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The diseases

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Overview of heart, stroke and vascular diseases

Key points

- Heart, stroke and vascular diseases are Australia's largest health problem, accounting for 50,294 deaths in 2002 (37.6% of all deaths) and affecting 3.67 million Australians in 2001.
- 1.10 million Australians had disabling conditions associated with heart, stroke and vascular diseases in 1998.
- Over the last decade the prevalence of heart, stroke and vascular conditions rose by around 18.2%.
- Over 1991–2002, death rates from heart, stroke and vascular diseases fell by 36.3% for males and 33.7% for females.
- In 2000–02, death rates from heart, stroke and vascular diseases in the most disadvantaged areas were 21.4% higher than in the least disadvantaged.
- In 2000–02, for Indigenous Australians death rates from heart, stroke and vascular diseases were 2.6 times as high as for other Australians.

Heart, stroke and vascular diseases (also known as cardiovascular or circulatory diseases) are Australia's largest health problem. They are Australia's greatest killer (accounting for 50,294 deaths in 2002) and affected 3.67 million Australians in 2001. They contribute to significant illness, disability, poor quality of life and premature death, and are the most expensive disease group in Australia in terms of health expenditure.

Much of the burden caused by heart, stroke and vascular diseases is preventable, and over the last few decades there have been substantial and continuing falls in death rates. These have been driven by improvements in some risk factor levels and major advances in treatment.

This chapter outlines the major components of heart, stroke and vascular diseases in terms of prevalence, incidence, hospitalisations and deaths. The types of heart, stroke and vascular diseases that pose the biggest problems in Australia are coronary heart disease, stroke, peripheral vascular disease⁵ and heart failure. Acute rheumatic fever and chronic rheumatic heart disease are also major health issues among Aboriginal and Torres Strait Islander peoples. Information on congenital heart diseases is also presented, as they are among the leading causes of death in the first year of life.

What are heart, stroke and vascular diseases?

Heart, stroke and vascular diseases cover all diseases and conditions of the heart and blood vessels. There can be many forms and causes of this diverse group of diseases. However, in developed countries such as Australia, the main underlying problem is atherosclerosis. This is a condition that forms abnormal build-ups of fat, cholesterol and other substances in the inner lining of the arteries (plaque). It is most serious when it affects the blood supply to the heart (causing angina or heart attack) or to the brain (which can lead to a stroke). The process leading to atherosclerosis is slow and complex, often starting in childhood, and it progresses with age.

Risk factors for heart, stroke and vascular diseases

Risk factor is the term given to a range of health-related behaviours and biomedical conditions that can affect the health of an individual in a negative way.

The major preventable risk factors for heart, stroke and vascular diseases are tobacco smoking, high blood pressure, high blood cholesterol, insufficient physical activity, overweight and obesity, poor nutrition and diabetes. Atrial fibrillation, transient ischaemic attack (TIA) and high intake of alcohol are

5 In this report, the term 'peripheral vascular disease' (commonly known as peripheral artery disease) is used to refer to diseases of arteries and arterioles (atherosclerosis of peripheral arteries, aneurysm, arterial embolism and thrombosis, and other peripheral vascular disease).



further risk factors for stroke. Risk strongly increases with age and is higher for men, Aboriginal and Torres Strait Islander peoples, and people from lower socioeconomic groups. New research suggests that other factors, including depression and social factors, may also play a role.

How many Australians have heart, stroke and vascular diseases?

Based on self-reports from the National Health Survey, 19.4% of the population had heart, stroke and vascular conditions in 2001. This corresponds to an estimated 3.67 million Australians affected. Of those with a heart, stroke and vascular condition, 12.6% had varicose veins, 9.7% had coronary heart disease and 9.6% had heart rhythm disorders. The prevalence of stroke was considerably lower at 2.8% of people with heart, stroke and vascular conditions.

Trends

Over the last decade, there has been a general increase of around 18.2% in the prevalence of heart, stroke and vascular conditions. Between 1989 and 1995, there was a 46.6% increase in the proportion of people reporting heart, stroke and vascular diseases as a long-term condition. However, between 1995 and 2001, there was a 19.4% decline.

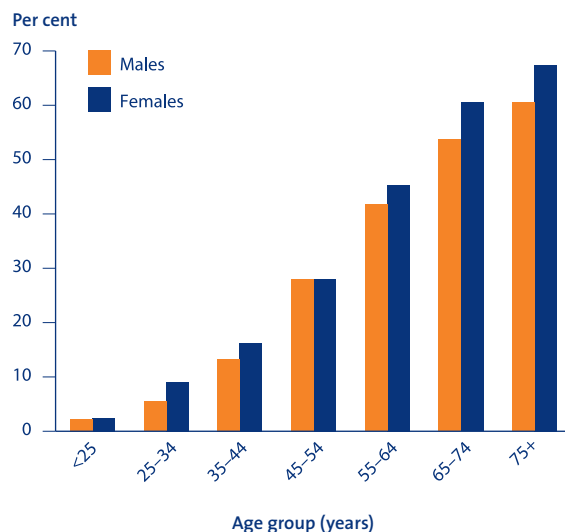
While changes in survey methodology and classification may reduce direct comparability between the National Health Surveys, other factors may be contributing to movements in prevalence, such as changing perception of certain conditions over time and improvements in diagnostic technology.

Sex and age

In 2001, the age-standardised prevalence of heart, stroke and vascular conditions was 11% higher for females than for males: 20.8% and 18.5%, respectively. Heart, stroke and vascular conditions occur mainly

among older Australians, with almost two-thirds of those aged 75 years and over reporting these conditions compared with 28.0% for 45–54-year-olds and 6.5% for those aged under 45 years.

People with heart, stroke and vascular conditions, 2001



Note: Based on self-reports.

Source: AIHW analysis of the 2001 National Health Survey.

Disability due to heart, stroke and vascular diseases

Based on self-reports from the Disability, Ageing and Carers Survey, heart, stroke and vascular diseases were one of the largest causes of disability in Australia in 1998. Six per cent of survey respondents (or almost one-third of all those with a disability) reported one or more disabling conditions associated with their heart, stroke and vascular conditions. This corresponds to 1.10 million Australians affected. Of these, around 59.1% needed assistance or had difficulties with self-care, mobility or communication, and around 30.1% had no difficulty with these activities but used aids or equipment.

Hospitalisations

In 2001–02, there were 441,039 hospitalisations where heart, stroke and vascular diseases were the principal diagnosis (condition chiefly responsible for the hospitalisation) (6.9% of all hospitalisations). Of these, 36.2% were attributed to coronary heart disease, 12.3% to heart rhythm disorders, 9.5% to heart failure, 9.1% to stroke, 5.5% to peripheral vascular disease and 0.5% to acute rheumatic fever and chronic rheumatic heart disease.

When both principal and additional diagnoses were examined, heart, stroke and vascular diseases were involved in 9.8% of all hospitalisations.

Trends

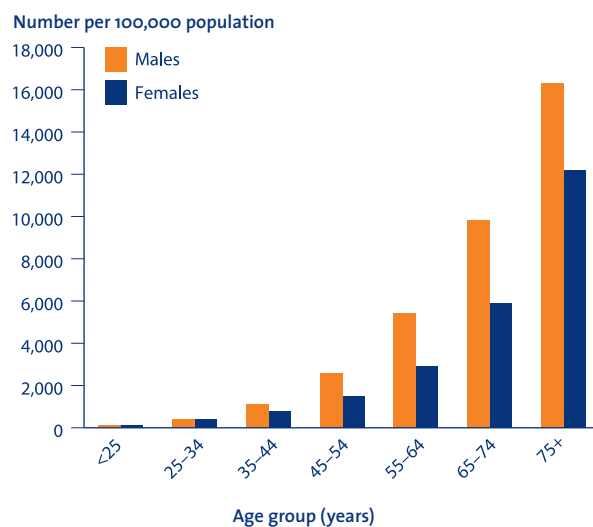
Between 1993–94 and 2001–02, there was a 19.8% increase in the age-standardised hospitalisation rate for heart, stroke and vascular diseases (including TIA). This increase has coincided with an overall increase in the prevalence of heart, stroke and vascular diseases and a decline in deaths over the last decade.

Sex and age

In 2001–02, males were over one-third more likely to be hospitalised for heart, stroke and vascular diseases than females, with coronary heart disease and peripheral vascular disease rates being twice as high in males. However, hospitalisation rates for acute rheumatic fever and chronic rheumatic heart disease were almost one-third higher for females than males.

Hospitalisations for heart, stroke and vascular diseases occur predominantly among middle-aged and older Australians. Over three-quarters of all these hospitalisations occur among those aged 55 years and over, although this age group represents only 22% of the Australian population.

Hospitalisations for heart, stroke and vascular diseases in Australia, 2001–02



Source: AIHW National Hospital Morbidity Database.

Aboriginal and Torres Strait Islander peoples

In 2001–02, Aboriginal and Torres Strait Islander peoples⁶ were 1.4 times as likely to be hospitalised for heart, stroke and vascular diseases as other Australians. The largest difference occurred for acute rheumatic fever and chronic rheumatic heart disease where the rate for males was six times as high and the rate for females was eight times as high as for other Australian males and females.

Length of stay in hospital

In 2001–02, 41% of hospitalisations for heart, stroke and vascular diseases were same-day hospitalisations. This was a large increase from 26.2% in 1993–94. The increase may reflect the much greater use of investigations for these diseases in recent years.

Of those hospitalised for at least one night, the average length of stay was 8.0 days, a decline from 1993–94 when the average length of stay was 9.8 days.

⁶ The reporting of the Indigenous identifier in hospital records is not always complete, so the rates presented may underestimate true hospital use by Aboriginal and Torres Strait Islander peoples (see Methods and data sources section for more information).

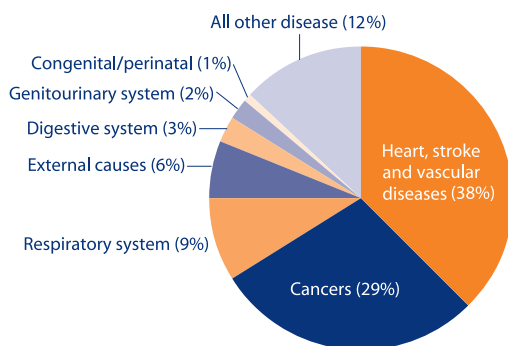


Those hospitalised for stroke, peripheral vascular disease, acute rheumatic fever and chronic rheumatic heart disease tended to stay at least twice as long as those hospitalised for coronary heart disease.

Deaths

In 2002, heart, stroke and vascular diseases were the leading cause of death among Australians, accounting for 50,294 deaths (37.6% of all deaths).

Deaths by major disease categories, 2002



Source: ABS 2003a.

Coronary heart disease and stroke together accounted for three-quarters of all deaths from heart, stroke and vascular diseases. Coronary heart disease was the major cause of death from heart, stroke and vascular diseases, accounting for 51.8% of all such deaths, followed by stroke (24.9%), heart failure (5.4%), peripheral vascular disease (5.1%) and acute rheumatic fever and chronic rheumatic heart disease (0.5%).

Congenital heart diseases accounted for 0.2% of all deaths in Australia during 2002.

Trends

Over the period 1991–02, death rates from heart, stroke and vascular diseases declined at a rate of 4.3% per year for males and 4.0% per year females, a faster rate than for all causes of death combined (2.5% and 2.0%, respectively). This produced a total decline of

36.3% among males and 33.7% among females over the 12-year period. This decline is partly due to falls in the rate at which people get heart, stroke and vascular diseases and partly due to improved survival following an acute event (such as heart attack or stroke).

Sex and age

In 2002, males were more likely to die from heart, stroke and vascular diseases than females across all age groups, with males aged under 75 years experiencing death rates up to three times those of females of the same age. Among older Australians (those aged 75 years and over), more women died from heart, stroke and vascular diseases than men, although the death rates of elderly men and women were similar. This is because more women than men live into old age.

Although heart, stroke and vascular diseases are a common cause of death among middle-aged Australians, they kill an even greater proportion of older people. Among those aged 75 years and over, these diseases accounted for 45.8% of all deaths.

Socioeconomic status

In 2000–02, Australians in the most disadvantaged areas experienced considerably higher death rates from heart, stroke and vascular diseases than their counterparts from the least disadvantaged areas—21.0% higher for males and 19.6% for females. It is important to note that this measure of inequality relates to the average disadvantage of all people living in the area and will generally understate the true inequality in deaths at the individual level in Australia (see **Methods and data sources** for further information).

Aboriginal and Torres Strait Islander peoples

In 2000–02, heart, stroke and vascular diseases were the leading causes of death among Aboriginal and Torres Strait Islander peoples in Queensland, Western Australia, South Australia and the Northern Territory⁷,

7 Data from these jurisdictions are considered to have sufficient coverage of Indigenous Australian deaths.

accounting for 26% of all deaths among Indigenous Australians in these four jurisdictions. Indigenous Australians experienced higher death rates from heart, stroke and vascular diseases than other Australians, with rates 2.6 times as high as for other Australians.

Region

In 2000–02, death rates from heart, stroke and vascular diseases were higher in regional and remote areas of Australia compared with major cities.

These higher death rates in regional areas could be due to a range of different influences including lower socioeconomic status, poorer risk factor profiles and different access to health services. The higher death rate in remote areas may reflect the high proportion of Indigenous people in these areas and the higher rate of deaths for indigenous people overall in Australia.

State and territory

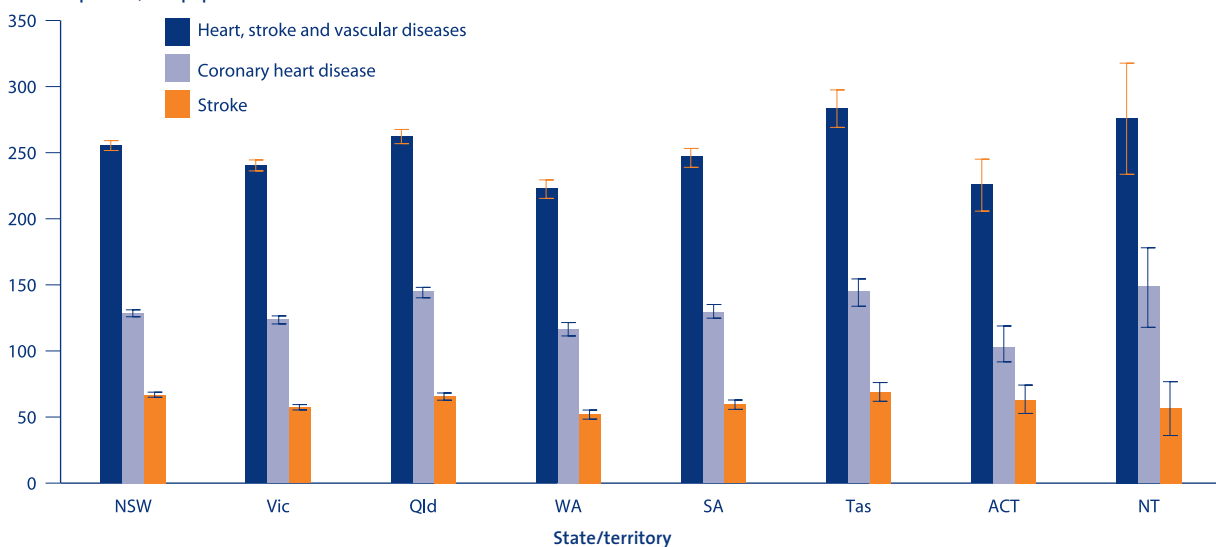
In 2002, death rates for heart, stroke and vascular diseases varied among the states and territories from 13.9% above the national average to 10.4% below the national average. Death rates were highest in Tasmania and the Northern Territory, and lowest in Western Australia and the Australian Capital Territory. For more information see the National Cardiovascular Disease Database <<http://www.aihw.gov.au/cvdhtml/cvd-menu.htm>>.

International comparisons

Australian death rates for heart, stroke and vascular diseases ranked towards the lower end of the 24 countries compared in 1999 (sixth lowest and one-and-a-half times as high as those of the lowest countries, Japan and France). The Slovak Republic had the worst death rates from heart, stroke and vascular diseases among the selected OECD countries—two-and-a-half times those of Australia and over three times those of Japan and France.

Deaths from heart, stroke and vascular diseases, coronary heart disease and stroke by state and territory, 2002

Number per 100,000 population

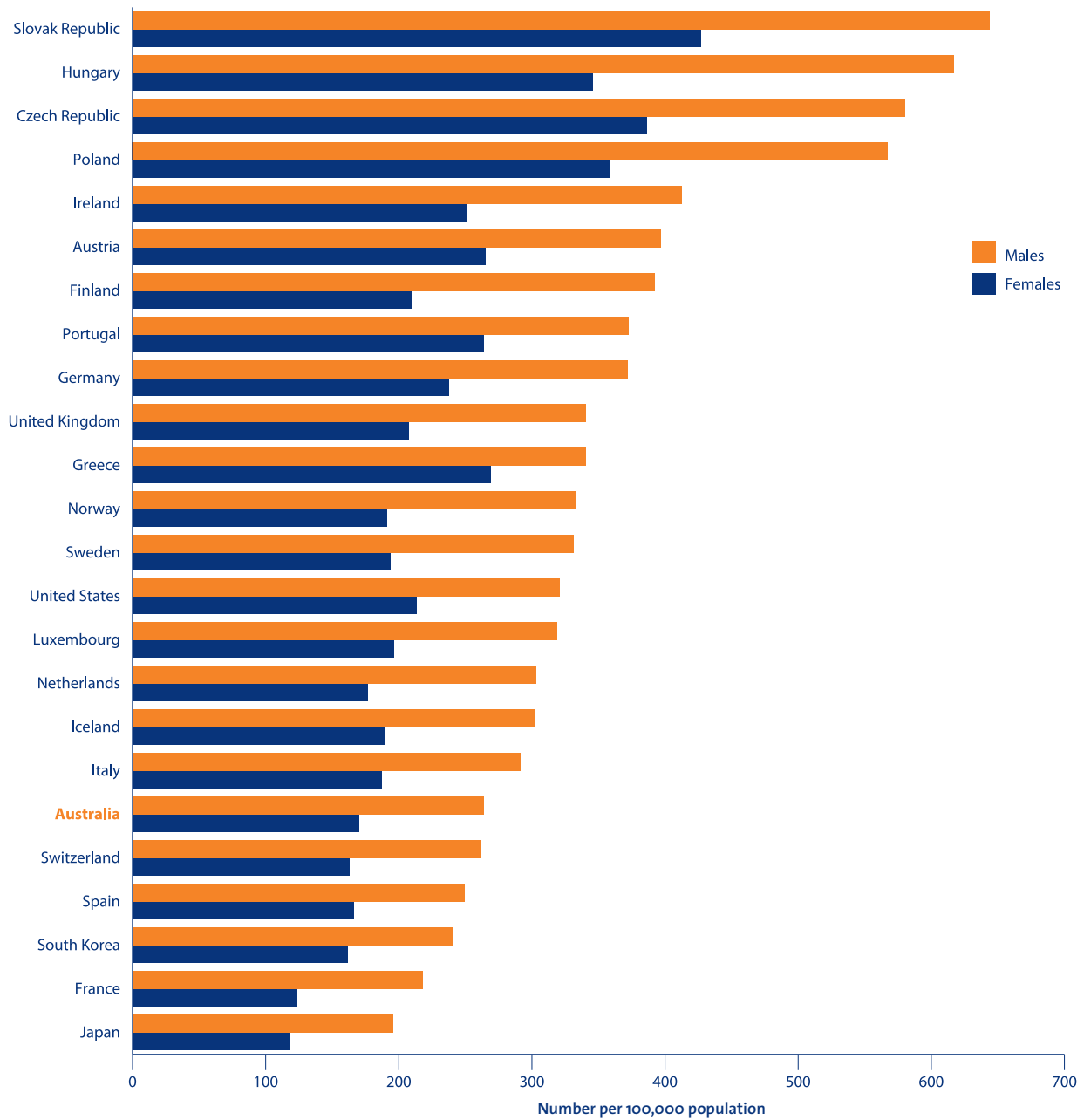


Note: Error bars indicate 95% confidence intervals.

Source: AIHW National Mortality Database.



Deaths from heart, stroke and vascular diseases for selected countries, 1999



Note: Rates have been age-standardised to the 1980 OECD population.

Source: OECD Health Data 2003.

Health inequalities

Deaths from heart, stroke and vascular diseases

Year	Population subgroup	Males	Females	Persons
Number per 100,000 population				
2002	Age group (years)			
	45–54	82.9	25.2	54.0
	55–64	226.2	83.1	155.5
	65–74	718.5	355.8	531.9
	75–84	2,331.7	1,668.7	1,949.0
	85 and over	7,851.4	7,359.2	7,512.6
	<i>All ages (ASR)</i>	<i>298.6</i>	<i>209.8</i>	<i>248.9</i>
2000–02	Socioeconomic status (IRSD)			
	1st quintile (most disadvantaged)	331.9	232.9	278.0
	2nd quintile	319.5	220.2*	265.8*
	3rd quintile	311.5*	215.4*	258.9*
	4th quintile	287.5*	209.9*	245.7*
	5th quintile (least disadvantaged)	274.3*	194.7*	228.9*
2000–02	Aboriginal and Torres Strait Islander status			
	Standardised mortality ratio	2.8 [#]	2.4 [#]	2.6 [#]
2000–02	Region (ASGC remoteness structure)			
	Major cities	293.7	207.5	245.8
	Regional	323.5*	226.6*	271.5*
	Remote	338.5*	248.4*	295.9*

* Statistically significant difference when compared with the first row in the population subgroup.

[#] Statistically significant difference from 1.0 (other Australians).

Notes

1. Standardised mortality ratio = observed deaths divided by expected deaths. For further information see Methods and data sources section.
2. Data for all ages.
3. Significance testing was not performed on the age groups.
4. All rates other than age-specific rates and standardised mortality ratio are age-standardised (ASR) to the 2001 Australian population.

Source: AIHW National Mortality Database.



Further reading

ABS 2003a. 2002 causes of death. ABS Cat. No. 3303.o. Canberra: ABS.

ABS 2003c. Occasional paper: long-term health conditions— a guide to time series comparability from the national health survey, Australia. ABS Cat. No. 4816.055.001. Canberra: ABS.

ABS 1999. 1998 disability, ageing and carers: summary of findings, Australia. ABS Cat. No. 4430.o. Canberra: ABS.

AIHW 2003. Rural, regional and remote health: a study on mortality. AIHW Cat. No. PHE 45. Canberra: AIHW (Rural Health Series No. 2).

OECD 2003. OECD health data 2003, 3rd edition: a comparative analysis of 30 countries (CD-ROM). Paris: OECD.

Coronary heart disease

Key points

- Coronary heart disease is the largest single cause of death and the most common cause of sudden death in Australia. It claimed 26,063 lives in 2002 (19.5% of all deaths).
- The 2001 National Health Survey showed that around 355,600 Australians have coronary heart disease.
- In 2001–02 there were an estimated 48,700 coronary heart disease events (deaths plus hospitalisations) in Australia among 40–90-year-olds. Around half were fatal and 86% of coronary deaths occurred outside hospital.
- Coronary heart disease death rates fell by 41.1% among males and 40.1% among females over the period 1991–02.
- In 2000–02, death rates from coronary heart disease in the most disadvantaged areas were 28.9% higher than in the least disadvantaged.
- In 2000–02, for Indigenous Australians coronary heart disease death rates were 2.6 times as high as for other Australians.

Coronary heart disease (also known as coronary artery disease or ischaemic heart disease) is the largest single cause of death and the most common cause of sudden death in Australia, claiming 26,063 lives in 2002, that is, over half of all deaths from heart, stroke and vascular diseases in 2002. It is the leading cause of premature death and disability. It was by far the greatest epidemic in Australia during the twentieth century and it is predicted that by 2020 it will become the single leading health problem for the world. However, age-standardised death rates from coronary heart disease have fallen substantially in Australia, by around 70% since the late 1960s. These patterns have been influenced by a number of factors including improvements in levels of some risk factors, improved medical care for those at higher risk of experiencing coronary heart disease and better survival for those who have had a heart attack.

What is coronary heart disease?

Coronary heart disease is the most common form of heart disease in Australia. Its two major clinical forms are heart attack and angina. The common underlying problem in coronary heart disease is atherosclerosis, where build-ups called plaques form on the inside surfaces of arteries. Plaques can occur in the arteries supplying the brain, the legs, the kidneys and, in the case of the heart itself, the coronary arteries.

A heart attack occurs when a coronary plaque suddenly breaks open. This brings on a blood clot that completely blocks blood flow to the heart muscle downstream. This is a life-threatening emergency that can cause severe chest pain, and possibly collapse and sudden death. If the clot cannot be promptly treated some of the heart muscle will die, a condition known as acute myocardial infarction (AMI).

With angina, a plaque has markedly narrowed a coronary artery to the point where, although the blood flow can usually meet most daily demands, it cannot increase to meet extra demands incurred by physical activity or strong emotion, resulting in temporary chest pain. This event is generally not life-threatening. However, people with angina are more prone to sudden cardiac death or AMI than the general population.

Acute coronary syndrome (ACS) is a term that is used to collectively describe AMI (heart attack) and unstable angina (chest pain occurring at rest, new onset of pain with exertion, or angina that is more frequent, longer in duration or lower in threshold than before) when they present as a clinical emergency. Improved diagnosis of AMI among those presenting with ACS has occurred through the use of more specific tests.

Heart attack remains an often fatal event. Among Australians having an attack, over four in ten will be dead within a year. Over half of all heart attack deaths occur before the person reaches hospital.



About 25% of those who have a heart attack die within an hour of their first-ever symptoms. In individuals with known coronary heart disease having a second heart attack, the risk of sudden death can increase greatly.

Risk factors for coronary heart disease

The major preventable risk factors for coronary heart disease are tobacco smoking, high blood pressure, high blood cholesterol, insufficient physical activity, and overweight and obesity. Nutrition factors and diabetes have also been associated with a higher risk of coronary heart disease. Males, older Australians, Aboriginal and Torres Strait Islander peoples, and people from lower socioeconomic groups are at greater risk of developing coronary heart disease compared with other Australians. Depression, social isolation and lack of quality social support are significant independent risk factors for coronary heart disease as well.

How many Australians have coronary heart disease?

Prevalence

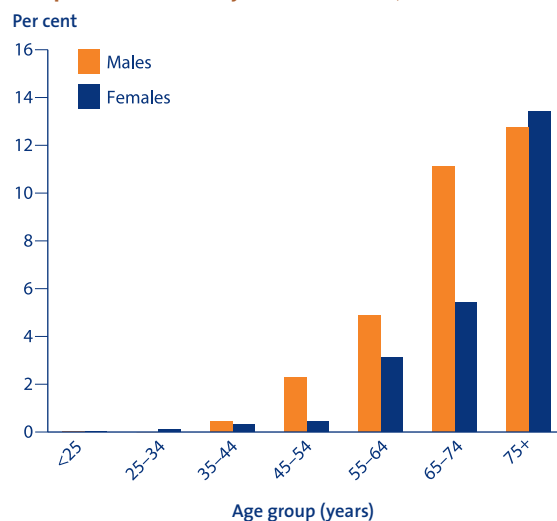
Based on self-reports from the 2001 National Health Survey, 1.9% of those surveyed reported having manifestations of coronary heart disease. This corresponds to around 355,600 Australians affected. Around three-quarters of people with coronary heart disease reported having angina, and around one-third reported having had a heart attack. High blood pressure (50.3%), high blood cholesterol (38.3%) and heart rhythm disorders (14.9%) were also frequently reported conditions by people with coronary heart disease.

Sex and age

The age-standardised prevalence of coronary heart disease was one-third higher among males than females: 2.4% and 1.6%, respectively. Coronary heart disease rates

increase rapidly with age from 4.0% among 55–64-year-olds to 8.2% in 65–74-year-olds and 13.1% in those aged 75 years and over. Almost two-thirds of people with coronary heart disease were aged 65 years and over.

People with coronary heart disease, 2001



Note: Based on self-reports.

Source: AIHW analysis of the 2001 National Health Survey.

Incidence

In 2001–02 there were an estimated 48,700 coronary heart disease events⁸ in Australia among 40–90-year-olds (29,800 among men and 18,900 among women). Around half of these events were fatal (case fatality of 46% or 22,400 cases), and 86% of these coronary deaths occurred outside hospital.

Trends

The age-standardised incidence of coronary heart disease has declined over the last decade, falling by around one-quarter between 1993–94 and 2001–02.

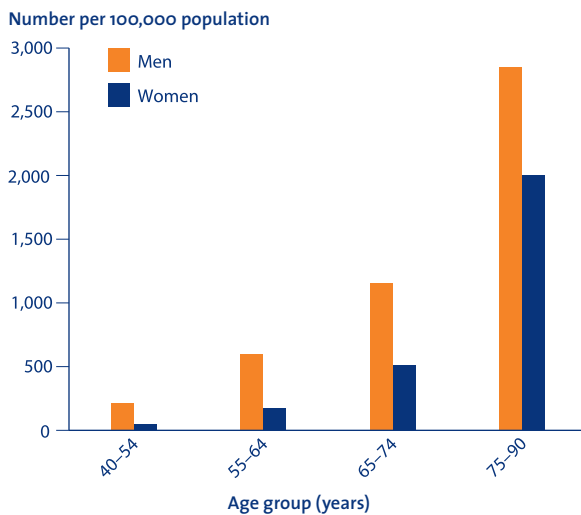
Sex and age

In 2001–02 among those aged 40–90 years, the incidence of coronary heart disease was twice as high among men as women.

⁸ In this report coronary events are defined as the sum of the number of non-fatal hospitalisations for AMI and the number of coronary heart disease deaths in the population. This method has been shown to provide a reasonable approximation of the real incidence of all coronary heart disease events in the population (see Methods and data sources section).

The incidence of coronary heart disease increases dramatically with age—rates among 75–90-year-olds were 18 times those of 40–54-year-olds. This age differential was considerably higher among women than men, and this pattern has remained consistent over time. The incidence of coronary heart disease for women aged 65–74 years was comparable with that of men aged 55–64 years, indicating that men on average suffer from coronary heart disease at a younger age than women.

Incidence of coronary heart disease, 2001–02



Note: Coronary heart disease incidence is defined as the sum of the number of non-fatal hospitalisations for AMI and the number of coronary heart disease deaths in the population.

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

Disability due to coronary heart disease

Coronary heart disease (angina and myocardial infarction) is one of the major causes of disability in Australia. Based on self-reports from the 1998 Disability, Ageing and Carers Survey, 1.2% of survey respondents reported one or more disabling conditions associated with coronary heart disease.

This corresponds to 224,400 Australians affected. Of these 59.0% needed assistance or had difficulties with self-care, mobility or communication, and 30.6% had no difficulty with these activities but used aids or equipment because of their disability.

Hospitalisation

In 2001–02, there were 159,572 hospitalisations for which coronary heart disease was the principal diagnosis (2.5% of hospitalisations). Coronary heart disease accounted for 36.2% of the hospitalisations for heart, stroke and vascular diseases. Of the hospitalisations for coronary heart disease, angina accounted for over half (87,026) and AMI for around one-quarter (40,338).

Trends

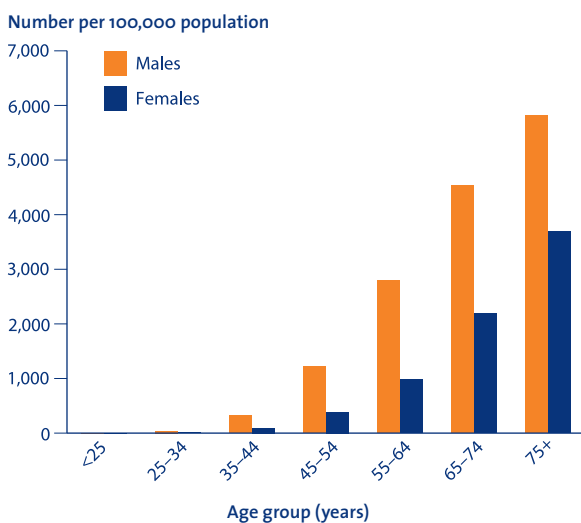
Between 1993–94 and 2001–02, there was a 11.7% increase in the age-standardised rate of hospitalisations for coronary heart disease. Hospitalisations for AMI increased by 22.8% over this period. The increase in hospitalisations for coronary heart disease may be due to the reductions in deaths and changes in diagnostic technology.

Sex and age

In 2001–02, males were twice as likely to be hospitalised for coronary heart disease as females. This was the case across all ages, with the greatest difference in the 45–64-year age group, where rates were three times as high in men as women. Hospital use for coronary heart disease occurred mainly among older Australians with around three-quarters of these hospitalisations occurring among those aged 60 years and over.



Hospitalisations for coronary heart disease in Australia, 2001–02



Source: AIHW National Hospital Morbidity Database.

For AMI the sex difference is even more pronounced than for the broader coronary heart disease category, particularly in the 45–64 age group, which is consistent with men’s greater risk of having a heart attack (see **Risk factors** chapter). Hospital use for AMI increases rapidly with age, more so than for coronary heart disease overall, with rates among those aged 75 years and over almost twice as high as for 65–74-year-olds, and over three times as high as for 55–64-year-olds.

Aboriginal and Torres Strait Islander peoples

In 2001–02, hospitalisation rates for coronary heart disease among Aboriginal and Torres Strait Islander peoples⁹ were almost twice those of other Australians.

Length of stay in hospital

In 2001–02, 39.4% of hospitalisations for coronary heart disease were same-day hospitalisations—this is a large increase from 1993–94 when it was 25.2%. This may reflect the much greater use of investigations in recent years.

Among those hospitalised for at least one night, the average length of stay was 6.3 days, a decline from 1993–94 when it was 7.5 days.

On average, those hospitalised for coronary heart disease tended to stay for a shorter period than those hospitalised for other major heart, stroke and vascular diseases (stroke, peripheral vascular disease, and acute rheumatic fever and chronic rheumatic heart disease).

For AMI, the average length of stay was 7.3 days (for those hospitalised for at least one night).

Deaths in hospital

In 2001–02, 2.7% of hospitalisations for coronary heart disease ended in death, a decline from 1993–94 when the rate was 3.7%.

The vast majority (81.3%) of coronary heart disease deaths in hospital was in people admitted for AMI. The in-hospital death rate for AMI (8.8%) was over three times as high as for the broader coronary heart disease group.

These patterns are difficult to interpret in the absence of risk-adjusted data; however, major advances in diagnosis and treatment of cardiac patients may have contributed to this decline.

Deaths

Coronary heart disease was the largest single cause of death in Australia in 2002, accounting for 26,063 deaths (19.5% of all deaths). It accounted for 51.8% of heart, stroke and vascular deaths. Over half of coronary heart disease deaths were from AMI (heart attacks).

Trends

Age-standardised coronary heart disease death rates have continued the decline that began in the 1970s: they fell at a rate of 4.9% per year among males and

⁹ The reporting of the Indigenous identifier in hospital records is not always complete, so the rates presented may underestimate true hospital use by Aboriginal and Torres Strait Islander peoples (see Methods and data sources section for more information).

4.8% per year females for the period 1991–02. This produced a total decline of 41.1% among males and 40.1% among females over the 12-year period. The decline in deaths from coronary heart disease may have been influenced by both a reduction in heart attacks and improved survival following a heart attack.

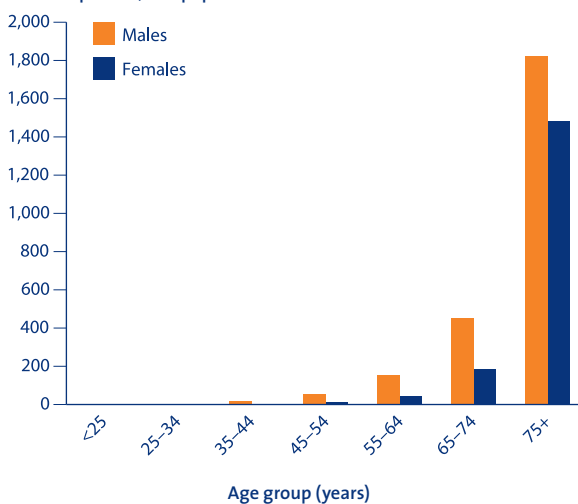
Sex and age

Overall, males were almost twice as likely to die from coronary heart disease as females in 2002, with males aged 25–64 years having death rates three to five times those of females. Death rates among older Australian men were higher than for women; however, more women died. This can be explained by the much greater number of women than men who live into old age.

The vast majority (71.6%) of coronary heart disease deaths occur among those aged 75 years and over.

Deaths from coronary heart disease, 2002

Number per 100,000 population



Source: AIHW National Mortality Database.

Socioeconomic status

In 2000–02, Australians in the most disadvantaged areas experienced considerably higher death rates from coronary heart disease than their counterparts from the least disadvantaged areas—24.9% higher for males and 28.7% higher for females.

Aboriginal and Torres Strait Islander peoples

In 2000–02, Aboriginal and Torres Strait Islander peoples¹⁰ died from coronary heart disease at 2.6 times the rate of other Australians.

Region

In 2000–02, death rates from coronary heart disease were higher in regional and remote areas of Australia compared with major cities. The higher death rate in remote areas may reflect the high proportion of Indigenous people in these areas and the higher rate of deaths for the Indigenous people overall in Australia.

State and territory

In 2002, death rates for coronary heart disease varied among the states and territories from 15.2% above the national average to 20.2% below the national average. Death rates were highest in the Northern Territory, Queensland and Tasmania, and lowest in the Australian Capital Territory. For more information see the National Cardiovascular Disease Database <<http://www.aihw.gov.au/cvdhtml/cvd-menu.htm>>.

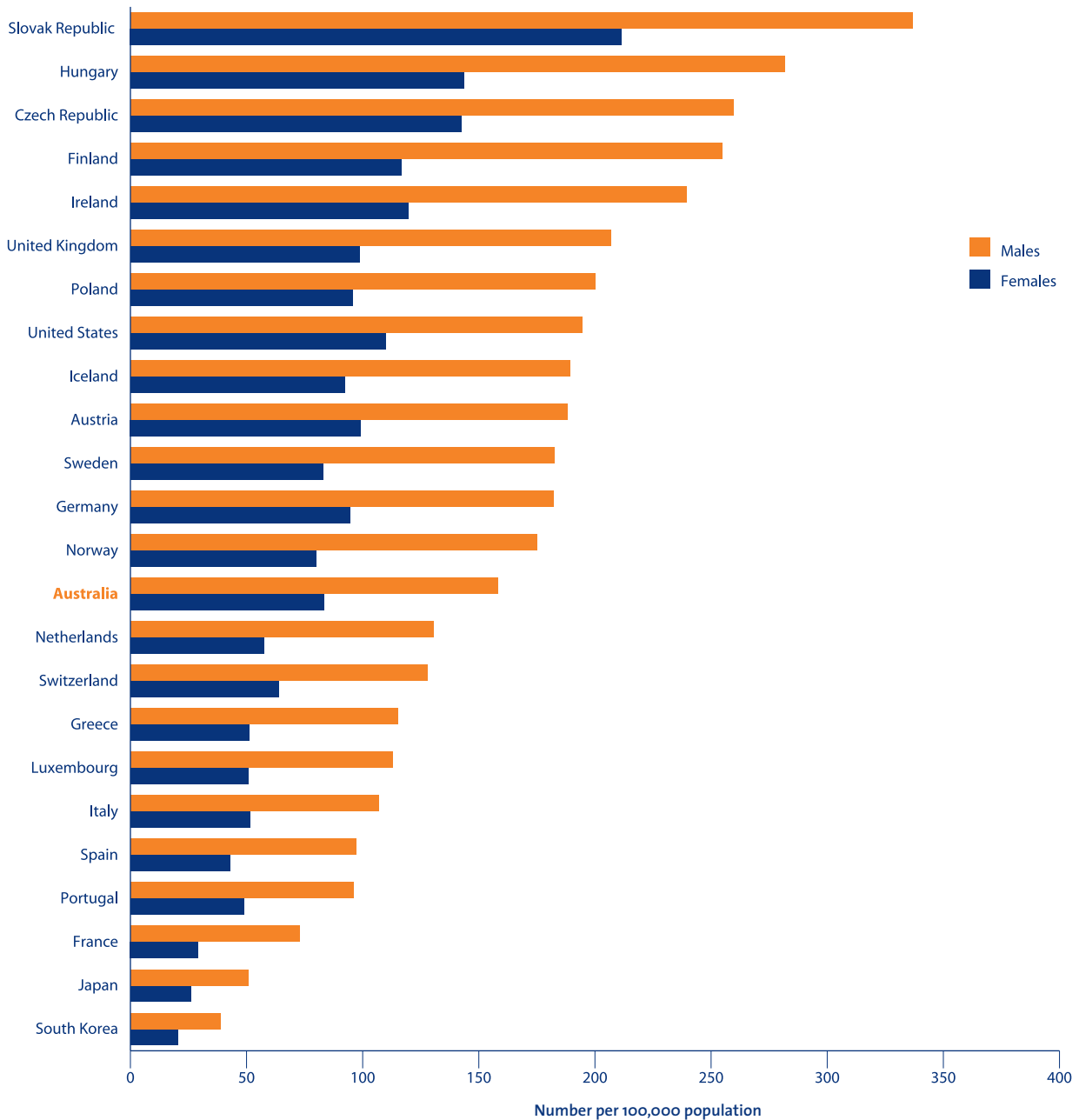
International comparisons

Australian death rates for coronary heart disease ranked towards the lower end of the 24 countries compared in 1999 (11th lowest for males and 13th lowest for females). For both males and females, the Australian death rate was over four times that of the lowest country (South Korea) and around half that of the highest country (Slovak Republic). The Slovak Republic had the highest death rate (10 times that of South Korea).

¹⁰ Includes data for only Queensland, Western Australia, South Australia and the Northern Territory as these states and territory are considered to have sufficient coverage of Indigenous Australian deaths.



Deaths from coronary heart disease for selected countries, 1999



Note: Rates have been age-standardised to the 1980 OECD population.

Source: OECD Health Data 2003.

Health inequalities

Deaths from coronary heart disease

Year	Population subgroup	Males	Females	Persons
Number per 100,000 population				
2002	Age group (years)			
	45–54	56.4	10.5	33.4
	55–64	155.5	42.3	99.5
	65–74	452.6	184.5	314.6
	75–84	1,307.3	797.9	1,013.3
	85 and over	4,050.3	3,296.6	3,531.4
	<i>All ages (ASR)</i>	<i>169.7</i>	<i>97.8</i>	<i>129.1</i>
2000–02	Socioeconomic status (IRSD)			
	1st quintile (most disadvantaged)	193.3	114.9	150.4
	2nd quintile	185.4	106.4*	142.3*
	3rd quintile	179.5*	104.1*	137.8*
	4th quintile	163.0*	97.6*	126.9*
	5th quintile (least disadvantaged)	154.7*	89.3*	116.6*
2000–02	Aboriginal and Torres Strait Islander status			
	Standardised mortality ratio	2.9 [#]	2.5 [#]	2.6 [#]
2000–02	Region (ASGC remoteness structure)			
	Major cities	169.4	99.0	129.7
	Regional	185.3*	107.8*	143.2*
	Remote	186.0*	120.2*	155.1*

* Statistically significant difference when compared with the first row in the population subgroup.

Statistically significant difference from 1.0 (other Australians).

Notes

1. Standardised mortality ratio = observed deaths divided by expected deaths. For further information see Methods and data sources section.
2. Data for all ages.
3. Significance testing was not performed on the age groups.
4. All rates other than age-specific rates and standardised mortality ratio are age-standardised (ASR) to the 2001 Australian population.

Source: AIHW National Mortality Database.



Further reading

ABS 1999. 1998 disability, ageing and carers: summary of findings, Australia. ABS Cat. No. 4430.0. Canberra: ABS.

AIHW: Mathur S 2002. Epidemic of coronary heart disease and its treatment in Australia. AIHW Cat. No. CVD 21. Canberra: AIHW (Cardiovascular Disease Series No. 20).

OECD 2003. OECD health data 2003, 3rd edition: a comparative analysis of 30 countries (CD-ROM). Paris: OECD.

Stroke

Key points

- Stroke is Australia's second single greatest killer, claiming 12,533 lives in 2002 (9.4% of all deaths).
- The 2001 National Health Survey showed that around 217,500 Australians had a stroke sometime in their lives.
- It is estimated that each year there are about 40,000–48,000 stroke events among Australians.
- Stroke death rates fell by 28.1% among males and 27.3% among females over the period 1991–02.
- In 2000–02, death rates from stroke in Indigenous Australians were twice as high as for other Australians.

Stroke is Australia's second single greatest killer after coronary heart disease, claiming 12,533 lives in 2002. However, age-standardised death rates from stroke have fallen dramatically since the late 1960s, by around 68%. These declines appear to have been largely driven by improvements in some risk factor levels, great increases in the use of drugs to lower blood pressure and treat and prevent blood clots, and other advances in treatment. Despite these declines in death rates, the number of people dying from stroke and those surviving with a permanent disability is likely to increase in the future, given the rapid ageing of the Australian population, and a slowing in the decline of stroke death rates in recent years.

What is stroke?

Stroke (also known as cerebrovascular disease) occurs when a blood vessel that carries oxygen and nutrients to the brain is either blocked by a clot or bleeds, resulting in part of the brain dying from lack of blood flow. This causes loss of function of the affected part of the brain, leading to death or impairment in any or all of a range of functions including movement of body parts, vision, planning, communication and swallowing. Depression and anxiety are common

after a stroke and many survivors have difficulty returning to their previous activities.

There are two main types of stroke: one is caused by blood clots or other particles (ischaemic strokes) and one by bleeding (haemorrhagic strokes). Ischaemic strokes occur more than five times as often as haemorrhagic strokes; however, haemorrhagic strokes have a much higher fatality rate.

Another related condition is transient ischaemic attack (TIA). They produce temporary stroke-like symptoms and are extremely important predictors of stroke. In this report, TIA is not included in the 'stroke' classification unless indicated otherwise.

Of those having a first-ever stroke, one in five die within the first 28 days, but almost two-thirds are alive one year after their stroke. About one in six people who have survived the first two days of a first-ever stroke will have a recurrent stroke over the next five years. Nearly all patients are disabled immediately following their stroke. Recovery is most rapid in the early weeks; however, by the end of the first year, about half of stroke survivors remain dependent on others for activities of daily living.

Risk factors for stroke

Risk factors for stroke include TIA, high blood pressure, tobacco smoking, diabetes, high alcohol consumption, high blood cholesterol, atrial fibrillation, other heart disease and narrowing of the carotid arteries (carotid stenosis). Older Australians and Aboriginal and Torres Strait Islander peoples are also at a greater risk of stroke than other Australians.

How many Australians have a stroke?

Prevalence

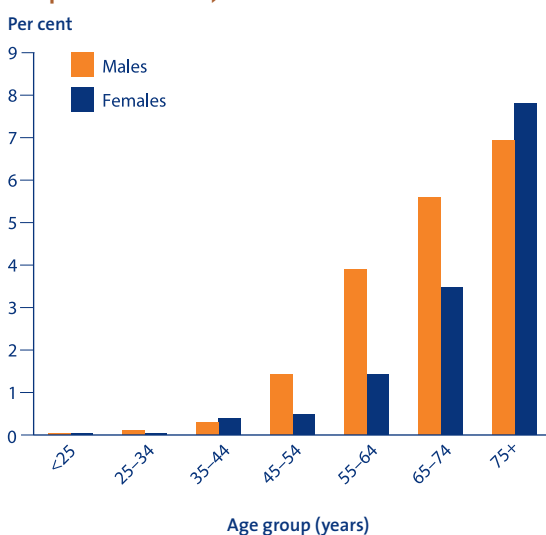
Based on self-reports from the 2001 National Health Survey, an estimated 1.2% of those surveyed had a stroke sometime in their lives. This corresponds to 217,500 Australians affected.



Sex and age

In 2001 the prevalence of stroke was 32.2% higher among males than females: 1.4% and 1.0% for males and females, respectively. Of the 217,500 Australians who have had a stroke, 60.0% are aged 65 years and over, while 18.0% are under the age of 55 years.

People with stroke, 2001



Note: Based on self-reports.

Source: 2001 National Health Survey, ABS.

Incidence

There are no national data on the incidence (new cases) of stroke. Estimates have been obtained from local registers in Melbourne and Perth. From these, it has been estimated that each year there are about 40,000–48,000 stroke events among Australians, which equates to a stroke occurring every 11–13 minutes. The majority (around 70%) of these are first-ever strokes. Each year about 12,000 people who have previously had a stroke suffer another stroke.

Sex and age

More women are affected by stroke than men, due to the larger number of elderly women in the population. However, the age-standardised stroke incidence rate for men is 30% higher than for women.

The rate of strokes is higher among men than women in all age categories except for those aged 25–34 years. Men tend to have strokes at a younger age, with around 58% and 50% of strokes (in Perth and Melbourne) occurring in men under 75 years. For women the corresponding proportion was around 35%, though this is at least partly due to the older average age of women.

Disability due to stroke

Based on self-reports from the 1998 Disability, Ageing and Carers Survey, 1.2% of survey respondents reported one or more disabling conditions associated with their stroke. This corresponds to 230,300 Australians affected. Of these, 76.6% needed assistance or had difficulties with self-care, mobility or communication, and 19.4% had no difficulties with these activities but used aids or equipment. Persons disabled by stroke were far more likely to need ongoing assistance with activities of daily living compared with persons disabled by other diseases. For example, those disabled by stroke were twice as likely to need ongoing assistance with these activities as those whose disability was caused by coronary heart disease (42.1% compared with 21.6%).

Hospitalisation

In 2001–02, there were 40,251 hospitalisations in Australia where stroke was the principal diagnosis (0.6% of all hospitalisations). Of the hospitalisations for heart, stroke and vascular diseases, stroke accounted for 9.1%.

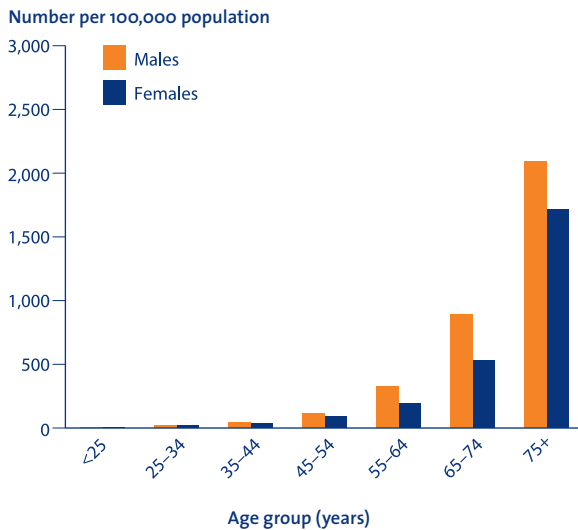
Trends

Between 1993–94 and 2001–02, there was a 9.7% increase in the age-standardised hospitalisation rate for stroke. This has coincided with large declines in death rates from stroke over the same period. Note that hospitalisations for TIA are included in the stroke hospitalisation rates for 2001–02 for comparability with the 1993–94 rates.

Sex and age

In 2001–02, males were 29.2% more likely to be hospitalised for stroke than females. Hospital use for stroke is higher among older Australians, with rates among those aged 75 years and over almost three times as high as in 65–74-year-olds and seven times as high as in 55–64-year-olds. Around two-thirds of stroke hospitalisations occur among those aged 70 years and over, reflecting the increasing risk of stroke with age.

Hospitalisations for stroke in Australia, 2001–02



Source: AIHW National Hospital Morbidity Database.

Aboriginal and Torres Strait Islander peoples

In 2001–02, hospitalisation rates for stroke among Indigenous Australians¹¹ were 1.5 times those of other Australians.

Length of stay in hospital

In 2001–02, 22.1% of hospitalisations for stroke (and TIA) were same-day hospitalisations; this is an increase from 1993–94 when the proportion of hospitalisations was 15.4%.

Among those hospitalised for at least one night, the average length of stay was 12.0 days, a decline from 1993–94 when it was 18.0 days. On average, those hospitalised for stroke tended to stay twice as long as those hospitalised for coronary heart disease. Note that hospitalisations for TIA are included in the stroke hospitalisation rates for 2001–02 for comparability with the 1993–94 rates.

Deaths in hospital

In 2001–02, 10.6% of hospitalisations for stroke ended in death, a decline from 1993–94, when the proportion was 12.0%.

Deaths

Stroke was the second single most common cause of death among Australians in 2002, accounting for 12,533 deaths, or 9.4% of all deaths.

Trends

Between 1991 and 2002, stroke death rates declined at a rate of 3.1% per year for both males and females. This produced a total decline of 28.1% among males and 27.3% among females over the 12-year period.

Sex and age

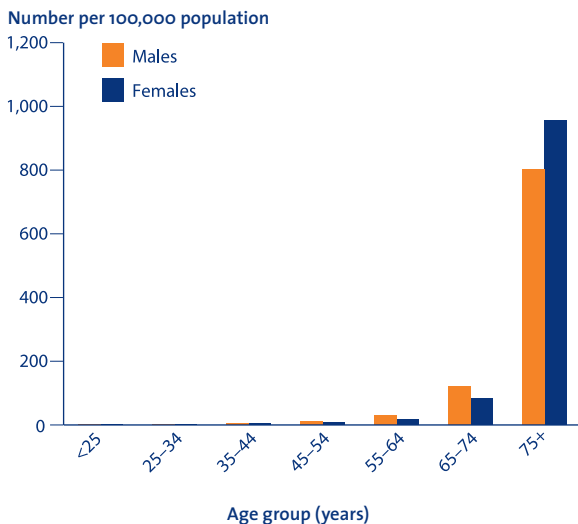
Males are slightly more likely to die from stroke than females across most age groups. Males aged 45–74 years had death rates one-and-a-half times those of females in 2002. The difference in stroke death rates between males and females is not as marked as for coronary heart disease.

Although the age-specific death rates from stroke are generally higher among males than females (the exceptions being the 85 and over and the 25–34-year age groups), the actual number of deaths is greater for females. This can be explained by the greater number of women than men who live into old age, when death rates from stroke are considerably higher.

¹¹ The reporting of the Indigenous identifier in hospital records is not always complete, so the rates presented may underestimate true hospital use by Aboriginal and Torres Strait Islander peoples (see Methods and data sources section for more information).



Deaths from stroke, 2002



Source: AIHW National Mortality Database.

Stroke death rates increase greatly with age, with 82.3% of all deaths from stroke occurring among those aged 75 years and over.

Socioeconomic status

In 2000–02, there were no significant differences in stroke death rates between the most and least disadvantaged areas.

Aboriginal and Torres Strait Islander peoples

In 2000–02, Aboriginal and Torres Strait Islander peoples¹² died from stroke at twice the rate of other Australians.

Region

In 2000–02, there were no significant differences in stroke death rates across major cities, regional and remote areas of Australia.

State and territory

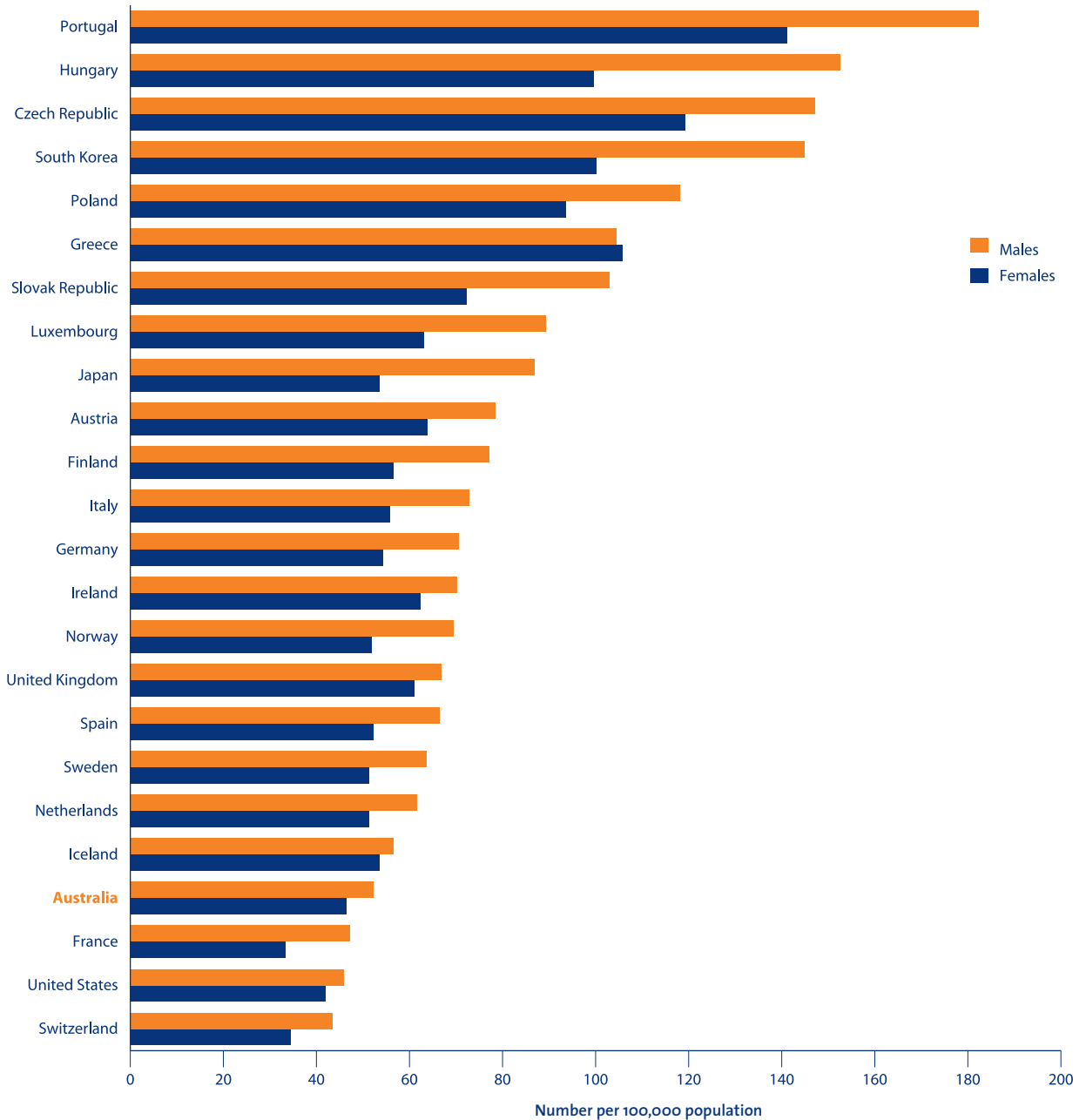
In 2002, death rates for stroke varied among the states and territories from 11.5% above the national average to 15.6% below the national average. Death rates were highest in Tasmania and lowest in Western Australia. For more information see the National Cardiovascular Disease Database <<http://www.aihw.gov.au/cvdhtml/cvd-menu.htm>>.

International comparisons

Stroke death rates in Australia were among the lowest of the 24 OECD countries compared in 1999 (4th lowest for both males and females). The Australian stroke death rate for males was 1.2 times that of Switzerland (lowest overall). Females in France had the lowest stroke death rates and the rate for Australian females was around one-and-a-half times that of France. Portugal had the highest stroke death rate (four times that of Switzerland and three times that of Australia).

12 Includes data for only Queensland, Western Australia, South Australia and the Northern Territory as these states and territory are considered to have sufficient coverage of Indigenous Australian deaths.

Deaths from stroke for selected countries, 1999



Note: Rates have been age-standardised to the 1980 OECD population.

Source: OECD Health Data 2003.



Health inequalities

Deaths from stroke

Year	Population subgroup	Males	Females	Persons
Number per 100,000 population				
2002	Age group (years)			
	45–54	10.6	7.1	8.8
	55–64	29.6	16.4	23.1
	65–74	122.2	84.1	102.6
	75–84	534.7	493.3	510.8
	85 and over	1,944.0	2,180.6	2,106.9
	<i>All ages (ASR)</i>	63.8	59.8	61.9
2000–02	Socioeconomic status (IRSD)			
	1st quintile (most disadvantaged)	68.4	60.7	64.4
	2nd quintile	65.4	60.9	63.5
	3rd quintile	66.3	59.7	63.1
	4th quintile	62.8	61.3	62.7
	5th quintile (least disadvantaged)	63.5	60.1	62.1
2000–02	Aboriginal and Torres Strait Islander status			
	Standardised mortality ratio	2.3 [#]	1.7 [#]	1.9 [#]
2000–02	Region (ASGC remoteness structure)			
	Major cities	64.6	60.5	62.8
	Regional	66.6	61.2	64.1
	Remote	64.3	56.3	60.6

* Statistically significant difference when compared with the first row in the population subgroup.

Statistically significant difference from 1.0 (other Australians).

Notes

1. Standardised mortality ratio = observed deaths divided by expected deaths. For further information see Methods and data sources section.
2. Data for all ages.
3. Significance testing was not performed on the age groups.
4. All rates other than age-specific rates and standardised mortality ratio are age-standardised (ASR) to the 2001 Australian population.

Source: AIHW National Mortality Database.

Further reading

ABS 1999. 1998 disability, ageing and carers: summary of findings, Australia. ABS Cat. No. 4430.0. Canberra: ABS.

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