in hospital | National | Annual 1996–97 |
| Cardiac Surgery Register | NHF | Operations | National | Annual 1976–1994 |
| Coronary Angioplasty Register | NHF | Procedures | National | Annual 1980–1995 |
| National Health Survey | ABS | Hospital visits, doctor consultations | National | 5-yearly 1989–90, 95 |
| Medical Benefits Data | Medicare & DVA | Medical services (diagnostic investigations & procedures) | National (excl public patients in public hospitals) | Annual 1997 |
| Australian Survey of Morbidity & Treatment in General Practice | University of Sydney | General practice management of chronic cardiovascular conditions | National (excl salaried practitioners) | Irregular 1990–91 |
| **Secondary prevention** | | | | |
| Drug Utilisation Subcommittee Database | DHFS | Prescription medicines | National (excl public hospital use) | Annual 1990–1997 |
| National Health Survey | ABS | Self-reported medication use | National | 5-yearly 1989–90, 1995 |
| **Disease prevalence** | | | | |
| National Health Survey | ABS | Self-reported recent illness, long-term conditions | National | 5-yearly 1989–90, 1995 |
| Rheumatic Heart Disease Register | Territory Health | Rheumatic heart disease prevalence | Top End, NT | New 1998 |
| National Aboriginal & Torres Strait Islander Survey | ABS | Self-reported recent illness, long-term conditions | Indigenous 13+ | 5-yearly 1994 |
| Disability, Ageing & Carers Survey | ABS | Persons whose main disabling condition is CVD | National All ages | 5-yearly 1981, 88, 93 |
| **Mortality** | | | | |
| Mortality Database | AIHW | Heart, stroke and vascular disease mortality | National State & Territory Indigenous All ages | Annual 1964–1996 |
| **Costs** | | | | |
| Disease Costs & Impact Study | AIHW | Health care costs heart, stroke and vascular disease | National | Irregular 1989–90, 93/94 |

*Notes:* ABS = Australian Bureau of Statistics; ACCV = Anti-Cancer Council of Victoria; NCADA = National Campaign Against Drug Abuse; NDS = National Drug Strategy; ACHPER = Australian Council for Health, Physical Education and Recreation; ARC = Australian Resuscitation Council; DVA = Department of Veterans' Affairs.

# Acronyms and abbreviations

| | |
|---|---|
| ABI | ankle brachial index |
| ABS | Australian Bureau of Statistics |
| ACE | angiotensin converting enzyme |
| ACRA | Australian Cardiac Rehabilitation Association |
| AHCPR | Agency for Health Care Policy and Research (US) |
| AHMAC | Australian Health Ministers' Advisory Council |
| AHTAC | Australian Health Technology Advisory Committee |
| AIHW | Australian Institute of Health and Welfare |
| ANBP-2 | Australian National Blood Pressure Trial-2 |
| BMI | body mass index |
| BP | blood pressure |
| CABG | coronary artery bypass grafting |
| CHD | coronary heart disease |
| CPR | cardiopulmonary resuscitation |
| CSANZ | Cardiac Society of Australia and New Zealand |
| CT | computed tomography |
| CVD | cardiovascular disease |
| DHFS | Commonwealth Department of Health and Family Services |
| DHSH | Commonwealth Department of Human Services and Health |
| DRG | diagnosis-related group |
| DVA | Department of Veterans' Affairs |
| ECG | electrocardiogram |
| HDL | high density lipoprotein |
| HEALTH | Commonwealth Department of Health and Aged Care |
| HIC | Health Information Centre |
| HSA | Heart Support - Australian |
| ICD | implantable cardiac defibrillator |
| ISDN | Integrated Services Digital Network |
| LDL | low density lipoprotein |
| LIPID | Long Term Intervention with Pravastatin in Ischaemic Disease |
| Lp | lipoprotein |
| MBS | Medicare Benefits Schedule |
| MI | myocardial infarction |
| MRI | magnetic resonance imaging |
| MSAC | Medicare Services Advisory Committee |

## Acronyms and abbreviations

| | |
|---|---|
| NAHS | National Aboriginal Health Strategy |
| NATSIS | National Aboriginal and Torres Strait Islander Survey |
| NCCH | National Centre for Classification in Health |
| NHF | National Heart Foundation |
| NHIM | National Health Information Model |
| NHLBI | US National Heart, Lung and Blood Institute |
| NHMRC | National Health and Medical Research Council |
| NHPA | National Health Priority Area |
| NHPC | National Health Priority Committee |
| NPHP | National Public Health Partnership |
| NSRI | National Stroke Research Institute |
| OATSIH | Office for Aboriginal and Torres Strait Islander Health |
| OECD | Organisation for Economic Cooperation and Development |
| PBAC | Pharmaceutical Benefits Advisory Council |
| PBS | Pharmaceutical Benefits Scheme |
| PET | positron emission tomography |
| PTCA | percutaneous transluminal coronary angioplasty |
| RACGP | Royal Australian College of General Practitioners |
| SERU | Support and Evaluation Resource Units |
| TG | triglyceride |
| TIA | transient ischaemic attack |
| tPA | tissue-type plasminogen activator |
| UPI | unique patient identifier |
| WHO | World Health Organization |

# Glossary

## Methodology terms

**Additional diagnosis:** diagnosis of conditions that affect a person's care in terms of requiring therapeutic treatment, clinical evaluation, diagnostic procedures, extended length of hospital stay or increased nursing care and/or monitoring. These include comorbid conditions (co-existing conditions) and complications.

**Confidence interval:** a range of values computed from a sample of data that has a given probability of containing the parameter being estimated. It indicates the precision with which the parameter has been estimated.

**Goal:** a general statement of intent and aspiration describing outcomes that might be reasonably achieved in the light of current knowledge and resources. Goals apply to the broad population with priority population identified when different strategies are required for certain groups of the population.

**Health outcome:** a change in the health of an individual, a group of people or a population, which is wholly or partially attributable to an intervention or series of interventions.

**Indicator:** provides a specific measurable way of assessing progress towards goals. In terms of health outcomes, an indicator is a statistic or other unit of information which reflects, directly or indirectly, the performance of a health and welfare intervention, facility, service or system in maintaining or increasing the well being of its target population.

**Meta-analysis:** method used for combining the results of a number of independent studies of the same outcome. It effectively increases sample size and decreases sampling errors.

**Principal diagnosis:** the diagnosis established after study to be that chiefly responsible for occasioning the patient's episode of care in hospital.

**Randomised controlled trial:** an experimental study in which subjects are randomly assigned to treatment and control groups.

**Separation:** the process by which a patient completes an episode of care that can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay beginning or ending in a change of type of care (eg from acute to rehabilitation).

**Target:** a specific and measurable amount of change in population health gain that could be expected in a given population within a given timeframe. Health gains include mortality, quality of life, disability, disease states and other significant health states such as risk factors.

## Medical terms

**Acute myocardial infarction:** an acute process of myocardial ischaemia with sufficient severity and duration to result in permanent myocardial damage.

**Angina:** a clinical syndrome typically characterised by a deep, poorly localised chest or arm discomfort that is reproducibly associated with physical exertion or emotional stress and relieved promptly by rest or sublingual nitroglycerine.

**Angioplasty:** see percutaneous transluminal coronary angioplasty.

## Glossary

**Arrhythmia:** irregularity or loss of rhythm of the heartbeat.

**Atherosclerosis:** nodular thickening or hardening of the layers in the wall of an artery; characterised by irregularly distributed lipid deposits in the intima of large and medium sized arteries.

**Atrial fibrillation:** a cardiac arrhythmia marked by rapid randomised contractions of the atrial myocardium, causing a totally irregular, often rapid, ventricular rate.

**Beta blocker (beta adrenergic blocking agent):** a drug that blocks the effect of catecholamines, producing a decrease in heart rate and oxygen demand in the myocardium.

**Calcium antagonist:** a drug that blocks entry of calcium into cells and inhibits the contractility of smooth muscle. The result is dilation of the blood vessels and a reduction in blood pressure.

**Cardiac catheterisation:** passage of a catheter into the heart through a blood vessel leading to the heart for the purpose of measuring intracardiac pressure abnormalities, obtaining cardiac blood samples and/or imaging cardiac structures by injection of radio-opaque dye.

**Claudication:** a complex of symptoms characterised by absence of pain in a limb at rest, commencement of pain, tension and weakness when walking, intensification of the condition until walking is impossible and the disappearance of symptoms after the limb has been at rest.

**Comorbidity:** a concomitant but unrelated pathologic or disease process, usually used to indicate co-existence of two or more disease processes.

**Congestive heart failure:** heart failure that causes swelling of the ankles and lung congestion.

**Coronary artery bypass grafting:** vein or artery grafted surgically to permit blood to travel from the aorta to a branch of the coronary artery at a point past an obstruction.

**Coronary stenosis:** narrowing or constriction of any orifices leading into or from the heart or between chambers of the heart.

**Echocardiography:** use of ultrasound in the investigation of the heart and great vessels and diagnosis of cardiovascular lesions.

**Electrocardiography:** the graphic recording from the body surface of the potential of electric currents generated by the heart, as a means of studying the heart muscle.

**Haemorrhagic stroke:** stroke caused by rupturing of a blood vessel, usually an artery, within the brain.

**Hyperlipidaemia:** excessive quantity of fat (cholesterol and triglycerides) in the blood.

**Ischaemia:** deficiency of blood in a part, due to functional constriction or actual obstruction of a blood vessel.

**Ischaemic stroke:** stroke resulting from cerebral thrombosis which causes ischaemia, oedema and congestion of the brain tissues surrounding the area.

**Left ventricular function:** function of the main pumping chamber of the heart that receives blood from the left atrium and pumps it out into the general circulation through the aortic valve.

**Mitral regurgitation:** abnormal systolic back flow of blood from the left ventricle into the left atrium, resulting from imperfect closure of the mitral valve.

**Myocardial infarction:** damage to the heart muscle caused by occlusion of one or more of the coronary arteries.

**Myocardial ischaemia:** a condition in which oxygen delivery to and waste removal from the myocardium falls below normal levels with oxygen demand exceeding supply. As a consequence, the metabolic machinery of myocardial cells is impaired leading to various degrees of systolic (contractile) and diastolic (relaxation) dysfunction. Ischaemia is usually diagnosed indirectly through techniques that demonstrate reduced myocardial blood flow or its consequences on contracting myocardium.

**Nitrate:** a drug whose metabolites produce a relaxation of vascular smooth muscle. This in turn produces a strong dilation of the veins, reducing preload and myocardial oxygen demand.

**Percutaneous transluminal coronary angioplasty (PTCA):** a method of treating localised coronary artery narrowing using a special catheter with a cylindrical balloon surrounding it that can be inflated to dilate the narrowed vessel.

**Perfusion scan:** a test to determine the status of blood flow to an organ.

**Pulmonary oedema:** a condition, usually acute but sometimes chronic, where fluid builds up in the lungs. This often occurs as a response to left ventricular failure in coronary heart disease, hypertension or aortic valve disease.

**Restenosis:** the recurrence of a stenosis in a coronary artery.

**Revascularisation:** restoration, to the extent possible, of normal blood flow to the myocardium by surgical or percutaneous means or with removal or reduction of an obstruction as occurs when coronary bypass surgery or coronary angioplasty is performed.

**Stenosis:** a narrowing or blockage of a coronary artery.

**Stress testing:** also referred to as an exercise tolerance test, a diagnostic test in which the patient exercises on a treadmill, bicycle or other equipment while heart activity is monitored by an ECG.

**Thrombolysis:** pharmacological treatment with a class of drugs that can break up fibrin blood clots.

**Transient ischaemic attack:** a sudden episode of temporary or passing symptoms typically due to diminished blood flow through the brain.

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