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Women and heart disease

Cardiovascular profile of women in Australia

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CARDIOVASCULAR DISEASE SERIES

33

Women and heart disease

Cardiovascular profile of women in Australia

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Contents

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Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
ASR	age-standardised rate
ATC	Anatomical Therapeutic Chemical
AusDiab	Australian Diabetes, Obesity and Lifestyle Study
BEACH	Bettering the Evaluation And Care of Health
BMI	body mass index
CABG	coronary artery bypass grafting
CHD	coronary heart disease
CI	confidence interval
CKD	chronic kidney disease
COPD	chronic obstructive pulmonary disease
CT	computerised tomography
CVD	cardiovascular disease
DALY	disability-adjusted life year
GP	general practitioner
ICD-10	International Statistical Classification of Diseases and Related Health Conditions, 10th Revision
ICD-10-AM	International Statistical Classification of Diseases and Related Health Conditions, 10th Revision, Australian Modification
ICPC-2	International Classification of Primary Care Version 2
IHD	ischaemic heart disease
MRI	magnetic resonance imaging
NHFA	National Heart Foundation of Australia
NHMRC	National Health and Medical Research Council
NHS	National Health Survey
PBS	Pharmaceutical Benefits Scheme
PCI	percutaneous coronary intervention
RPBS	Repatriation Pharmaceutical Benefits Scheme
TIA	transient ischaemic attack
WHO	World Health Organization
YLD	years of health life lost due to poor health or disability
YLL	years of life lost due to premature death

Symbols

–	nil or rounded to zero
%	per cent
mmHg	millimetres of mercury
mmol/L	millimoles per litre
n.p.	not published
..	not applicable (that category/data item does not apply)

Key points

Why the focus on women?

- Cardiovascular diseases (CVDs)—a highly preventable and treatable group of diseases—are a major threat to the health of Australian women. But there is a lack of awareness of this threat.
- This report provides both the evidence that CVDs are an important health issue for Australian women, and the baseline picture against which future monitoring can be compared.

The message

- There is enormous potential to improve the risk profile of Australian women, and therefore reduce the number of women and families affected by CVDs.
- This potential exists because many of the known risk factors for CVD are very common among Australian women and can be reduced, in terms of both severity and the number of coexisting risk factors per person.

What are cardiovascular diseases?

- Cardiovascular diseases are diseases of the heart (cardio) and blood vessels (vascular).
- The main cardiovascular diseases, and the focus of this report, are coronary heart disease (CHD, including heart attack and angina), stroke and heart failure.

What makes CVDs such a major health issue for women?

- CHD, stroke and other heart diseases (including heart failure) are the three leading causes of death among women.
- CVDs not only cause more deaths than any other disease group (more than one in three deaths among women in 2006), but are also responsible for more than one-quarter of premature death among women. CHD and stroke were the two leading causes of years of life lost to premature death among women in 2003.
- CVDs are also in the top 10 causes of disability—CHD and stroke were the fifth and ninth leading causes of years of healthy life lost to poor health or disability.
- About two million Australian women have CVD—about 226,000 women have CHD, 168,000 have had stroke and 176,000 have heart failure.

What does this mean for health services, treatments and expenditure?

- CVDs are the second most expensive diseases in terms of health system expenditure on women, with $2,682.8 million spent treating CVD in women in Australia in 2004–05.
- About two million women filled 36.5 million prescriptions for cardiovascular medicines through the Pharmaceutical Benefits Scheme (PBS) and the Repatriation Pharmaceutical Benefits Scheme (RPBS) in 2007–08. This accounted for 52% of these prescriptions and 52% of users of these cardiovascular medicines in that year.
- CVDs are responsible for a significant proportion of general practitioners' workload—general practitioners treated at least one CVD problem in one-fifth of encounters with women in 2007–08.
- CVDs account for about 5% of all hospitalisations for women—nearly 200,000 hospitalisations in 2006–07.

- Many important diagnostic and therapeutic procedures for CVD tend to be less common among women than men. In 2006–07, women hospitalised with relevant cardiovascular diagnoses were less likely than men to: have coronary angiography or echocardiography; undergo carotid endarterectomy; receive coronary artery bypass grafting or percutaneous coronary interventions; or have a heart defibrillator implanted. More research is needed into the reasons for these differences. But women were as likely as men to have heart valves repaired or replaced, or have a CT (computerised tomography) or MRI (magnetic resonance imaging) scan of the brain when hospitalised with stroke or transient ischaemic attack.

How common are CVD risk factors among Australian women?

- Much of CVD burden can be explained by known modifiable risk factors. Most Australian women (more than 90%) have at least one modifiable risk factor for CVD, and half of all women have two or three.
- Many of these risk factors are very common among Australian women—the vast majority consume inadequate amounts of fruit and/or vegetables, three-quarters are physically inactive, more than half are overweight or obese, and almost half have high blood cholesterol.
- Many of these risk factors are already common among young females—from as young as 35–44 years, it is more common for females to be overweight or obese than to have a healthy weight; and one in five of those aged 20–29 years smoke daily.

How do CVDs compare with other diseases for women?

- Prevalence—among Australian women overall, CHD, stroke and heart failure are all less common than asthma, chronic obstructive pulmonary disease and diabetes, and more common than breast cancer, dementia and lung cancer.
- Deaths—CHD is by far the biggest cause of death among Australian women overall, followed by stroke and dementia.
- Disease burden—for females overall, CHD (9% of total) is second only to anxiety and depression (10%), followed by stroke (5%).

Can the threat of CVDs to Australian women be effectively assessed and monitored?

- The ability to monitor CVDs and their risk factors is seriously impaired by important data gaps. There is a lack of data that are national, recent and of sufficient quality on: CVDs such as heart failure, peripheral vascular disease and rheumatic heart disease; services such as cardiac rehabilitation; survival following cardiovascular events; and risk factors such as high blood pressure, high blood cholesterol and diet. Access to more detailed data on individual patients (such as those collected by registers) would enable better monitoring at a national level of disease management, outcomes and access to interventions.

Want to know more?

- More detailed key points are provided at the start of each chapter.

1 Introduction

What is the biggest threat to the health of Australian women? The answer: diseases of their heart and blood vessels, also known collectively as cardiovascular disease.

Cardiovascular disease is a large cause of premature death among Australian women

Of all the Australian women who died in 2006, more than one in every three (37%) died from cardiovascular disease (CVD). This group of diseases (see Box 1.1) caused more deaths than any other disease group, making CVD the biggest killer of Australian women.

These deaths were not only among very elderly women; cardiovascular diseases are leading causes of premature death among women, with coronary heart disease (CHD) and stroke accounting for almost one-quarter of years of life lost to premature death in 2003. CVD is also a major cause of disability and reduced quality of life, has a considerable impact on the health care system, and is the second most expensive group of diseases in terms of health expenditure on women (behind oral health).

Despite all this, there is evidence that people are not aware of how significant a threat CVD is to women's health (NHFA unpublished). This is a concern because much of this disease, and therefore the associated reduced quality of life, disability and premature death can be prevented through modification and monitoring of risk factors. The majority of risk factors for CVD are known, and many of them are modifiable; that is, we can do something about them. So there is the opportunity to change the level of threat that CVD poses to Australian women.

The Australian Government has recognised that "women are the majority of health care consumers, the majority of health service providers and the majority of carers in the Australian community", and that "improving the health of Australian women will improve the health of the whole community". A National Women's Health Policy to improve the health and wellbeing of women in Australia is being developed (DoHA 2009).

Purpose of this report

This report has been prepared to:

- describe the current impact of CVD on Australian women to provide a baseline picture against which future monitoring can be compared and assessed
- provide evidence that dispels the belief that CVD is not an important threat to Australian women.

Structure of this report

Following this Introduction chapter:

- Chapter 2 briefly describes the demographic, socioeconomic and health profile of Australian women.
- Chapters 3 to 6 describe CVD overall, followed by the specific cardiovascular diseases: coronary heart disease (CHD), stroke, and heart failure. Data are presented to describe the number of women who have the disease, are disabled by it, and die from it, as well as a measure of the burden from death and disability (see Box 3.1 for further details about the burden of disease, it should be read before reading chapters 3–7).
- Chapter 7 discusses the role of risk and protective factors for CVD and then describes nine modifiable factors of interest: blood pressure, blood cholesterol, body weight, physical activity, diet, smoking, alcohol consumption, and psychosocial measures. Data are presented to describe how many women are affected by these factors and what proportion of the burden of disease can be attributed to each factor (again, note that Box 3.1 should be read before reading chapters 3–7).
- Chapter 8 describes services and treatments.
- Chapter 9 discusses expenditure.
- Chapter 10 discusses major cardiovascular conditions in the context of other important diseases for women.
- Chapter 11 summarises the main findings of the report and draws conclusions from the available data.
- The appendixes cover detailed statistical tables, a description of data sources and methods.

Box 1.1 Cardiovascular diseases presented in this report

Cardiovascular disease (CVD) includes all diseases and conditions of the heart (cardio) and blood vessels (vascular). It is also known as circulatory disease. It includes CHD (for example, heart attack or angina), cerebrovascular disease (for example, stroke), heart failure, peripheral vascular disease, rheumatic fever and rheumatic heart disease, and others.

Note that peripheral vascular disease, rheumatic fever, and rheumatic heart disease are not presented in this report due to the limited data available.

Coronary heart disease (CHD) is due to blockages in the blood vessels that supply blood to the heart muscle, also known as ischaemic heart disease (IHD). There are two major clinical forms: heart attack and angina (described in Chapter 4). The common underlying problem in CHD is atherosclerosis (described in Chapter 3). If not promptly treated, heart attacks lead to death of parts of the heart muscle, reducing its ability to function normally or, in the worst case, sudden death.

Stroke occurs when a blood vessel supplying blood to the brain suddenly becomes blocked (ischaemic stroke) or ruptures and bleeds (haemorrhagic stroke). Either may result in part of the brain dying because of the lack of blood, causing brain damage and the loss of some sensory or motor functions, such as movement, vision, swallowing, thinking and communication, and may lead to death.

Heart failure occurs when the heart functions less effectively in pumping blood around the body. It can occur suddenly, although it usually develops slowly, often over many years, as the heart becomes gradually weaker and works less effectively. It can result from a variety of diseases and conditions that impair or overload the heart, notably heart attack, high blood pressure or a damaged heart valve. There are different forms of heart failure (see Chapter 6).

People with mild heart failure may have few symptoms, but in more severe cases it can result in chronic tiredness, reduced capacity for physical activity, and shortness of breath. Heart failure is life-threatening and is usually associated with poor survival. However, modern treatments can result in improved quality of life, reduced hospital admissions, and improved survival time.

Other AIHW reports that complement this report

Heart, stroke and vascular diseases, Australian facts 2004

Socioeconomic inequalities in cardiovascular disease in Australia

Medicines for cardiovascular health: are they used appropriately?

Comorbidity of cardiovascular disease, diabetes and chronic kidney disease in Australia

Cardiovascular disease and its associated risk factors in Aboriginal and Torres Strait Islander peoples 2004–05

Health care expenditure on cardiovascular diseases 2004-05

Impact of falling cardiovascular disease death rates: deaths delayed and years of life extended

Prevention of cardiovascular disease, diabetes and chronic kidney disease: targeting risk factors

Cardiovascular disease mortality: trends at different ages

Cardiovascular medicines and primary health care: a regional analysis

Australia's health 2010 (to be released in 2010)

All freely available in full at <www.aihw.gov.au>.

2 Australian women at a glance

Key points

Demographic profile

- Females made up half of Australia's 20.7 million people in 2006.
- Older women (75 years and over) outnumber older men, accounting for almost 60% of this age group.
- Women live longer than men, but this gap is decreasing.
- Women are having fewer babies than 40 years ago, and doing so at older ages.
- Almost 3% of Australian females are Aboriginal or Torres Strait Islander, and 24% were born overseas.

Socioeconomic profile

- Women are over-represented among low income earners, and under-represented among high income earners.
- More women are achieving higher levels of education than 10 years ago.
- More women are in the workforce than 20 years ago.
- Women make up more than half (54%) of all carers and almost three-quarters of primary carers (71%).

Health profile

- More than one-third (35%) of women have a chronic disease, and one-fifth (20%) have a disability.
- More than 90% of women have at least one risk factor for CVD.
- Many risk factors for CVD are very common among Australian women; for example more than half are overweight or obese, almost half have high blood cholesterol, and about three-quarters are physically inactive.

This chapter outlines some demographic, socioeconomic and health characteristics of Australian women to provide context to the findings presented in the rest of this report. Demographic and social factors are important in assessing the health and wellbeing of any population group. This is especially true for this report, as many cardiovascular risk factors are lifestyle related.

So when thinking about preventing CVD among Australian women, it is important to not only focus on their cardiovascular risk profile, but to consider other components of their life

that may affect either their cardiovascular profile or their ability to change it. For example: How old are they? Do they have children? How educated are they? Do they work? Do they exercise? Do they eat a nutritious diet? Do they have a support network? Are they in good health? Do they have a disability? Are they geographically isolated? Do they have a home? Can they afford the basics of everyday living? The list goes on. This chapter touches on a few of these issues to draw attention to them.

Demographic profile

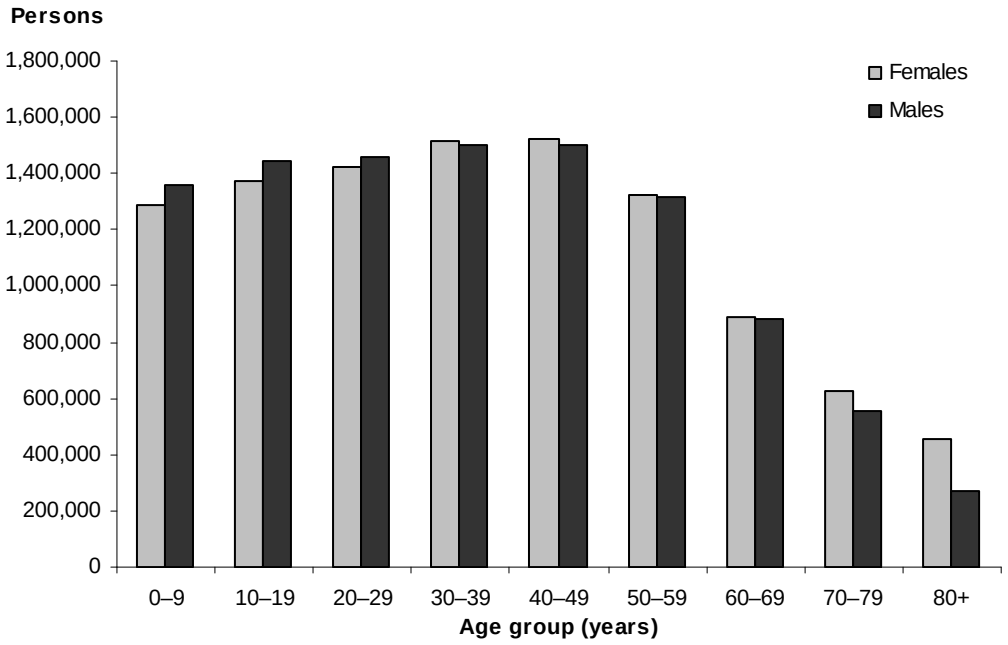
One in two Australians are females

Females made up half (50.3%) of Australia's 20.7 million people in 2006 (Table A2.1). Females have outnumbered males since 1979, reflecting significant gains in female health compared with that of males during the mid to late years of the 20th century. However, the gap is reducing, with relatively greater increases in male life expectancy over the two decades to 2006 (AIHW 2008a).

The age structure of the female population in 2006 was:

- 16% children aged 12 years and under
- 7% adolescents aged 13–17 years
- 38% aged 18–44 years (sometimes referred to as reproductive-aged females)
- 25% aged 45–64 years
- 12% aged 65–84 years
- 2% aged 85 years and over (Table A2.1).

There are less females than males among people aged less than 30 years, whereas females noticeably outnumber males in the older age groups (75 years and over), accounting for 59% of this age group (Figure 2.1; Table A2.1).



Note: Refer to Appendix Table A2.1.

Source: AIHW population database.

Figure 2.1: Australia's estimated resident population, 31 December 2006

The Australian female population is ageing

Australia's demographic profile has changed significantly over the past 100 years or so. Two major features of this have been declining fertility and declining mortality (see details below) (AIHW 2008a).

A decline in fertility since the 1950s has led to slow growth of the population at younger ages, whereas declining mortality has contributed to large growth in the number of people in the older age groups (AIHW 2008a). For example, between 1956 and 2006 the number of:

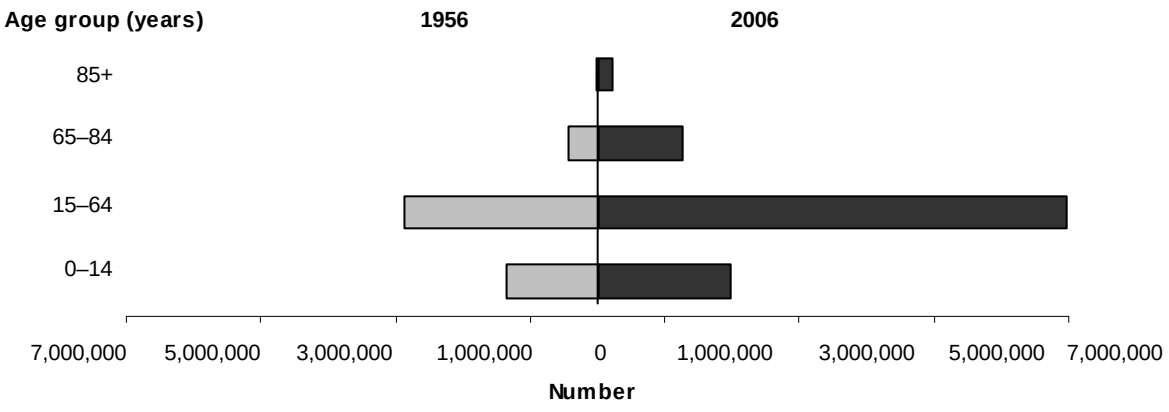
- girls aged 0–14 years increased by 46%
- women aged 65 years and over increased by more than 300%
- women aged 85 years and over increased by more than 900%.

Figure 2.2 shows how the age structure of the population has changed over the 50 years to 2006. In 1956, girls aged 0–14 years made up 29% of the total female population; 50 years later (2006) this had decreased to 19%, whereas for females aged 85 years and over the proportions increased from 0.5% to 2%, respectively.

One way to assess patterns in the age of a population is to look at the median age—the age at which half the population are older and half are younger. Over the two decades to 2007 the median age of the Australian population has increased by 5.5 years, from 31.3 in 1987 to 36.8 in 2007. For females the median age increased by 5.5 years (from 32.0 to 37.5), and for males by 5.4 years (30.7 to 36.1) over this period (ABS 2007c).

The increasing size of the older population has important implications for Australia's health care system, and that older population has a larger proportion of females than males—

females make up 59% of those aged 80–84 years and 68% of those aged 85 years and over (Table A2.1).



Note: Refer to Appendix Table A2.2.

Source: ABS 2006a.

Figure 2.2: Age distribution of the Australian female population in 1956 and 2006

Fertility

On average, women are having fewer children than 40 years ago and are older when they give birth

Two measures are commonly used to describe trends and patterns in fertility: the number of children born per female (total fertility rate), and the age of females giving birth (AIHW 2008a).

Australia's total fertility rate in 2007 was 1.9 babies per woman (ABS 2008b). From a peak of 3.5 in 1961, this figure has generally decreased; since 1977 it has been lower than the replacement level of 2.1 (the rate needed to maintain the population size by 'replacing' the number of deaths) (AIHW 2008a; ABS 2008b). However, this 40-year trend is changing, with the total fertility rate increasing since 2001.

The median age of all females giving birth in 2007 was 30.7 years, compared with 29.4 years 10 years earlier (ABS 2008b). The average age of females giving birth for the first time was 28.2 in 2007 compared with 27.0 years in 1998 (AIHW: Laws & Sullivan 2009).

Mortality

Females have lower death rates than males

Data on deaths and its causes are vital measures of a population's health. In 2007, there were about 138,000 deaths in Australia. Female deaths were outnumbered by male deaths (67,300 compared with 70,600) resulting in a death rate ratio of 105 males to 100 females (ABS 2008c).

Over the 20 years to 2007, death rates in Australia have decreased for females and males of all ages. In fact, the most recent standardised death rates in Australia are the lowest on record at 6.0 deaths per 1,000 population for 2005, 2006 and 2007 (ABS 2008c).

Females have lower mortality rates than males. In 2007, females had a standardised death rate of 4.9 deaths per 1,000 population, which was 2.3 deaths lower than the male standardised death rate of 7.2. However, this gap is narrowing; 20 years earlier (1987) the difference was 4.5 deaths (ABS 2008c).

The median age at death was 83.5 years for females in 2007 and 77.5 years for males (ABS 2008c).

Life expectancy

Women live longer than men but this gap is decreasing

Life expectancy is one of the most commonly used measures of a population's health; it is the number of years a person can expect to live if the existing mortality patterns continue (AIHW 2008a).

A direct consequence of declining death rates is an increase in life expectancy (AIHW 2008a). Life expectancy has been increasing in Australia over the past century for both females and males. A girl born in 2005–2007 can expect to live 83.7 years while a boy can expect to live 79.0 years (ABS 2008c). Females have consistently had higher life expectancies than males, but the gap is reducing due to relatively greater increases in life expectancy for males (AIHW 2008a). Over the past few decades, life expectancy at birth has improved more for boys than for girls. This has reduced the difference between female and male life expectancy from 6.5 years in 1987 to 4.7 years in 2007 (ABS 2008c).

Diversity

Australian females are a culturally and ethnically diverse group, with:

- almost 3% being Aboriginal or Torres Strait Islander (3% for males) (ABS 2008d)
- 24% being born overseas (24% for males) (ABS 2007b).

Socioeconomic profile

A person's income, education, employment and housing are interrelated. As women's life expectancy continues to increase, their income will be an important determinant of their ability to afford an acceptable standard of living in their older years. Also, as separation and divorce rates remain relatively high, women's access to a source of income is crucial to their ability to support themselves and their dependent children (ABS 2008a).

Income

Women are over-represented among low income earners and under-represented among high income earners

In the 25 years to 2005–06, there has been an increase in the proportion of women earning their own income and in their level of economic autonomy; however, over the decade to 2005–06 the picture did not change much (ABS 2008a).

One way to assess the income of women compared with men is to break income level into fifths and then look at the proportion of women and men in each group. If the incomes of women and men were equal, then each fifth would contain equal proportions of each sex; however, this is not the case in Australia (ABS 2008a).

Australian women are over-represented in the lowest income fifths and under-represented in the highest fifths (ABS 2008a). In 2005–06, 25% of women were in the bottom fifth compared with 15% of men, while only 11% of women were in the top fifth compared with 29% of men (ABS 2008a).

Education

More women are achieving higher levels of education than before

Between 1996 and 2006, the proportion of women aged 25–64 years holding a post-school qualification increased from 41% to 56% (54% to 63% for men) (ABS 2007a).

Employment

More women are in the workforce than before

Between 1986–87 and 2006–07, the proportion of females aged 15 years and over participating in the workforce increased from 49% to 58%. In contrast, over the same period, the male participation rate decreased from 76% to 72% (ABS 2008f).

Of employed females in 2006–07, 45% worked part time and 55% worked full time; this compares with 15% and 85%, respectively, for males (ABS 2008f). For females, the lowest proportion of part-time workers was among those aged 20–34 years.

The unemployment rate decreased over the 4 years from 2002–03 to 2006–07, for both women and men. In 2006-07, of people in the labour force (that is working or actively looking for work and available to start working), 4.8% of females and 4.3% of males were unemployed (ABS 2008f).

Region

Australia's population is spread across a very large country—7.7 million square kilometres, the sixth largest country in the world (ABS 2008f; GA 2009). Australians live in a variety of areas, from major cities such as Sydney, to inner regional areas such as Bendigo, to remote areas such as Alice Springs, and very remote areas such as Tennant Creek.

People living in rural and remote areas tend to have shorter lives and higher levels of illness and disease risk factors than those in major cities (AIHW 2008a). People living in rural and remote Australia do not always have the same opportunities for good health as those in major cities. For example, residents of more inaccessible regions of Australia are generally disadvantaged in their educational and employment opportunities, income, and access to goods and services (AIHW 2008a)—factors that may impact on health status.

So where do Australian females live?

- 69% live in major cities (compared with 68% for males)
- 20% live in inner regional areas (20% for males)
- 9% live in outer regional areas (10% for males)
- 2% live in remote and very remote areas (3% for males).

These proportions vary for different age groups.

There are more females than males in Australia; in 2006, there were 100 females for every 99 males. By region, females slightly outnumbered males in major cities and inner regional areas, but the reverse was true in more remote areas (ABS 2008a).

Women as caregivers

Informal carers, most of whom are women, are the main source of assistance for older people and most people with disability and other long-term conditions, and enable many people to remain living at home. Overall, females accounted for more than half (54%) of all carers and almost three-quarters (71%) of all primary carers—those who give the most informal assistance (AIHW 2009a).

Health profile

Below are a few points about the health profile of Australian females; most of these are covered in greater detail throughout the report.

- 35% have a chronic disease (28% for males) (AIHW 2009b)
- 20% have a disability (20% for males) (ABS 2004)
- 91% have at least one risk factor for CVD (94% for males) (Chapter 7)
- 27% have high blood pressure (33% for males) (Chapter 7)
- 48% have high blood cholesterol (48% for males) (Chapter 7)
- 54% are overweight or obese (66% for males) (Chapter 7)
- 76% are physically inactive (68% for males) (Chapter 7)
- 93% do not eat the recommended serves of fruit or vegetables (95% for males) (Chapter 7)
- 15% smoke daily (18% for males) (Chapter 7)
- 10% drink alcohol at risky or high-risk levels (10% for males) (Chapter 7)
- 15% have had at least one episode of depression in their lifetime (9% for males) (Chapter 7).

3 Cardiovascular disease—an overview

Key points

- In Australia, one in every five women (20%) is estimated to have CVD—about two million women in 2004–05.
- More Australian women died from CVD than from any other disease group in 2006.
- CVD caused 24,100 female deaths in 2006; that is more than one-third (37%) of all female deaths, many of them premature.
- CHD, cerebrovascular disease, and other heart diseases were the overall leading causes of death among Australian women.
- The CVD death rate increases greatly with age, peaking among women aged 85 years and over.
- For adults, women were less likely than men to die from CVD at all ages.
- CVD was the second leading cause of the burden of disease and injury overall for both females and males in 2003 (accounted for about 18%). More than three-quarters of this burden was due to the premature deaths caused by CVD.
- CHD and stroke were the two specific leading causes of premature death among females, together accounting for almost one-quarter of years of life lost to premature death in 2003 (16% and 9%, respectively).

This chapter presents data for cardiovascular disease (CVD) overall while specific cardiovascular diseases are covered in subsequent chapters. For detailed information on data, methods and data sources refer to the Appendix.

What is cardiovascular disease?

The term 'cardiovascular disease' (CVD) covers all diseases and conditions of the heart (cardio) and blood vessels (vascular). It is also known as circulatory disease.

It includes CHD (for example, heart attack or angina), cerebrovascular disease (for example, stroke), heart failure, peripheral vascular disease, rheumatic fever and rheumatic heart disease, and others. These diseases are defined in their own chapters and in the Glossary.

Cause

The most common cause of CVD is atherosclerosis. Blood vessels are ideally soft and pliable to allow them to contract and expand as blood passes through. However, in many people, atherosclerosis causes a progressive thickening and hardening of the artery walls (arteries are blood vessels that carry blood away from the heart to all parts of the body). This results from a build up of fat, cholesterol, immune cells, inflammatory cells, and other substances in the inner lining of the arteries; the build-up is called a plaque (or sometimes a lesion).

Atherosclerosis can occur in arteries anywhere in the body, such as the neck, heart, kidneys, legs and arms. It is most serious when it leads to a reduced or blocked blood supply to the heart (causing angina or heart attack) or to the brain (which may lead to a stroke). Atherosclerosis is a complex process, often starting in childhood and progressing with age; clinical symptoms only appear in advanced stages of plaque.

Risk factors and prevention

Much of the burden caused by CVD is preventable (Mosca et al. 2007). The major modifiable risk factors for CVD include tobacco smoking, high blood pressure, high blood cholesterol, insufficient physical activity, overweight and obesity, diabetes, poor nutrition, and excessive intake of alcohol; see Chapter 7 for more details.

For women free of CVD at 50 years of age, the average risk of developing CVD in their remaining lifespan is very high—39%, compared with 52% in men (Lloyd-Jones et al. 2006). But this risk varies widely with the presence of cardiovascular risk factors—from as low as 8% in women with no risk factors to 50% in those with two or more.

How many women have CVD?

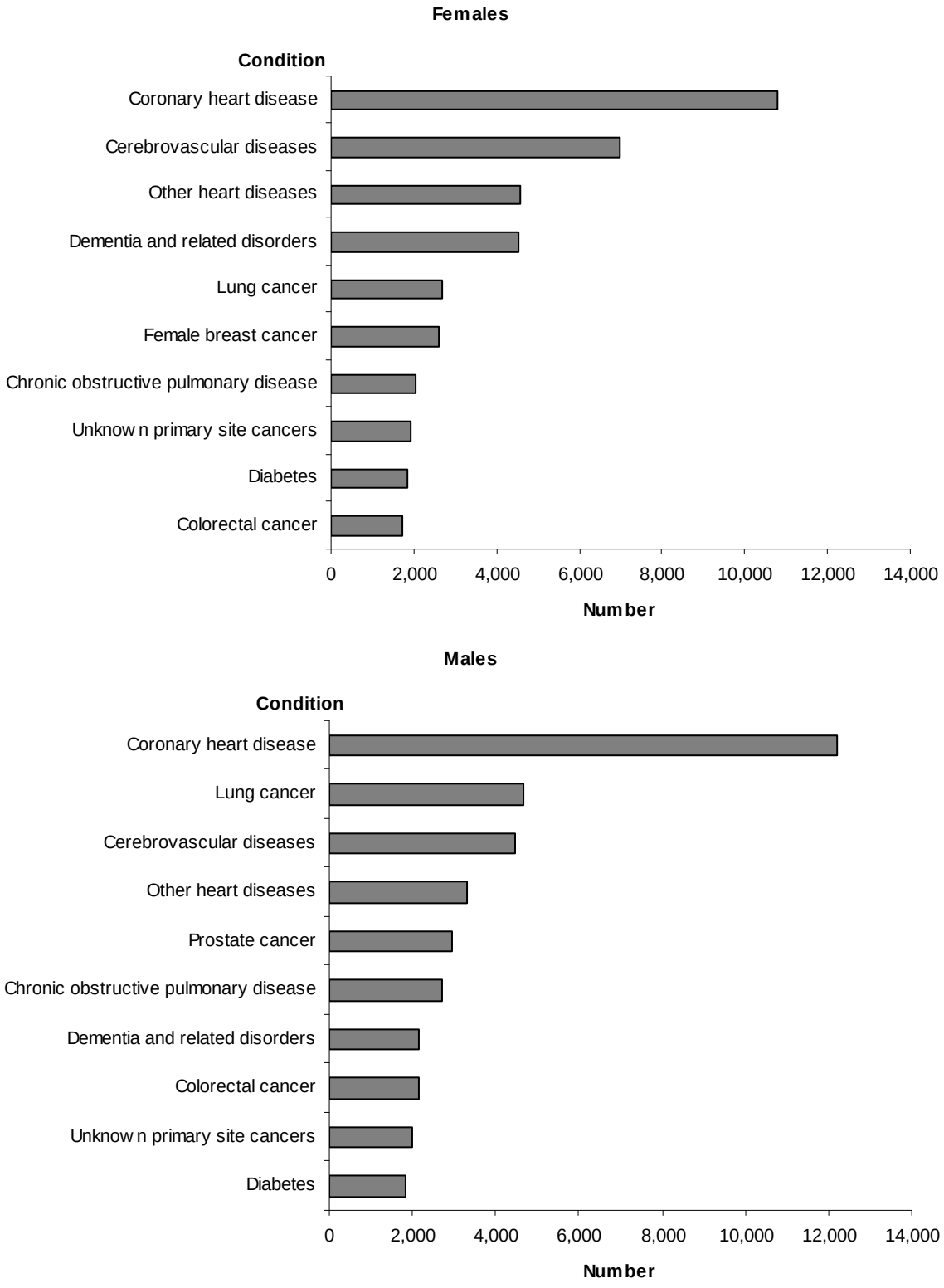
Based on self-reported data from the 2004–05 National Health Survey it is estimated that, overall, cardiovascular conditions are slightly more prevalent among females than males—20% of females and 17% of males have CVD, corresponding to more than two million females and 1.7 million males. Put another way, one in five females and one in six males has CVD.

It should be noted that the prevalence of CVD overall includes a broad range of conditions across the spectrum of disease severity, including not only people who have had a heart attack or stroke but also people with conditions such as varicose veins and haemorrhoids.

How many women die from CVD?

Deaths data can be reported at a broad disease group level (for example, CVD or cancer overall), or at specific disease level (that is, by type of cardiovascular diseases such as CHD):

- At the broad disease group level, CVD was responsible for more than one-third (37%) of all female deaths in Australia in 2006, causing the death of more than 24,100 females (for males, 32% and 21,600, respectively), making it the largest cause of death in Australia (tables A3.1 and A3.2).
- Among the leading specific causes of death, CHD, cerebrovascular disease and other heart diseases ranked first, second and third for females (first, third and fourth for males, respectively) (Figure 3.1). They were responsible for most of the deaths caused by CVD, accounting for 93% of CVD deaths (note that 'other heart diseases' includes heart failure).
- Many of the deaths caused by CVD were premature—CHD and stroke were the two leading causes of premature death among women, accounting for almost one-quarter of years of life lost to premature death for females in 2003 (16% and 9%, respectively) (Begg et al. 2007).



Notes: Underlying causes of death. Refer to Appendix Table A3.1

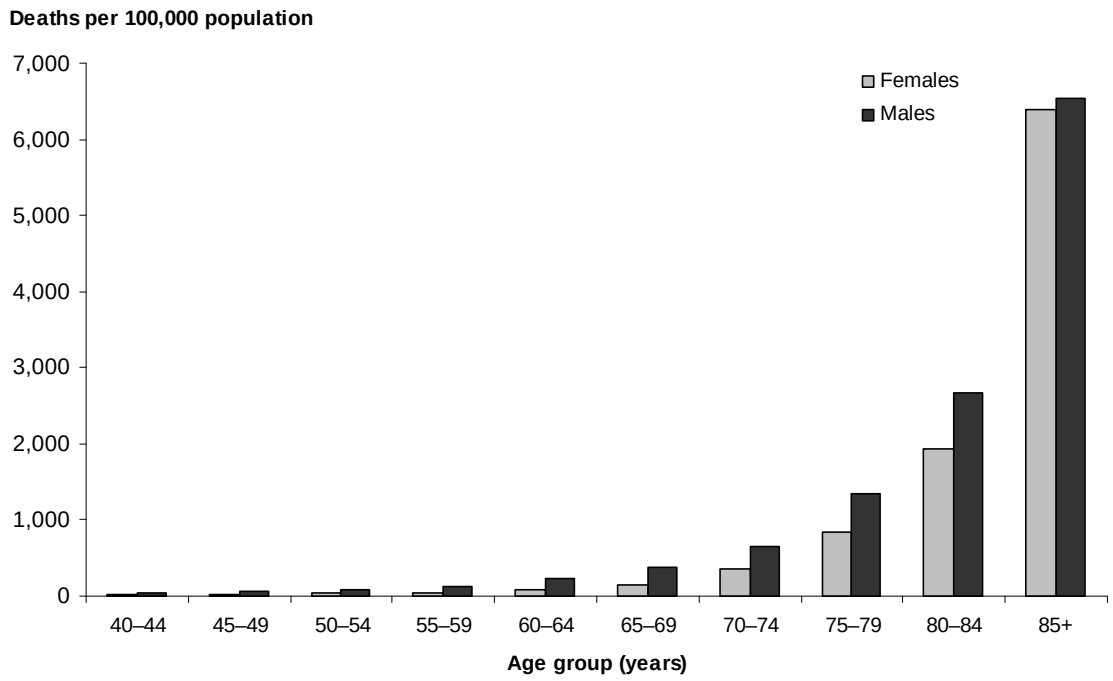
Source: AIHW National Mortality Database.

Figure 3.1: Leading specific causes of death, all ages, by sex, 2006

Age

While CVD was responsible for more than one-third of all female deaths in 2006, this proportion varied greatly by age (described in detail in Chapter 10).

- The CVD death rate increased greatly with age, from less than 10 deaths per 100,000 population for females aged less than 40 years, to nearly 6,400 deaths per 100,000 population for females aged 85 years and over (Figure 3.2; Table A3.2).
- For adults, females were less likely than males to die from CVD at all ages, with the gap between the female and male rate lessening for those aged 85 years and over (Figure 3.2).
- The biggest difference in death rates was in those aged 40–64 years, with females having death rates about one-third those for males.



Notes

1. Underlying causes of death.
2. Refer to Appendix Table A3.2.

Source: AIHW National Mortality Database.

Figure 3.2: Deaths from all cardiovascular diseases (age-specific rate), by sex, 2006

Box 3.1: Assessing the burden of cardiovascular diseases and their risk factors; important notes for understanding the data presented in chapters 3–7

Chapters 3 to 7 describe various cardiovascular diseases and some of their associated risk factors. To describe their impact on women's health, data are presented on how many women have them (prevalence), how many women die from them (mortality), and how many women are disabled by them.

However, as explained in *Australia's health 2008* (AIHW 2008a), assessing the overall burden of a disease is difficult. "How can the impact of a common chronic disease that leads to long-term disability, but rarely causes death, be compared with the impact of a disease that is less common but often fatal?"

One way to answer this question is to use a method that was developed to assess the impact or burden of different diseases, injuries, and risk factors on an equal basis by measuring the lost years of healthy life. "Lost healthy life can be from premature death, prolonged illness or disability, or a combination" (AIHW 2008a).

The years of lost healthy life, or burden, are measured in DALYs, disability-adjusted life years. One DALY is one lost year of healthy life due to a disease, injury or risk factor (AIHW 2008a). "The main advantage of DALYs is that they give better and due prominence to health problems that cause much illness and disability even if they are not often fatal; and also to conditions that may not cause many deaths but, when they do, those deaths occur among younger people"(AIHW 2008a).

A DALY for a disease or health condition is calculated by adding the years of life lost due to premature death (YLL) to the years of healthy life lost due to poor health or disability (YLD). Thus, using DALYs allows the full 'health loss' of different diseases and risk factors to be compared (Begg et al. 2007).

These three measures (DALY, YLL, YLD) are presented, where available, for the various diseases and risk factors in the following chapters.

Further reading: detailed information about the burden of disease can be found in *The burden of disease and injury in Australia 2003* (Begg et al. 2007) and *Australia's health 2008* (AIHW 2008a).

The burden of CVD

Burden overall

CVD was the second leading cause of the total burden of disease and injury in Australia in 2003. Combining both the burden from premature death and the extent of disability associated with it, CVD accounted for about 18% of the overall disease burden for both females and males (NHFA: Vos & Begg 2007). Cancer was the leading contributor overall; however, its contribution peaked at age 70, leaving CVD as the major cause of burden in the elderly (Begg et al. 2007).

The contribution of CVD to overall burden is noticeably lower than the proportion of deaths it causes (39% of female deaths and 34% of male deaths in 2003) (NHFA: Vos & Begg 2007). This difference reflects the fact that CVD is a major contributor to premature death in

Australia, but it is not as big a contributor to lost years of healthy life due to poor health or disability, as described below.

CHD and stroke are the leading causes of CVD burden at all ages for both sexes, together accounting for more than 80% of this burden (NHFA: Vos & Begg 2007).

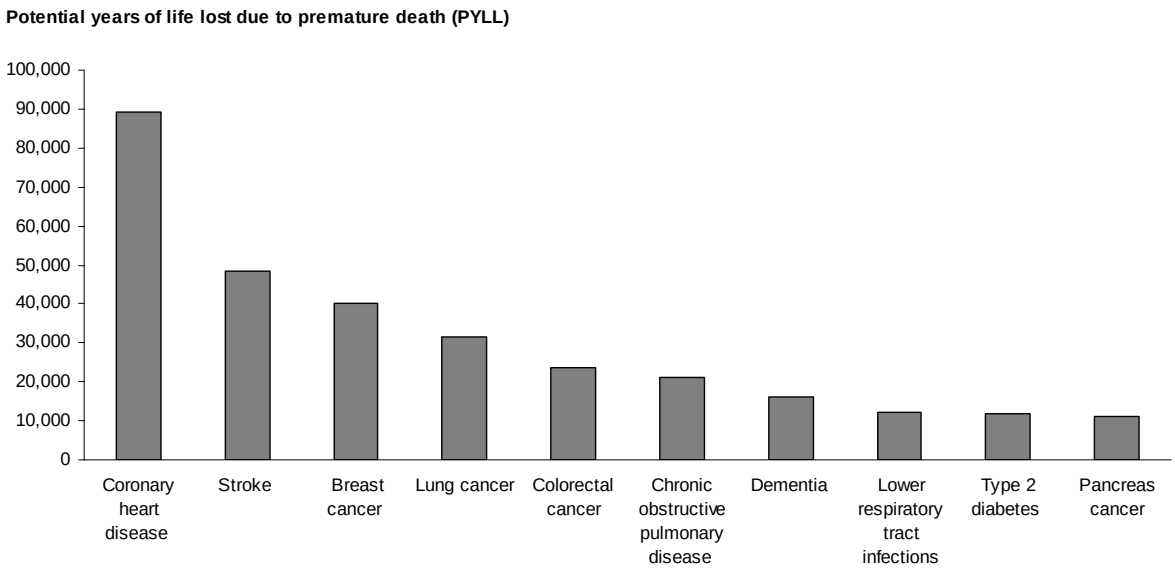
The rate of cardiovascular burden increases steeply with age, and is lower in females than in males at all ages (NHFA: Vos & Begg 2007).

Burden due to premature death

CVD was the second leading cause of years of life lost to premature death in Australia in 2003, being responsible for 29%, at the broad cause level. Cancer was the only disease group with a larger contribution (32%), followed by unintentional injuries (7%) and chronic respiratory diseases (6%). As with total burden, the contribution from cancer peaked at age 70, again leaving CVD as the major cause of fatal burden in the elderly (Begg et al. 2007).

The overall burden of CVD is dominated by the premature deaths it causes. Most of the cardiovascular burden in 2003 was due to years of life lost to premature death, accounting for more than three-quarters of the overall CVD burden for females and males (77% and 79%, respectively) (NHFA: Vos & Begg 2007).

Overall, CHD and stroke are the leading causes of potential years of life lost due to premature death in females (Figure 3.3).



Source: Adapted from Begg et al. 2007.

Figure 3.3: Leading causes of potential years of life lost due to premature death, females, 2003

Burden due to poor health or disability

CVD was the fifth leading cause of years of healthy life lost due to poor health or disability in Australia in 2003, being responsible for 8%. It was preceded by mental disorders (24%), neurological and sense disorders (19%), chronic respiratory disorders (9%) and diabetes mellitus (8%) (Begg et al. 2007).

Years of healthy life lost due to poor health or disability arising from CVD accounted for 23% of the overall CVD burden for females and 21% for males (NHFA: Vos & Begg 2007).

Comorbidities with CVD

Comorbidity refers to any two or more diseases occurring in one person at the same time. This section looks at the presence of any cardiovascular condition in combination with diabetes, chronic kidney disease (CKD) and depression.

More often than not, diseases occur together because there are associations between them, or common pathways. There is substantial evidence demonstrating relationships between CVD, diabetes and CKD.

Diabetes

Diabetes is a well-known risk factor for CVD. The reasons why diabetes increases the risk of CVD are only partially understood. One established explanation is that diabetes increases atherosclerosis, which is the underlying cause of most CVD. We also know that people with diabetes tend to have higher levels of blood pressure and abnormal cholesterol levels, both of which increase the risk of atherosclerosis and CVD (AIHW 2008b).

Diabetes can also lead to kidney damage—a complication known as diabetic nephropathy—which results from high blood glucose levels damaging the blood-filtering capillaries in the kidneys. Moreover, diabetes also increases the risk of kidney damage and accelerates the reduction of kidney function by increasing the risk of high blood pressure (AIHW 2005).

Chronic kidney disease

CKD independently increases the risk of high blood pressure and other cardiovascular diseases, including CHD, stroke and heart failure. The risks of a cardiovascular event, such as heart attack or stroke, are greater in those with poorer kidney function. The reasons for excess risk of CVD among people with CKD are not clearly understood. However, some established risk factors of CVD, such as obesity, abnormal lipid levels and diabetes, are also common among people with CKD. In addition, CKD complications, such as anaemia and disturbed mineral metabolism, also contribute to increased risk of CVD.

CVD, especially high blood pressure, is one of the major causes of CKD. Untreated high blood pressure can damage the blood vessels in the kidneys. The walls of these blood vessels become thick and the internal diameter narrowed, leading to reduced blood supply and decreased kidney function. Among people with CKD, the presence of CVD is associated with a faster decline of kidney function and the need for dialysis.

Risk factors

Shared risk factors also promote co-occurrence of these diseases, and strengthen the association between them. These risk factors do not just affect the onset of CVD, diabetes and CKD, but also affect their progression and increase the risk of complications. They include ageing, gender, overweight or obesity, lifestyle and socioeconomic conditions. Other factors, such as genetic background and environmental factors, also play a role in the co-occurrence of these diseases. The risk of developing these diseases and their comorbidities is even greater among those with multiple risk factors.

Depression

Having a physical illness, such as CVD, is a strong risk factor for depression; there is also growing evidence of depression being a risk factor for heart disease and stroke (Clarke & Currie 2009). Depression is markedly more common among people with heart disease and stroke than in the general population. Women with heart disease tend to report more symptoms of depression than men. Comorbid depression is a risk factor for greater disease severity due to affected people not following treatment and greater complications.

Comorbidity and complications

CVD, diabetes and CKD are more likely to first manifest among middle aged to older people. Complications of these diseases may develop over a considerable period (about 10–20 years) after the onset of the original disease. By the time comorbidity presents, most people are at an old or very old age. The period between onset of the disease and its comorbidity is very important for the prevention and management of comorbidity, as early detection and good management of the original disease can effectively reduce the risk of comorbidity and/or delay its occurrence. In addition, longer survival with chronic conditions allows the complications of these conditions to develop.

The presence of these comorbidities in people with CVD often indicates more severe disease and poorer prognosis. An excess risk of being hospitalised or dying has been documented in people with some combinations of these diseases, compared with people with only one of these diseases (Haffner et al. 1998; Weiner et al. 2004). People with comorbidity also have a higher risk of impaired functioning or quality of life (Gijsen et al. 2001).

Services and treatment

Comorbidity increases the burden on health care services too. Comorbidity is associated with greater use of health care services, including more hospital admissions, longer stays in hospital and greater frequency of visits to general practitioners and specialists (Gijsen et al. 2001; Starfield et al. 2003; Struijs et al. 2006). In addition, treatment for people with comorbidity is much more complex. Multiple medicines are usually needed, increasing the risk of dangerous interactions. People with comorbidity are also more likely to have complications when receiving common procedures, including some lifesaving procedures. Because of this, doctors may be reluctant to arrange such procedures for them (Levin et al. 2002).

How common are comorbidities with CVD?

Based on self-reported data from the National Health Survey, it is estimated that about 204,000 females had both CVD and diabetes in 2004–05, representing 3% of Australian women aged 20 years and over (AIHW: Tong & Stevenson 2007). The prevalence of this comorbidity rose markedly with age—8% for women aged 65–84 years and 10% for those aged 85 years and over.

The Survey of Disability, Ageing and Carers provides information on people living in cared accommodation. Based on this survey, about 8% of women aged 20 years and over living in institutions had both CVD and diabetes in 2003, amounting to about 9,900 women (AIHW: Tong & Stevenson 2007).

Estimates of the number of Australian women with comorbidity of CVD and CKD are currently not available.

From data collected in the ABS Survey of Mental Health and Wellbeing in 2007, it is estimated that about 16% of females with CVD also had at least one episode of depression in their lifetime—21% of women aged 18–64 years and 8% for those aged 65–85 years (Table A7.11).

Information in death certificates help determine the extent of comorbidity as a cause of death, as those diseases that contributed to the death are recorded. This does not, however, represent the prevalence of these comorbidities among people who died. Among adult women in 2004, the comorbidity of: CVD and diabetes contributed to 3,705 deaths (6%); CVD and CKD contributed to 3,284 deaths (5%); and CVD, diabetes and CKD contributed to 858 deaths (1%) (AIHW: Tong & Stevenson 2007).

4 Coronary heart disease

Key points

- CHD is less common among Australian females than males.
- Two in every 100 females and four in every 100 males have CHD, corresponding to more than 225,600 females and 412,300 males.
- CHD increases markedly with age—four in every 100 women aged 55–59 years compared with 20 in every 100 aged 85 years and over.
- More Australian females died from CHD than any other disease in 2006.
- CHD caused the death of 10,800 females (one in every six female deaths) in 2006, many of these deaths were premature; see below.
- Overall, females were less likely than males to die from CHD at any age.
- The CHD death rate increased greatly with age, from less than 10 deaths per 100,000 population for women aged less than 40 years, to about 2,900 deaths per 100,000 population for women aged 85 years and over.
- CHD was the second leading specific cause of overall disease burden for females in 2003 (9%); the majority of this burden (79%) was due to the premature deaths it caused.
- CHD was the leading specific cause of premature death for females in 2003, accounting for 16% of years of life lost to premature death.
- CHD was the fifth leading specific cause of years of healthy life lost due to poor health or disability for females in 2003.

What is coronary heart disease?

Coronary heart disease (CHD) is the most common form of heart disease in Australia, and it causes the death of more Australian women than any other disease. It is also known as ischaemic heart disease. CHD refers to disease due to blockages in the blood vessels that supply blood to the heart muscle.

There are two major clinical forms: heart attack and angina (AIHW 2004). The common underlying problem in CHD is atherosclerosis (described in Chapter 3).

Heart attack

A heart attack is a life-threatening event that usually occurs when a blood vessel supplying the heart itself is suddenly blocked completely, thus stopping the normal flow of blood to the heart muscle. The blockage is often caused by a blood clot that forms when a plaque (described in Chapter 3) breaks open, ruptures. If not promptly treated, this event may lead to the death of parts of the heart muscle (known as acute myocardial infarction), reducing its ability to function normally or, in the worst case, sudden death. Note that the term

myocardial infarction is commonly used to mean a heart attack but it more correctly refers only to those heart attacks that have caused some death of heart muscle.

Angina

Angina is a condition, which can be acute or chronic, in which temporary chest pain or discomfort is caused by a severe but incomplete blockage (due to atherosclerosis) of one of the blood vessels supplying the heart. This results in an inadequate supply of blood to the heart muscle, particularly in times of extra demand for blood flow, such as with exercise or strong emotion. Angina is generally not life threatening, but people with angina are more likely to have a heart attack or sudden cardiac death than those without the condition (AIHW: Penm 2008).

Symptoms, treatment

It seems women may be perceived as being at lower risk of CHD than men (discussed in more detail in Chapter 11). It is important to note that females with CHD may have different symptoms to males, making diagnosis of CHD harder. CHD in females may be under-recognised and undertreated, possibly leading to more advanced disease at the time of heart attack. There is also some evidence that medical staff: may be more likely to classify women at lower risk of CVD than men despite similar calculated risk; may not recognise CHD in women at its initial manifestation; and may have difficulty recognising presenting symptoms in the emergency department, possibly causing delays in access to diagnostic tests and treatment (Arslanian-Engoren 2001; Arslanian-Engoren et al. 2006; Daly et al. 2006; Mosca et al. 2005).

Risk factors and prevention

There are many risk factors for CHD. Its major preventable risk factors are tobacco smoking, high blood pressure, high blood cholesterol, insufficient physical activity, overweight and obesity, diabetes, diet, socioeconomic factors, and psychosocial factors (including depression, social isolation and lack of quality social support) (AIHW 2004).

How many women have CHD?

Based on self-reported data from the 2004–05 National Health Survey it is estimated that CHD overall, as well as its components angina and heart attack, are all less common among females than males:

- CHD was reported by 2% of females and 4% of males, corresponding to more than 225,600 females and 412,300 males (Table A4.1). This difference remained after adjusting for differences in age structure, with females less than half as likely as males to report CHD (2,121 per 100,000 versus 4,353).
- Angina was reported by 1% of females, and 2% of males, corresponding to about 140,200 females and 219,200 males. This difference remained after adjusting for

differences in age structure, with females just over half as likely as males to report angina (1,319 per 100,000 compared with 2,315).

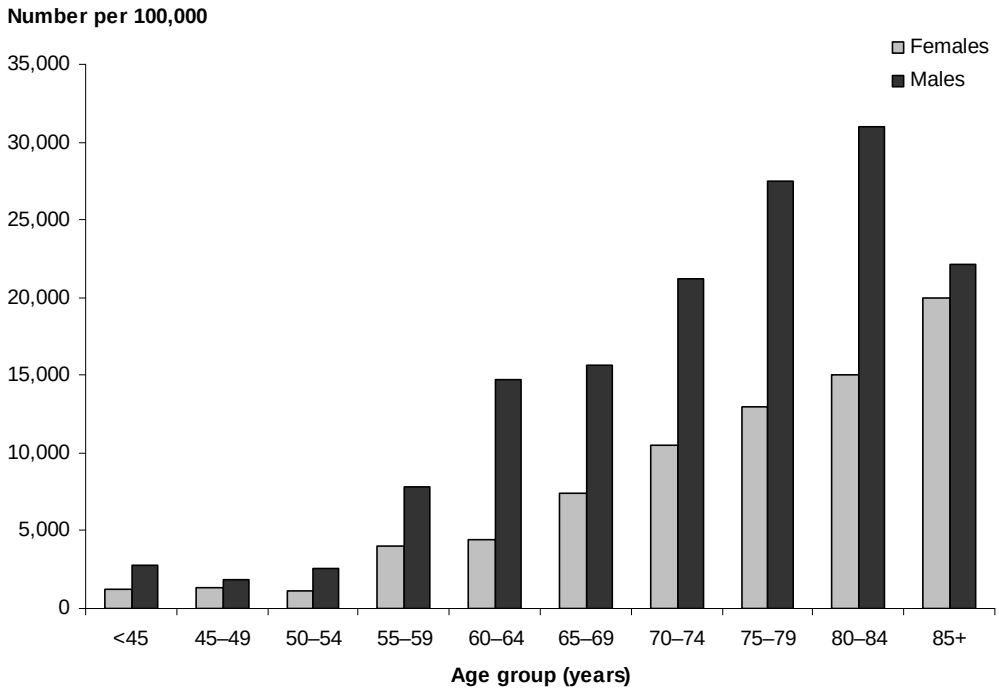
- For a history of heart attack, the difference between females and males was greater still, reported by 1% and 3%, respectively, and corresponding to about 96,600 females and 258,100 males. Again this difference remained after adjusting for differences in age structure, with females only one-third as likely as males to report heart attack (905 per 100,000 compared with 2,729).

Age

- The prevalence of CHD increased markedly with age, affecting 4% of women aged 55–59 years to a peak of 20% among those aged 85 years and over (derived from Table A4.1).
- CHD was less common among women than men in any age group (Figure 4.1).

Note that some of the CHD estimates have a relative standard error between 25% and 50%, and should be interpreted with caution; see Table A4.1 for further details.

- Women with CHD tend to be older than men—56% of women with CHD were aged 70 years or more, compared with 46% for men (Figure 4.2). The most noticeable differences between sexes were:
  - 21% of women with CHD were aged 60–69 years, compared with 30% for men.
  - 24% of women with CHD were aged 80 years and over compared with 15% for men.

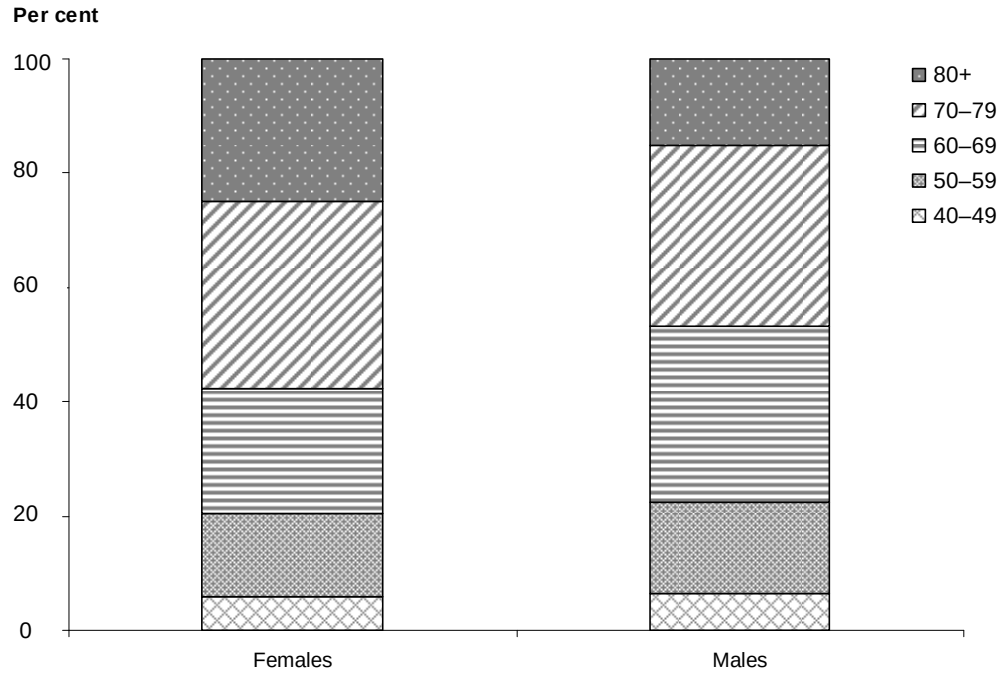


Notes

1. Rates are number per 100,000 population.
2. Refer to Appendix Table A4.1.

Source: AIHW analysis of ABS 2004–05 National Health Survey data.

Figure 4.1: Prevalence of coronary heart disease, age-specific rates, by sex, 2004–05



Note: Refer to Appendix Table A4.1.

Source: AIHW analysis of ABS 2004–05 National Health Survey data.

Figure 4.2: People with coronary heart disease, by age and sex, 2004–05

How many women die from CHD?

More women died from CHD than any other disease in Australia in 2006 (Figure 3.1). CHD was, by far, the leading specific cause of death for both sexes, accounting for about one in six deaths (17% of female deaths and 18% of male deaths), causing the death of about 10,800 females and 12,200 males (tables A3.1 and A4.2). Many of these deaths were premature, as CHD was the leading specific cause of premature death in females in 2003, see 'Burden due to premature death' overleaf for details.

Overall, after adjusting for differences in age structure, females are less likely than males to die from CHD, with an age-standardised death rate of 77 and 133 deaths per 100,000 population, respectively (Table A4.2).

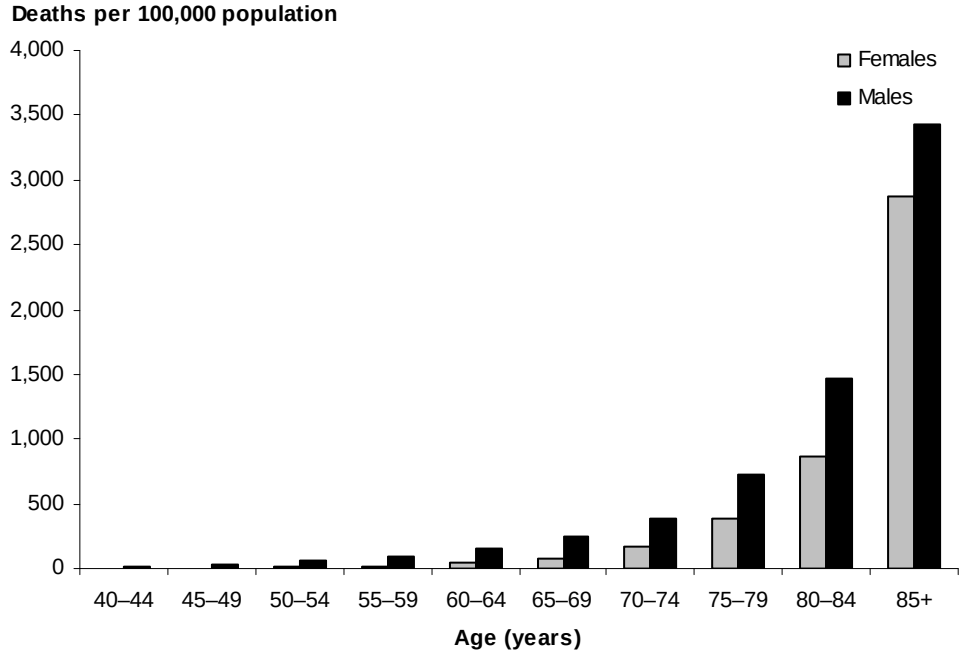
Age

- The CHD death rate increased greatly with age, from less than 10 deaths per 100,000 population for females aged under 40 years, to 2,869 deaths per 100,000 population for females aged 85 years and over (Figure 4.3; Table A4.2).
- Females were less likely than males to die from CHD at all ages (Figure 4.3; Table A4.2).
- The biggest difference in death rates was in those aged 30–59 years, with females having death rates about one-sixth to one-eighth those of males (Table A4.2).

- The majority of CHD deaths occurred in the oldest age groups, although this is more pronounced for females, with well over half (58%) of the female CHD deaths being for women aged 85 years and over compared with 29% for males (Table A4.2).

Survival

In 2006, it is estimated that about two in five people aged 40–90 years, died after a major CHD event—an age-standardised case fatality rate of 37% for females and 39% for males (AIHW analyses of AIHW National Hospital Morbidity and National Mortality databases). While these data are the best national estimates available for survival following a CHD event in Australia, they are population level data, are not based on individual case outcomes, and are not risk adjusted. This highlights an important data gap in the monitoring of CHD in Australia. More reliable analyses would be possible if disease registers were in place that allowed for adjustment for risk factors, comorbidities and disease severity.



Notes

1. Only a small proportion of CHD deaths occurred among people aged less than 40 years (0.2% for females and 1.1% for males); these are not shown here.
2. Underlying causes of death.
3. Refer to Appendix Table A4.2.

Source: AIHW National Mortality Database.

Figure 4.3: Deaths from coronary heart disease, age-specific rates, by sex, 2006

The burden of CHD

Burden overall

CHD was the second leading specific cause of overall disease burden for females (after anxiety and depression) and the leading cause for males—accounting for 9% and 11% of overall burden, respectively (Begg et al. 2007). Also, see Chapter 10 and Figure 10.12 for information about the burden of CHD by age.

Note that the definition of CHD used in burden of disease analyses differs from that used in the sections above. The burden of CHD includes not only angina and heart attack but also heart failure, because CHD is the underlying cause of heart failure in most cases (NHFA: Vos & Begg 2007).

Burden due to premature death

CHD was the leading specific cause of premature death among females in 2003, accounting for 16% of years of life lost to premature death (18% for males) (Begg et al. 2007).

The overall burden of CHD is dominated by the premature deaths it causes, although slightly less so for females than males. In 2003, 79% of the overall CHD burden for females, and 85% for males, was due to premature death (NHFA: Vos & Begg 2007).

Burden due to poor health or disability

For females, CHD was the fifth leading specific cause of years of healthy life lost due to poor health or disability in Australia in 2003 (3%), and the seventh leading cause for males (3%) (Begg et al. 2007).

Years of healthy life lost due to poor health or disability only accounted for a small proportion of the overall CHD burden for females (21%) and males (15%), when compared with the contribution from premature death (79% and 85%, respectively) (NHFA: Vos & Begg 2007).

5 Stroke

Key points

- Two in every 100 females have had a stroke at some time in their lives, corresponding to about 168,400 females in 2003.
- Cerebrovascular disease (mostly stroke) was the second leading cause of death of Australian women in 2006. Stroke caused the death of 5,100 females (one in every 13 female deaths) in 2006; many of these deaths were premature.
- Overall, females and males are similarly likely to die from stroke—after adjusting for differences in age structure, the overall age-standardised death rate was the same for both sexes, at 37 deaths per 100,000 population.
- Stroke was the third leading specific cause of overall disease burden for females in 2003; three-quarters of this burden (75%) was due to the premature deaths stroke causes.
- Stroke was the second leading cause of premature death for females in 2003, accounting for 9% of years of life lost to premature death.
- Stroke was the ninth leading cause of years of healthy life due to poor health or disability for females in 2003.
- Stroke is highly preventable, and much of post-stroke disability can be improved.

What is stroke?

Stroke is the most common form of cerebrovascular disease. Cerebrovascular disease refers to any disorder of the blood vessels supplying the brain and its covering membranes. These include stroke, transient ischaemic attack and others.

Stroke occurs when a blood vessel to the brain is either suddenly blocked (ischaemic stroke) or ruptures and bleeds (haemorrhagic stroke), accounting for about 85% and 15% of cases, respectively. Either may result in part of the brain dying because of the lack of blood, causing brain damage and the loss of some sensory or motor functions, such as movement, vision, swallowing, thinking and communication, and may lead to death (AIHW: Senes 2006).

Symptoms and signs of stroke include one or more of the following:

- motor impairments (weakness or paralysis of parts of the body, including the face, on one or both sides)
- sensory impairments (touch, pain, warm/cold), most often on one side of the body
- speech difficulties or slurred speech
- vision difficulties (sudden loss of vision, blurred vision), most often on one side
- dizziness, loss of balance or unexplained fall
- sudden severe headache
- difficulty swallowing (AIHW: Senes 2006).

Transient ischaemic attack (TIA), sometimes called 'mini-stroke', is another less severe form of cerebrovascular disease. It results in temporary symptoms similar to those of stroke. It usually results from a temporary blockage of blood vessels that reduces blood supply to the brain and may last only a few minutes, with symptoms disappearing completely within 24 hours (AIHW: Senes 2006).

After a stroke

Of those having a first-ever stroke, one in five die as a result within the first month of its occurrence and one in three die within 12 months of their stroke. Among the people who survive the first month after their first-ever stroke, about half survive 5 years. About one in six survivors of a first-ever stroke will have another stroke over the following 5 years (AIHW: Senes 2006).

Nearly all patients are disabled immediately following their stroke. Recovery is 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 (AIHW 2004). Depression, anxiety and cognitive impairment are also common after a stroke (AIHW: Senes 2006).

Risk factors and prevention

There is some good news: much of stroke is highly preventable and much of post-stroke disability can be improved with rehabilitation and occupational therapy (AIHW: Senes 2006).

The risk of stroke increases with age, previous transient ischaemic attack or stroke, high blood pressure, tobacco smoking, diabetes, high blood cholesterol, insufficient physical activity, poor diet, excessive alcohol consumption, irregular rapid heartbeat (atrial fibrillation), and narrowing of the carotid arteries (carotid stenosis) that feed the brain (AIHW: Senes 2006). People with a number of these risk factors are at even higher risk of stroke (AIHW: O'Brien 2005).

Reducing the high prevalence of the modifiable risk factors could prevent many strokes (AIHW: Senes 2006).

Note: the data presented in this chapter are for stroke only and do not include TIA; refer to the Appendix for details of which codes are included.

Further reading: detailed information about stroke can be found in the report *How we manage stroke in Australia* (AIHW: Senes 2006).

How many women have had a stroke?

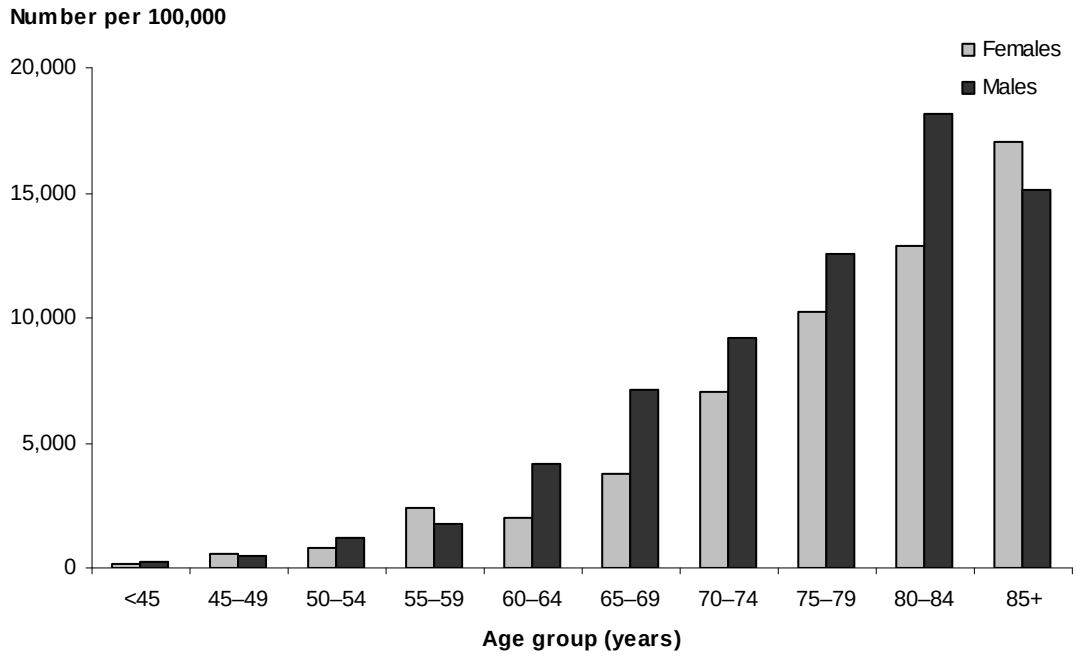
Based on the 2003 Survey of Disability, Ageing and Carers, it is estimated that 2% of both females and males had had a stroke at some time in their lives, corresponding to about 168,400 females and 178,300 males (Table A5.1).

It is estimated that 60,000 stroke events occur in Australia every year, although there are no national data on the incidence (new cases) of stroke (National Stroke Foundation 2010).

Age

- The prevalence of a history of stroke increased markedly with age, affecting 2% of women aged 55–59 years to a peak of 17% among women aged 85 years and over (derived from Table A5.1).
- Stroke was slightly less common among females than males in most age groups (Figure 5.1); this difference remained after adjusting for differences in age structure (1,475 per 100,000 population versus 1,898) (Table A5.1).

Note that some of the stroke estimates have a relative standard error between 25% and 50%, and should be interpreted with caution; see Table A5.1 for further details.



Note: Refer to Appendix Table A5.1.

Source: Analysis of ABS 2003 Disability, Ageing and Carers Survey data.

Figure 5.1: Prevalence of stroke, age-specific rates, by sex, 2003

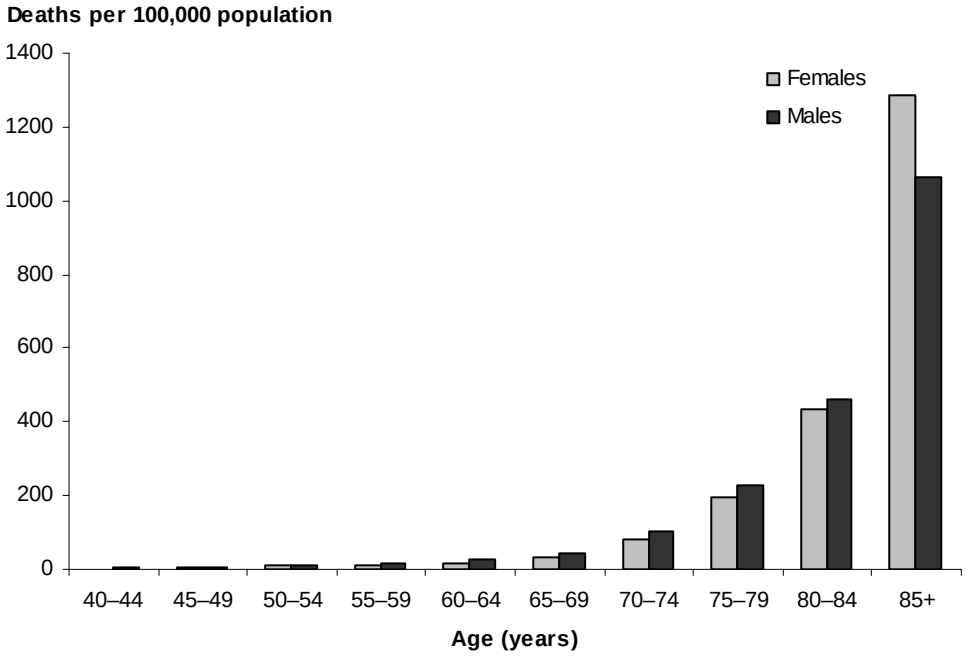
How many women die from stroke?

Cerebrovascular disease (mostly stroke) was the second most common cause of death for females, and the third for males in 2006 (Figure 3.1). It accounted for about one in 13 female deaths and one in 21 male deaths (8% of female deaths and 5% of male deaths), causing the death of about 5,100 females and 3,300 males (tables A3.1 and A5.2). Many of these deaths were premature; stroke was the second leading cause of premature deaths among females in 2003, behind CHD. See 'Burden due to premature death' below for details.

Overall, females and males are similarly likely to die from stroke—after adjusting for differences in age structure, the overall age-standardised death rate was the same for both sexes, at 37 deaths per 100,000 population.

Age

- Stroke death rates increase greatly with age—the majority of stroke deaths are among the oldest age groups, although this is more pronounced for females, with more than half of the female stroke deaths being for those aged 85 years and over (54%), compared with 33% for males (Table A5.2).
- Females are slightly less likely to die from stroke than males across most age groups, except for those aged under 30 years and those aged 85 years and over (Table A5.2; Figure 5.2).
- The difference between the sexes in stroke death rates at different age groups is not as marked as for CHD (figures 5.2 and 4.3).



Note: Underlying causes of death. Refer to Appendix Table A5.2.

Source: AIHW National Mortality Database

Figure 5.2: Deaths from stroke, age-specific rates, by sex, 2006

The burden of stroke

Burden overall

Stroke was the third leading specific cause of disease burden overall for females in 2003, behind anxiety and depression, and CHD (and the fifth leading cause for males—accounting for 5% and 4% of overall burden, respectively) (Begg et al. 2007). Also, see Chapter 10 and Figure 10.12 for information about the burden of stroke by age.

Burden due to premature death

For females, stroke was the second leading cause of years of life lost to premature death (9%) in Australia in 2003, following CHD. Stroke was a larger contributor to premature death for females than males (5%) (Begg et al. 2007).

The overall burden of stroke is largely due to the premature deaths it causes, even more so for females than for males. Most of the stroke burden in 2003 was due to years of life lost to premature death, accounting for 75% of the overall stroke burden for females and 68% for males (NHFA: Vos & Begg 2007).

Burden due to poor health or disability

Stroke ranks and contributes similarly to lost years of healthy life due to poor health or disability among females and males. It was the ninth leading cause for females (2%) and the eighth for males (3%) in 2003 (Begg et al. 2007).

Years of healthy life lost due to poor health or disability accounted for 25% of the overall stroke burden for females and 32% for males (NHFA: Vos & Begg 2007).

6 Heart failure

Key points

- Heart failure is more common among Australian females than males; females account for two-thirds of Australians with heart failure.
- Two in every 100 females have heart failure, corresponding to about 176,000 females in 2004–05.
- Heart failure is the third leading cause of cardiovascular death, causing the death of 1,500 females (2% of female deaths) in 2006.
- Overall, females and males are similarly likely to die from heart failure, with an age-standardised death rate of 10 deaths per 100,000 population for both sexes.
- The heart failure death rate increased greatly with age, from less than 1 death per 100,000 population for females aged less than 60 years to a peak of 488 per 100,000 for those aged 85 years and over.
- Heart failure contributed to many more deaths than this, as it is more often listed as an associated cause of death for diseases such as kidney failure and CHD.
- Much of heart failure is preventable.
- It is difficult to assess the impact of heart failure on women in Australia, because the data available on heart failure are very poor. To determine the real prevalence of heart failure, a national survey is needed involving echocardiography to assess heart structure and function.

What is heart failure?

Heart failure occurs when the heart functions less effectively in pumping blood around the body. It can occur suddenly, although it usually develops slowly, often over many years, as the heart becomes gradually weaker and works less effectively (AIHW: Field 2003). It can result from a variety of diseases and conditions that impair or overload the heart, notably heart attack, high blood pressure or a damaged heart valve.

People with mild heart failure may have few symptoms, but in more severe cases it can result in chronic tiredness, reduced capacity for physical activity, and shortness of breath. Heart failure is life-threatening and is usually associated with poor survival (AIHW: Field 2003).

There are different forms of heart failure. Some can usually be treated to improve a person's quality of life, reduce hospital admissions and improve survival time (National Heart Foundation of Australia & Cardiac Society of Australia and New Zealand 2006). But generally, it cannot be cured because the heart muscle has usually been irreversibly damaged (AIHW: Field 2003). However, some acute (new onset or acute worsening of) heart failure, caused by particular impairments, such as heart valve defects or after a heart attack, may be cured if treated early enough (AIHW: Field 2003; AIHW 2004).

Risk factors and prevention

The most important risk factors for heart failure are CHD and high blood pressure. Other common causes are diseases of the heart muscle (cardiomyopathy) due to alcohol abuse or infections, diseases of the heart valves (such as with chronic rheumatic heart disease), diabetes and obesity.

Further reading: more information on heart failure can be found in the report *Heart failure…what of the future?* (AIHW: Field 2003).

How many women have heart failure?

It is difficult to assess the impact of heart failure on women in Australia because the data available on heart failure are very poor. Self-reported data on heart failure may be inaccurate because of poor and inconsistent definitions of heart failure, as well as a poor understanding of the term heart failure. In addition, the term heart failure may not be used by doctors when talking about this condition with their patients, thus self-reported data on heart failure may provide a gross underestimate of prevalence (and hospital data cannot be used for this, as they cannot estimate the number of people affected). To determine the real prevalence of heart failure in Australia, a national survey is needed involving echocardiography to assess heart structure and function, as was done for example in the Canberra Heart Study (Abhayaratna et al. 2006).

Heart failure is more common among Australian females than males, based on self-reported data from the 2004-05 National Health Survey—it is estimated that 2% of females and 1% of males had heart failure or oedema (swelling, which can be a sign of heart failure when it occurs in the lower legs). This corresponds to about 176,000 females and 86,700 males, or in other words, females account for two-thirds of all Australians with heart failure (Table A6.1).

It has been estimated that about 30,000 new cases of heart failure are diagnosed in Australia each year. However, there are no national data on the incidence of heart failure (AIHW: Field 2003).

Age

- The prevalence of heart failure or oedema increased with age, affecting around 2% of women aged 50–54 years and around 8% of women aged 80–84 years (derived from Table A6.1).
- Heart failure or oedema was generally more common among females than males; after adjusting for differences in age structure, the overall rate was 1,682 per 100,000 population for females and 955 for males (Table A6.1).

Note that some of the heart failure estimates have a relative standard error of between 25% and 50%, and should be interpreted with caution; see Table A6.1 for further details.

How many women die from heart failure?

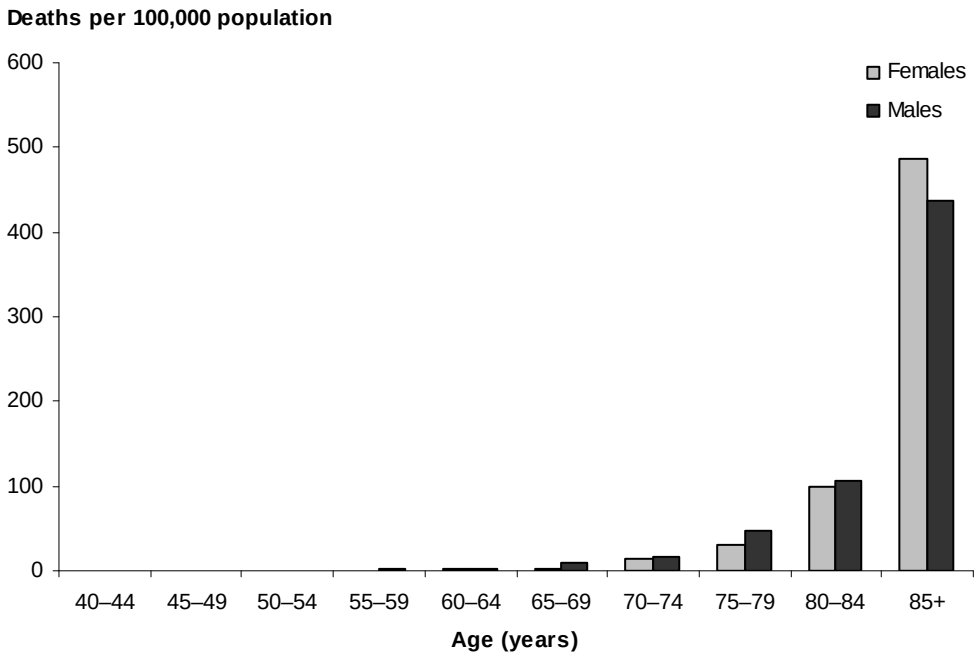
The deaths data presented here relate to underlying cause only. This understates heart failure's contribution to deaths because heart failure is more likely to be reported as an associated cause of death than as the underlying cause. Heart failure is often listed as an associated cause of death when the underlying cause is kidney failure, CHD, diabetes or chronic lower respiratory disease (AIHW 2008a).

Heart failure is the third largest cause of cardiovascular deaths. It accounted for 2% of female deaths and 1% of male deaths in 2006, causing the death of about 1,500 females and 870 males (tables A3.1 and A6.2).

Although more females died from heart failure than males, after adjusting for differences in age structure, the overall age-standardised death rate was the same for both sexes, at 10 deaths per 100,000 population. This can be explained by the greater number of females than males who live into old age when death rates from heart failure are considerably higher, as described below.

Age

- Heart failure death rates increased greatly with age—from less than 1 death per 100,000 population for females aged under 60 years to a peak of 488 deaths per 100,000 population for females aged 85 years and over (Figure 6.1; Table A6.2).
- From 55 to 84 years of age, females had similar or slightly lower heart failure death rates than males; among those aged 85 years and over females were slightly more likely than males to die from heart failure (488 and 436 deaths per 100,000 population, respectively) (Figure 6.1; Table A6.2).



Notes

1. Heart failure as the underlying cause of death.
2. Refer to Appendix Table A6.2.

Source: AIHW National Mortality Database

Figure 6.1: Deaths from heart failure, age-specific rates, by sex, 2006

The burden of heart failure

Heart failure's contribution to the burden of disease and injury in Australia is included in the estimates for CHD, because CHD is the underlying cause of heart failure in the majority of cases (NHFA: Vos & Begg 2007). Refer to Chapter 4.

7 Risk factors, protective factors and associated conditions

Key points

- We know which risk factors are responsible for most of the burden of CVD.
- We know that most Australian women have one or more of the modifiable risk factors; in fact, half of all women have two or three modifiable risk factors.
- We know that most of these risk factors can be reduced, both in terms of the severity of individual risk factors and in the number of risk factors per person.
- So the good news is that there is enormous potential to improve the risk profile of women and therefore reduce the number of women and families affected by CVD.
- Specifically, among Australian women:
  - 27% have high blood pressure
  - 48% have high blood cholesterol
  - 54% are overweight or obese
  - 2–7% have Type 2 diabetes
  - 93% do not eat the recommended serves of fruit or vegetables
  - 76% are physically inactive
  - 15% smoke daily
  - 10% drink alcohol at risky or high risk levels
  - 15% have had at least one episode of depression in their lifetime.

Much of CVD (in particular CHD and stroke—the two leading causes of premature death and deaths overall of Australian women) is highly preventable. Thus, reducing the high prevalence of modifiable risk factors could prevent much disease, disability and premature death, improving not only the health and lives of women but the community as a whole.

Part 1: An overview

A woman's risk of developing CVD is affected by many factors. Some are factors that she cannot change, such as her age or her family history. Some factors are related to her social conditions, such as education, income, and housing; and while these may be changed this may not be easily within her control. Some factors are related to her lifestyle, such as diet, physical activity, whether or not she smokes, how much alcohol she consumes. All of these factors impact on her body—for example, in terms of her blood pressure, body weight, and blood cholesterol levels. This chapter focuses on the 'modifiable' factors—that is, those that women can change; these are the key to reducing the number of women affected by CVD.

What is a risk factor?

Risk factors are characteristics that can impact on the onset, progression and prognosis of diseases and quality of life. Risk factors are also called determinants. Health determinants are the factors that determine how likely a person is to stay well or become ill or injured (AIHW 2008a). They are relevant for individuals and populations. They cover human biology, lifestyle, environmental, social, economic, psychological and cultural factors.

Determinants can have a positive or negative effect on health. Those that have a positive effect—that is they reduce the risk of ill health—are often called protective factors; those that have a negative effect—that is, they increase the risk of ill health—are often referred to as risk factors (AIHW 2008d).

Determinants help explain and predict trends in health, and provide insight as to why some groups have better or worse health than others (AIHW 2008a). Because many of these determinants are 'modifiable'—that is, we can do something to change them—they provide opportunities to change disease risk in individuals and in populations. Thus, understanding these determinants, both protective and risk factors, is crucial to improving the health of Australians.

Further reading: a detailed discussion about health determinants can be found in *Australia's health 2008* (AIHW 2008a).

Types of risk factors

Risk factors can be categorised into those factors that are modifiable and those that are not. The modifiable factors can then be categorised into those that are behavioural, biological/medical, and psychological/social.

Behavioural risk factors are based on an individual's behaviours, such as tobacco smoking or physical inactivity, while biomedical risk factors are derived from body measurements, such as body weight or the level of cholesterol in the blood. Their presence and severity may be reduced by the person changing behaviours and lifestyle, and/or by medical interventions. Psychosocial risk factors include social support and depression.

It is important to note that behavioural risk factors, such as physical inactivity, diet, tobacco consumption and alcohol consumption, can influence biomedical risk factors, such as blood pressure, blood cholesterol, overweight and obesity, and diabetes; and in turn, behavioural risk factors can be influenced by underlying social, economic, psychological and cultural factors.

What are the risk/protective factors for cardiovascular disease?

The risk and/or protective factors for CVD are listed in Table 7.1. This report focuses on the modifiable risk factors because they are the key to reducing the number of women and families affected by CVD.

Table 7.1: What are the risk/protective factors for cardiovascular diseases?

Non-modifiable	Modifiable		
	Behavioural	**Biological / medical**	**Psychological / social**
Age	Physical activity	Blood pressure	Depression
Gender	Diet	Cholesterol	Social support
Ethnicity	Tobacco smoking	Body weight	Perceived control over life circumstances
Genetics	Alcohol consumption	Diabetes	
		Chronic kidney disease	

Level of risk is increased by the level of the risk factor

There is often no threshold level where increased risk begins; it is a continuum where the higher the level of the risk factor, the higher the risk of developing chronic disease. However, many risk factors are categorised for ease of reporting and monitoring. For example, when reporting blood cholesterol as a risk factor, it is often the category of high blood cholesterol that is reported. High blood cholesterol is defined as 5.5 mmol/L or more. So while someone with blood cholesterol of 5.0mmol/L is not categorised as having high blood cholesterol they are still at increased risk of illness compared with someone with lower levels of cholesterol (AIHW: O'Brien 2005). The same principle applies when considering levels of physical activity, body weight, and blood pressure.

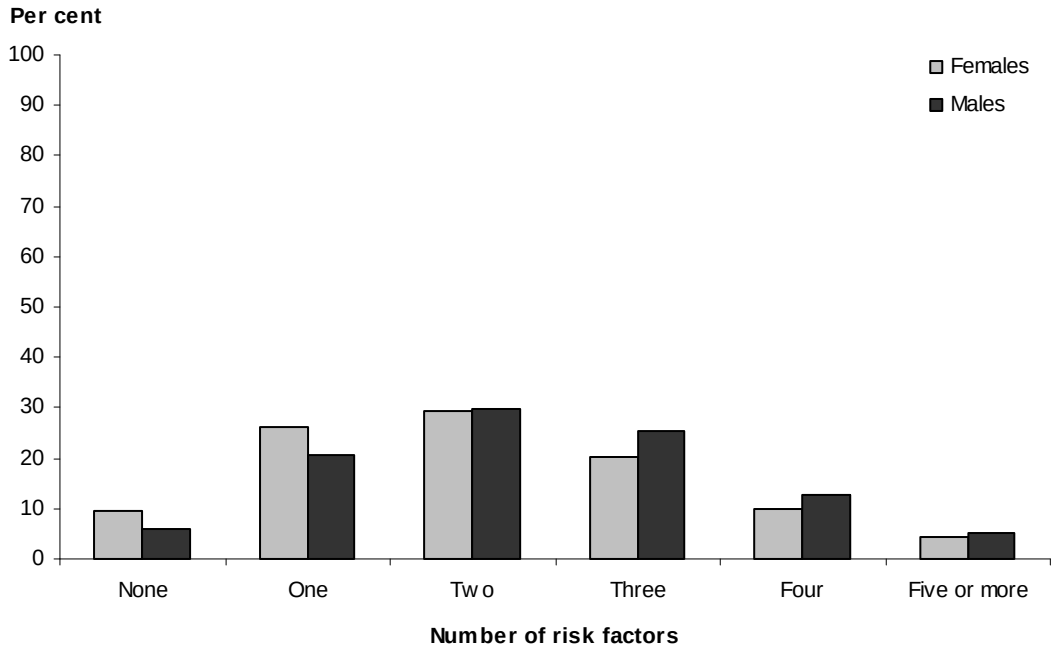
...and by the number of risk factors

Risk factors interact with each other, and as the number of risk factors increases so does the risk of illness. While the data presented in this chapter are shown for each risk factor in isolation, and do not attempt to describe their interactive effects, previous research has looked at CVD and multiple risk factors in the Australian population.

The study investigated nine modifiable risk factors in adults (obesity, diabetes, smoking, physical inactivity, high blood pressure, risky alcohol consumption, high blood cholesterol, low fruit consumption, and low vegetable consumption), using data from the 2001 National Health survey (AIHW: O'Brien 2005). Of the nine risk factors investigated: more than 90% of Australian women had at least one, 50% of all women had two or three, and 15% of women had four or more (Figure 7.1; Table A7.1).

The prevalence of heart attack and stroke increased as the number of risk factors increased (Figure 7.2; Table A7.2; AIHW: O'Brien 2005).

Further reading: a detailed discussion about CVD and multiple risk factors in Australians can be found in *Living dangerously: Australians with multiple risk factors for cardiovascular disease* (AIHW: O'Brien 2005).

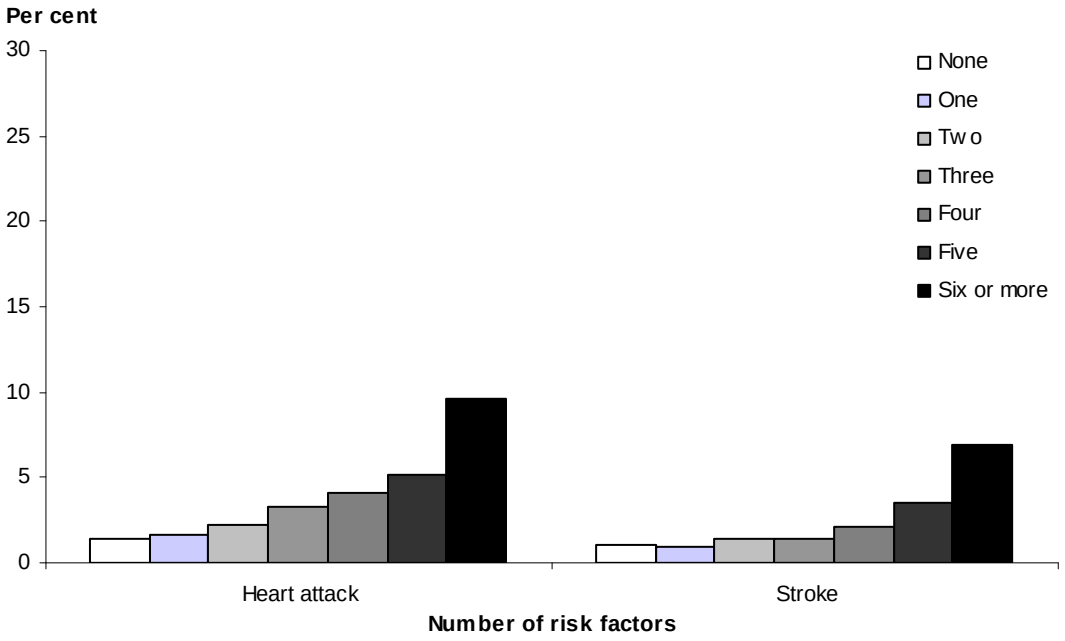


Notes

1. Risk factors include obesity, high blood pressure, high blood cholesterol, diabetes, physical inactivity, smoking, risky alcohol consumption, low vegetable consumption and low fruit consumption.
2. Refer to Appendix Table A7.1.

Source: AIHW analysis of the 2001 National Health Survey, adapted from AIHW: O'Brien 2005.

Figure 7.1: Prevalence of multiple risk factors, by sex, 2001



Notes

1. Risk factors include obesity, high blood pressure, high blood cholesterol, diabetes, physical inactivity, smoking, risky alcohol consumption, low vegetable consumption and low fruit consumption.
2. Refer to Appendix Table A7.2.

Source: AIHW analysis of the 2001 National Health Survey, adapted from AIHW: O'Brien 2005.

Figure 7.2: Prevalence of heart attack and stroke, by number of risk factors present, 2001

Assessing a woman's level of CVD risk

Table 7.2 provides a guide to assess the level of risk of CVD among women. Tools to assess the absolute risk of CVD in women without known CVD and guidelines for prevention are also available in Australia, and have been approved by the National Health and Medical Research Council (NHMRC). The absolute risk approach depends on the combination and intensity of all identified risk factors, rather than on the presence of any single risk factor; it takes into account the cumulative and sometimes synergistic effects of these multiple risk factors. Assessing a patient's absolute risk allows general practitioners to identify those at the highest risk, and then tailor pharmacological and lifestyle interventions accordingly, leading to improved health outcomes (NVDPA 2009).

The number of women aged 30–74 years at high risk of CVD in 2000 was estimated at about 893,300, based on the results of the Australian Diabetes, Obesity and Lifestyle (AusDiab) Study (Chen et al. 2008). Without more recent data on the prevalence of biomedical risk factors for CVD, based on measurements, it is not possible to provide a current estimate of the number of women at risk of CVD (see later in this chapter for further details).

Table 7.2: Classification of cardiovascular risk in women

Risk status	Criteria
High risk	CHD
	Cerebrovascular disease
	Peripheral vascular disease
	Abdominal aortic aneurysm
	End-stage or chronic kidney disease
	Diabetes
	10-year Framingham global risk greater than 20%[(a)] or at high risk on another tool used to assess global risk
At risk	One or more major risk factors for CVD, including: cigarette smoking poor diet physical inactivity obesity, especially abdominal obesity family history of premature CVD (CVD at less than 55 years of age in male relative and less than 65 years of age in female relative) hypertension abnormal blood lipids
	Evidence of subclinical blood vessel disease such as calcification of coronary arteries
	Metabolic syndrome
	Poor exercise capacity on treadmill test and/or abnormal heart rate recovery after stopping exercise
Optimal risk	Framingham global risk less than10%[(a)] and a healthy lifestyle, with no risk factors

(a) The Framingham risk is determined from a statistical method of predicting an individual's likelihood of developing CVD within the next 5 or 10 years, based on risk factors such as age, sex and blood pressure (NVDPA 2009).

Source: Mosca et al. 2007

Which risk factors should be focused on by individuals, general practitioners and public health strategies?

A major worldwide study, the INTERHEART study, was conducted in 52 countries to assess the effect of potentially modifiable risk factors associated with heart attacks (Yusuf et al. 2004). The study found that for women and men worldwide, most of the risk (more than 90%) could be accounted for by: abnormal blood lipids (cholesterol), smoking, high blood pressure, diabetes, abdominal obesity (waist/hip ratio), psychosocial factors (including depression and stress), consumption of fruits and vegetables, consumption of alcohol, and regular physical activity.

The authors concluded that modification of the above risk factors has the potential to prevent most premature cases of heart attack.

The Australian Burden of Disease study assessed the following similar group of risk factors for their contribution to the burden of CVD in 2003: tobacco, physical inactivity, low fruit and vegetable intake, high body mass index (BMI), high cholesterol, high blood pressure, alcohol.

The combined effect of these seven lifestyle-related risk factors explained 68% of total cardiovascular deaths and 69% of total cardiovascular disability-adjusted life years (NHFA: Vos & Begg 2007).

Information and data about the risk factors in the lists above are presented in Part 2 of this chapter.

Part 2: Specific risk/protective factors

High blood pressure

Key points

- High blood pressure is a major risk factor for CHD, stroke, heart failure, peripheral vascular disease and kidney failure. The risk of disease increases as the level of blood pressure increases.
- High blood pressure is common among Australian women (27%) but less common than for men (33%).
- The prevalence of high blood pressure increases markedly with age—in 1999–2000, almost half (45%) of women aged 55–64 years had high blood pressure, rising to about three-quarters (76%) in women aged 75 years and over.
- For risk factors, high blood pressure is one of the two biggest contributors to the burden of disease among females (on par with high body mass), accounting for 7%. For CVD burden specifically, high blood pressure is the largest contributing risk factor, accounting for 42%.
- There is an urgent need for recent measured national blood pressure data to better monitor the cardiovascular risk of Australian women and men.

High blood pressure, a CVD in its own right, is a major risk factor for CHD, stroke, heart failure, peripheral vascular disease and kidney failure.

What is high blood pressure?

High blood pressure (hypertension) is prolonged elevation of the blood pressure.

Blood pressure is the force exerted by the blood on the walls of the blood vessels as it is pumped around the body. It is reported as a ratio of systolic/diastolic—for example 120/80 mmHg, which is stated as '120 over 80' (AIHW 2004). Systolic blood pressure is the highest pressure in the arteries when the heart muscle contracts to pump blood. Diastolic blood pressure is the lowest pressure in the arteries when the heart muscle relaxes before its next contraction.

Increased blood pressure causes the heart to work harder than normal, causing it to enlarge and weaken over time (AIHW 2004).

High blood pressure is a cardiovascular disease in its own right. Although it is not a common direct cause of death, it is a major risk factor for other cardiovascular diseases (some of which are major causes of death), including CHD, stroke, heart failure and kidney failure. When high blood pressure is controlled by medicines, the risk of CVD is reduced, but not necessarily to the levels of unaffected people (WHO–ISH 1999).

The relationship between blood pressure levels and CVD risk is continuous. In other words, there is no threshold level where risk begins. Starting from quite low levels, as blood pressure increases, so does the risk of stroke, heart attack and heart failure (AIHW 2008a); thus, the definition of high blood pressure is somewhat arbitrary (AIHW 2004). Elevated levels of systolic and diastolic blood pressure are each predictors of CVD (AIHW 2008a).

The World Health Organization (WHO–ISH 2003) defines high blood pressure as:

- systolic blood pressure of 140 mmHg or more
- diastolic blood pressure of 90 mmHg or more
- receiving medication for high blood pressure.

The WHO also states that in high-risk patients there is evidence for lower thresholds (WHO–ISH 2003). For example, the NHMRC recommends that the target blood pressure in people with Type 2 diabetes should be below 130/80 mmHg (NHMRC 2004).

Major causes of high blood pressure include poor diet (particularly a high salt intake), obesity, excessive alcohol consumption, and insufficient physical activity (AIHW 2008a). Attention to risk factors such as body weight, physical activity and nutrition plays an important role in maintaining healthy blood pressure.

How can we find out how many Australian women have high blood pressure?

Information about blood pressure can be collected by measuring people's blood pressure (measured data) or by asking people to report if they have high blood pressure (self-reported data). Measured data provide far more accurate results and enable analysis by the varying gradients of blood pressure (AIHW 2008d). However, the most recent measured national data available, from the 1999–2000 AusDiab study, are now 10 years old. Given evidence that the prevalence of high blood pressure was declining in Australia between 1980 to 1999–2000 (AIHW 2004), it is possible that the results of the 1999-2000 study no longer reflect the current blood pressure levels in Australia. So, summary data from the ABS 2007–08 National Health Survey (NHS), which is more recent but self-reported, are also presented here for comparison.

How many Australian women have high blood pressure?

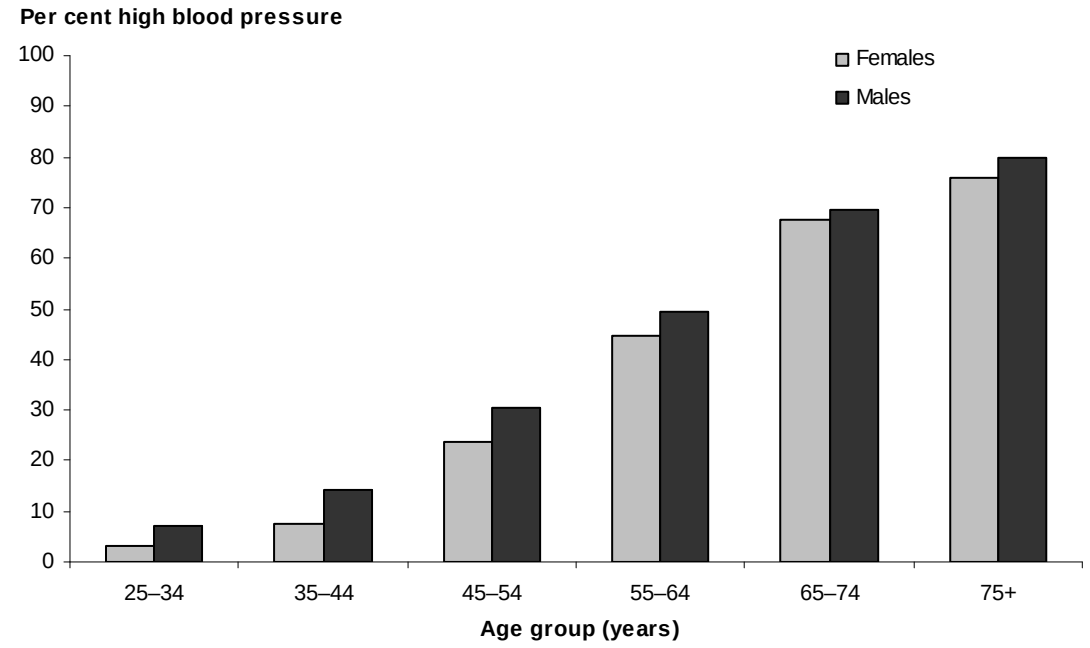
High blood pressure is common among Australian females but less so than in males. Based on measured data from the 1999–2000 AusDiab study, more than a quarter (27%) of Australian females aged 25 years and over had high blood pressure; that is, they had high systolic or diastolic blood pressure or were on medicines for high blood pressure (Table A7.3). The corresponding figure for males was 33%.

- High blood pressure was less common among females than males across all age groups (Figure 7.3).
- The proportion of both females and males with high blood pressure increased markedly with age (Figure 7.3; Table A7.3).

- For the age group 55–64 years, almost half (45%) of Australian females had high blood pressure, a figure that increased in older age groups—about three-quarters (76%) of females aged 75 years and over had high blood pressure. The corresponding figures for males were similar at 49% and 80% (Table A7.3).

Based on self-reported data from the ABS 2007–08 NHS, high blood pressure was reported by 10% of females and 9% of males (ABS 2009). The discrepancy between measured and self-reported data may be related to misreporting and different questions/definitions.

These differing results provide evidence of the urgent need for recent measured national blood pressure data to better monitor the cardiovascular risk of Australian women and men.



Notes

1. Based on WHO definition of high blood pressure—systolic blood pressure of 140 mmHg or more, or diastolic blood pressure of 90 mmHg or more, or receiving medication for high blood pressure.
2. Refer to Appendix Table A7.3.

Source: AIHW analysis of the 1999–2000 AusDiab study.

Figure 7.3: Proportion of adults with high blood pressure, 1999–2000

The burden of high blood pressure

Nearly 8% of the burden of disease and injury in Australia in 2003 was attributed to high blood pressure (Begg et al. 2007). Overall, it ranks a close second to tobacco use on this score. Of the 14 risk factors studied by Begg et al. (2007), high blood pressure was the largest contributor to the burden of CVD, accounting for 42%.

The burden from high blood pressure is slightly less for females than for males. Of the 14 risk factors Begg et al. (2007) studied, high blood pressure is one of the two biggest contributors to the burden of disease among females (on par with high body mass), accounting for 7% of

the burden among females, higher than that of tobacco at 6%; whereas for males, high blood pressure accounts for 8%, which is lower than the burden from tobacco at 10%.

High blood cholesterol

Key points

- High blood cholesterol is a major risk factor for CHD, stroke, and peripheral vascular disease. The risk of disease increases as the level of blood cholesterol increases.
- High blood cholesterol is very common, being present in almost half of Australians overall, and in more than one-quarter of Australia's young women and men aged 25–34 years.
- The prevalence of high blood cholesterol increases with age until 65–74 years (70%) for women, and 45–64 years (57%) for men, when it starts decreasing.
- High blood cholesterol is less common among women than men in adults aged less than 55 years, and more common among females than males from 55 years of age.
- For risk factors, high blood cholesterol was the fourth largest contributor to the burden of disease among females (on par with tobacco), accounting for 6% of the burden among females in 2003. For the burden of CVD specifically, it was the second largest contributor (behind high blood pressure), accounting for 35%.
- There is an urgent need for recent measured national blood cholesterol data to better monitor the cardiovascular risk of Australian women and men.

High blood cholesterol is a major risk factor for CVD, in particular CHD and stroke, the two leading causes of death for Australian women.

What is high blood cholesterol?

Cholesterol is a fatty substance produced by the liver and carried by the blood to the rest of the body (AIHW 2008a). Its natural function is to provide material for cell walls and for steroid hormones. If levels in the blood are too high, this can contribute to the artery-clogging process known as atherosclerosis, which is a major cause of CVD, including heart attacks, angina and stroke. This process may be intensified by diabetes (AIHW 2008b). The risk of heart disease increases steadily, from a low base, with increasing blood cholesterol levels. A total cholesterol level of 5.5 mmol/L or more is considered 'high' but this is an arbitrary definition (AIHW 2008a).

It is important to note that total cholesterol has several parts, two of which are:

- low-density lipoprotein cholesterol, often known as 'bad' cholesterol. Excess levels of low-density lipoprotein cholesterol are the main way that cholesterol contributes to atherosclerosis
- high-density lipoprotein cholesterol, often known as 'good' cholesterol. High levels of high-density lipoprotein have a protective effect against heart disease by helping reduce atherosclerosis.

In this report, levels of high blood cholesterol are based on a total cholesterol level of 5.5 mmol/L or more.

For most people, saturated fat in the diet is the main factor that raises blood cholesterol levels (AIHW 2008a). Genetic factors can also affect blood cholesterol levels, severely in some individuals. Attention to healthy eating and physical activity plays an important role in maintaining a healthy blood cholesterol level (AIHW 2008a).

How can we find out how many Australian women have high blood cholesterol?

Information about high cholesterol can be collected by taking blood, and analysing the level of cholesterol (measured data), or by asking people to report if they have high cholesterol (self-reported data). Measured data provide far more accurate results, and enable analysis by the varying gradients of blood cholesterol (AIHW 2008d). However, the most recent measured national data available, from the 1999–2000 AusDiab study, are now 10 years old, so it is unknown whether these results still reflect the current blood cholesterol levels in Australia. So, summary data from the ABS 2007–08 NHS, which is more recent but self-reported, are also presented here for comparison.

Note that the prevalence of high blood cholesterol based on measured data from the 1999–2000 AusDiab study relate to the participant's measured blood cholesterol level, and do not take into account whether or not they were on cholesterol-lowering medicines (as is done for high blood pressure). That is, a participant using cholesterol-lowering medicines who has a blood cholesterol measurement below 5.5 mmol/L will not be counted in the high blood cholesterol group.

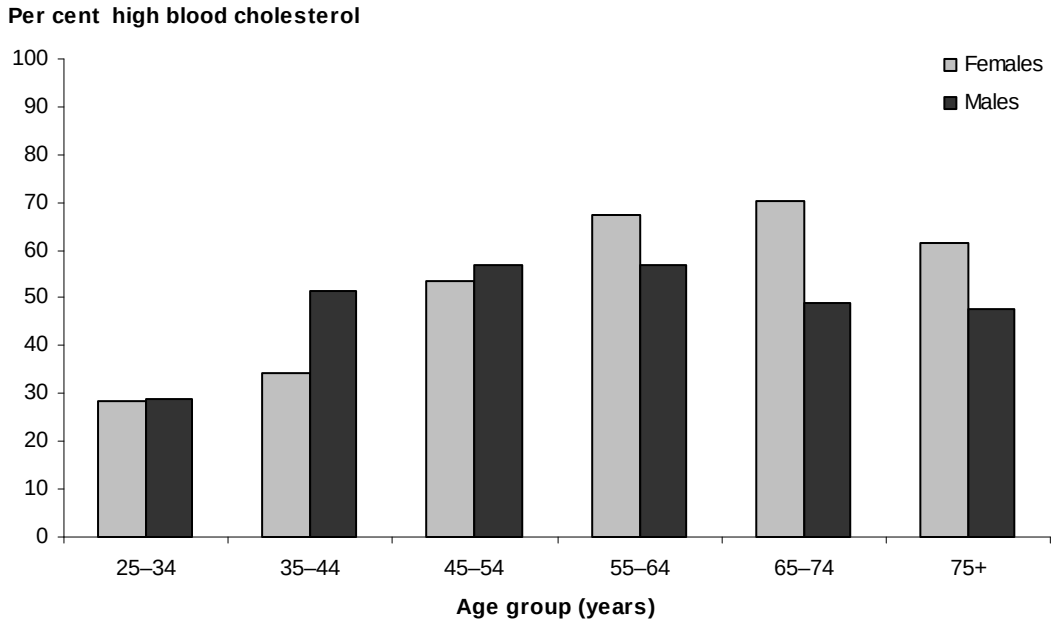
How many Australian women have high blood cholesterol?

High blood cholesterol is very common among Australians. Based on measured data from the 1999–2000 AusDiab study, almost half (48%) of Australians aged 25 years and over had high blood cholesterol; that is, they had levels of 5.5 mmol/L or more (Table A7.4).

- More than one-quarter of Australia's young females and males have this major risk factor for CVD—28% of females and 29% of males aged 25–34 years already had high blood cholesterol (Figure 7.4; Table A7.4).
- The prevalence of high blood cholesterol increased with age until 65–74 years (70%) for females, and 45–64 years (57%) for males, when it starts decreasing (Figure 7.4; Table A7.4).
- In adults aged less than 55 years, high blood cholesterol is less common among females than males, particularly so for those aged 35–44 years; from 55 years of age, high blood cholesterol is more common among females than males (Figure 7.4; Table A7.4).

Based on self-reported data from the ABS 2007–08 NHS, 5% of females and 6% of males had high blood cholesterol (ABS 2009).

These differing results provide evidence of the urgent need for recent measured national blood cholesterol data to better monitor the cardiovascular risk of Australians.



Notes

1. High blood cholesterol is a total cholesterol level of 5.5 mmol/L or more.
2. Refer to Appendix Table A7.4.

Source: AIHW analysis of the 1999–2000 AusDiab study.

Figure 7.4: Proportion of adults with high blood cholesterol, 1999–2000

The burden of high blood cholesterol

About 6% of the burden of disease and injury in Australia in 2003 was attributed to high blood cholesterol, placing it fifth out of 14 risk factors studied by Begg et al. (2007). It was the second largest contributor, behind high blood pressure, to the burden of CVD, accounting for 35% (Begg et al. 2007).

Of the 14 risk factors Begg et al. (2007) studied, high blood cholesterol was the fourth largest contributor to the burden of disease among females (on par with tobacco) accounting for 6% of the burden among females, slightly less than for males at 7%.

Overweight and obesity

Key points

- Excess weight—that is, excess body fat—is a risk factor for CVD and several other health problems, some of which are themselves risk factors for CVD. The risk of disease increases with the level of excess weight.
- More than half (54%) of Australian females aged 15 years and over had a body mass index (BMI) higher than the healthy range—overall 31% of females were overweight and 23% were obese in 2007–08. Based on measured waist circumference, an even higher proportion of females aged 18 years and over were at increased risk (64%).
- Overall, females were less likely than males to be overweight or obese, with the exception of those aged 75 years and over, who were more likely than males to be obese (based on BMI).
- Starting as young as 35–44 years, females were more likely to be overweight or obese than to have a healthy BMI.
- For risk factors, high body mass was one of the two largest contributors to the burden of disease among females (on par with high blood pressure) accounting for 7% of the burden among females in 2003. For CVD burden specifically, it was the fourth largest contributor (20%).

Excess weight—that is, excess body fat—is a risk factor for CVD and several other health problems, some of which are themselves risk factors for CVD (such as high blood pressure and Type 2 diabetes).

What is overweight and obesity?

Overweight is a condition of excess body weight that normally results from a sustained energy imbalance. This occurs when the amount of energy consumed (through food and drink) is greater than the energy used by the body to live and move, resulting in weight gain over time. Obesity is an extreme category of overweight.

There are two main methods used for monitoring body weight at the population level, body mass index (BMI) and waist circumference, defined below.

Body mass index

BMI is an acceptable approximation of total body fat at the population level, and can be used to estimate the risk of disease in most people; however, because BMI does not distinguish between weight attributable to fat and weight attributable to muscle, it should be interpreted with caution when assessing an individual's body weight (NHMRC 2003a).

BMI is calculated by dividing weight in kilograms by the square of height in metres (kg/m^2). It is the most common measure used (particularly in self-report surveys), as people are more likely to know their height and weight than their waist circumference (AIHW 2008a).

The BMI categories recommended by the World Health Organization and the *National Health Data Dictionary*, for adults aged 18 years and over, are based on the association between BMI and illness and mortality (WHO 2000):

- underweight BMI less than 18.5
- healthy weight BMI greater than or equal to 18.5 and less than 25
- overweight (but not obese) BMI greater than or equal to 25 and less than 30
- obese (BMI greater than or equal to 30).

This classification may not be suitable for all ethnic groups and is not suitable for children.

In this report, unless otherwise specified, overweight and obese are reported separately.

Waist circumference

Waist circumference is an indicator of excess abdominal weight/fat, which is a risk factor for CVD and Type 2 diabetes. It is a useful addition to BMI because abdominal fat mass can vary greatly within a narrow range of total body fat or BMI (AIHW 2004).

The *National Health Data Dictionary* defines waist circumference cut-offs for increased and substantially increased risk of ill health. Waist circumferences of 80 centimetres or more in women and 94 centimetres or more in men indicate increased risk (referred to here as abdominal overweight). Waist circumferences of 88 centimetres or more in women and 102 centimetres or more in men indicate substantially increased risk (referred to here as abdominal obesity) (NHDC 2003). This classification is not suitable for people aged less than 18 years, and the cut-off points may not be suitable for all ethnic groups. In this report, data are presented for the proportion of people at increased risk—that is, a total of increased risk plus substantially increased risk.

How can we find out how many Australian women are overweight?

Height and weight data may be collected in surveys as measured or self-reported data. People tend to overestimate their height and underestimate their weight, leading to an underestimate of BMI (ABS 2009). Thus, rates of overweight and obesity are more accurate when based on measured data; when based on self-reported data they are likely to be underestimates of the true prevalence. Recent measured data for Australia are available from the ABS 2007–08 NHS.

How many Australian women are overweight or obese?

BMI—measured

Excess body weight is very common among Australian adults. Based on recent measured data from the ABS 2007–08 NHS, more than half of Australian females aged 15 years and over had a BMI higher than the healthy range—overall, 31% of females were overweight and 23% were obese (Table A7.5). Overall, females (54%) were notably less likely than males (66%) to be overweight or obese. For males, 41% were overweight and 25% were obese.

Starting as young as 35–44 years for females, and 25–34 years for males, it is more common to be overweight or obese than to have a healthy BMI (derived from Table A7.5).

Overweight

- Females were less likely than males to be overweight in all age groups (Figure 7.5; Table A7.5).
- Among females, the prevalence of overweight generally increased with age, from 22% of those aged 15–24 years to 42% among those aged 65–74 years, and dropped to 33% for

those aged 75 years and over. This pattern was slightly different to that of males. Among males, the prevalence of overweight increased with age until 45–54 years (47%); it dropped for those aged 55–64 years, only to continue rising to 53% for those aged 75 years and over (Figure 7.5; Table A7.5).

Obesity

- Females were less likely than males to be obese in most age groups, the exception being those aged 75 years and over (Figure 7.5; Table A7.5).
- The prevalence of obesity increased with age until 55–64 years for both females and males, to 33% and 35%, respectively (Figure 7.5; Table A7.5).

Waist circumference - measured

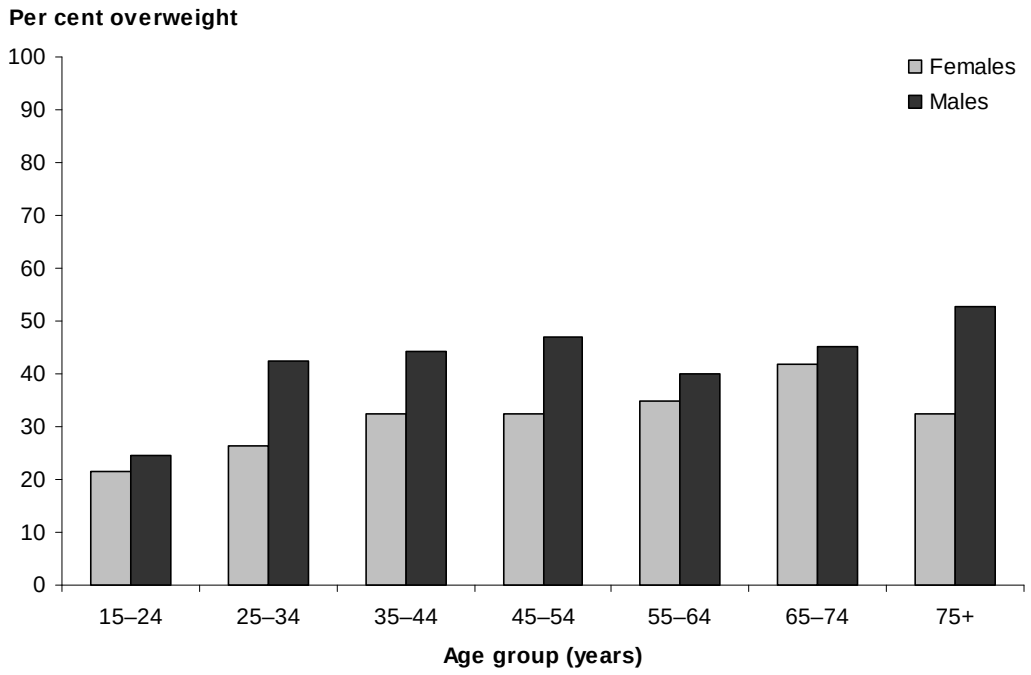
Based on measured waist circumference data from the same data source, 64% of females aged 18 years and over (and 55% of males) are at increased risk due to overweight or obesity (Table A7.5).

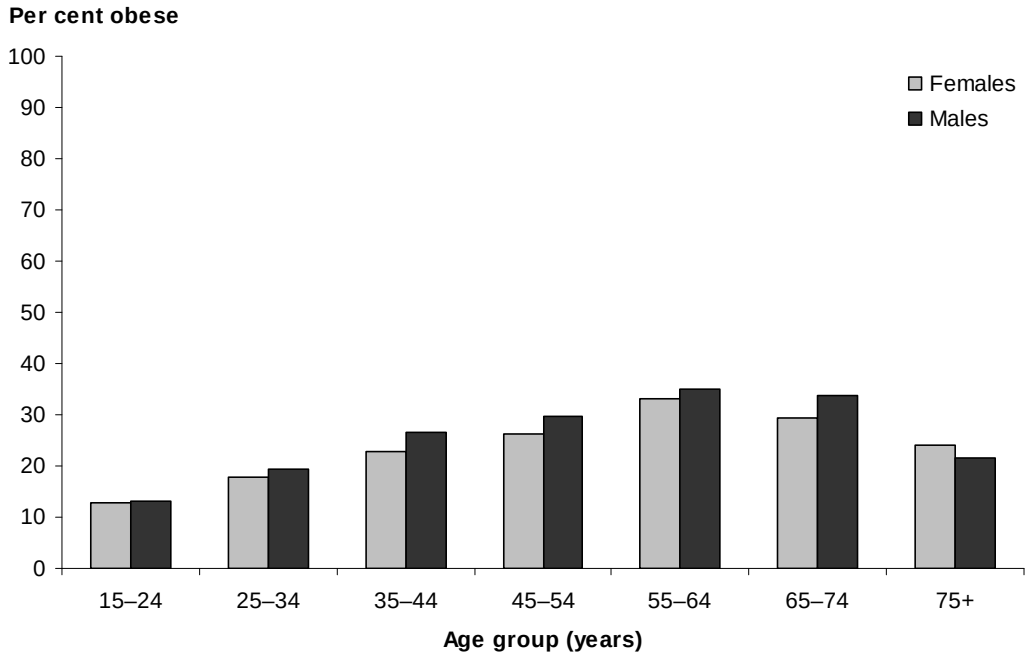
The burden of overweight and obesity

About 8% of the burden of disease and injury in Australia in 2003 was attributed to high body mass (defined as BMI greater than 21, see below), placing it third out of 14 risk factors studied by Begg et al. (2007). It was the fourth largest contributor to the burden of CVD, accounting for 20% (Begg et al. 2007).

Of the 14 risk factors Begg et al. (2007) studied, high body mass was one of the two largest contributors to the burden of disease among females (on par with high blood pressure), accounting for 7% of the burden among females, slightly less than for males, at 8%.

Note that although, as described above, overweight and obesity is typically defined as a BMI of 25 and over, data on the burden of high body mass was actually calculated using BMI on a continuous scale, with risk attributed to all people in the population with a BMI of greater than 21. The degree of risk increased exponentially above this value (Begg et al. 2007), for some forms of CVD.





Notes

1. Based on measurements. Overweight is defined as a person having a body mass index of 25 or more, but less than 30. Obese is defined as a person having a body mass index of 30 or more.
2. Refer to Appendix Table A7.5

Source: AIHW analysis of ABS National Health Survey 2007–08.

Figure 7.5: Proportion of adults who are overweight or obese, based on body mass index, 2007–08

Type 2 Diabetes

Key points

- Type 2 diabetes has a significant impact on the health of Australians, both as a disease in its own right and as a risk factor for cardiovascular diseases such as CHD, stroke and peripheral vascular disease, and for kidney failure.
- About 2–7% of females have Type 2 diabetes, depending on whether self-reported or measured data are used.
- The prevalence of diabetes increases with increasing age—27% among females aged 75 years and over compared with 2% among those aged 45–54 years.
- Type 2 diabetes is becomingly increasingly common among younger people; it was reported by 26,000 (less than 1%) females aged less than 45 years.
- Diabetes accounted for 5% of the burden of disease and injury for females in 2003, ranking fourth after anxiety and depression, CHD and stroke.
- There is an urgent need for recent measured national data on diabetes prevalence to better monitor the diabetes and cardiovascular risk of Australians.

Type 2 diabetes has a significant impact on the health of Australians, both as a disease in its own right and as a risk factor for cardiovascular diseases such as CHD, stroke and peripheral vascular disease, and for kidney failure. Diabetes belongs in this chapter as both a risk factor and an associated condition.

People with diabetes are 2 to 6 times as likely to develop CVD, such as CHD and stroke, than people without diabetes; and they tend to develop CVD at a younger age and have more severe effects than people without diabetes (IDF 2003).

What is Type 2 diabetes?

Diabetes mellitus (diabetes) is a collection of closely related metabolic conditions marked by high blood glucose levels resulting from defects in either production of the hormone insulin, or in its effectiveness, or both (WHO 1999). Insulin is a hormone produced in the pancreas that helps glucose to enter body cells for energy metabolism. The chronic high blood glucose levels (hyperglycaemia) of poorly controlled diabetes are associated with long-term damage, dysfunction and failure of various organs, especially the eyes, kidneys, nerves, heart and blood vessels (AIHW 2004).

There are several types of diabetes, with different causes and clinical histories: Type 1, Type 2, gestational diabetes and other types (see AIHW 2008b for further details). Type 2 diabetes in particular is a risk factor for CVD, and as such is the focus of this section.

Type 2 diabetes is the most common form of diabetes in adults, and although uncommon in childhood, it is becoming increasingly recognised in that group. People with Type 2 diabetes produce insulin, but may not produce enough or cannot use it effectively. Type 2 diabetes may be managed with changes to diet and exercise, oral glucose-lowering drugs, insulin injections, or a combination of these (AIHW 2008b).

CVD and Type 2 diabetes (and its complications) share many risk factors, including obesity (especially abdominal), physical inactivity, an unhealthy diet, impaired glucose regulation, high blood pressure, high blood cholesterol, tobacco smoking, and possibly depression (AIHW 2008b). Diabetes is known to magnify the effect of some cardiovascular risk factors, such as cholesterol, obesity, blood pressure and smoking (AIHW 2004).

Long-term complications of diabetes include: disease of large blood vessels (macrovascular disease) that leads to conditions such as CHD, stroke and peripheral vascular disease; and disease of small blood vessels (microvascular disease) that can cause, among other things, chronic kidney disease—another risk factor for CVD (AIHW 2008a).

Further reading: more information on diabetes can be found in the report *Diabetes: Australian facts 2008* (AIHW 2008b).

How can we find out how many Australian women have Type 2 diabetes?

Determining the prevalence of diabetes in the population is difficult (AIHW 2004). This is due to several reasons including: the potential of diabetes to be symptom-free (and therefore undiagnosed), possibly for years; and a variety of definitions and terms used to refer to diabetes types that has changed over time, meaning that people may not be sure about which type of diabetes they have. There are two main sources of national diabetes prevalence data in Australia: the 1999–2000 AusDiab study (measured data) and the ABS 2004–05 NHS (self-reported data) (AIHW 2008b).

Measured data should provide more accurate estimates of the prevalence of diabetes than self-reported survey data, because they can detect and include previously undiagnosed cases of diabetes, whereas, the accuracy of self-reported data relies on respondents being aware of (that is, they have been diagnosed) and also accurately reporting their health status (AIHW 2008b). Therefore, self-reported data cannot include previously undiagnosed cases of diabetes, and thus likely underestimate the true rate.

Undiagnosed diabetes is a problem, because if people are not aware that they have the disease they cannot appropriately manage or treat it, and thereby minimise their risk of complications. Recent national data on the ratio of diagnosed to undiagnosed diabetes are urgently needed; see AIHW 2008b for further details.

How many Australian women have Type 2 diabetes?

Based on self-reported data from the ABS 2004–05 NHS (Figure 7.6; Table A7.6):

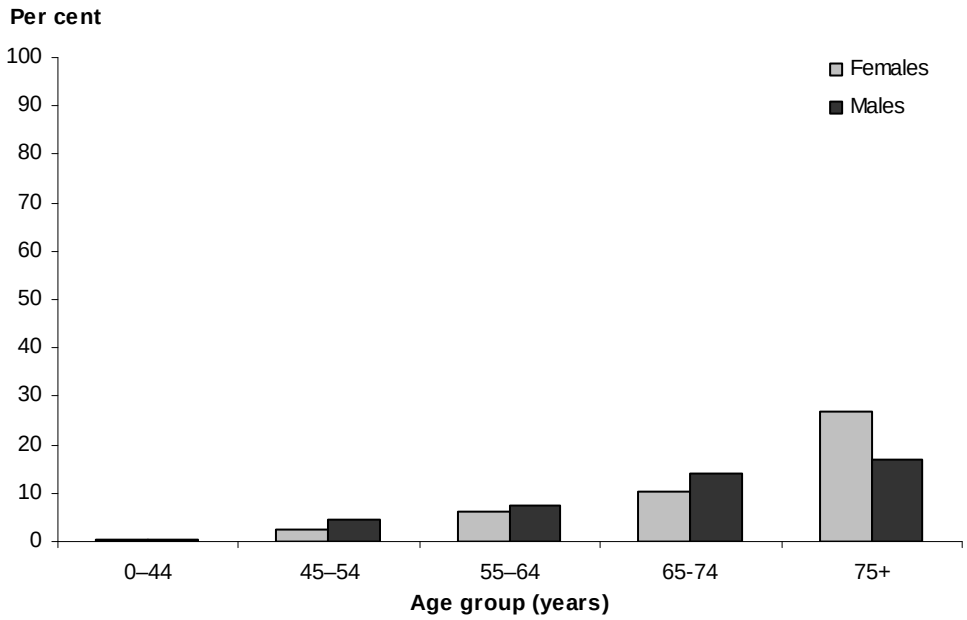
- overall, 2% of females and 3% of males have Type 2 diabetes
- the proportion of females reporting Type 2 diabetes increases with age, with the highest prevalence reported at 27% among females aged 75 years and over, up from 2% among those aged 45–54 years
- Type 2 diabetes, a disease previously reported as a disease among older people, is becomingly increasingly common among younger people; it was reported by 26,000 females (less than 1%) and 30,600 males (less than 1%) aged less than 45 years.

As discussed earlier, self-reported data are likely to underestimate the true rate of Type 2 diabetes. Based on measured data from the 1999–2000 AusDiab study (of people aged

25 years and over), it is estimated that 7% of females and 8% of males have Type 2 diabetes (AIHW 2008b).

Although not strictly comparable (due to differing factors such as time period, age groups, and diagnostic tests), the measured data provide estimates that are 2 to 3 times as high as the self-reported estimate.

These differing results provide evidence of the urgent need for recent measured national data on diabetes prevalence to better monitor the diabetes and cardiovascular risk of Australians.



Note: Refer to Appendix Table A7.6.

Source: AIHW analysis of 2004–05 National Health Survey.

Figure 7.6: Prevalence of Type 2 diabetes, by age and sex, 2004–05

The burden of diabetes

Diabetes accounted for 5% of the burden of disease and injury for females in 2003, ranking fourth after anxiety and depression, CHD and stroke; for males it was the second highest (5%) behind CHD (Begg et al. 2007). Also, see Chapter 10 and Figure 10.12 for information about the burden of diabetes by age.

Physical activity/inactivity

Key points

- Physical inactivity is a risk factor for poor health, while physical activity is a protective factor for good health.
- Regular physical activity reduces cardiovascular risk in its own right, and reduces cardiovascular risk factors through positive effects on body weight, blood pressure, cholesterol, Type 2 diabetes, and depression.
- About three-quarters (76%) of females did not do enough exercise for health benefit (36% sedentary and 40% low) in 2007–08.
- Both sedentary and low levels of physical activity were more common among females than males across all age groups, with the exception of sedentary levels among those aged 45–54 years.
- The overall level of insufficient activity remained fairly stable at 74–78% across females aged 18–74 years; although the prevalence of low levels of physical activity generally decreased with increasing age, this coincided with a general rise in sedentary levels with increasing age.
- This important risk factor for CVD is present among almost three-quarters (74%) of Australia's young females aged 18–24 years; almost one-third (31%) of this group were sedentary.
- For risk factors, physical inactivity was the third largest contributor, accounting for 7% of the burden of disease and injury among females in 2003, ahead of tobacco and high body mass. For CVD burden specifically, it was the third largest contributor (24%).

Physical inactivity is a risk factor for poor health, while physical activity is a protective factor for good health.

Physical inactivity is associated with an increased risk of ill health and death, particularly relating to CVD. Put another way, regular physical activity reduces cardiovascular risk in its own right, and reduces cardiovascular risk factors through positive effects on other risk factors in this chapter, including body weight, blood pressure, cholesterol, Type 2 diabetes, and depression (AIHW 2008a).

As mentioned in the 'Overweight and obesity' section above, physical activity is a critical factor in determining a person's body weight. If the energy going into the body (via food and drink) is not balanced by energy expenditure (via activity and internal bodily functions), and the situation is sustained, the excess food energy is stored as body fat (AIHW 2008a).

Further reading: a discussion on factors that impact on the physical activity habits of Australians can be found in *Australia's health 2008* (AIHW 2008a).

What is physical activity?

Put simply, physical activity is any bodily movement produced by the muscles that results in energy expenditure. Although most measures of physical activity focus on deliberate activity

in leisure time (often referred to as exercise or sport), other forms of non-leisure time activity—such as walking/cycling for transport, and activity associated with a person's job—are important components of overall activity (AIHW 2008a). Indeed, even the activity associated with everyday tasks like shopping and housework—incidental activity—all contribute to overall physical activity and its associated health benefits.

What is sufficient physical activity?

The *National physical activity guidelines for Australians* (DHAC 1999) recommend at least 30 minutes of moderate-intensity physical activity on most, preferably all, days of the week. This is generally interpreted as 30 minutes on at least 5 days of the week—a total of 150 minutes (2.5 hours) of moderate-intensity activity per week. These guidelines correspond to the notion of 'sufficient' activity—the amount needed to obtain health benefits.

Examples of moderate-intensity activity are brisk walking, swimming, doubles tennis and medium-paced cycling. More vigorous physical activity includes jogging and active sports like football and basketball.

For population-monitoring purposes, there are two ways of calculating sufficient activity:

- 'sufficient time'—at least 150 minutes per week of moderate-intensity physical activity, with each minute of vigorous activity counted as 2 minutes of moderate activity
- 'sufficient time and sessions'—at least 150 minutes of moderate-intensity physical activity accrued over at least five sessions per week, with vigorous activity counted double.

Sufficient time and sessions is the preferred measure of sufficient activity for health, as it takes into account the frequency of physical activity as well as duration. Research suggests that even shorter sessions (down to 10 minutes) can be beneficial as well, provided they add up to the required total over the week.

How can we find out how many Australian women are sufficiently active?

Various methods are available to measure physical activity, so results from different surveys can provide different estimates of the proportion of people who are sufficiently active for health. Depending on the data collection instrument, the data may or may not allow for assessment of physical activity in relation to the national guidelines' sufficient time and sessions measure. Also, non-leisure time physical activity is difficult to measure, and the methods used to measure it are not generally practical for use in population surveys. Finally, the data are usually self-reported, which means that the accuracy of the data rely on the respondent's memory and accuracy of reporting, so may not be a true estimate of their actual physical activity levels.

The most recent physical activity data available for Australia are from the ABS 2007–08 NHS. It is important to note 'that results from this survey relate only to exercise for fitness, recreation or sport, so are not necessarily indicative of total physical activity; for example, they could exclude physical activity at work (ABS 2009). Unfortunately, results from the NHS cannot be assessed directly against the *National physical activity guidelines* (ABS 2009). The NHS categorises exercise into four levels—high, medium, low and sedentary (see the Appendix - Methods for further details). Thus, for the results that follow, insufficient activity refers to the NHS categories of low plus sedentary (which includes no exercise).

How many Australian women are not sufficiently active?

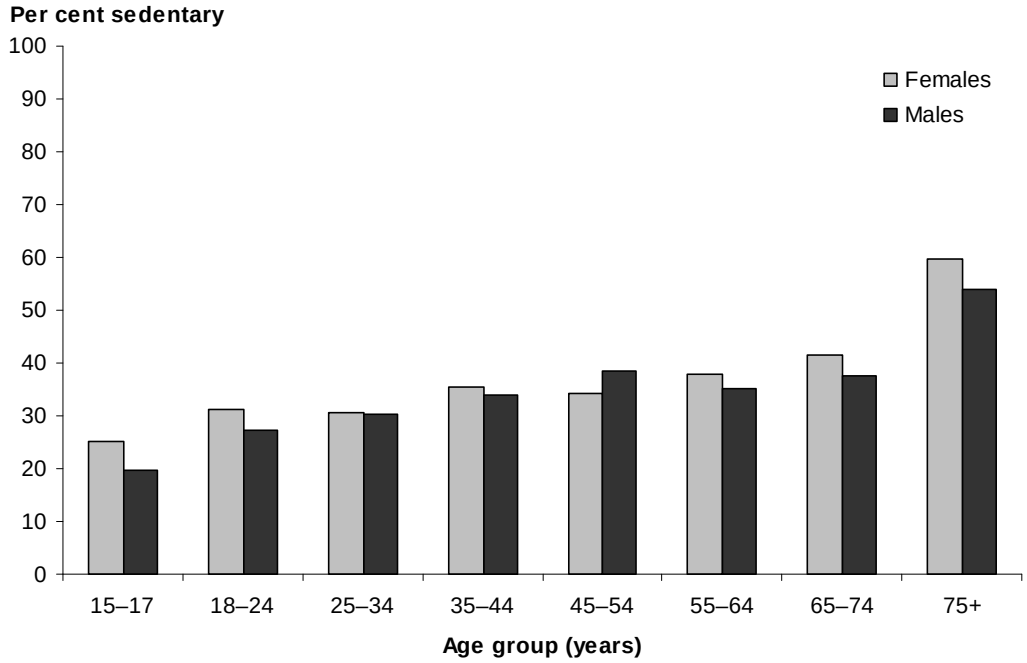
Based on data from the ABS 2007–08 NHS it is estimated that about three-quarters (76%) of females did not do enough exercise (36% sedentary and 40% low); overall females were more likely than males (68%) to be insufficiently active (34% each for sedentary and low) (Table A7.7).

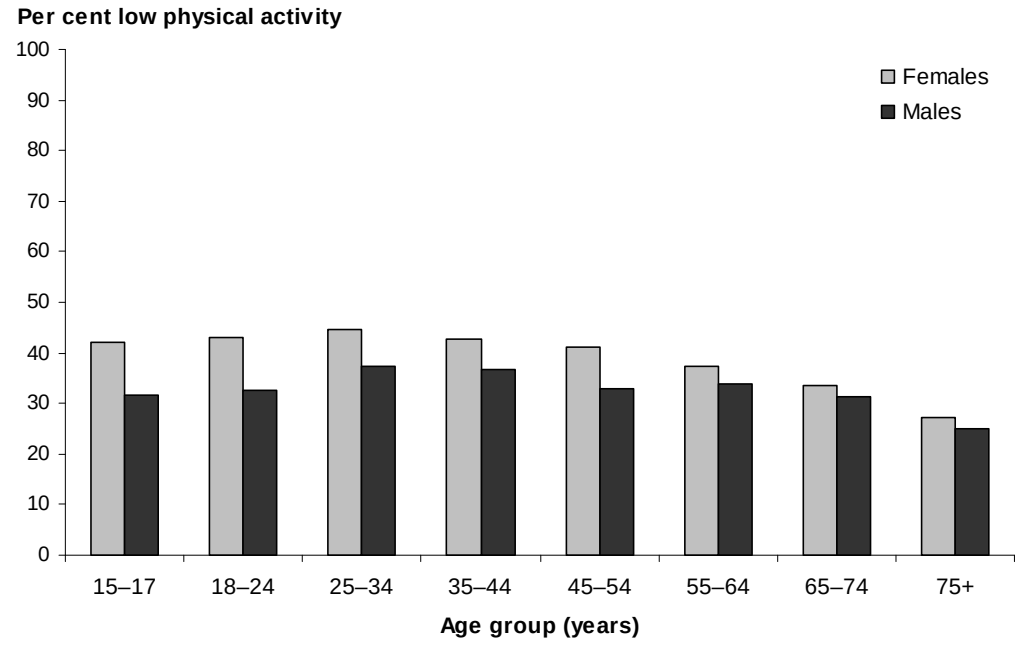
- Both sedentary and low levels of physical activity were more common among females than males across all age groups, with the exception of sedentary levels among those aged 45–54 years (Figure 7.7; Table A7.7).
- The overall level of insufficient activity (sedentary plus low) remained fairly stable at 74–78% for females aged 18–74 years (the comparable figure for males was 60–72%) (Table A7.7); although the prevalence of low levels of physical activity generally decreased with increasing age, this coincided with a general rise in sedentary levels with increasing age (Figure 7.7).
- This important risk factor for CVD is present among almost three-quarters (74%) of Australia's young females aged 18–24 years; almost one-third (31%) of this group were sedentary (60% and 27%, respectively, for males) (Table A7.7).
- Insufficient activity levels (sedentary plus low) were most common among females (87%) and males (79%) aged 75 years and over (Table A7.7).

The burden of physical inactivity

For risk factors, about 7% of the burden of disease and injury in Australia in 2003 was attributed to physical inactivity, placing it fourth out of the 14 risk factors studied by Begg et al. (2007). Physical inactivity accounted for 24% of the burden of CVD ranking third behind high blood pressure and high blood cholesterol, and above high body mass and tobacco; in fact, it was more than double that of tobacco at 10% (Begg et al. 2007).

Of the 14 risk factors studied by Begg et al. (2007), physical inactivity was the third largest contributor to the burden of disease among females, accounting for 7% of the burden among females, and 6% among males (in fifth place).





Notes

1. Low physical activity levels are defined as an exercise score of 100 to less than 1,600 over a 2-week period. Sedentary physical activity levels are defined as an exercise score of less than 100 over a 2-week period (includes no exercise) – see the Appendix for further details.
2. Refer to Appendix Table A7.7.

Source: ABS 2007–08 National Health Survey (ABS 2009).

Figure 7.7: Prevalence of adult physical inactivity (low and sedentary physical activity levels), 2007–08

Diet (low fruit and vegetable consumption)

Key points

- Low fruit and vegetable consumption is a risk factor for CVD; put another way, a diet rich in vegetables and fruit is beneficial to cardiovascular health.
- The vast majority of Australian females (93%) do not eat the recommended serves of fruit and/or vegetables.
- 89% of females did not eat enough vegetables, and 44% did not eat enough fruit in 2007–08.
- Females are slightly less likely than males to have low consumption of fruits and vegetables.
- Low fruit and vegetable consumption accounted for 2%of the burden of disease among women in 2003. For CVD burden specifically, it was the sixth largest contributor (10%).
- There is an urgent need for recent national data on food and nutrient intake, including fruit and vegetable consumption, to assess and monitor diet in relation to CVD but also many other diseases.

There is a large body of evidence that the consumption of vegetables, fruits and legumes is associated with a reduced risk of cardiovascular diseases and cardiovascular-related death (including CHD, stroke and high blood pressure), as well as other diseases such as diabetes and some cancers (DAFF 2008; NHMRC 2003b).

The actual beneficial substances in fruits and vegetables and the mechanisms by which they exert their protective effects against CVD are not yet fully understood. Substances being investigated include: antioxidant phytochemicals, antioxidant and other vitamins (for example, vitamins E and C and folate), minerals (such as potassium and magnesium) and fibre. Possible mechanisms include their effects on cholesterol levels, cholesterol oxidation (part of atherosclerotic plaque development), and blood pressure (DAFF 2008; NHMRC 2003b).

Importantly, it is not necessary to know the exact substances and mechanisms for Australians to benefit, as there is enough good evidence that increased fruit and vegetable consumption is protective against CVD. This evidence provided part of the justification for the NHMRC's dietary guideline on fruit and vegetable consumption: "eat plenty of vegetables, legumes and fruit" (see Box 7.1).

The fruit and vegetables guideline is related to at least two other guidelines that are particularly important for cardiovascular risk: limit saturated fat and moderate total fat intake; and choose foods low in salt. Fruits, vegetable and legumes are low in saturated fat and low in salt (NHMRC 2003b). Furthermore, increased fruit and vegetable consumption may also displace less beneficial foods from daily food intake, and help maintain a healthy body weight.

Box 7.1: Dietary guidelines for Australian adults

Enjoy a wide variety of nutritious foods

- Eat plenty of vegetables, legumes and fruits
- Eat plenty of cereals (including breads, rice, pasta and noodles), preferably wholegrain
- Include lean meat, fish, poultry and/or alternatives
- Include milks, yoghurts, cheeses and/or alternatives. Reduced fat varieties should be chosen, where possible
- Drink plenty of water.

And take care to

- Limit saturated fat and moderate total fat intake
- Choose foods low in salt
- Limit your alcohol intake if you choose to drink
- Consume only moderate amounts of sugars and food containing added sugars.

Prevent weight gain: be physically active and eat according to your energy needs

Care for your food: prepare and store it safely

Encourage and support breastfeeding

Source: NHMRC 2003b.

What is low fruit and vegetable consumption?

The NHMRC's *Dietary guidelines for Australian adults* recommend that adults consume two to four serves of fruit and four to eight serves of vegetables, on average, per day (NHMRC 2003b). The range relates to the amount of cereals consumed; if opting for fewer serves of cereals, then this is compensated by more serves from the other groups including fruits, vegetables and legumes. The guidelines recommend that, depending on body size and activity levels, adults aim for, on average, two serves of fruit and five serves of vegetables/legumes per day. For monitoring purposes, inadequate or low consumption refers to adults consuming less than two serves of fruit or less than five serves of vegetables. See Box 7.2 for examples of serves.

Box 7.2 What is a serve of fruit or vegetable?

By convention, a serve of fruit is 150 grams (raw weight), and a serve of vegetables is 75 grams (cooked weight). The list below shows some examples of how much makes up a serve of some common fruit and vegetables.

Fruit	Vegetables
1 medium apple, or orange, or banana, etc.	1 medium potato, ½ medium sweet potato
2 apricots or plums or kiwis, etc.	1 cup of salad vegetables
About 8 strawberries	½ cup tomato, capsicum, cucumber, etc.
1 cup of canned fruit	½ cup carrot, swede, turnip, etc.
About 20 grapes or cherries	½ cup peas, beans, lentils, etc.
About 4 dried apricots	½ cup spinach, cabbage, broccoli, etc.
1 ½ tablespoons of sultanas	
½ cup of fruit juice (although fruit juice does not have all the benefits of eating a piece of fruit)	

Source: Adapted from DoHA & NHMRC 2003.

How can we find out how many Australian women are not eating enough fruit and vegetables?

There have been few national nutrition-related data collected in recent years in Australia; detailed information about food and nutrient intakes were last collected in 1995 (AIHW 2008a). However, the regular NHS done by the ABS collects limited information on nutrition-related behaviours, including fruit and vegetable consumption. There is an urgent need for recent national data on food and nutrient intake, including fruit and vegetable consumption, to assess and monitor diet in relation to CVD but also many other diseases.

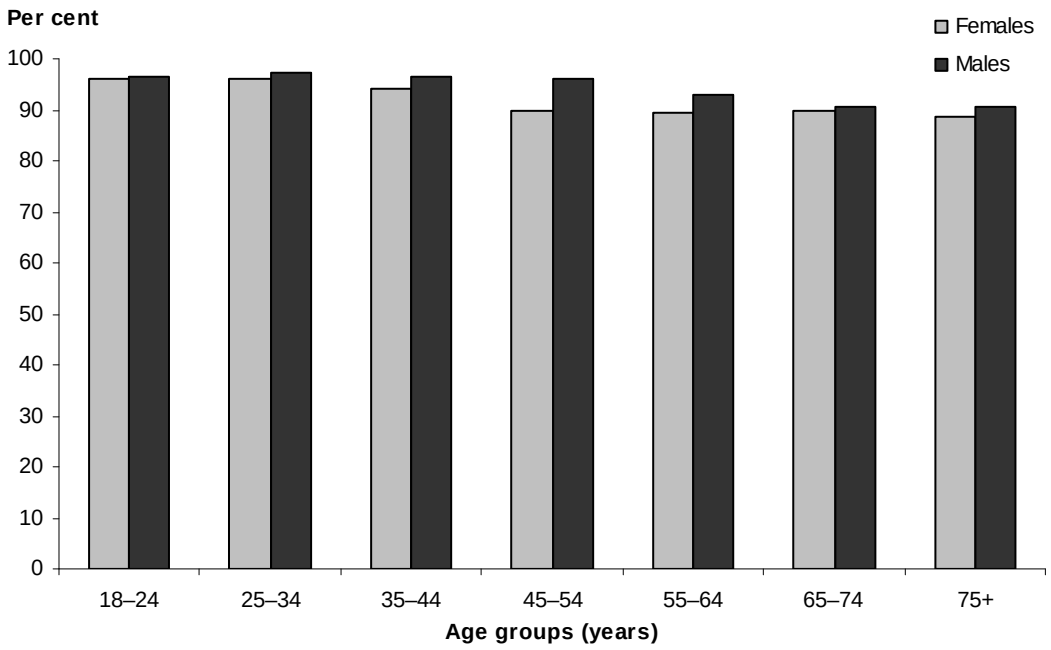
How many Australian women do not eat enough fruit and vegetables?

Based on self-reported data from the ABS 2007–08 NHS, the vast majority of Australian females (93%) and males (95%) are consuming an inadequate intake of fruit and/or vegetables (Figure 7.8; Table A7.8).

- Females consumed slightly higher levels of fruit and vegetables than males; that is, they were slightly less likely to have an inadequate intake, across all age groups (Figure 7.8; Table A7.8).
- The highest proportion of females (10–11%) and males (9%) having the recommended number of serves of fruit and vegetables per day was recorded in the 65–74 year and older age groups (ABS 2009). Even so, that left about 90% of that age group consuming inadequate serves of fruit and vegetables.
- 89% of females aged 15 years and over did not consume enough vegetables (fewer than five or more serves), compared with 93% for males (ABS 2009).

- 44% of females aged 15 years and over did not consume enough fruit (fewer than two or more serves), compared with 54% for males (ABS 2009).

Some care should be taken when interpreting 2007–08 NHS data on fruit and vegetable intake due to the difficulties respondents had in estimating the quantities consumed (ABS 2009).



Notes

1. Usual daily intake of fruit and vegetables, compared with National Health and Medical Research Council (NHMRC) recommendations of a minimum of two serves of fruit and five serves of vegetables per day for adults.
2. Refer to Appendix Table A7.8.

Source: ABS 2007–08 National Health Survey (ABS 2009).

Figure 7.8: Proportion of adults with inadequate fruit and vegetable intake, 2007–08

The burden of not eating enough fruit and vegetables

In 2003, low fruit and vegetable consumption accounted for 2% of the disease and injury burden among females and 3% among males, placing it, overall, seventh out of 14 risk factors studied by Begg et al. (2007). It was the sixth largest contributor to the burden of CVD, accounting for 10%, almost on par with tobacco (Begg et al. 2007).

Tobacco smoking

Key points

- Smoking, the single most preventable cause of ill health and death in Australia, is a major risk factor for developing cardiovascular diseases such as CHD, stroke, peripheral vascular disease, and kidney disease. The level of risk increases with the level of consumption.
- Passive smoking increases risk of CHD.
- Overall, 1 in 7 women smoke daily (15%), but it is more common among women aged 20–49 years, at about one in every five women.
- Daily smoking is most common among women aged 40–49 years (21%).
- The proportion of young female smokers has increased in recent decades, and they are more likely to be daily smokers than their male counterparts. Smoking in young women is associated with increased rates of CVD later in life.
- After 1 year of smoking cessation, the risk of CHD is halved compared with those who continue to smoke. After 2–6 years of smoking cessation, the risk of CHD is the same as for a non-smoker.
- Smoking was the fourth largest contributor to the burden of disease among females (on par with high blood cholesterol), being responsible for 6% of the total burden of disease in Australia in 2003. For CVD burden specifically, it accounted for 10%.

Tobacco smoking is the single most preventable cause of ill health and death in Australia, contributing to more hospitalisations and deaths than alcohol and drug use combined (AIHW 2008a). It is a major risk factor for developing cardiovascular diseases such as CHD, stroke, peripheral vascular disease, and kidney disease, as well as a range of cancers and other diseases and conditions (ACDS 2004; AIHW 2005; AIHW 2008a; Eliasson 2003).

What is tobacco smoking?

Tobacco smoking includes the smoking of tobacco products such as packet cigarettes, roll-your-own cigarettes, pipes and cigars (Foy et al. 2005). People who smoke inhale a complex mixture of more than 4,000 chemicals, in the form of gases, liquid vapours and solid particles (including metals). These chemicals come from the burning tobacco, burning cigarette paper, agricultural chemicals on the tobacco leaves, and chemicals added during the cigarette making process (US DHHS 1989; IARC 1985). Once inhaled into the lungs, these chemicals pass through the lungs' walls into the blood stream, and are pumped around the body. Nicotine, tar, and carbon monoxide contribute the most to smoking related diseases (US DHHS 1981; US DHHS 1996). Nicotine is the toxic addictive substance in cigarettes (Foy et al. 2005). The nicotine inhaled from tobacco smoke damages the heart and blood vessels, causing atherosclerosis (AIHW: O'Brien 2005). The blood is less able to carry oxygen, straining the heart and increasing blood pressure. Tar and carbon monoxide can form blood clots in the blood stream (AIHW 2008d).

Passive smoking is the breathing in of second-hand tobacco smoke, consisting of smoke directly from the burning tobacco and exhaled smoke from the smoker. Passive smoking is associated with health problems such as asthma in children, lower respiratory tract infections, lung cancer, and CHD (NHMRC 1997).

Smoking cessation is associated with substantially improved cardiovascular function and reduced risk of cardiovascular morbidity and mortality (Gratziou 2009). The risk of a coronary event in ex-smokers declines rapidly after quitting. After 1 year of smoking cessation, the risk of CHD is halved compared with those who continue to smoke (DoHA 2004), and within 2–6 years the risk is similar as for non-smokers (Dobson et al.1991; McElduff 1998).

There is debate about whether smoking reduction among those who cannot completely quit can also reduce risk of CVD (Critchley & Capewell 2007). Yusuf et al. (2005) found that smoking even a few cigarettes a day increases the risk of myocardial infarction, which suggests that there is no safe level of smoking. But Bhat et al. (2008) found that if quitting is not possible, the risk of myocardial infarction associated with smoking could be significantly reduced by cutting down the numbers smoked.

A population of recent concern are 'casual smokers'. People who smoke occasionally make up a large proportion of smokers in Australia. Health promotion interventions should focus on preventing this population from becoming daily smokers and help them quit (McDermott et al.2007).

Although this report does not cover trends, it is important to note that the prevalence of smoking in young females is increasing. Female teenagers (9%) were more likely than male teenagers (6%) to be daily smokers, which is an increase from previous years (AIHW 2008e).

Most adult smokers begin smoking during adolescence. Those who begin smoking early are more likely to continue (Tyas & Pederson 1998); thus, tobacco use among young people is a key predictor of adult smoking. Lifestyle and life stage factors are significant determinants of young women's smoking behaviour (McDermott et al. 2009). These young women face serious cardiovascular problems later in life, including an increased risk of myocardial infarction and stroke (Bhat et al. 2008). Heavy smoking combined with other risk factors, such as hypertension or Type 2 diabetes, further increase the risk of myocardial infarction (Dunn et al. 1999).

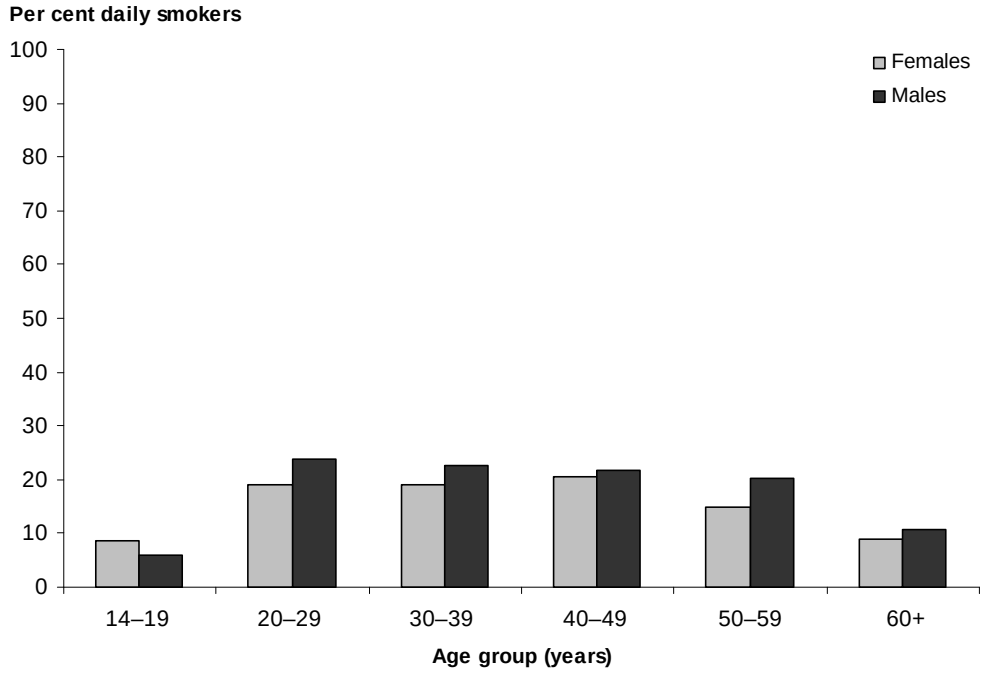
How can we find out how many Australian women smoke tobacco?

Information about smoking can be collected by asking people to report how much and how often they smoke tobacco (self-reported data). This information is then collated and analysed, with daily smokers being the key point of interest in this report. It would be very difficult to collect measured data on smoking. It is important to note that self-reported survey data rely on the respondent's knowledge of their health status and honesty for their degree of accuracy. Some under-reporting of tobacco consumption is expected. The National Drug Strategy Household Survey data presented here are based on respondent self-report, and are therefore not verified by direct measurement (AIHW 2008e).

How many Australian women smoke tobacco?

Based on data from the 2007 National Drug Strategy Household Survey, it is estimated that one in seven Australian females aged 14 years and over smoked daily (15% or 1.3 million) (Table A 7.9).

- Overall, females were less likely to be daily smokers (15%) than males (18%) (Table A7.9).
- For females, the highest proportion of daily smoking was in those aged 40–49 years (21%), which was only slightly higher than for those aged 20–29 years (19%) (Figure 7.9). The 20–29 years age group had the highest proportion of male smokers (24%).
- Among younger Australians, 9% of females and 6% of males aged 14–19 years smoked daily. This was the only age group where females were more likely to be daily smokers than males (Figure 7.9).



Notes

1. Daily smokers only (persons smoking on a daily basis).
2. Refer to Appendix Table A7.9.

Source: AIHW analysis of the 2007 National Drug Strategy Household Survey.

Figure 7.9: Prevalence of daily smokers, by age and sex, 2007

The burden of tobacco smoking

Overall, smoking was responsible for 8% of the total burden of disease and injury in 2003. Of the 14 risk factors studied, it was the fourth largest contributor to the burden of disease among females (on par with high blood cholesterol), accounting for 6%, less than for males, at 10%. Tobacco smoking is a major burden on the cardiovascular health of Australians, it

was the fifth largest contributor to the burden of CVD, accounting for 10% of the total burden of CVD in 2003 (Begg et al. 2007).

Tobacco smoking and the contraceptive pill

The contraceptive pill is the most widely used form of contraception (Farley 1998). The pill has been associated with an increased risk of some heart diseases, even more so when combined with smoking (Barton et al. 2002; BMA 2004; Castelli 1999). The combined effect of smoking and taking the contraceptive pill increases risk of CHD, heart attack and stroke, and this effect increases with age (BMA 2004; Castelli 1999; Farley 1998; Schiff et al.1999; Tanis et al. 2001). The reason for the increased cardiovascular risk is the lipid and lipoprotein response to cigarette smoking and oral contraceptive use (Webber et al. 1982). Guidelines recommend that women at high risk of CVD, especially those who smoke, consider alternative forms of contraception (JACC 2009).

Alcohol consumption

Key points

- The effect of alcohol on the cardiovascular system is complex; depending on the level of consumption, it may have protective or detrimental effects. The lifetime risk from drinking alcohol increases with the amount consumed.
- Overall, in 2007, seven out of every 10 females were estimated to drink at levels considered low risk for long-term health, while one in every 10 drank at levels considered to be harmful ('risky' and 'high risk') to their long-term health.
- Females are more likely than males to drink at 'risky' levels and to be abstainers, and they are less likely than males to be low-risk and high-risk drinkers.
- Both risky and high-risk drinkers were most common among females aged 20–29 years and least common among those aged 60 years and over.
- The net effect of alcohol consumption accounted for 1% of the burden of disease among females, the balance of alcohol's beneficial effects (–1%) and harmful effects (2%). For CVD burden specifically, the balance was preventing 5% of the burden (-6% for beneficial effects and 1% for harmful effects).

Alcohol is absorbed into the blood via the stomach and small intestine. Most alcohol is broken down by the liver. Alcohol affects almost all systems of the body. The effect on the cardiovascular system includes raised blood pressure and triglycerides (especially after binge drinking), damage to the heart muscle and stroke (State of Victoria 2009).

The effect of alcohol on the cardiovascular system is complex. Its impact varies with levels of consumption. Low to moderate consumption of alcohol is protective, whereas high consumption is associated with higher risk of CVD (AIHW 2004).

The benefit of low-risk alcohol consumption in preventing heart disease has been well documented. Low levels of alcohol raise high-density lipoprotein cholesterol (which is protective against cardiovascular disease), and reduce plaque accumulation in arteries.

Alcohol can also have a mild anti-coagulating effect (NHMRC 2009). Long-term low to moderate alcohol consumption is thought to reduce risk of stroke, CHD, and hypoglycaemia (low blood glucose levels) mostly in older females (AIHW 2008a; AIHW 2008b; Mann et al. 2004; WHO 2003).

It is important to remember that even though moderate intake of alcohol may have beneficial effects at middle and older ages, when taken in excess alcohol is harmful at all ages (Begg et al. 2007).

Long-term excessive drinking is associated with cardiovascular diseases such as stroke, inflammatory heart disease, hypertension, heart failure and congenital heart disease (Begg et al. 2007; English et al. 1995; Mann et al. 2004).

Short-term excessive consumption of alcohol, particularly binge drinking, is associated with higher blood pressure and increased risk of death from stroke. Alcohol can also have an impact on blood triglyceride levels, complicating the effects of high blood cholesterol where present (AIHW 2004).

Drinking alcohol can raise blood pressure and increase the risk of arrhythmias, shortness of breath, some types of heart failure, haemorrhagic stroke and other circulatory problems (NHMRC 2009).

Alcohol is a source of energy. The contribution of alcohol intake should be considered for its potential effect on weight gain, and therefore CVD (AIHW 2004). One gram of alcohol contains 29 kilojoules, almost as much energy as fat, at 37 kilojoules.

What is risky and high-risk alcohol consumption?

In this report, alcohol consumption is presented against the NHMRC alcohol guidelines (NHMRC 2001) (see Table 7.3). These guidelines describe three risk categories for alcohol-related harm (injury, ill health and death) in the long term. For adult females, the consumption of up to 14 standard drinks per week is considered 'low risk', 15–28 per week 'risky', and 29 or more per week 'high risk'. For males, the consumption of up to 28 standard drinks per week is considered 'low risk', 29–42 per week 'risky', and 43 or more per week 'high risk' (NHMRC 2001).

In 2009, the NHMRC released revised guidelines, with the simplified overall recommendation that for healthy women and men, drinking no more than two standard drinks on any day reduces the lifetime risk of harm from alcohol-related disease or injury (NHMRC 2009). But this report uses the 2001 guidelines because they relate to how the 2007 National Drug Strategy Household Survey data, presented below, were collected and reported.

Table 7.3: NHMRC Australian alcohol guidelines 2001

	Adult females	Adult males
Risk level	**Standard drinks per week**	
Low risk	Up to 14	Up to 28
Risky	15–28	29–42
High risk	29 or more	43 or more

Source: Australian Alcohol Guidelines (NHMRC 2001).

How can we know how many Australian women drink excessively?

Information about alcohol consumption can be collected by asking people to report how much and how often they consume alcohol (self-reported data). This information is then compared to the NHMRC guidelines. It would be very difficult to collect measured data for alcohol consumption.

It is important to note that self-reported survey data rely on the respondent's knowledge of their health status and honesty for their degree of accuracy. Some under-reporting of alcohol consumption is expected. There are also many different ways to phrase survey questions relating to alcohol consumption, and the wording may have an impact on the results. The National Drug Strategy Household Survey data presented here are based on respondent self-report, and are therefore not verified by direct measurement (AIHW 2008e).

How many Australian women are drinking at risky or high-risk levels?

Based on self-reported information from the 2007 National Drug Strategy Household Survey (Figure 7.10; Table A7.10), one in every 10 Australians consumed alcohol at levels considered harmful (risky or high risk) for their long-term health:

Low risk

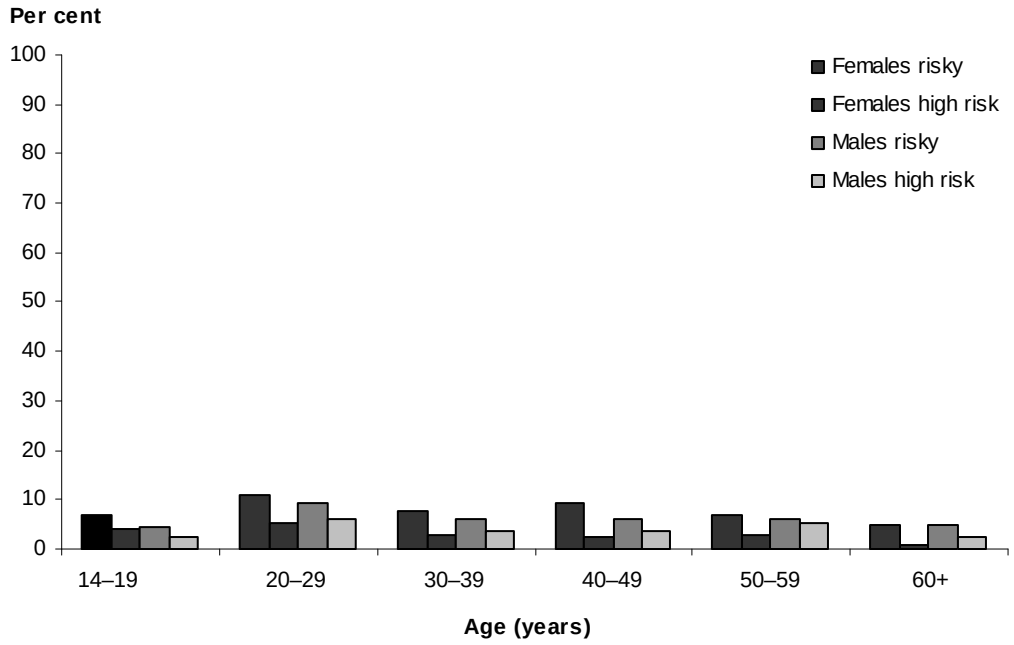
- The majority (69%) of females aged 14 years and over consumed alcohol in moderation; that is, at levels considered 'low risk' to their health in the long term. The corresponding figure for males was 76%. Interestingly, while females were less likely than males to drink at low-risk levels, they were more likely to be 'abstainers' (20% and 14% respectively).

Risky

- Overall, 8% of females and 6% of males drank alcohol at risky levels.
- More females than males drank at risky levels in all age groups, except in the 60 years and over age group.
- The 20–29 years age group had the highest proportion of risky drinkers for both sexes—11% of females and 9% of males.
- The lowest levels of risky alcohol consumption for females were reported in the 60 years and over age group (5%); for males, it was the 14–19 years age group (4%).

High risk

- Overall, 3% of females and 4% of males drank at high-risk levels.
- In all age groups, females were less likely than males to drink at high-risk levels.
- Again, the 20–29 years age group had the highest proportion of high-risk drinkers for both sexes—5% of females and 6% of males.
- The lowest proportion of high-risk drinkers for both sexes was in the 60 years and over age group—1% of females and 3% males.



Notes

1. For males, the consumption of 29–42 drinks per week is considered 'Risky', and 43 or more per week 'High risk'. For females, the consumption of 15–28 drinks per week is considered 'Risky', and 29 or more per week 'High risk'. Long-term risk drinking only. Long-term risk of harm is associated with regular daily patterns of drinking. The model used is that outlined in the 2001 Australian alcohol guidelines (NHMRC 2001).
2. Refer to Appendix Table A7.10.

Source: AIHW analysis of the 2007 National Drug Strategy Household Survey.

Figure 7.10: Prevalence of excess alcohol consumption, by age and sex, 2007

The burden of risky and high-risk alcohol consumption

Alcohol has both hazardous and protective effects on health, and the age and sex distribution of these effects varies in important ways. In Australia, it has been estimated that the net effect from alcohol caused 1% of the burden of disease and injury for females and 4% for males. This is the balance of alcohol's harmful and beneficial effects on the burden of disease (2% and –1%, respectively, for females, and 5% and –1%, respectively, for males). The benefits of alcohol consumption outweigh its harmful effects only in females over the age of 65 years (Begg et al. 2007).

In relation to the burden of CVD, the net effects of alcohol were responsible for preventing 5% of the burden, a balance of alcohol's beneficial effects (–6%) and harmful effects (1%) (Begg et al. 2007).

Depression and social support

Key points

- Depression, social isolation and lack of quality social support are independent risk factors for the onset and prognosis of some cardiovascular diseases, particularly the two leading causes of death of Australian women, CHD and stroke.
- For depression, the risk is directly related to the severity of the depression.
- Depression and social support also tend to coexist with, or increase the risk of, other cardiovascular risk factors such as physical inactivity and smoking, and are a major barrier to the adoption of healthy lifestyle behaviours.
- Women were more likely to have had an episode of depression during their lifetime (lifetime depressive episode) than men (15% compared with 9%), and a higher prevalence of symptoms of that disorder in the previous 12 months (5% and 3% respectively).
- The prevalence of lifetime depressive episodes was higher among women aged 18–64 years (16%) than among those aged 65–85 years (9%).
- Anxiety and depression were the leading cause of the burden of disease and injury among women (10%) in 2003, ahead of CHD, stroke, Type 2 diabetes and dementia.
- 5% of women had no family they could rely on, and 7% of women had no family they could confide in, while 2% had contact with family less than once a month.
- Women were more likely than men to have no family they could confide in for all age groups except the 18–24 age group.
- About 2% of women had no friends or no contact with friends; and a much higher proportion had no friends they could rely on (8%) or confide in (9%).
- In addition, 4% of women had contact with friends less than once a month.

Depression, social isolation and lack of quality social support are risk factors for the onset and prognosis of some cardiovascular diseases, particularly the two leading causes of death of Australian women, CHD and stroke (Bunker et al. 2003; Clarke & Currie 2009; Jonas & Mussolino 2000; Yusuf et al. 2004).

Depression

Depression is a mental illness that affects a large proportion of Australians. It is a mood disorder that presents with depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy, and poor concentration. These problems can become chronic or recurrent and lead to substantial impairments in an individual's ability to take care of their everyday responsibilities. At its worst, depression can lead to suicide (WHO 2009). Depression, also referred to as an affective disorder, is the most commonly diagnosed mental illness (AIHW 2008a).

Depression is a risk factor for cardiovascular diseases, such as CHD and stroke, as well as for cardiovascular risk factors such as Type 2 diabetes. Depression also impacts on other risk

factors for CVD in that: they often co-exist—for example, people with depression are more likely to smoke and be physically inactive (Bunker et al. 2003); and depression is a major barrier to healthy lifestyle behaviours (Hayes 2006). Coexisting depression is also a risk factor for greater disease severity due to people not following treatment and greater likelihood of complications (Clarke & Currie 2009).

The risk from depression is directly related to the severity of depression; and the risk is independent of effects such as smoking or poor diet. The strength of association is similar to that of standard risk factors such as smoking or high blood cholesterol (Bunker et al. 2003).

The relationship between depression, social support and physical illness is complex. Physical illness (such as CVD) is one of the strongest risk factors for depression, while depression is a risk factor for physical illness (including heart disease and stroke) and early death (Clarke & Currie 2009).

Australian and international recommendations state that people with CHD should be assessed/screened for depression and treated where necessary, and that patients with depression should be assessed for CHD risk factors (Bunker et al. 2003; Mosca et al. 2007).

How can we find out how many Australian women have depression?

Measuring the prevalence of mental health through household surveys is a complex task, as mental disorders are usually determined through detailed clinical assessment. The most recent available national data on depression and social support are from the ABS 2007 National Survey of Mental Health and Wellbeing. The survey provides lifetime and 12-month prevalence estimates of mental disorders in the Australian population aged 16–85 years. The 12-month diagnosis is based on lifetime diagnosis and the presence of symptoms of that disorder in the 12 months before the survey interview.

How many Australian women have depression?

The following estimates are based on data from the 2007 National Survey of Mental Health and Wellbeing.

Women had a higher prevalence than men of depressive episodes. Overall, 15% of women (equating to 1.2 million women), and 9% of men (equating to 694,600 men), aged 18–85 years had had a depressive episode at some point in their life (Table A7.11), with about 5% of women and 3% of men experiencing symptoms of that disorder in the 12 months before the interview (note that the latter figures refer to those aged 16–85 years) (ABS 2008e).

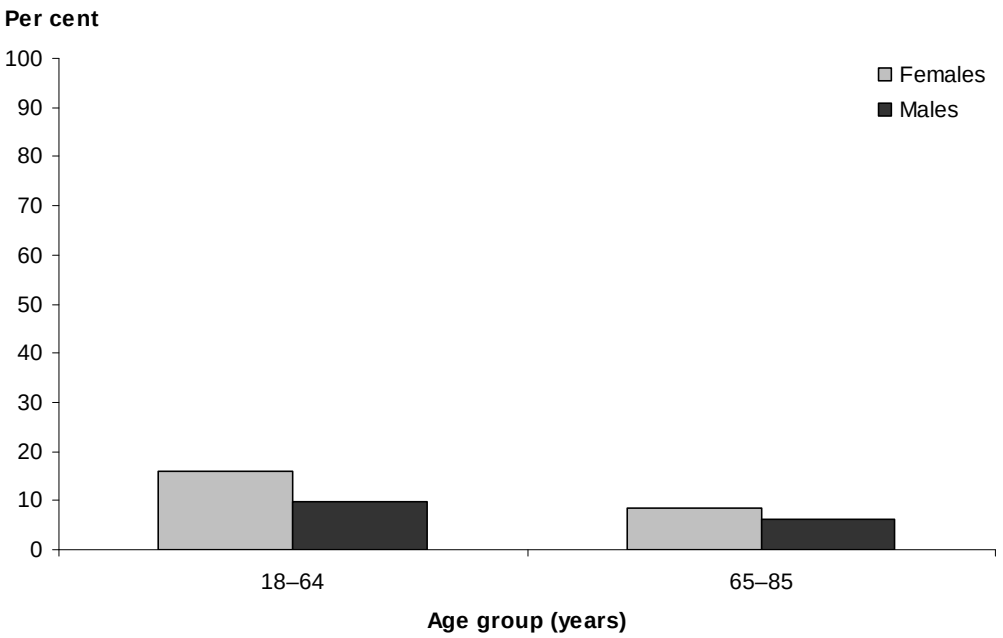
- The prevalence of lifetime depressive episodes was higher among women aged 18–64 years (16%) than among those aged 65–85 years (9%); 10% and 6%, respectively for men (Figure 7.11; Table A7.11).
- The prevalence of lifetime depressive episodes was higher among women than men for both those aged 18–64 years and 65–85 years (Table A7.11; Figure 7.11).

It should be noted that studies have shown that women are more likely than men to report a mental illness such as depression; these figures could therefore represent the number of reported cases rather than actual prevalence (ABS 2008e).

The burden of depression

In the 2003 burden of disease and injury study, anxiety and depression were assessed together. They often coexist and are not always easily differentiated (Clarke & Currie 2009).

They were the leading cause of burden among women (10%), ahead of CHD, stroke, Type 2 diabetes and dementia (Begg et al. 2007). They were the third leading cause among males (5%), behind CHD and Type 2 diabetes. Also, see Chapter 10 and Figure 10.12 for information about the burden of anxiety and depression by age.



Notes

1. Persons who met criteria for mild depressive episode, moderate depressive episode or severe depressive episode at some stage in their lifetime.
2. Refer to Appendix Table A7.11.

Source: AIHW analysis of ABS 2007 Survey of Mental Health and Wellbeing.

Figure 7.11: Prevalence of a depressive episode (lifetime), by age and sex, 2007

Social support

Definitions and measurements of social support and social isolation vary according to the study and survey instrument used, but may include reference to the number of people a person has social contact with, how often they have social contact, and the quality of that contact, such as, whether the respondent has people they can call upon for help or support.

Social support may be separated into structural and functional support, where structural refers to factors such as the number and frequency of contact and functional refers to factors such as financial support, emotional support, instrumental support (that is, help getting tangible tasks done) (Lett et al. 2005).

Social support is included here for several reasons. Social support is: an established risk factor for some of the most common cardiovascular diseases, CHD and high blood pressure; possibly a risk factor for stroke; associated with depression—an important risk factor for CHD and stroke; and an important factor for rehabilitation following cardiovascular events such as heart attack and stroke (which may in turn have an impact on the risk of future

cardiovascular events). The inclusion of social support in this chapter is based on a body of evidence that, when compared with most of the other risk factors in this chapter, is in its infancy.

There is strong and consistent evidence that social isolation and lack of quality social support are risk factors for CHD onset and prognosis. The association was found in studies that looked at the size and nature of a person's social network, and in studies that looked at the type of support received (Bunker et al. 2003).

The exact mechanisms by which social support or social isolation affect cardiovascular risk remain unclear. It has been suggested that social isolation may indirectly affect survival through its relation with psychological distress, disease severity (due to a delay in seeking medical attention), demographic factors (such as socioeconomic status), or some other unknown confounding factor (Brummett et al. 2001).

The relationship between social support and depression, still not entirely understood, is particularly important for CVD, as depression is an important risk factor for some cardiovascular diseases. A lack of social support is related to the risk of having mental disorders, including depression, and/or recovering from them. Social relationships and networks can act as protective factors against the onset or recurrence of mental illness and improve recovery from mental disorders (ABS 2008e).

Based on estimates from the ABS 2007 National Survey of Mental Health and Wellbeing, the prevalence of 12-month mental disorders (which includes anxiety, affective and substance use disorders) was slightly higher for those who had no contact with their family (23%) than for those who did (20%). However, the difference was much bigger when comparing contact with friends. The prevalence of a 12-month mental disorder was 38% among people who did not have contact with friends or had no friends compared with 20% among those who did have contact with their friends (ABS 2008e).

A lack of social support and social isolation has also been found to be associated with other cardiovascular risk factors such as smoking and physical inactivity (Brummett et al. 2001; Orth-Gomer et al. 1993).

How can we find out how many Australian women lack social support?

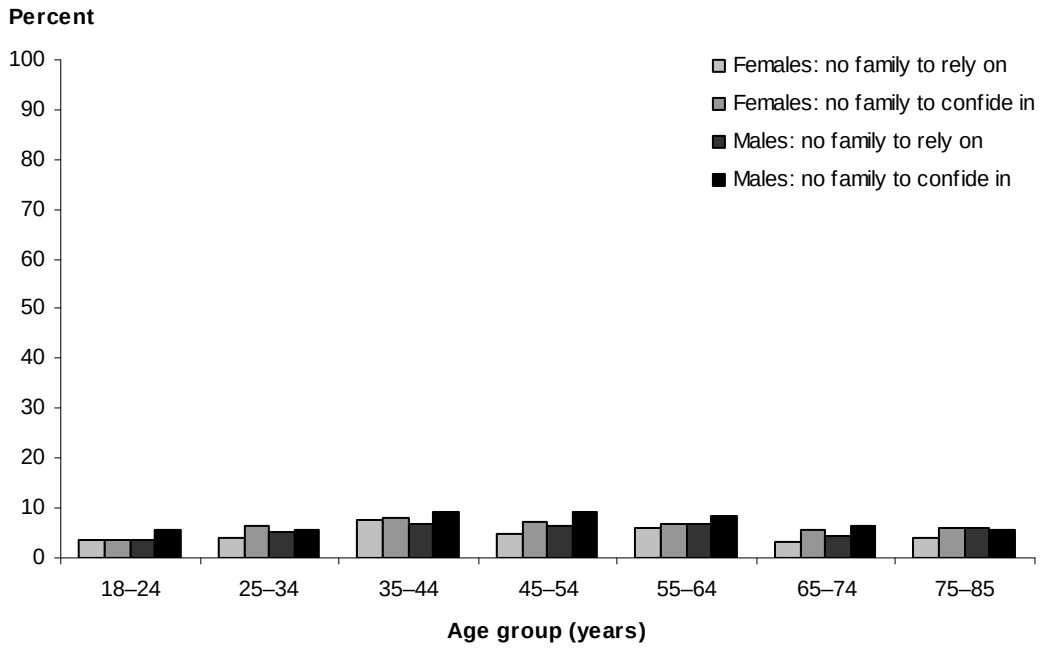
The ABS 2007 National Survey of Mental Health and Wellbeing collected information on frequency of contact with friends and family (contact included visits, phone calls, letters, or emails), and, for respondents who had contact with family and/or friends, whether they could rely on or confide in them if they were faced with a serious problem (ABS 2008e). Data on the frequency of contact by age have not been presented below due to the high relative standard error of many of the estimates, which makes the estimates by age unreliable.

How many Australian women lack support from family?

- About 121,800 (less than 1%) Australians aged 18–85 years had no family or no contact with family; a higher proportion had no family that they could rely on or confide in, 5% and 7%, respectively, for women, and 6% and 8%, respectively for men (Figure 7.12; Table A7.12).
- Women with no family they could rely on or confide in were both most common among those aged 35–44 years (8% each). Women with no family to rely on were least common among those aged 18–34 years and 65–85 years (around 3–4% each), and women with no

family to confide in were least common among those aged 18–24 years (4%) (Figure 7.12; Table A7.12).

- Women were more likely than men to have no family they could confide in for all age groups except the 18–24 year age group.
- Men who had no family they could rely on or confide in were most common among those aged 35–64 years (6–7% and 9%, respectively) and least common among those aged 18–24 years (4% and 5%, respectively) (Figure 7.12; Table A7.12).
- There were also 145,300 women (2%) and 300,700 men (4%) aged 18–85 years who had contact with family less than once per month (Table A7.13; Figure 7.14).



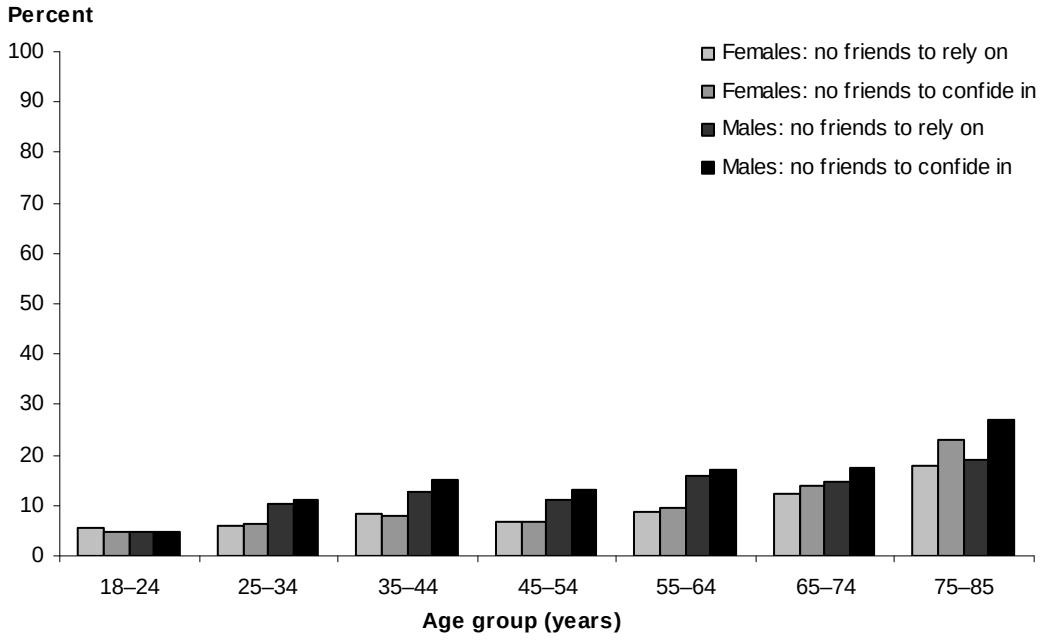
Note: Some estimates presented here have a relative standard error of 25–50% and should be used with caution. Refer to Appendix Table A7.12.

Source: AIHW analysis of ABS 2007 Survey of Mental Health and Wellbeing.

Figure 7.12: Proportion of people with no family to rely on or confide in, by sex and age, 2007

How many Australian women lack support from friends?

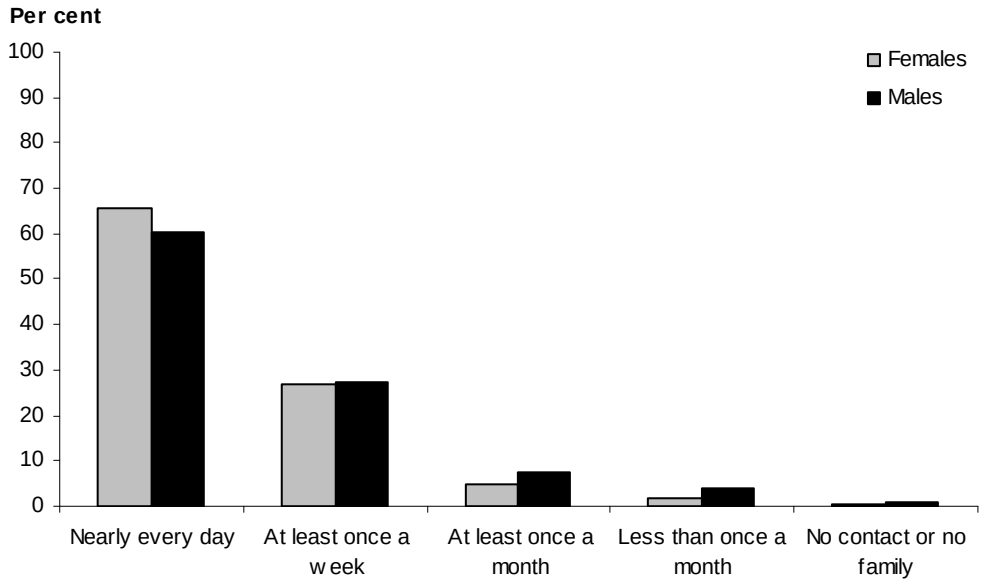
- About 140,100 women (2%) and 212,500 men (3%) had no friends or no contact with friends; a much higher proportion had no friends they could rely on or confide in, 8% and 9%, respectively, for women and 12% and 14%, respectively, for men (Figure 7.13; Table A7.12).
- The proportion of women who had no friends they could rely on or confide in generally increased with age, being most common among those aged 75–85 years (18% and 23%, respectively) and least common among those aged 18–24 years (5% each) (Figure 7.13; Table A7.12).
- Women were less likely than men across all ages, except the 18-24 year age group, to have no friends they could rely on or confide in. The proportion of men who had no friends they could rely on or confide in was also most common among those aged 75–85 years (19% and 27%, respectively) and least common among those aged 18–24 years (5% each) (Figure 7.13; Table A7.12).
- There were also 287,000 women (4%) and 287,000 men (4%) aged 18–85 years who had contact with friends less than once per month (Figure 7.15; Table A7.13).



Note: The male estimates for those aged 25–34 years have a relative standard error of 25% to 50% and should be used with caution. Refer to Appendix Table A7.12.

Source: AIHW analysis of ABS 2007 Survey of Mental Health and Wellbeing.

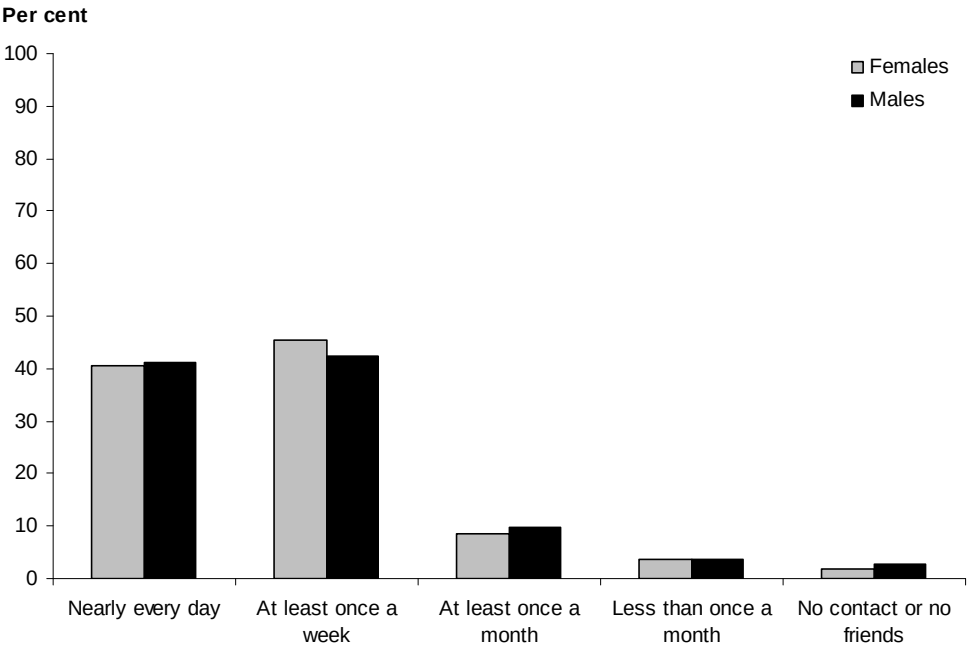
Figure 7.13: Proportion of people with no friends to rely on or confide in, by sex and age, 2007



Note: Refer to Appendix Table A7.13.

Source: AIHW analysis of ABS 2007 Survey of Mental Health and Wellbeing.

Figure 7.14: Frequency of contact with family, by sex, 2007



Note: Refer to Table A7.13.

Source: AIHW analysis of ABS 2007 Survey of Mental Health and Wellbeing.

Figure 7.15: Frequency of contact with friends, by sex, 2007

8 Services and treatments

This chapter is about the care and treatment of people with CVD. It is divided into four main sections which look at:

- hospitalisations
- procedures performed in hospital
- problems general practitioners are treating
- medicines dispensed.

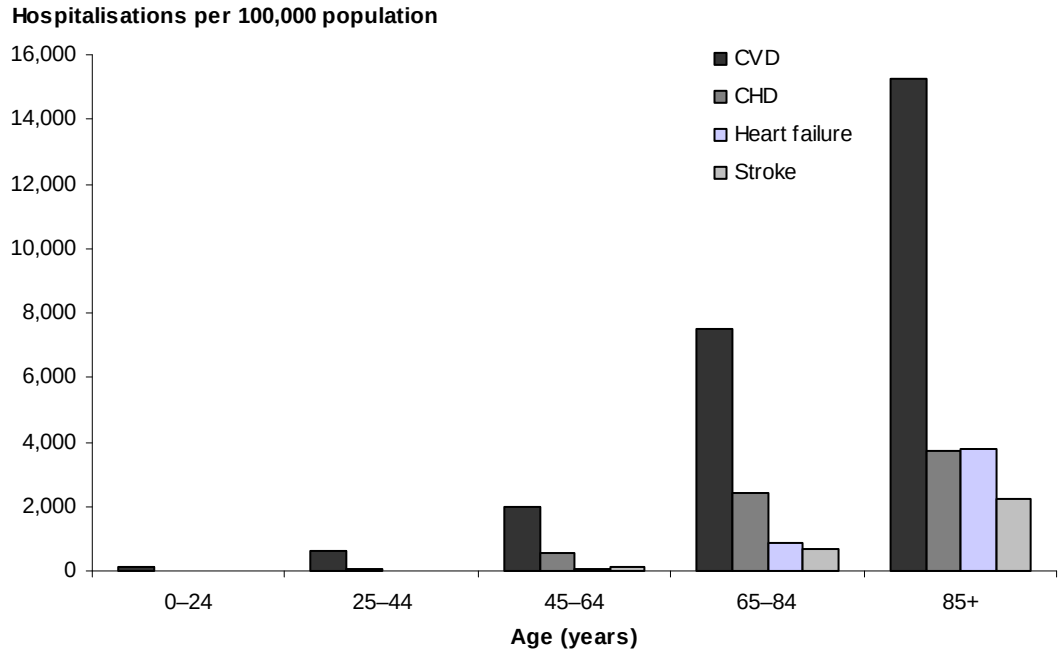
There are no national data available on the use of cardiac rehabilitation services. This is an important data gap in the assessment and monitoring of cardiovascular disease among Australian women, given the evidence of improved survival rates among those who attend and complete these programs compared with those who do not, and given some evidence that women may be less likely than men to attend or complete these programs (Sundararajan et al. 2004).

Hospitalisations

Key points

- In 2006–07, there were nearly 200,000 hospitalisations with CVD among females, accounting for 5% of all female hospitalisations in that year.
- Age-standardised hospitalisation rates with CHD among females were less than half those of males (462 per 100,000 population compared with 1,046).
- Although the age-standardised hospitalisation rates with stroke and heart failure among females were lower than for males, about half the number of hospitalisations with these conditions were for females.

In 2006–07, there were nearly 200,000 hospitalisations with CVD among females, accounting for 5% of all female hospitalisations in that year (see the Appendix for an explanation of exclusions and inclusions). Not surprisingly, the vast majority of these were for older females (Figure 8.1). The leading specific principal diagnosis within the CVD group for females was CHD, accounting for 28% of these hospitalisations, followed by heart failure (11%) and stroke (8%). The remainder of this section presents hospitalisations for each of these four disease groups—all CVD, CHD, stroke and heart failure, by age and sex.



Notes

1. Population calculated from June 2006 and June 2007 population database.
2. Refer to Appendix tables A8.1, A8.2, A8.3, and A8.4.

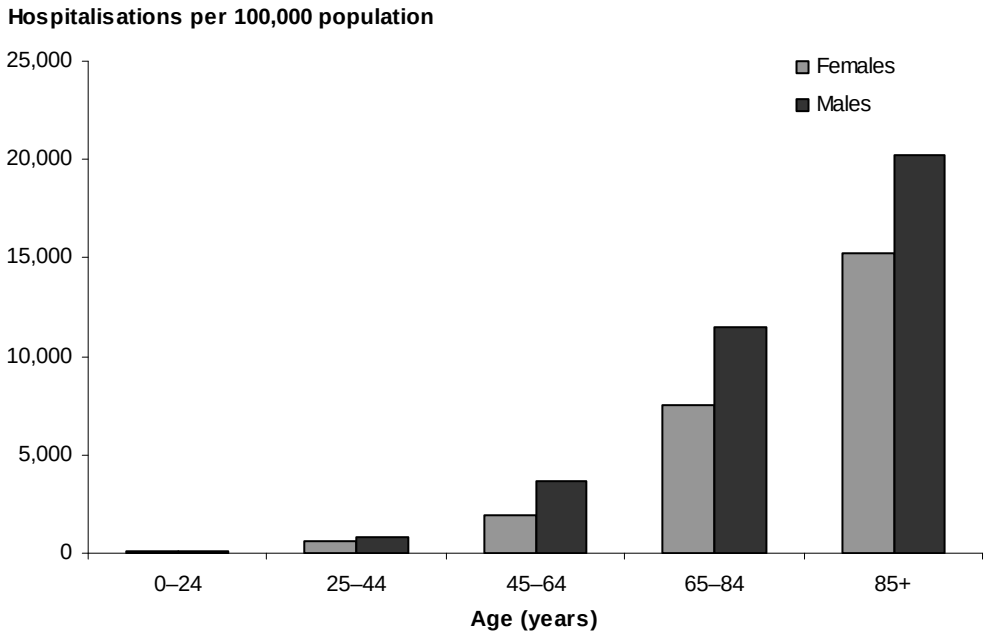
Source: AIHW National Hospital Morbidity Database.

Figure 8.1: Hospitalisations with cardiovascular diseases as principal diagnosis, age-specific rates, females, 2006–07

Cardiovascular disease

In 2006–07, females were hospitalised with CVD (when it was the principal condition diagnosed) less often than males; this was true for all age groups (Figure 8.2; Table A8.1). The age-standardised rate for females was 1,690 per 100,000 population, compared with 2,675 for males.

Hospitalisation rates with CVD increased with age for both females and males. Almost four in five (79%) of these hospitalisations were for females aged 55 years and over (Table A8.1). Among males, slightly less (77%) hospitalisations with CVD were for those aged 55 years and over, reflecting the earlier onset of CVD in males compared with females.



Notes

1. Population calculated from June 2006 and June 2007 population database.
2. Refer to Appendix Table A8.1.

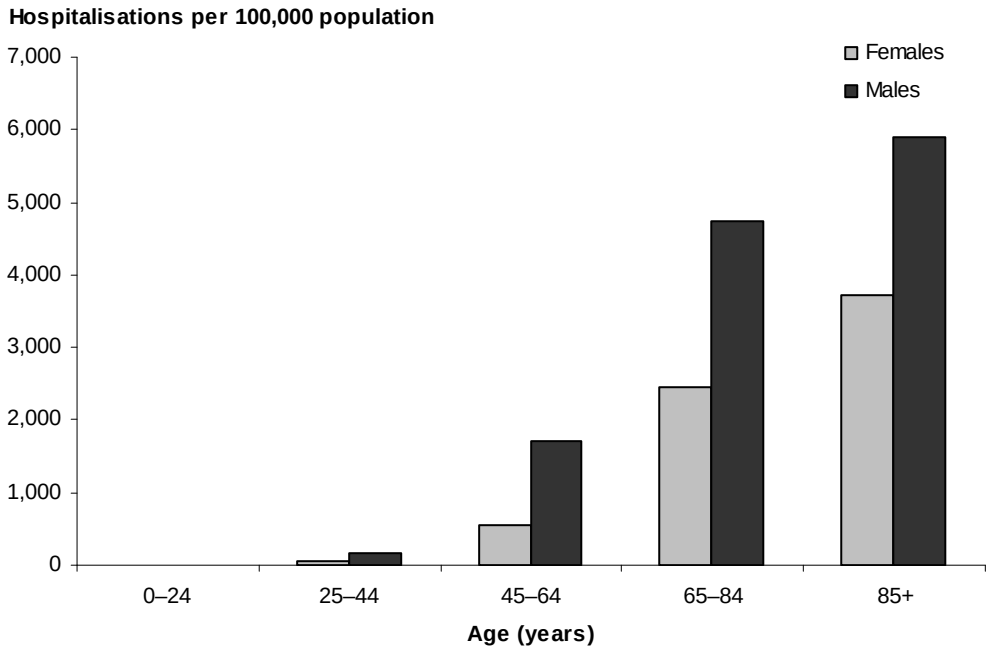
Source: AIHW National Hospital Morbidity Database.

Figure 8.2: Hospitalisations with cardiovascular disease, age-specific rates, by sex, 2006–07

Coronary heart disease

CHD was the largest component of CVD hospitalisations among females in 2006–07, accounting for more than one-quarter (55,079) of them. Rates for females were substantially lower than for males across all age groups (Figure 8.3). Consequently, the age-standardised rate for males (1,046 hospitalisations per 100,000 population) was more than twice that for females (462).

Hospitalisation rates increased with age, with around 88% being for females aged 55 years and over (Table A8.2). Although females had lower age-specific hospitalisation rates than males for CHD problems, there were more hospitalisations for females (8,122) than males (6,148) aged 85 years. This is because in that age group there are more females than males in the population.



Notes

1. Population calculated from June 2006 and June 2007 population database.
2. Refer to Appendix Table A8.2.

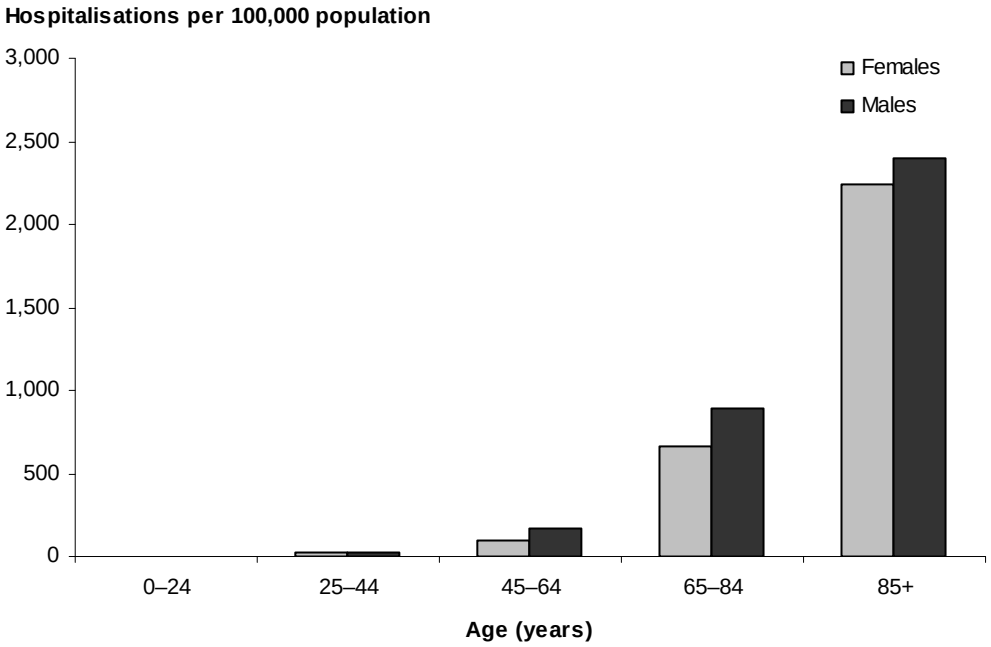
Source: AIHW National Hospital Morbidity Database.

Figure 8.3: Hospitalisations with coronary heart disease, age-specific rates, by sex, 2006–07

Stroke

Stroke was the principal diagnosis in 16,837 hospitalisations among females during 2006–07, making it the third largest component of all hospitalisations for CVD. Females had slightly lower rates than males in all age groups, though in the oldest age group the difference was small (Figure 8.4). Hospitalisation rates increased rapidly with age.

Although the age-standardised rate for females (135 hospitalisations per 100,000 population) was lower than the male rate (181), there was very little difference in the proportion of females and males being hospitalised for stroke, with hospitalisations for females making up 49% of the total. Of these hospitalisations, 88% were for females aged 55 years and over (Table A8.3). Hospitalisation rates for males were higher than for females in those aged 35 years and over, as were age-standardised rates, but there were more hospitalisations for females in those aged 75 years and over (Table A8.3).



Notes

1. Population calculated from June 2006 and June 2007 population database.
2. Refer to Appendix Table A8.3.

Source: AIHW National Hospital Morbidity Database.

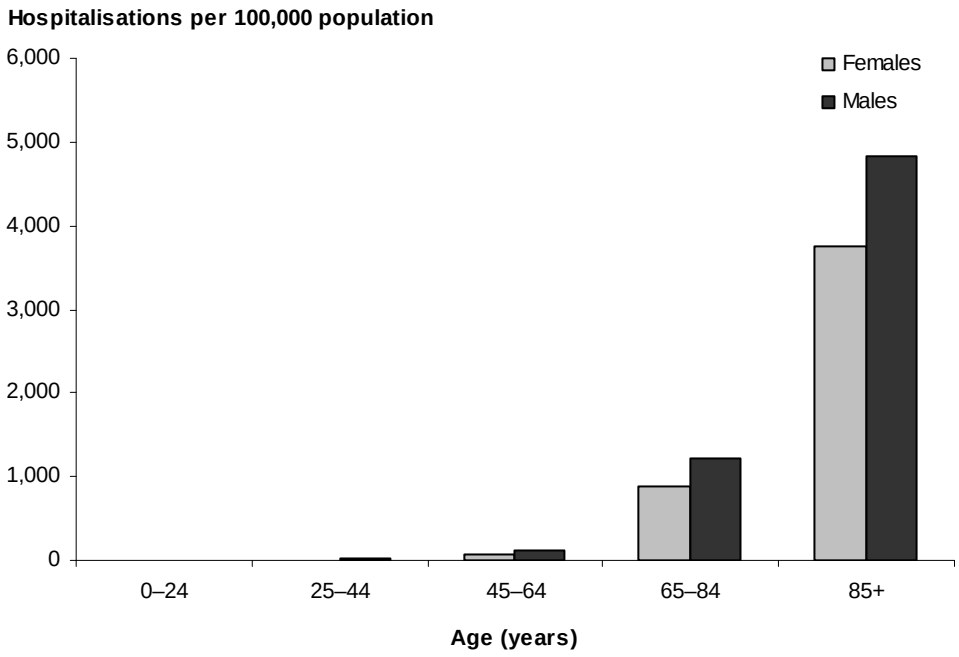
Figure 8.4: Hospitalisations with stroke, age-specific rates, by sex, 2006–07

Heart failure

Heart failure was the second largest component of all hospitalisations with CVD among females, accounting for 11%. Of the 43,861 heart failure hospitalisations in 2006–07, almost 49% were for females.

Hospitalisation rates for heart failure were lower for females than males across all age groups (Figure 8.5). This resulted in a lower age-standardised rate of hospitalisations for females (163 per 100,000 population) compared with males (239).

As for all other types of CVD looked at here, rates increased markedly with age. In particular, the age-specific rate of hospitalisations for both females and males increased rapidly after 65 years of age (Table A8.4; Figure 8.5). More than 96% of hospitalisations for females with heart failure were in those aged 55 years and over.



Notes

1. Population calculated from June 2006 and June 2007 population database.
2. Refer to Appendix Table A8.4.

Source: AIHW National Hospital Morbidity Database.

Figure 8.5: Hospitalisations with heart failure, age-specific rates, by sex, 2006–07

Procedures in hospital

Key points

- In 2006-07, in females hospitalised with particular CVD diagnoses, there were 25,311 coronary angiographies, 16,429 CT brain scans, 8,842 coronary angioplasties/stenting (mostly percutaneous coronary interventions), 3,001 heart valve repairs or replacements, and 2,974 coronary artery bypass grafting procedures.
- Generally, age-standardised rates of diagnostic and therapeutic procedures performed in people hospitalised with a diagnosis of CVD tended to be lower among females than males in 2006–07.
- For diagnostic procedures (all per 100 hospitalisations for particular CVD diagnoses), females were less likely than males to have coronary angiography (24 compared with 30) and echocardiography (5 compared with 6), and similarly likely to have a CT brain scan (both 70) and MRI brain scan (17 compared with 18).
- For therapeutic procedures (all per 100 hospitalisations for particular CVD diagnoses), females were less likely than males to have percutaneous coronary interventions (16 compared with 22), CABG (5 compared with 9), a heart defibrillator implanted (0.6 compared with 1.2), and carotid endarterectomy (4 compared with 6); while they were similarly likely to have a heart valve repair or replacement (2.6 compared with 2.4).

Many procedures are used for the diagnosis and treatment of CVD. Diagnostic procedures include coronary angiography, echocardiography, CT scans and MRI scans.

Therapeutic procedures include percutaneous coronary intervention (PCI), coronary artery bypass graft (CABG), heart valve repair or replacement, pacemaker insertion, cardiac defibrillator implant and carotid endarterectomy. These procedures are outlined briefly in Box 8.1. The ICD-10-AM codes used to extract the relevant data are detailed in Table A8.5.

Data considerations

The data presented in this section refer only to those procedures performed in hospital, but note that some of these may also be done elsewhere. Thus, in some cases, the data in this section underestimate the total number of procedures in Australia.

The data reported in this section are rates of procedures among those hospitalised with particular cardiovascular diagnoses; for example, rates for coronary interventions (PCIs) are presented as number of PCIs per 100 hospitalisations with CHD. This is as opposed to rates of procedures for the whole population, as has been presented in previous AIHW publications; thus, findings presented here are not comparable with earlier work. This approach provides insight into treatment patterns among those diagnosed with a particular cardiovascular condition, enabling a more robust comparison of the female and male rates. See the methods section in the Appendix for further details.

Box 8.1: Procedures used for cardiovascular diseases

Diagnostic

Coronary angiography (also known as coronary arteriography) gives a picture of the heart's arteries, known as the coronary arteries, to find out if and where the coronary arteries are narrowed or blocked. A catheter is guided to the heart where a special dye is released into the coronary arteries before X-rays are taken. The resulting X-ray images provide detailed information about the health of the heart and arteries. This is an important diagnostic test that informs medical professionals on treatment options.

Echocardiography takes moving pictures of the heart using high frequency sound waves (ultrasound). With these, it is possible to measure the size of the various chambers, to study the appearance and motions of the heart valves, and to assess blood flow throughout the heart.

CT brain scan for stroke or transient ischaemic attack uses X-rays to generate an image of the brain to distinguish between the major stroke types—blockage or bleeding—to guide treatment.

MRI brain scan for stroke or transient ischaemic attack uses magnets and radio waves to generate an image. These images show a higher degree of detail in soft tissue than CT brain scans.

Therapeutic

Percutaneous coronary interventions (PCIs) are used to restore adequate blood flow to blocked coronary arteries. Two types of procedure are used: coronary angioplasty without stent, and coronary stenting. Coronary angioplasty uses a small balloon to clear the arteries. Coronary stenting is similar, but involves the insertion of stents (expandable mesh tubes) into the affected coronary arteries.

Coronary artery bypass grafting (CABG) is a surgical procedure using blood vessel grafts to bypass blockages in the coronary arteries and restore adequate blood flow to the heart muscle. The surgery involves taking a blood vessel from the patient's leg, arm or inner chest and using it to attach to vessels on the outside of the heart to bypass a blocked artery.

Heart valve repair or replacement involves repairing or replacing one of the valves of the heart. These procedures are performed when the normal flow of blood through the heart is disrupted by damaged valves, making it harder for the heart to pump blood around the body effectively, which can lead to heart failure.

Pacemakers electrically stimulate the heart to contract when the heart's electrical system is not working properly. Once the electrical leads are correctly positioned as confirmed by X-ray, the pacemaker device is placed under the skin and the leads are connected to the pacemaker box.

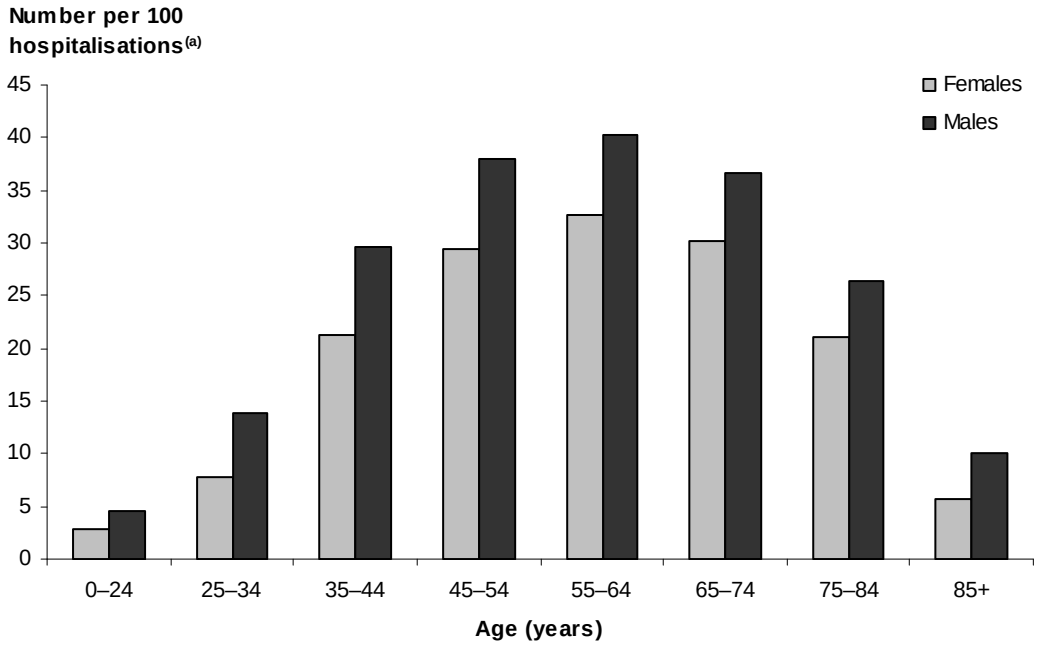
Cardiac defibrillator implants monitor the heart rhythm, and deliver electrical shocks to the heart when required to eliminate abnormal rhythms. They are effective in preventing sudden cardiac death in people at high risk of the life-threatening arrhythmia known as ventricular fibrillation.

Carotid endarterectomy entails surgically removing atherosclerotic plaque from the carotid arteries in the neck, which supply blood to the brain. This aims to reduce the risk of stroke.

Coronary angiography

In 2006–07, among people hospitalised with a principal diagnosis of CHD or other forms of heart disease, 83,244 coronary angiographies were performed—30% on females (25,311) and 70% on males (57,933) (Table A8.6). For females, this amounted to an age-standardised rate of 24 angiographies per 100 hospitalisations with these diagnoses, lower than that for males (30 per 100).

The age-specific rate of coronary angiography for females was lower than for males across all age groups (Figure 8.6). For both females and males, the rate of coronary angiographies increased with increasing age, peaking among those aged 55–64 years, with a considerable fall in the oldest age group. Most (87%) angiographies performed on females were among those aged 55 years and over (81% for males).



(a) Hospitalisations with principal diagnosis ICD-10-AM codes I20-I25, I30-I52.

Note: Refer to Appendix Table A8.6.

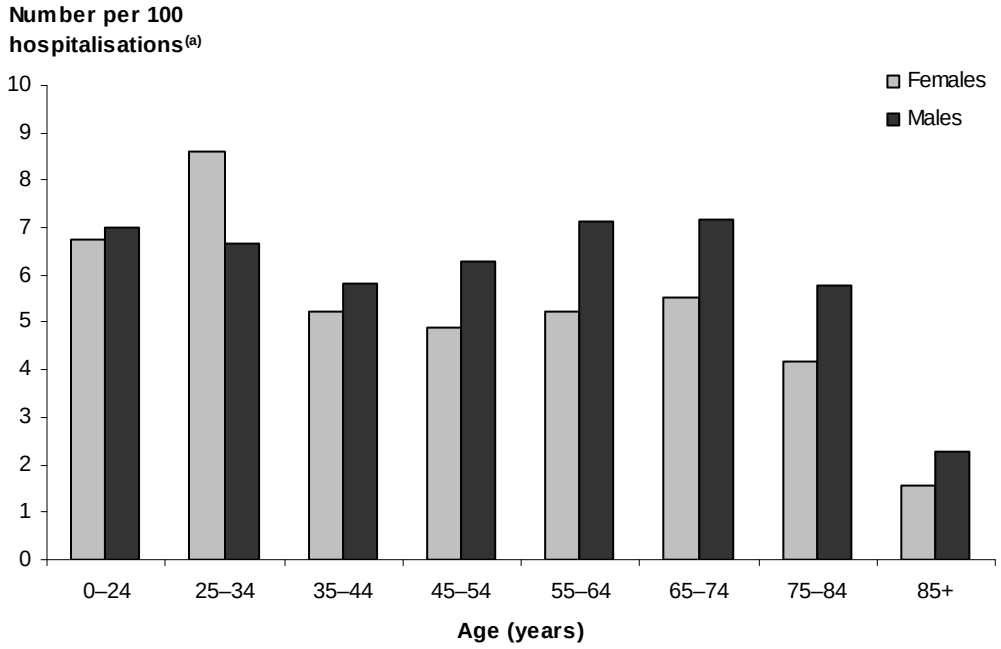
Source: AIHW National Hospital Morbidity Database.

Figure 8.6: Coronary angiography procedures performed in Australian hospitals, age-specific rates, by sex, 2006–07

Echocardiography

In 2006–07, among people hospitalised with a principal diagnosis of any form of heart disease, 17,245 echocardiograms were performed—32% (5,438) on females and 68% (11,807) on males (Table A8.7). Overall, females were less likely than males to undergo this procedure, with an age-standardised rate of 5 and 6, respectively, per 100 hospitalisations.

Most (83%) echocardiograms for females were among those aged 55 years and over (80% for males) (Table A8.7). For females, the highest age-standardised rates were among those aged 25–34 years, and the lowest among those aged 85 years and over; the only group where the rate was higher for females than males was for those aged 25–34 years (Figure 8.7; Table 8.7).



(a) Hospitalisations with principal diagnosis ICD-10-AM codes I00-I52.

Note: Refer to Appendix Table A8.7.

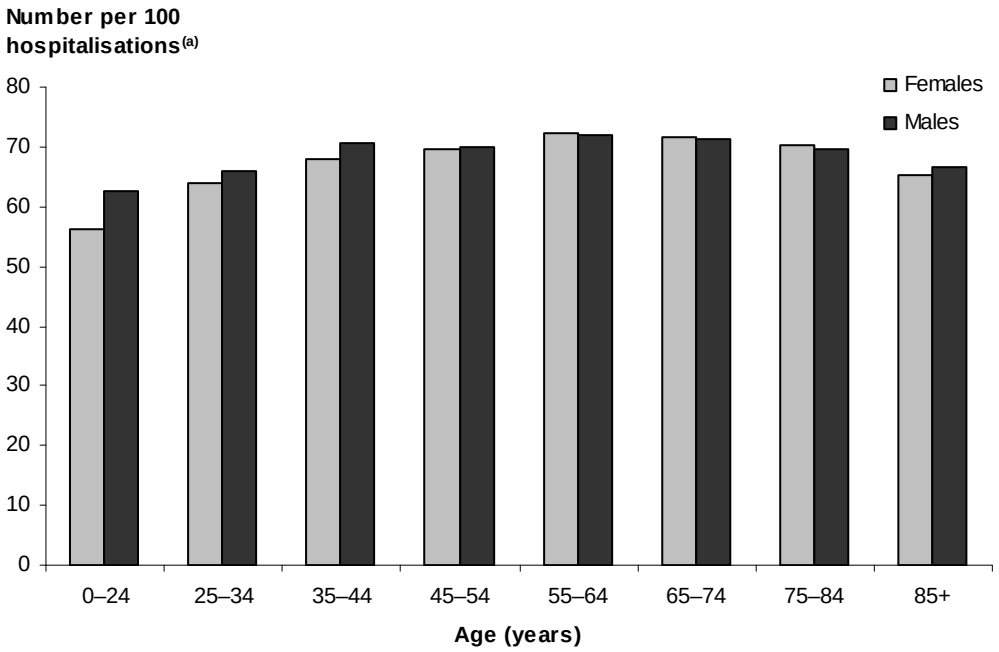
Source: AIHW National Hospital Morbidity Database.

Figure 8.7: Echocardiography procedures performed in Australian hospitals, age-specific rates, by sex, 2006–07

CT brain scan

In 2006–07, among people hospitalised with a principal diagnosis of stroke or TIA, 33,693 CT brain scans were performed—49% (16,429) on females and 51% (17,264) on males (Table A8.8). Females and males hospitalised with a principal diagnosis of stroke or TIA were similarly likely to have a CT brain scan, both with age-standardised rates of 70 per 100 hospitalisations, respectively.

Females and males had similar age-specific rates of CT brain scans, with the most noticeable difference among those aged 0–24 years (56 per 100 hospitalisations for females compared with 63 for males). Both sexes showed a slight drop among those aged 85 years and over (Figure 8.8). Most CT brain scans, for those hospitalised with a diagnosis of stroke or TIA, were among those aged 55 years and over (89% for females, 87% for males) (Table A8.8).



(a) Hospitalisations with principal diagnosis ICD-10-AM codes I60-I64, G45.

Note: Refer to Appendix Table A8.8.

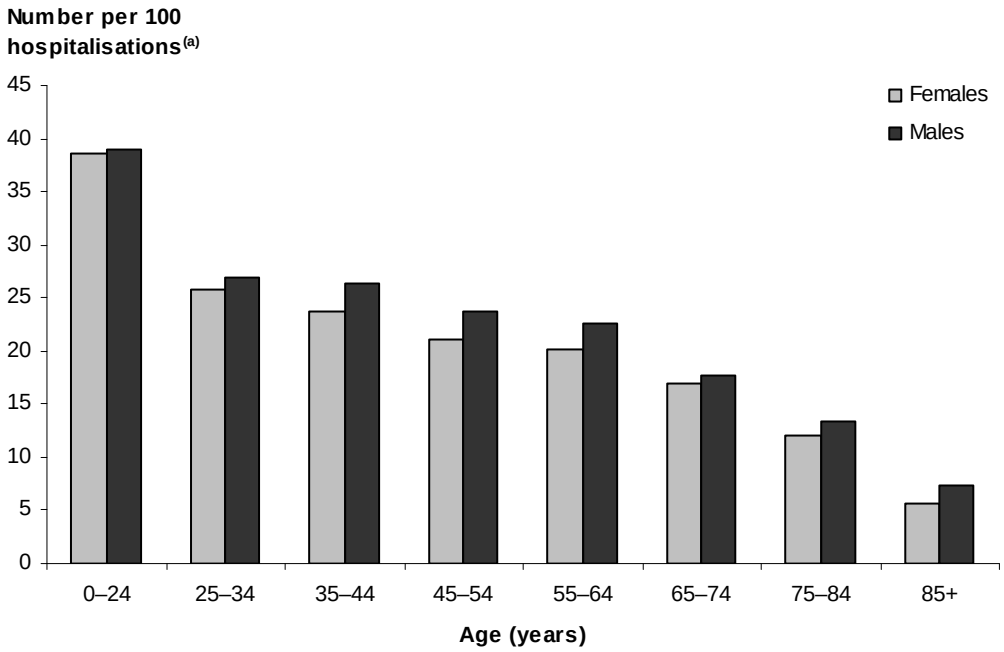
Source: AIHW National Hospital Morbidity Database.

Figure 8.8: CT scans performed in patients hospitalised with a diagnosis of stroke or TIA in Australian hospitals, age-specific rates, by sex, 2006–07

MRI brain scan

MRI scans of the brain were used far less often than CT scans in cases with stroke or TIA. In 2006–07, among people hospitalised with a principal diagnosis of stroke or TIA, 7,249 MRI scans performed—43% (3,135) on females and 57% (4,114) on males (Table A8.9). The overall age-standardised rate for females was 17 scans per 100 hospitalisations, compared with 18 for males.

The age-specific rate of MRI brain scans in patients hospitalised with a principal diagnosis of stroke or TIA decreased with increasing age. The highest rates were seen among those aged 0–24 years (at 39 per 100 hospitalisations for both sexes) and the lowest rates among those aged 85 years and over (Figure 8.9). Most MRI brain scans in patients hospitalised with a diagnosis of stroke or TIA were among those aged 55 years and over (80% for females, 79% for males) (Table A8.9).



(a) Hospitalisations with principal diagnosis ICD-10-AM codes I60-I64, G45.

Note: Refer to Appendix Table A8.9.

Source: AIHW National Hospital Morbidity Database.

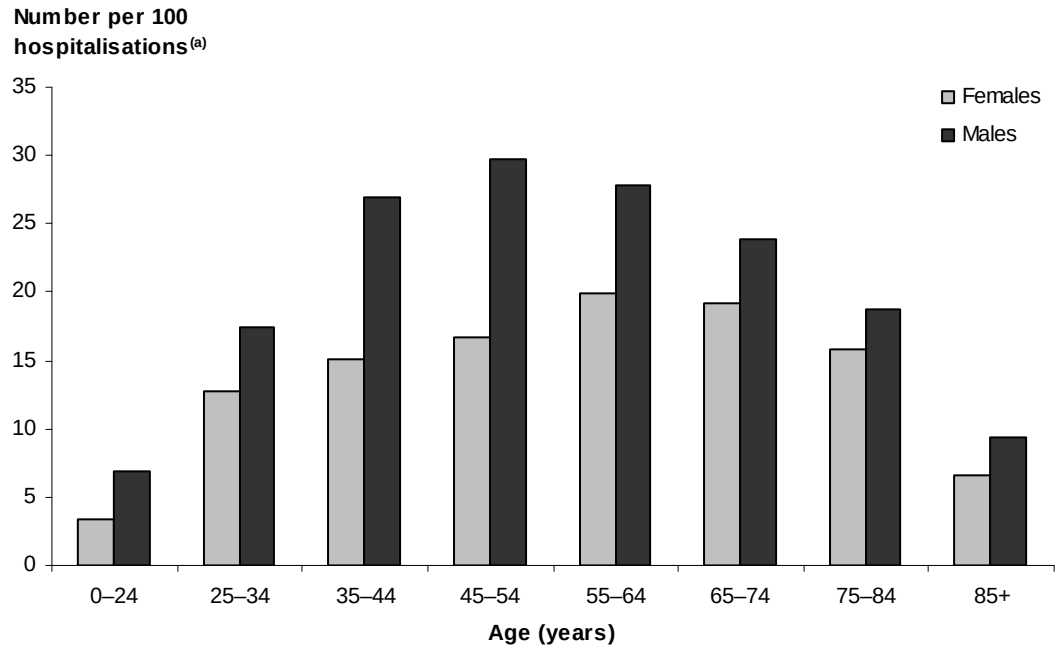
Figure 8.9: MRI scans performed in patients hospitalised with a diagnosis of stroke or TIA in Australian hospitals, age-specific rates, by sex, 2006–07

Percutaneous coronary interventions

Note that for simplicity, the term 'percutaneous coronary interventions (PCIs)' is used to refer to the data shown here, but they include a very small number of open coronary angioplasty/stenting procedures, that is, not done percutaneously.

In 2006–07, among people hospitalised with a principal diagnosis of CHD, 34,481 PCIs were carried out. Of these procedures, 26% (8,842) were performed on females and 74% on males (25,639) (Table A8.10). For females, the overall age-standardised rate was 16 per 100 hospitalisations with CHD, lower than that for males (22 per 100).

Most (88%) PCIs carried out on females were for those aged 55 years and over compared with 77% for males. Although the age-specific rates were lower for females than males in every age group, the difference between the two was less with increasing age (Figure 8.10). The highest rate for females was among those aged 55–64 years (20 per 100 hospitalisations), whereas for males it was among those aged 45–54 years (30 per 100).



(a) Hospitalisations with principal diagnosis ICD-10-AM codes I20-I25.

Note: Refer to Appendix Table A8.10.

Source: AIHW National Hospital Morbidity Database.

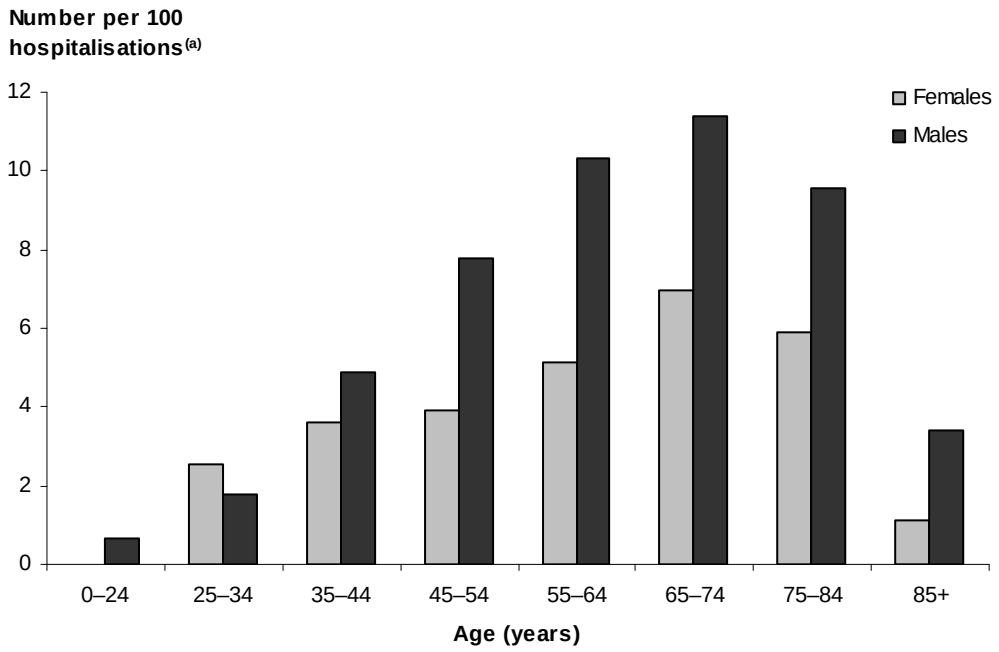
Figure 8.10: Percutaneous coronary intervention (PCI) procedures performed in Australian hospitals, age-specific rates, by sex, 2006–07

Coronary artery bypass grafting

In 2006–07, among people hospitalised with a principal diagnosis of CHD, 13,562 CABGs were performed—22% (2,974) on females and 78% (10,588) on males (Table A8.11). The age-standardised rate for females (5 per 100 hospitalisations) was lower than for males (9 per 100).

Females had lower age-specific rates than males across almost all age groups, with the exception of those aged 25–34 years (Figure 8.11). The age-specific rates for both females and males were highest among those aged 65–74 years (7 and 11 per 100 hospitalisations, respectively) and fell substantially for those aged 85 years and over.

Most (91%) CABGs performed on females were on those aged 55 years and over (86% for males) (Table A8.11).



(a) Hospitalisations with principal diagnosis ICD-10-AM codes I20-I25, I34, I35.

Note: Refer to Appendix Table A8.11.

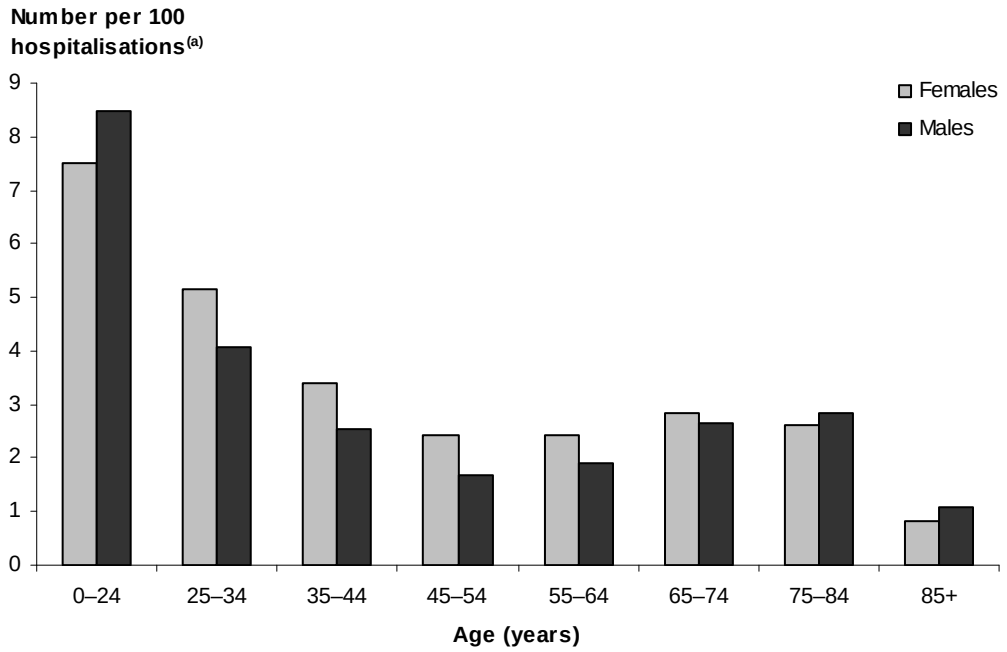
Source: AIHW National Hospital Morbidity Database.

Figure 8.11: Coronary artery bypass grafting (CABG) procedures performed in Australian hospitals, age-specific rates, by sex, 2006–07

Heart valve repair or replacement

In 2006–07, among people hospitalised with a principal diagnosis of acute rheumatic fever, rheumatic heart disease, CHD or some other forms of heart disease (see the Appendix for codes), 7,514 heart valve repairs or replacements were performed—40% (3,001) on females and 60% (4,513) on males (Table A8.12). Females and males had similar age-standardised rates for heart valve repair or replacement (2.6 and 2.4, respectively, per 100 hospitalisations).

The highest age-specific rates were seen in the youngest age groups, probably reflecting treatment for congenital heart defects, with 8 per 100 hospitalisations for females aged 0–24 years, and 9 for males (Figure 8.12). Females had slightly higher age-specific rates than males among those aged 25–64 years. Most heart valve repairs or replacements (78%) were in females and males aged 55 years and over.



(a) Hospitalisations with principal diagnosis ICD-10-AM codes I01-I09, I20-I25, I33-I39, I42-I52, Q20-Q25, T82.

Note: Refer to Appendix Table A8.12.

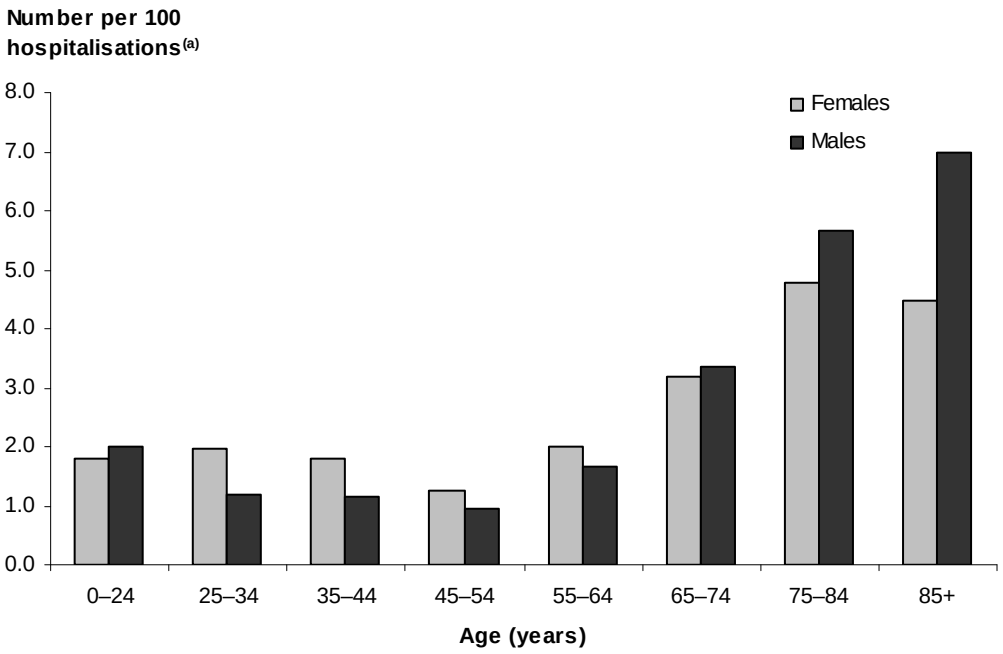
Source: AIHW National Hospital Morbidity Database.

Figure 8.12: Heart valve repair or replacement procedures performed in Australian hospitals, age-specific rates, by sex, 2006–07

Pacemaker insertion

In 2006–07, among people hospitalised with selected forms of heart disease as principal diagnoses (see the Appendix for details), 10,081 pacemaker insertion procedures were performed—40% (4,061) on females and 60% (6,020) on males (Table A8.13). The age-standardised rate for females (3 per 100 hospitalisations) was lower than for males (4 per 100). Age-specific rates were generally similar for females and males, except for those aged 75 years and over, among whom females had lower rates than males (Figure 8.13).

Pacemaker insertions before the age of 55 years were rare for both females and males—the vast majority were for those aged 55 years and over (95% and 94%, respectively) (Table A8.13).



(a) Hospitalisations with principal diagnosis ICD-10-AM codes I08, I20, I21, I25, I34-I39, I42-I52.

Note: Refer to Appendix Table A8.13.

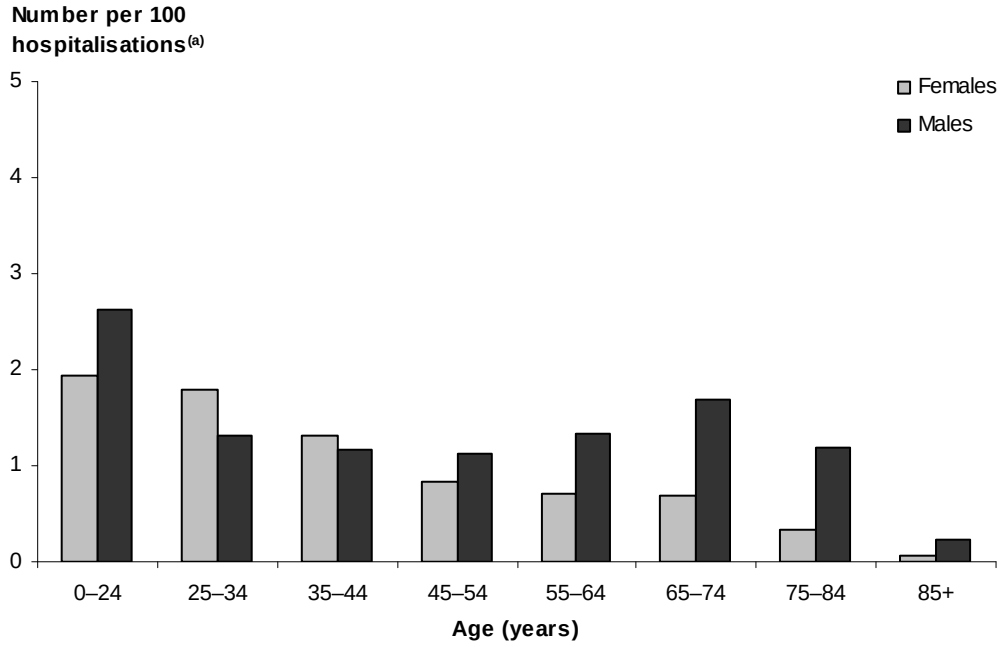
Source: AIHW National Hospital Morbidity Database.

Figure 8.13: Pacemaker insertion procedures performed in Australian hospitals, age-specific rates, by sex, 2006–07

Cardiac defibrillator implant

In 2006–07, among people hospitalised with selected forms of heart disease as principal diagnoses (see the Appendix for details), 2,715 cardiac defibrillator implantation procedures were performed—20% (542) on females and 80% (2,173) on males (Table A8.14). The age-standardised rate for females (0.6 per 100 hospitalisations) was half that of males (1.2 per 100).

For females, the age-specific rate of cardiac defibrillator implants decreased with increasing age, whereas for males, after an initial decrease, the rate increased for the 55–74 year age group (Figure 8.14). Almost three-quarters (74%) of cardiac defibrillator implants in females were among those aged 55 years and over (83% for males) (Table A8.14).



(a) Hospitalisations with principal diagnosis ICD-10-AM codes I20, I21,I25, I42-I51.

Note: Refer to Appendix Table A8.14.

Source: AIHW National Hospital Morbidity Database.

Figure 8.14: Cardiac defibrillator implantation procedures performed in Australian hospitals, age-specific rates, by sex, 2006–07

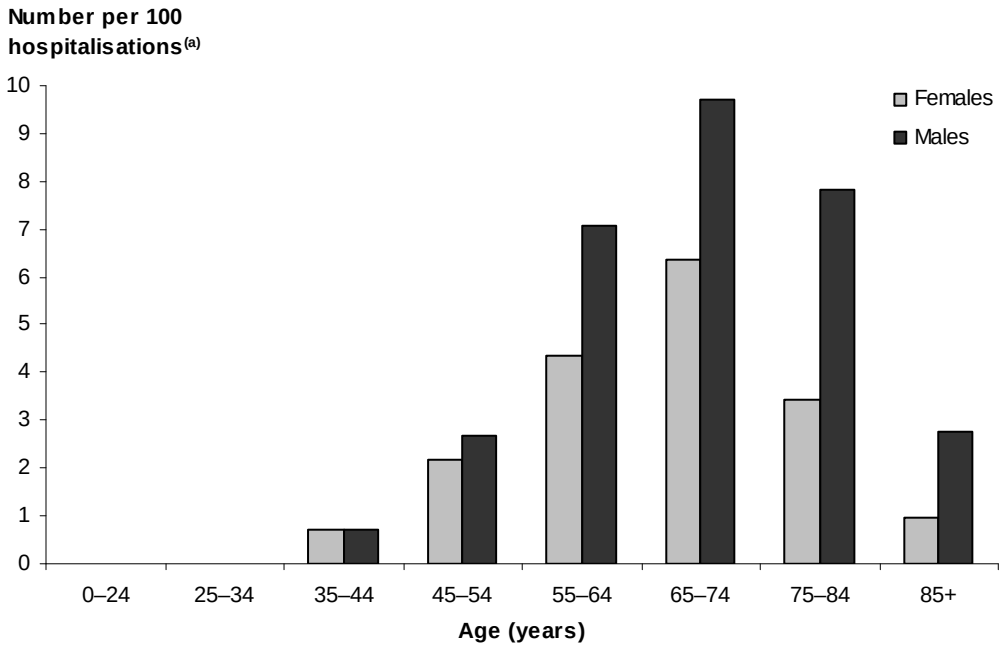
Heart transplants

While heart transplants are not common, there were 80 of these in 2006–07; just over one-quarter (22) were among females (Table A8.15). All of these occurred before the age of 65 years. Females had lower numbers and rates of heart transplants compared with males, largely due to lower rates in the 45–64 year age group.

Carotid endarterectomy

In 2006–07, among people hospitalised with a principal diagnosis of stroke, TIA or other cerebrovascular conditions, 2,290 carotid endarterectomies were performed—30% (679) on females and 70% (1,611) on males (Table A8.16). Females had a lower age-standardised rate than males (4 and 6 per 100 hospitalisations, respectively).

Females and males aged 65–74 years had the highest age-specific rates (6 and 10 per 100 hospitalisations, respectively) (Figure 8.15). The vast majority (95%) of the procedures on females were for those aged 55 years and over (97% for males) (Table A8.16).



(a) Hospitalisations with principal diagnosis ICD-10-AM codes G45, I63-I67.

Note: Refer to Appendix Table A8.16.

Source: AIHW National Hospital Morbidity Database.

Figure 8.15: Carotid endarterectomies performed in Australian hospitals, age-specific rates, by sex, 2006–07

General practice care

Key points

- Cardiovascular diseases are responsible for a significant proportion of general practitioners' (GP) workload, being the third most common problem managed by GPs in 2007–08.
- At least one CVD problem was managed in 20% of GP encounters with females in 2007–08. Hypertension was the most common CVD problem managed at 11%.
- The proportion of encounters with at least one CVD problem managed increased with age for CVD overall, ischaemic heart disease (IHD), stroke, hypertension, and heart failure.
- Across age groups, the proportion of encounters where GPs managed at least one stroke or heart failure problem was similar for females and males. But for CVD overall, IHD and hypertension there were differences. A lesser proportion of encounters with females involved:
  - CVD problem(s) for those aged 25–64 years
  - IHD problem(s) for those aged 35 years and over
  - a hypertension problem for those aged 35–54 years.
- The most common actions taken to manage cardiovascular problems (CVD overall, IHD, stroke, hypertension, and heart failure), were prescription of medicines and ordering of pathology.
- GPs managed these cardiovascular problems similarly in females and males, in terms of medicines prescriptions, referrals, and ordering of pathology and imaging.
- The ordering of imaging was noticeably higher for stroke (ordered in about 15% of encounters where stroke was managed) than for the other CVD problems investigated.

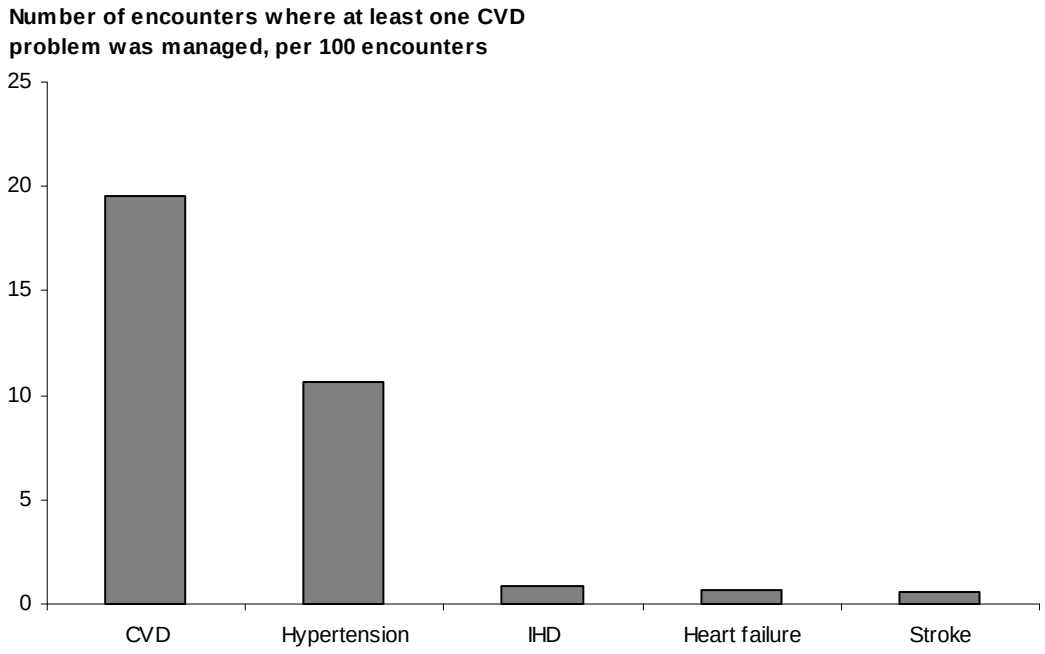
The data shown in this section are from the BEACH survey (Bettering the Evaluation and Care of Health) for the 12-month period from April 2007 to March 2008, from a sample of 95,300 patient encounters with 953 general practitioners (GPs) (Britt et al. 2008). This survey provides an insight into the reasons patients see their GP and how their problems are managed.

This section includes information on 'encounters' and 'problems managed'. An 'encounter' is any professional interchange between a patient and a GP, and is dominated by standard consultations in the doctor's surgery. A 'problem managed' is a formal statement by the GP of a problem managed at the encounter. Note that for each patient encounter, GPs could record up to four problems managed (Britt et al. 2008).

It is important to bear in mind that generally females consult GPs more often than do males. In the sample analysed in this section, females accounted for 58% of all encounters and males 42%. To take account of this difference, results are expressed as number of problems managed per 100 sex-specific encounters or as a sex-specific proportion of encounters.

Cardiovascular diseases are responsible for a significant proportion of the general practice workload. They were the third most common groups of problems managed by GPs in 2007–08 behind respiratory diseases and general or unspecified conditions (Britt et al. 2008). Within the CVD group of diseases, the most common problem managed was hypertension, followed by cardiac check-up and ischaemic heart disease (IHD). Hypertension was also the most common individual problem managed by GPs overall.

At least one CVD problem was managed at 20% of GP encounters with females in 2007–08 (Figure 8.16). Among the types of CVD looked at in this section, hypertension was the most common CVD problem managed at female visits to their GPs, followed by IHD, heart failure and then stroke.



Note: Refer to Appendix Table A8.17 to A8.21.

Source: 2007–08 Bettering the Evaluation and Care of Health program, Australian General Practice Statistics and Classification Centre.

Figure 8.16: Encounters for females with at least one cardiovascular problem managed, by cardiovascular condition, April 2007–March 2008

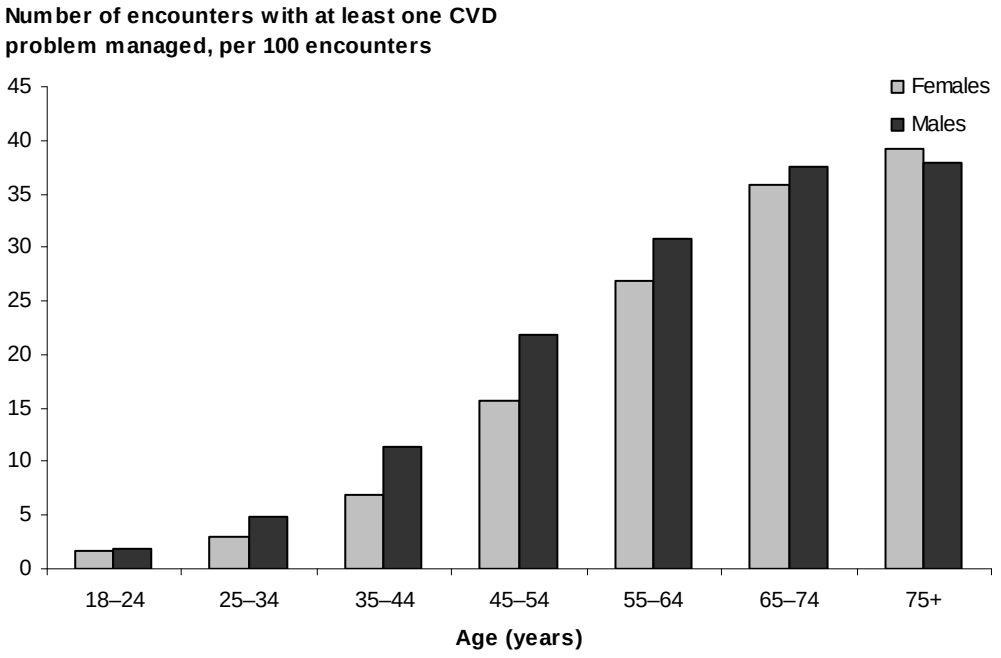
Cardiovascular disease

Note that the data presented here for encounters with at least one CVD problem managed include lipid disorders; refer to Appendix for specific codes.

In 2007–08, there were about 10.4 million GP encounters with females where at least one CVD problem was managed (extrapolated to the total number of GP encounters with females in Australia), accounting for 20% of all encounters with females in that year.

In 2007–08, the proportion of GP encounters with at least one CVD problem managed increased substantially with age for both females and males, but with some levelling off for the oldest age group (Figure 8.17). It ranged from less than 2 per 100 encounters, for those aged 18–24 years to just under 40 per 100 encounters for those aged 75 years and over (Table A8.17).

Females aged 25–64 years had lower rates of encounters with at least one CVD problem managed than males; at other ages, females and males had similar rates (Table A8.17).



Notes

1. Includes lipid disorders, refer to Appendix for specific codes.
2. Refer to Appendix Table A8.17

Source: 2007-08 Bettering the Evaluation and Care of Health program, Australian General Practice Statistics and Classification Centre.

Figure 8.17: Encounters with at least one cardiovascular problem managed, by sex and age, April 2007–March 2008

For CVD problems managed, the most common action was a prescription for a medicine, occurring in 77 out of every 100 of these problems among females (Table 8.1), followed by pathology tests (36), referral to a specialist (4), and imaging ordered (3). The rates for all actions were similar for males.

Table 8.1: Actions taken to manage cardiovascular disease problems[a], April 2007–March 2008

	Females		Males	
Action	Number per 100 problems	95% CIs	Number per 100 problems	95% CIs
Medicines prescription	77.2	73.9–80.5	81.9	78.4–85.5
Referral				
- Specialist	3.5	3.1–3.9	3.5	3.0–4.0
- Allied health services	0.5	0.3–0.6	0.3	0.2–0.5
Pathology ordered	36.1	33.2–39.0	41.7	38.3–45.1
Imaging ordered	2.6	2.2–3.0	2.3	2.0–2.7

(a) Includes lipid disorders, refer to Appendix for specific codes.

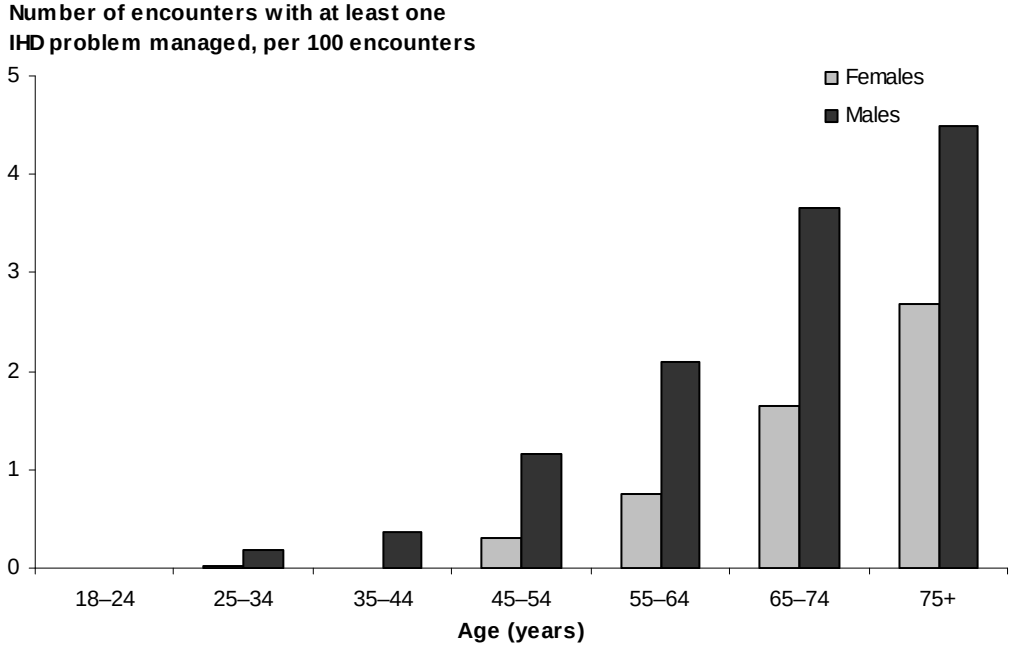
Source: 2007-08 Bettering the Evaluation and Care of Health program, Australian General Practice Statistics and Classification Centre.

Ischaemic heart disease

In 2007–08, there were about 400,000 GP encounters with females where at least one IHD problem was managed (extrapolated to the total number of GP encounters with females in Australia), accounting for less than 1% of all encounters with females in that year.

During 2007–08, the proportion of encounters with at least one IHD problem managed increased with age, peaking among those aged 75 years and over at 3 per 100 encounters with females, and 5 for males (Figure 8.18; Table A8.18). In those aged 35 years and over, females had lower rates than males. Note the majority of IHD is CHD.

For IHD problems managed, prescription of medicines was by far the most common action taken. For every 100 IHD problems managed in females, 106 prescriptions for medicines were written, followed by orders for pathology tests (33), referrals to specialists (11), and orders for imaging (3) (Table 8.2). Rates for all actions were similar for males.



Notes

1. The majority of ischaemic heart disease is CHD.
2. Refer to Appendix Table A8.18.

Source: 2007–08 Bettering the Evaluation and Care of Health program, Australian General Practice Statistics and Classification Centre.

Figure 8.18: Encounters with at least one ischaemic heart disease problem managed, by sex and age, April 2007–March 2008

Table 8.2: Actions taken to manage ischaemic heart disease[(a)] problems, April 2007–March 2008

	Females		Males	
Action	**Number per 100 problems**	**95% CIs**	**Number per 100 problems**	**95% CIs**
Medicines prescription	106.0	93.8–118.2	119.5	108.1–130.8
Referral				
- Specialist	10.5	7.0–14.0	10.3	7.6–13.0
- Allied health services	1.4	0.0–2.9	0.1	–
Pathology ordered	33.3	23.3–43.2	44.0	33.7–54.3
Imaging ordered	2.9	1.0–4.7	2.2	0.8–3.6

(a) The majority of ischaemic heart disease is CHD.

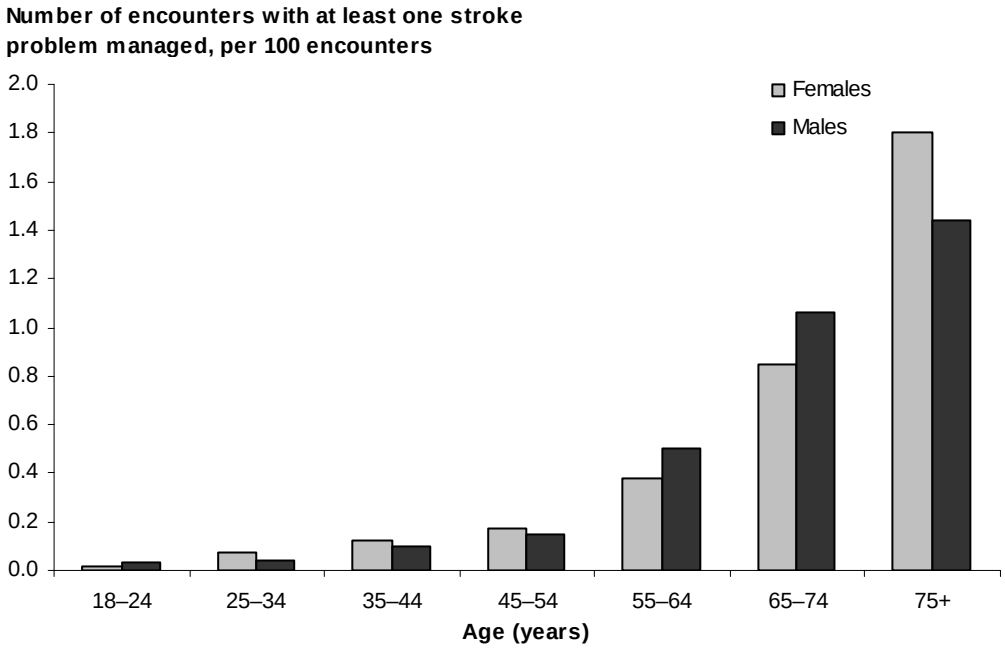
Source: 2007–08 Bettering the Evaluation and Care of Health program, Australian General Practice Statistics and Classification Centre.

Stroke

In 2007–08, there were about 300,000 GP encounters with females where at least one stroke problem was managed (extrapolated to the total number of GP encounters with females in Australia), accounting for less than 1% of all encounters with females in that year.

The proportion of encounters with at least one stroke problem managed by GPs in 2007–08 among females increased from close to 0 for every 100 encounters for young females aged 18–24 years, to 1.8 for females aged 75 years and over (Figure 8.19; Table A8.19). It did not differ between females and males across all ages (Table A8.19).

At encounters with females in 2007–08, for every 100 stroke problems managed GPs wrote 58 prescriptions, ordered 25 pathology tests, and ordered 15 imaging tests (Table 8.3). Rates for all actions were similar for males. The ordering of imaging for stroke problems was noticeably higher than for CVD overall, IHD, hypertension and heart failure.



Note: Refer to Appendix Table A8.19.

Source: 2007-08 Bettering the Evaluation and Care of Health program, Australian General Practice Statistics and Classification Centre.

Figure 8.19: Encounters with at least one stroke problem managed, by sex and age, April 2007–March 2008

Table 8.3: Actions taken to manage stroke problems, April 2007–March 2008

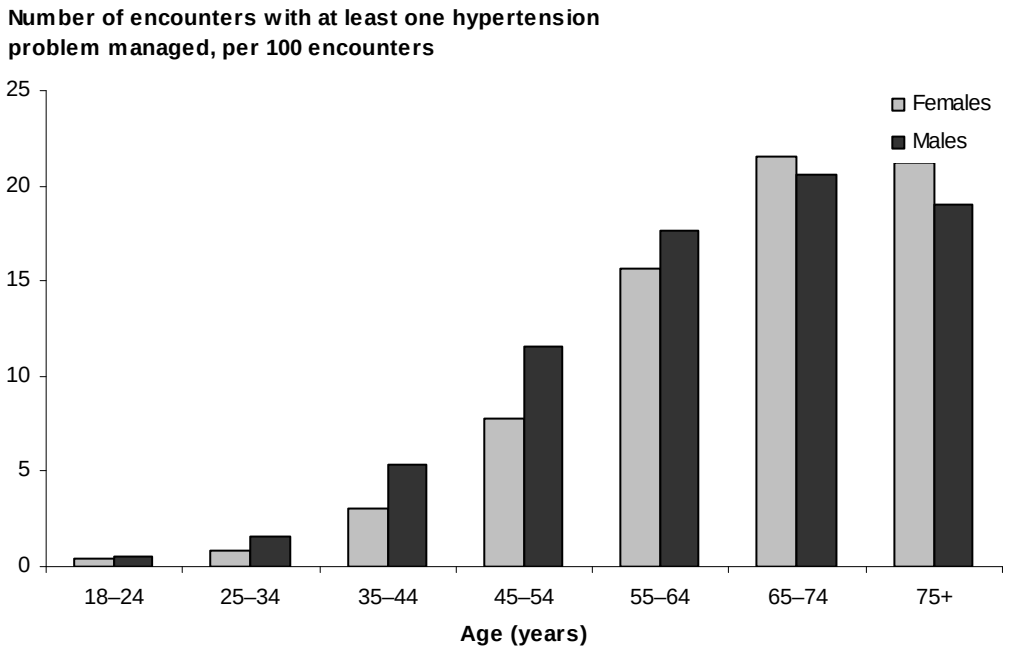
	Females		Males	
Action	Number per 100 problems	95% CIs	Number per 100 problems	95% CIs
Medicines prescription	58.1	46.6–69.6	72.8	60.4–85.1
Referral				
- Specialist	4.1	1.4–6.8	4.5	1.4–7.6
- Allied health services	3.5	1.0–6.1	–	. .
Pathology ordered	25.0	12.6–37.4	26.0	11.0–41.1
Imaging ordered	14.8	9.3–20.4	14.9	7.8–22.1

Source: 2007-08 Bettering the Evaluation and Care of Health program, Australian General Practice Statistics and Classification Centre.

Hypertension

In 2007–08, there were about 5.7 million GP encounters with females where hypertension was managed (extrapolated to the total number of GP encounters with females in Australia), accounting for 11% of all encounters with females in that year (Table A8.20). Rates increased markedly with age, though with some levelling off in the oldest age group (Figure 8.20). Females aged 35–54 years had lower attendance rates for hypertension than did males, but rates were similar for both sexes among all other ages (Table A8.20).

Prescribing of medicines was by far the most common action for these problems among females, with 93 prescriptions being written for every 100 hypertension problems managed, followed by ordering of pathology tests (29 tests per 100) (Table 8.4). All other actions looked at were quite rare. Treatments provided were very similar at encounters with females and males.



(a) Hypertension here refers to medically diagnosed hypertension, and excludes high blood pressure that may be transient; see Appendix for specific codes.

Note: Refer to Appendix Table A8.20.

Source: 2007–08 Bettering the Evaluation and Care of Health program, Australian General Practice Statistics and Classification Centre.

Figure 8.20: Encounters with at least one hypertension[(a)] problem managed, by sex and age, April 2007–March 2008

Table 8.4: Actions taken to manage hypertension[(a)] problems, April 2007–March 2008

	Females		Males	
Action	**Number per 100 problems**	**95% CIs**	**Number per 100 problems**	**95% CIs**
Medicines prescription	93.2	88.9–97.5	94.9	90.4–99.5
Referral				
- Specialist	0.9	0.5–1.2	1.2	0.8–1.5
- Allied health services	0.3	0.1–0.5	0.3	0.1–0.6
Pathology ordered	29.1	25.6–32.6	32.6	28.4–36.8
Imaging ordered	0.9	0.6–1.2	0.7	0.4–1.0

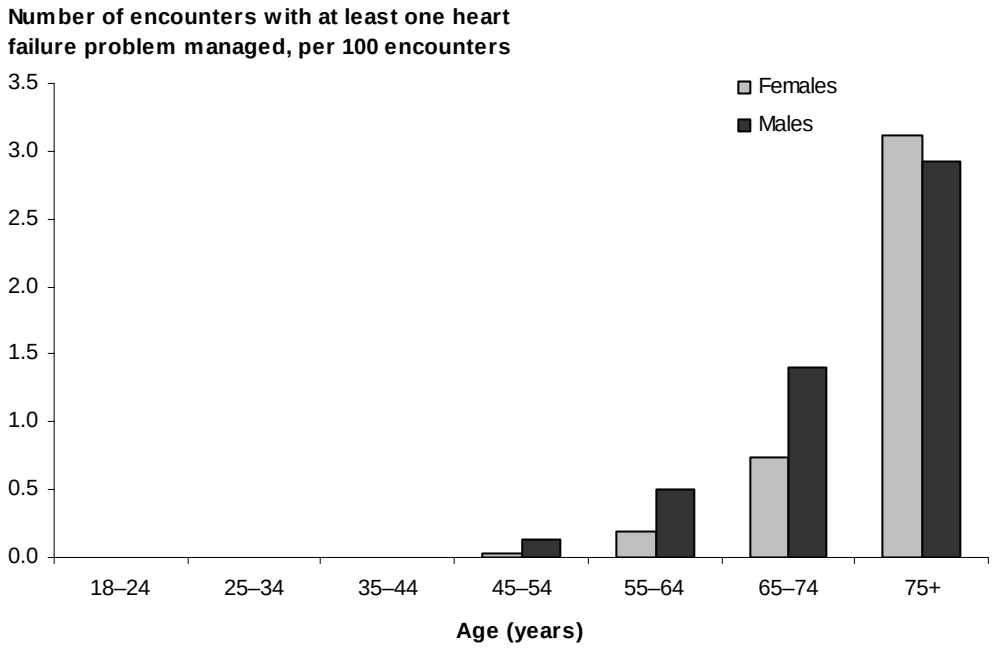
(a) Hypertension here refers to medically diagnosed hypertension, and excludes high blood pressure that may be transient; see Appendix for specific codes.

Source: 2007–08 Bettering the Evaluation and Care of Health program, Australian General Practice Statistics and Classification Centre.

Heart failure

In 2007–08, there were about 300,000 GP encounters with females where at least one heart failure problem was managed (extrapolated to the total number of GP encounters with females in Australia), accounting for less than 1% of all encounters with females in that year. As expected, rates were higher in older ages, peaking at about 3 per 100 encounters for those aged 75 years and over (Figure 8.21); rates were similar for both females and males (Table A8.21).

By far the most common action taken to manage heart failure among females was prescribing of medicines, at an average rate of more than one for each heart failure problem managed (rate of 105 per 100 problems, Table 8.5). Pathology tests were ordered at a rate of 29 test orders per 100 heart failure problems. Treatment rates were similar for males.



Note: Refer to Appendix Table A8.21.

Source: 2007–08 Bettering the Evaluation and Care of Health program, Australian General Practice Statistics and Classification Centre.

Figure 8.21: Encounters with at least one heart failure problem managed, by sex and age, April 2007–March 2008

Table 8.5: Actions taken to manage heart failure problems, April 2007–March 2008

	Females		Males	
Action	**Number per 100 problems**	**95% CIs**	**Number per 100 problems**	**95% CIs**
Medicines prescription	104.8	89.5–120.0	106.5	91.0–121.9
Referral				
- Specialist	4.8	2.2–7.4	2.3	0.2–4.5
- Allied health services	0.5	0.0–0.0	0.4	0.0–0.0
Pathology ordered	29.0	18.4–39.7	35.1	23.0–47.2
Imaging ordered	7.3	4.0–10.6	8.6	4.8–12.4

Source: 2007–08 Bettering the Evaluation and Care of Health program, Australian General Practice Statistics and Classification Centre.

Medicines

Key points

- Females filled 36.5 million prescriptions for cardiovascular medicines through the Pharmaceutical Benefits Scheme and the Repatriation Pharmaceutical Benefits Scheme in 2007–08.
- Females accounted for about half (52%) of patients dispensed cardiovascular medicines in 2007–08, amounting to about two million female users.
- Age-standardised rates of cardiovascular prescriptions dispensed were slightly lower among females than males for cardiovascular medicines overall.
- Specifically, age-standardised rates were lower for females than males for antithrombotics, cardiac therapy medicines, and lipid-lowering medicines, but higher for diuretics, calcium-channel blockers and renin-angiotensin system agents. Rates for beta-blockers were similar in both sexes.

This section is concerned with the supply of cardiovascular medicines based on data obtained from the Pharmaceutical Benefits Scheme (PBS) database. This database provides information on prescribed medicines that are subsidised by the Australian Government through the PBS and RPBS (Repatriation Pharmaceutical Benefits Scheme). Note that this database does not record the indication for which a medicine was prescribed. Therefore, it is assumed that the cardiovascular medicines shown in this section were dispensed for CVD, which is the case in the majority, but not all cases.

There are a wide range of medicines to prevent and treat CVD to improve quality of life and reduce morbidity and mortality. These are described in Table 8.6.

In this report we use the Anatomical Therapeutic Chemical (ATC) classification of medicines, because this is the classification adopted by the PBS database. The ATC classification is the Australian standard for classifying medicines but it has confusing terminology. For example, the term 'antihypertensives' refers to a particular group of medicines in the ATC classification, but there are many other medicines used to treat hypertension that are commonly referred to as 'antihypertensives' elsewhere. Similarly, the term 'antithrombotic agents' in the ATC classification includes blood clot preventing medicines (referred to as 'antiplatelet agents' elsewhere) as well as clot dissolving medicines.

In total in 2007–08, 36.5 million CVD-related prescriptions were filled by females through the PBS/RPBS (Table 8.7). The most common were for 'agents acting on the renin-angiotensin system', followed by 'serum lipid-reducing agents'. Somewhat more CVD prescriptions were filled through the PBS/RPBS for females than for males.

Females accounted for about half (52%) of patients dispensed cardiovascular medicines in 2007–08; this amounted to about two million female users of cardiovascular medicines (Table A8.22).

Further reading: detailed information about the use of medicines for CVD can be found in the report *Medicines for cardiovascular health: are they used appropriately?* (AIHW: Senes & Penm 2007).

Table 8.6: Indications for medicines used in cardiovascular disease

Medicine class (ATC code)	Indications
Antithrombotic agents (B01)	• Prevent and treat venous thromboembolism • Prevent stroke in patients with atrial fibrillation • Treat arterial thromboembolism in acute heart attack, unstable angina • Prevent thrombosis during coronary angioplasty, cardiopulmonary bypass and dialysis • Prevent heart attack and stroke in people with cardiovascular risk factors or history of heart attack, stroke, transient ischaemic attack, angina, peripheral arterial disease or atrial fibrillation • Treat acute heart attack and acute ischaemic stroke
Cardiac therapy (C01)	• Prevent and treat angina • Prevent life threatening arrhythmias that could lead to sudden cardiac death • Treat arrhythmias (atrial fibrillation or flutter) • Treat heart arrest • Prevent worsening of heart failure • Treat heart failure • Treat low blood pressure • Treat cardiogenic shock due to heart attack
Antihypertensives (C02)	• Treat hypertension to prevent disease and deaths from stroke, CHD, heart failure and aortic aneurysm • Treat hypertension to reduce microvascular disease affecting kidney, brain and retina
Diuretics (C03)	• Treat hypertension to prevent disease and deaths from stroke, CHD, heart failure and aortic aneurysm • Treat hypertension to reduce microvascular disease affecting kidney, brain and retina
Peripheral vasodilators (C04)	• Treat hypertension to prevent disease and deaths from stroke, CHD, heart failure and aortic aneurysm • Treat hypertension to reduce microvascular disease affecting kidney, brain and retina • Treat peripheral vascular disease
Beta-blocking agents (C07)	• Treat hypertension to prevent disease and deaths from stroke, CHD, heart failure and aortic aneurysm • Treat hypertension to reduce microvascular disease affecting kidney, brain and retina • Treat angina • Treat arrhythmias • Prevent further cardiovascular events and death following heart attack • Treat heart failure

(continued)

Table 8.6 (continued): Indications for medicines used in cardiovascular disease

Medicine class (ATC code)	Indications
Calcium-channel blockers (C08)	• Treat hypertension to prevent disease and deaths from stroke, CHD, heart failure and aortic aneurysm • Treat hypertension to reduce microvascular disease affecting kidney, brain and retina • Prevent angina
Agents acting on renin–angiotensin system (C09)	• Treat hypertension to prevent disease and deaths from stroke, CHD, heart failure and aortic aneurysm • Treat hypertension to reduce microvascular disease affecting kidney, brain and retina • Treat heart failure and delay disease progression • Prevent development of heart failure following heart attack • Reduce risk of heart attack, stroke and cardiovascular death in selected patients with CHD, stroke, peripheral vascular disease or diabetes • Diabetic nephropathy • Prevent worsening of kidney failure
Serum-lipid-reducing agents (C10)	• Treat lipid disorders to reduce progression of atherosclerosis and reduce risk of heart attack and stroke in people with established CVD • Treat lipid disorders to prevent CVD and deaths in people at high risk of heart attack and stroke due to the presence of multiple risk factors

Notes

1. Only those indications relevant to CVD are listed here. However, some of the medicines in this table have other indications as well.
2. Medicines shown in this table are classified according to the Anatomical Therapeutic Chemical (ATC) system.

Source: Australian Medicines Handbook 2006.

Table 8.7: Number of prescriptions dispensed, by class of medicine and sex, 2007–08

	Number		Per cent	
Medicine class	**Females**	**Males**	**Females**	**Males**
B01 Antithrombotic agents	3,312,797	3,866,000	46.1	53.8
C01 Cardiac therapy	1,775,018	1,748,832	50.3	49.5
C02 Antihypertensives	331,627	513,575	39.2	60.7
C03 Diuretics	1,530,411	945,108	61.7	38.1
C04 Peripheral vasodilators	679	1,946	25.8	73.9
C07 Beta-blocking agents	3,146,259	2,701,969	53.7	46.2
C08 Calcium-channel blockers	4,373,487	3,275,929	57.1	42.8
C09 Agents acting on renin-angiotensin system	11,485,872	9,350,236	55.1	44.8
C10 Serum-lipid-reducing agents	10,569,030	11,268,616	48.4	51.6
Total	**36,525,180**	**33,672,211**	**52.0**	**47.9**

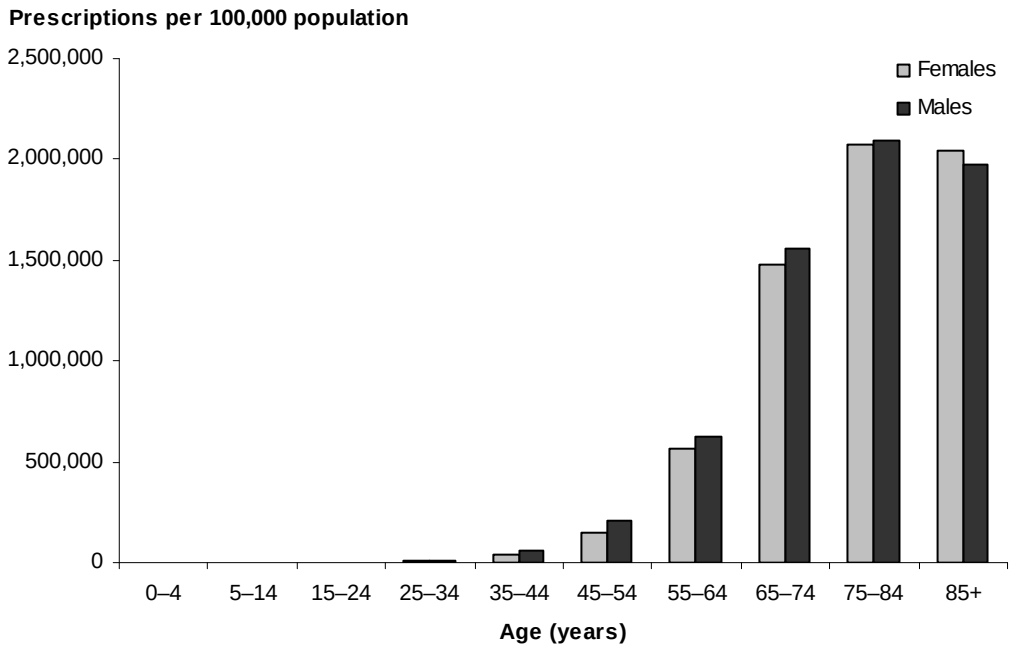
Note: Medicines classified according to the WHO Anatomical Therapeutic Chemical (ATC) system.

Source: AIHW analysis of PBS/RPBS data.

Not surprisingly, rates of prescriptions filled through the PBS/RPBS increased substantially with age, though fell slightly for people aged 85 years and over (Figure 8.22). Most (92%) of the prescriptions for females were for those aged 55 years and over (Table A8.24).

The overall rate of prescriptions filled through the PBS/RPBS for cardiovascular medicines was slightly lower for females than males. Females had slightly lower rates in most age groups, leading to a lower age-standardised rate overall (301,627 compared with 324,532 per 100,000 population, respectively (Table A8.24).

The classes of cardiovascular medicines most often prescribed in women are described in more detail below. Data for the two groups not covered in the text below—antihypertensives and peripheral vasodilators—are included in tables A8.27 and A8.29.



Note: See Appendix Table A8.24.

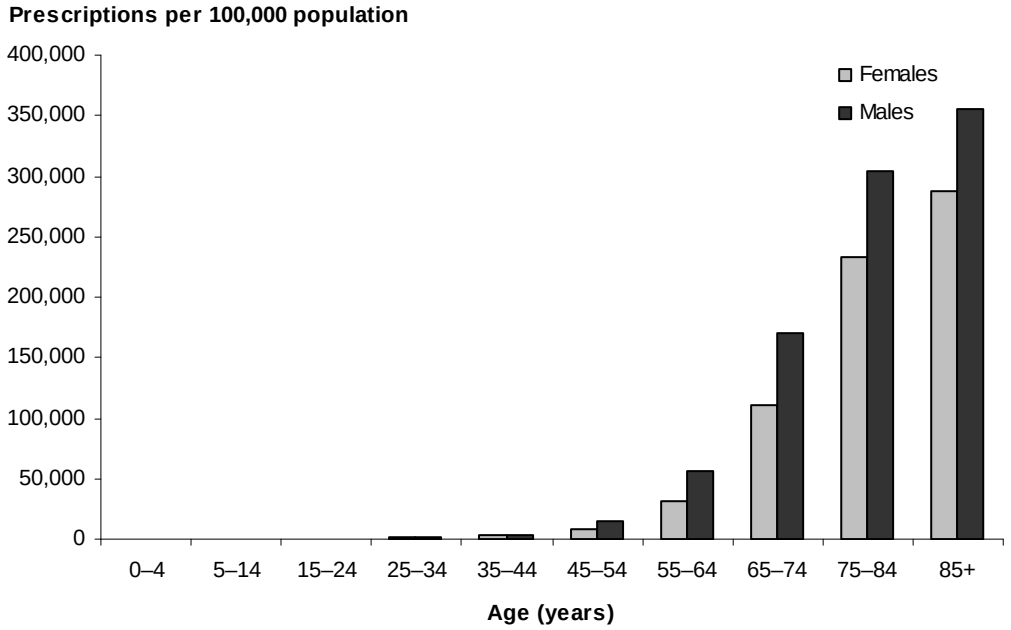
Source: AIHW analysis of PBS/RPBS data.

Figure 8.22: Prescriptions for cardiovascular medicines supplied through the PBS/RPBS, age-specific rates, by sex, 2007–08

Antithrombotic agents

These medicines are used to prevent and dissolve blood clots. They are particularly useful in patients with heart attack, where a clot blocks blood supply to part of the heart, and in people with stroke caused by a clot impeding blood flow to part of the brain (ischaemic stroke).

In 2007–08, there were 3.3 million PBS/RPBS prescriptions for antithrombotic medicines dispensed among females. Prescription rates increased markedly with age (Figure 8.23). Almost all prescriptions for females (94%) were for females aged 55 years and over (Table A8.26). Females were supplied these medicines at a lower rate than males in every age group except 0–4 years. This led to a lower age-standardised rate for females (26,502 prescriptions per 100,000 population) than males (38,105). However, more prescriptions were filled for females than males aged 80 years and over (Table A8.25).



Note: See Appendix Table A8.25.

Source: AIHW analysis of PBS/RPBS data.

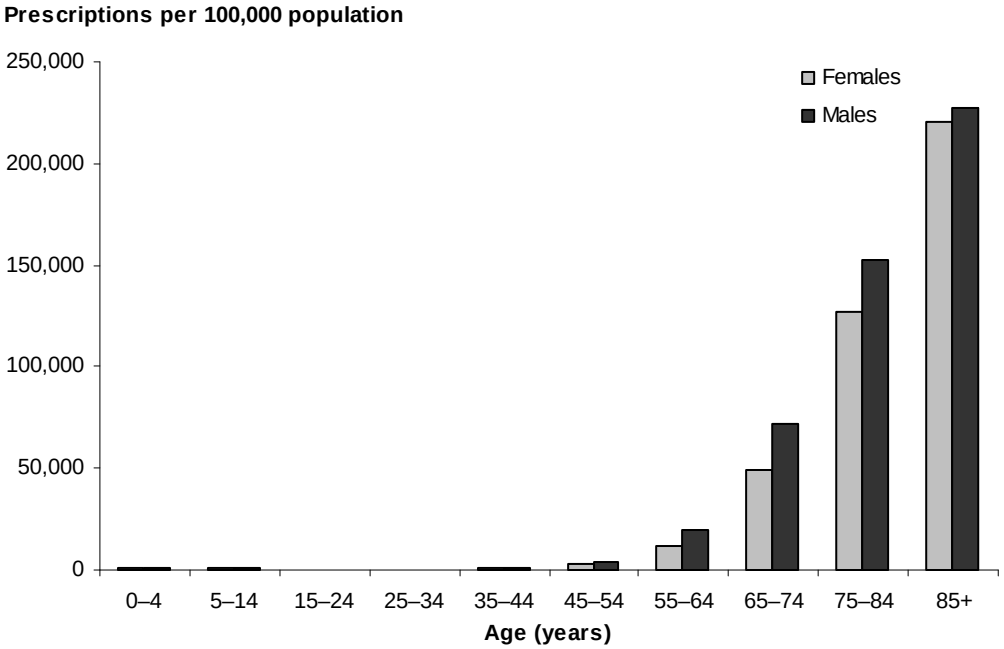
Figure 8.23: Prescriptions for antithrombotic agents dispensed through the PBS/RPBS, age-specific rates by sex, 2007–08

Cardiac therapy

Cardiac therapy medicines are used to prevent and treat a range of heart conditions, including angina, heart attack, arrhythmia and heart failure. They include digoxin, lignocaine and adrenaline among others.

There were just under 1.8 million prescriptions filled under the PBS/RPBS for cardiac therapy medicines for females in 2007–08 (Table A8.26). The vast majority (96%) were for females aged 55 years and over.

These prescription rates increased markedly with age (Figure 8.24), including into the oldest age group. Females had lower rates than males in all age groups from 30 years of age, resulting in a lower age-standardised rate (13,694 per 100,000 population compared with 17,561) (Table A8.26).



Note: See Appendix Table A8.26.

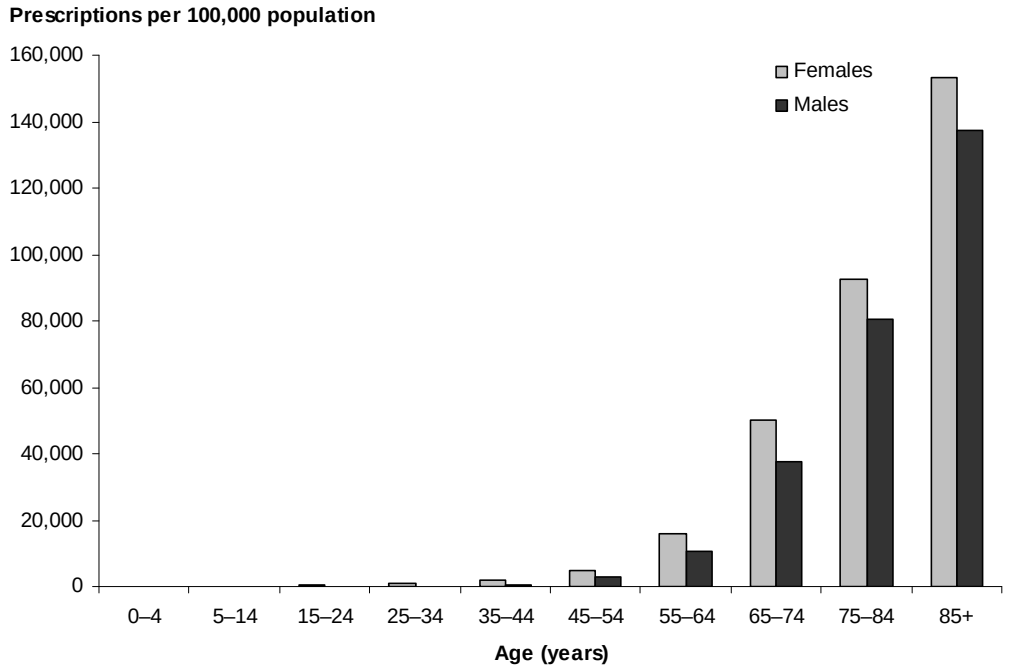
Source: AIHW analysis of PBS/RPBS data.

Figure 8.24: Prescriptions for cardiac therapy medicines dispensed through the PBS/RPBS, age-specific rates, by sex, 2007–08

Diuretics

Diuretics are used in the treatment of hypertension, by reducing fluid flowing through blood vessels, which reduces pressure on the walls of the arteries. Examples include thiazides and sulfonamides.

In 2006–07, there were 1.5 million prescriptions for diuretics filled through the PBS/RPBS by females, 92% were for females aged over 55 years (Table A8.28). This is because the rates increased markedly with age (Figure 8.25). Females had higher rates than males in all adult age groups, and an overall age-standardised rate for females of 12,151 per 100,000 population, compared with 9,522 for males.



Note: See Appendix Table A8.28.

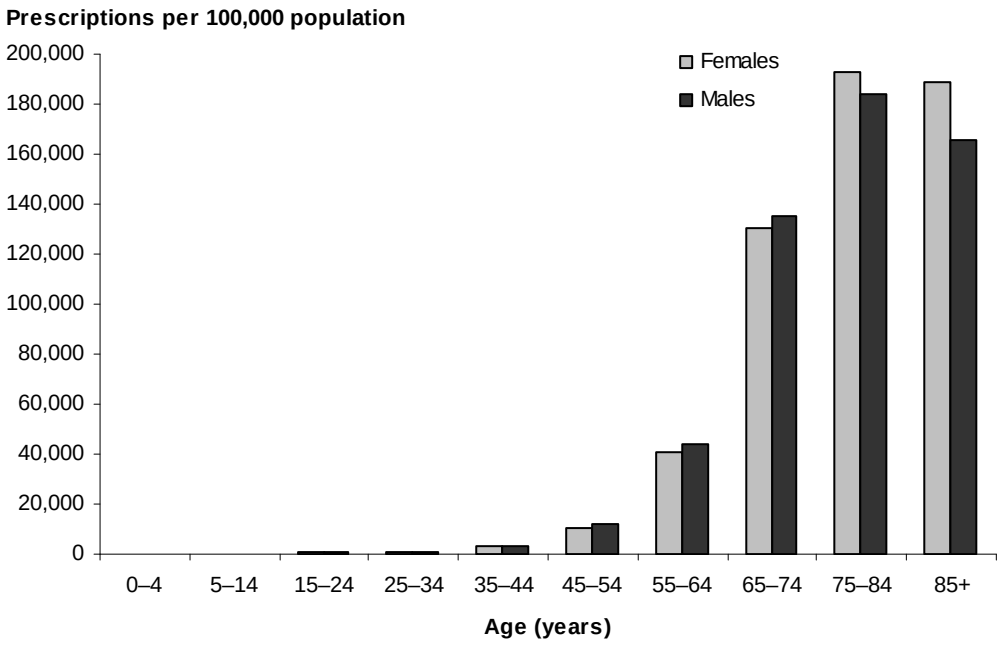
Source: AIHW analysis of PBS/RPBS data.

Figure 8.25: Prescriptions for diuretics dispensed through the PBS/RPBS, age-specific rates, by sex, 2007–08

Beta-blocking agents

Beta-blockers are used to treat patients with high blood pressure. Through their lowering of blood pressure, these drugs help prevent strokes and heart attacks. Also, in people with angina or history of heart attack, beta-blockers can reduce pain and deaths, and prevent further heart attacks. Certain beta-blockers are used in the treatment of heart failure.

In 2007–08, there were more than 3.1 million PBS/RPBS prescriptions for beta blocking medicines dispensed among females (Table A8.30). Rates increased substantially with age, though fell somewhat in the oldest age group (Figure 8.26). Rates of PBS/RPBS prescriptions supplied were very similar for females and males, though females had higher rates in the oldest age groups (75 years and over).



Note: See Appendix Table A8.30.

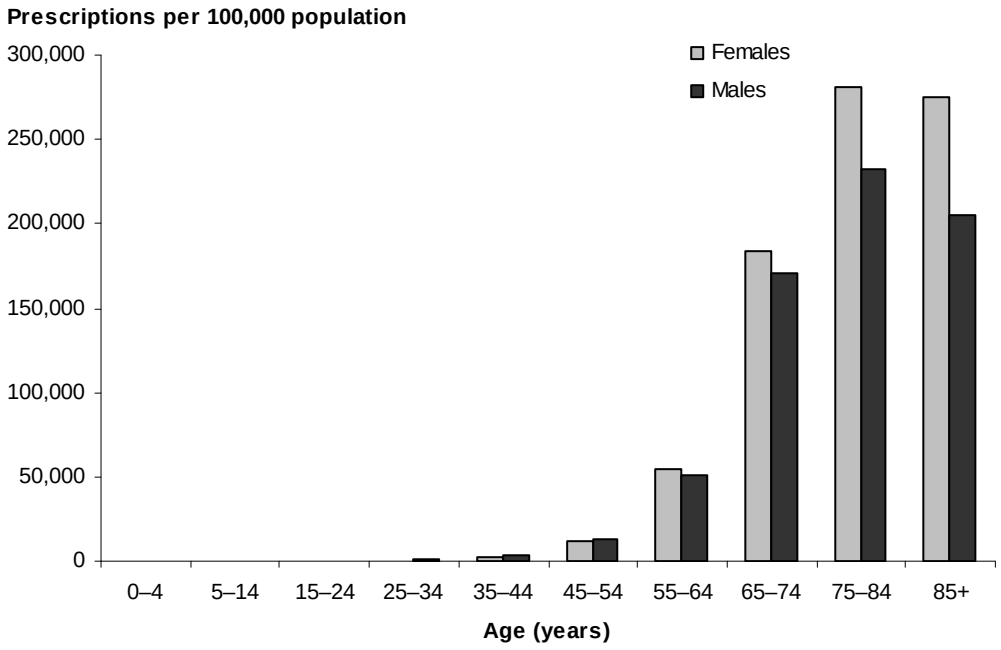
Source: AIHW analysis of PBS/RPBS data.

Figure 8.26: Prescriptions for beta-blocking agents dispensed through the PBS/RPBS, age-specific rates, by sex, 2007–08

Calcium-channel blockers

Calcium blockers are used to reduce blood pressure and treat angina. In 2007–08, there were almost 4.4 million PBS/RPBS prescriptions for calcium-blocking medicines dispensed among females (Table A8.31). As with other CVD medicines, use increased sharply with age, but waned in the oldest age groups (Figure 8.27).

Rates were very similar for females and males up to about 60 years of age. At older ages, females had higher prescription rates than males, and consequently females had higher age-standardised rates than males (35,824 per 100,000 population compared with 31,878).



Note: See Appendix Table A8.31.

Source: AIHW analysis of PBS/RPBS data.

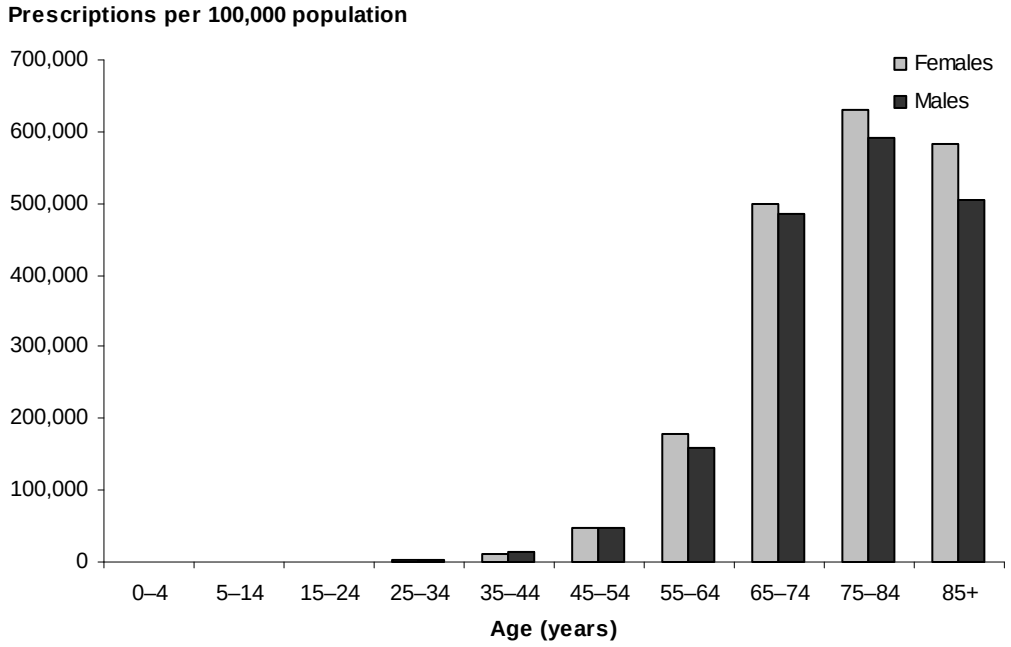
Figure 8.27: Prescriptions for calcium-channel blockers dispensed through the PBS/RPBS, age-specific rates, by sex, 2007–08

Agents acting on the renin-angiotensin system

Renin-angiotensin system medicines are used widely to treat people with high blood pressure or heart failure. They limit the progressive enlargement of the heart that can occur after a heart attack and relieve heart failure symptoms. If given early during a heart attack, they can reduce the risk of death.

In 2007–08, there were nearly 11.5 million PBS/RPBS prescriptions for these medicines dispensed among females. Again, use increased sharply with age up to the oldest age groups and then declined for those aged 85 years and over (Figure 8.28).

Prescription rates were very similar for females and males up to about 55 years of age, and after that rates were higher for females. This resulted in a higher age-standardised rate for females than males (95,404 per 100,000 population compared with 90,270) (Table A8.32).



Note: See Appendix Table A8.32.

Source: AIHW analysis of PBS/RPBS data.

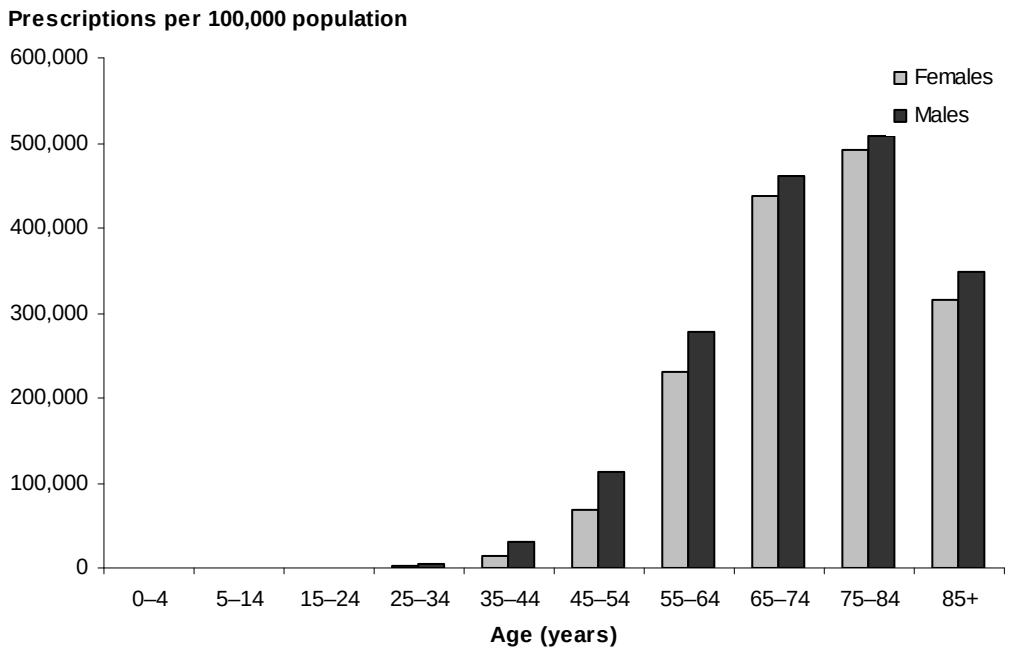
Figure 8.28: Prescriptions for agents acting on the renin-angiotensin system dispensed through the PBS/RPBS, age-specific rates, by sex, 2007–08

Serum-lipid-reducing agents

Lipid-lowering medicines aim to reduce cholesterol and/or triglyceride in people with high levels or at high risk of CVD. Statins are a major component of this group.

In 2007–08, there were nearly 10.6 million PBS/RPBS prescriptions for serum-lipid-reducing medicines dispensed among females (Table A8.33). Rates increased sharply with age, but declined substantially over 84 years of age (Figure 8.29).

Females were prescribed this class of medicine at a slightly lower rate than males in all age groups. This resulted in a lower age-standardised rate for females (89,364 prescriptions per 100,000 population) than males (105,915).



Note: See Appendix Table A8.33.

Source: AIHW analysis of PBS/RPBS data.

Figure 8.29: Prescriptions for serum-lipid-reducing agents dispensed through the PBS/RPBS, age-specific rates, by sex, 2007–08

9 Health care expenditure

Key points

- CVD is the most costly group of diseases in Australia. In 2004–05, CVD cost $5,942.1 million in allocated recurrent health system expenditure, which is 11% of the total.
- Overall, expenditure was lower on females compared with males—$2,682.8 million and $3,259.4 million, respectively, making CVD the second most expensive group of diseases for females, behind oral health.
- For females, those aged 75–84 years were the costliest age group.
- Expenditure per person increased markedly with age, from $14 or less for females aged 24 years and under to $1,699 for females aged 85 years and over.
- Overall, on average, about 20% less was spent per person on females than on males—$261 and $322, respectively.
- Most of the difference in expenditure between sexes related to hospital-admitted patients. Expenditure on hospital-admitted patients for females was less than three-quarters that for males.

This chapter presents estimates of expenditure on CVD overall and by specific cardiovascular diseases where possible—data are presented as overall expenditure by sex and age, as well as expenditure per person by sex and age (that is, taking in to account the number of people in any given sex/age group). For more information on data, methods and data sources refer to *Health care expenditure on cardiovascular diseases 2004–05* (AIHW 2008c).

The expenditure reported here is funded by the Australian Government, and state, territory and local governments, as well as non-government sources (such as private health insurance and individuals). Estimates are for the period 2004–05, and are the most up to date currently available.

Included in this chapter are estimates of direct health expenditure only—the expenditure related to preventing, diagnosing and treating health problems. They do not include costs of CVD that are not accrued by the health system, such as travel costs of patients, costs associated with the social and economic burden on carers and family, and costs relating to lost quality and quantity of life. Therefore, these estimates do not represent the total economic impact of CVD in the Australian community.

Health expenditure comprises spending on items such as hospital services, medical services, medicines, community and public health services, and health research. Expenditure per person was calculated based on the total number of females and males in the population, rather than the population with CVD or the population hospitalised with CVD. This was done to enable comparisons between sexes across all areas of expenditure.

Note that the figures shown exclude expenditure on treatment of abnormal blood lipids, such as high blood cholesterol, because this is allocated to the category 'Endocrine, nutritional and metabolic disorders' and not to CVD (even though the main clinical goal

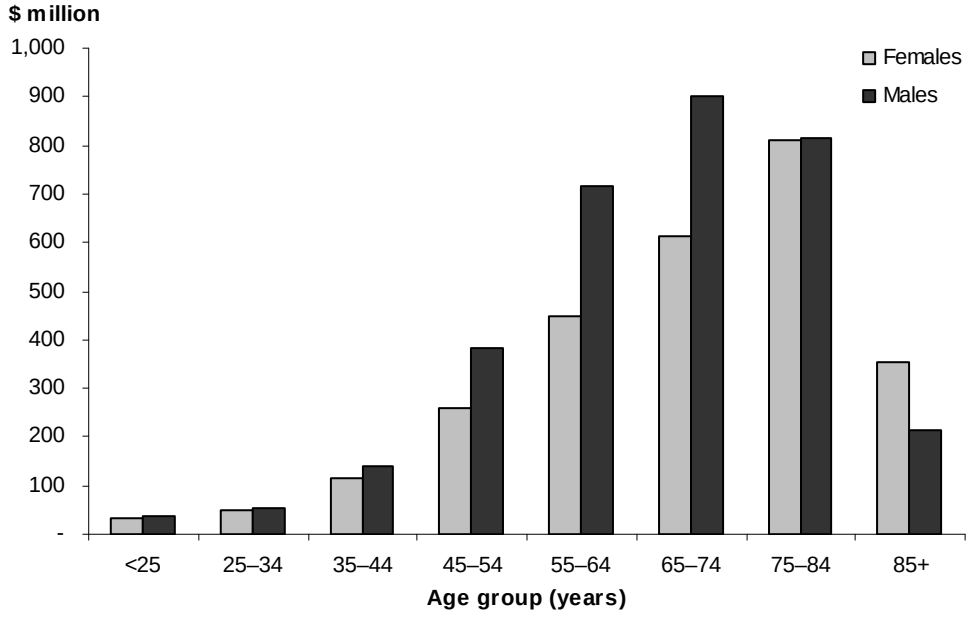
when treating abnormal blood lipids is usually related to CVD). This leads to an underestimation of the total expenditure on medicines used to prevent and treat CVD.

All cardiovascular disease

CVD is the most costly group of diseases in Australia in terms of health expenditure. In 2004–05, they cost $5,942.1 million in allocated recurrent health system expenditure, which is 11% of the total (AIHW 2008c). The next highest cost group was oral health at $5,304.9 million, followed by expenditure on mental disorders ($4,128.2 million), musculoskeletal conditions ($3,955.9 million) and cancers ($3,787.2 million).

Expenditure on CVD in the younger age groups was relatively low for females and males and increased sharply from about 45 years (Figure 9.1; Table A9.1). The fall in expenditure in people aged 85 years and over reflected the smaller population in that age group. For females, those aged 75–84 years were the costliest group.

Overall, expenditure for CVD was lower on females compared with males ($2,682.8 million and $3,259.4 million, respectively). This difference was most marked at ages 45–74 years and disappeared among those aged 75–84 years. In people aged 85 years and over, expenditure on females was greater, reflecting longer life expectancy for females.



Notes

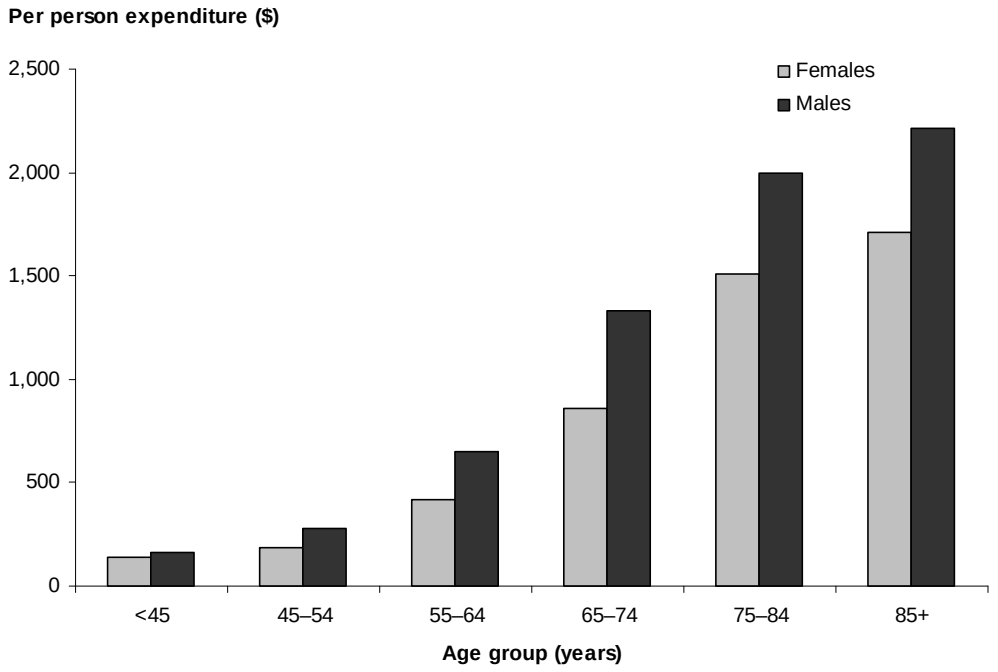
1. Includes private medical services provided in hospital. Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under co-payment prescriptions, but excludes highly specialised medicines. Also excludes over-the-counter medicines such as vitamins and minerals, first aid and wound care products, pain-killers and a number of complementary health products sold in both pharmacies and other retail outlets.
2. Refer to Appendix Table A9.1.

Source: AIHW Disease Expenditure Database.

Figure 9.1: Health care expenditure on all cardiovascular disease, by age and sex, 2004–05

Expenditure for CVD per person increased markedly with age, from $14 or less for females aged 24 years and under to $1,699 for females aged 85 years and over (Figure 9.2; Table A9.2).

For CVD as a whole, the largest proportion of expenditure occurred among people aged 75 years and over. Although total expenditure on the most elderly was lower due to the smaller number of people in these age groups, more was spent per person among the most elderly than for any other age group. This applied to both females and males (Figure 9.3).



Note: Refer to Appendix Table A9.2.

Source: AIHW Disease Expenditure Database.

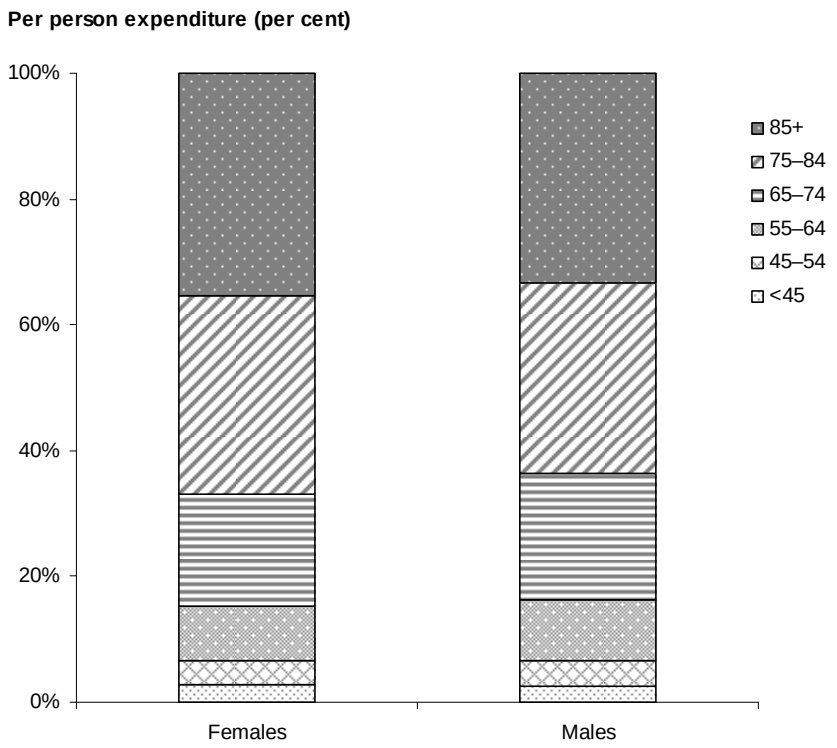
Figure 9.2: Health care expenditure on all cardiovascular disease, per person, by age and sex, 2004–05

Overall, on average, about 20% less was spent per person on females than on males ($261 and $322, respectively). This pattern was observed in every age group. The largest gap was in those aged 45–74 years, where on average for every dollar spent on males, about $0.65 was spent on females (Table A9.2).

Patients admitted to hospital accounted for the largest share of expenditure for CVD, followed by prescription medicines (Figure 9.4). For females, expenditure amounted to $1,214.3 million for hospital-admitted patients, $816.6 million for prescription medicines, $577.9 million for out-of-hospital medical services and $74.0 million on research (Table A9.1).

Most of the difference in expenditure between sexes is related to hospital-admitted patients. Expenditure on hospital-admitted patients for females was less than three-quarters that for males—$1,214.3 million for females and $1,795.1 million for males (Table A9.1). This reflects the larger number of hospitalisations with CVD among males. In 2004–05, there were about

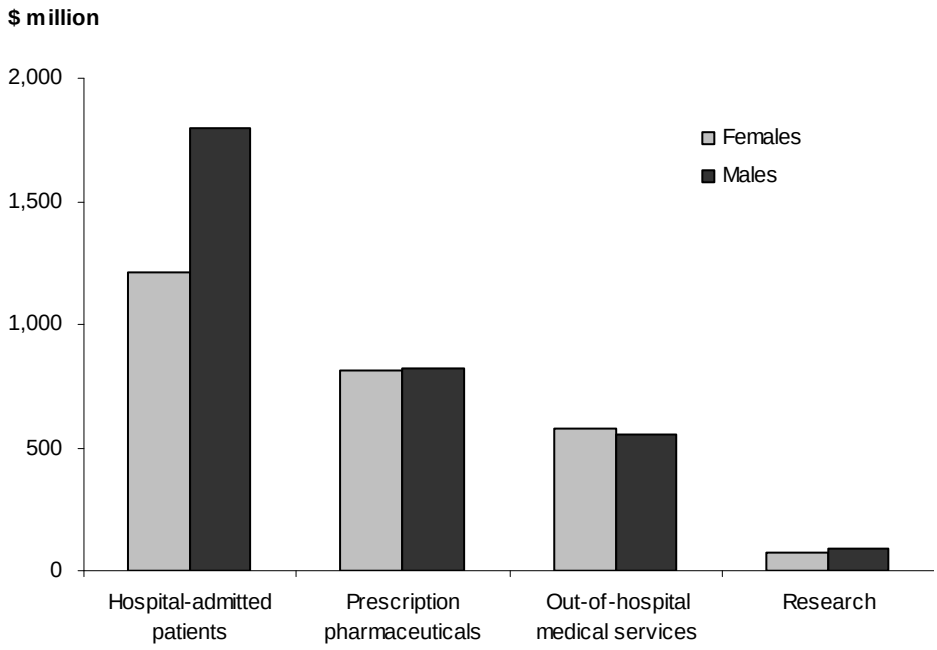
260,000 hospitalisations with CVD for males, compared with about 190,000 for females. The largest difference was in people aged 55–64 years, with on average about $0.40 spent on females for every dollar spent on males (Table A9.3). Expenditure on other areas was roughly equivalent for both sexes.



Notes

Source: AIHW Disease Expenditure Database.

Figure 9.3: Proportion of health care expenditure on all cardiovascular disease, per person, by age and sex, 2004–05



Notes

1. Includes private medical services provided in hospital. Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under co-payment prescriptions, but excludes highly specialised medicines. Also excludes over-the-counter medicines such as vitamins and minerals, first aid and wound care products, pain-killers and a number of complementary health products sold in both pharmacies and other retail outlets.
2. Refer to Appendix Table A9.1.

Source: AIHW Disease Expenditure Database.

Figure 9.4: Health care expenditure on all cardiovascular disease, by area of expenditure, by sex, 2004–05

Coronary heart disease

In 2004–05, $1,769.4 million was spent on CHD, representing 31% of the total expenditure on CVD.

Expenditure on CHD increased markedly with age from about 35 years, and decreased in the most elderly (Figure 9.5; Table A9.4). The fall in expenditure in people aged over 85 years and over is due to the smaller population in that age group. For females, those aged 75–84 years were the most expensive group.

Overall, expenditure for CHD in females was one-half that in males ($605.6 million and $1,163.8 million, respectively) (Table A9.4). The difference in expenditure was most marked at ages 45–74 years, but remained in those aged 75–84 years (Figure 9.7). In people aged 85 years and over expenditure on females was greater, reflecting longer life expectancy for females.

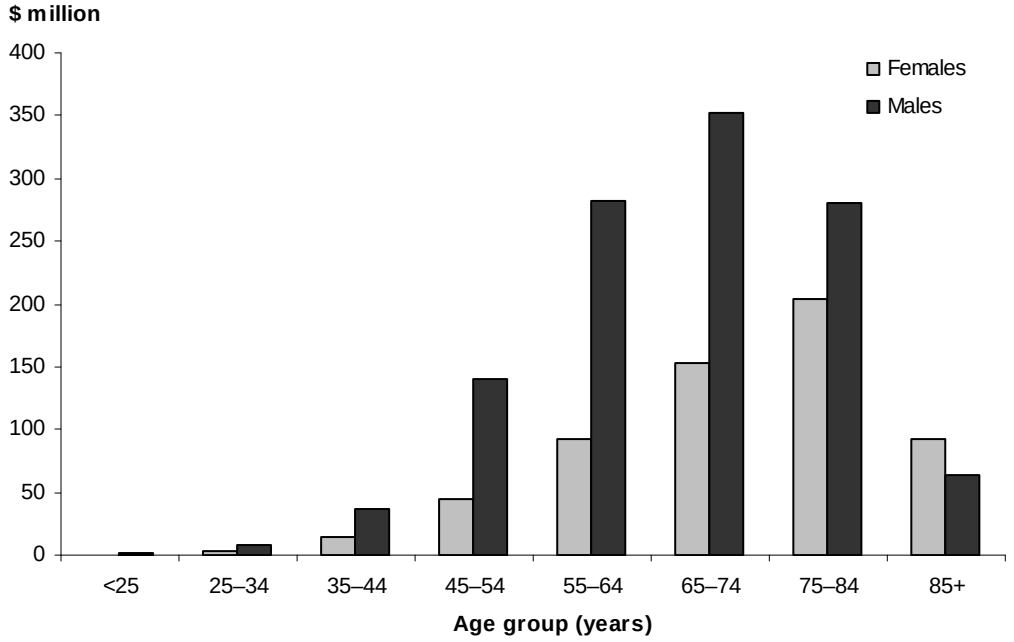
Expenditure for CHD per person increased markedly with age, from under $1 for females aged below 25 years to $451 for females aged 85 years and over (Figure 9.6; Table A9.5).

For CHD, the largest proportion of expenditure among females was in those aged 75 years and over, whereas in males there was a more even distribution of expenditure in those aged 65–74 years, 75–84 years and 85 years and over (Figure 9.7).

Overall, on average, about one-half was spent per person on females compared with males ($59 and $115, respectively). This pattern was observed in every age group. The largest gap was in those aged 45–64 years, where on average for every dollar spent on males, about $0.32 was spent on females (Table A9.6).

Patients admitted to hospital accounted for the largest share of expenditure for CHD, followed by prescription medicines (Figure 9.8). For females, expenditure amounted to $435.3 million for hospital-admitted patients, $102.8 million for prescription medicines and $67.5 million for out-of-hospital medical services (Table A9.4).

Substantially less was spent for CHD on females than males across all areas. Expenditure on hospital-admitted patients for females was half that of males—$435.3 million and $870.9 million, respectively (Table A9.4). The largest difference was in people aged 45–54 years, with on average $0.26 spent on hospital-admitted females for every dollar spent on males (Table A9.6). On average, for every dollar spent on males, expenditure for females on prescription medicines was $0.55 and that on out-of-hospital medical services was $0.61.

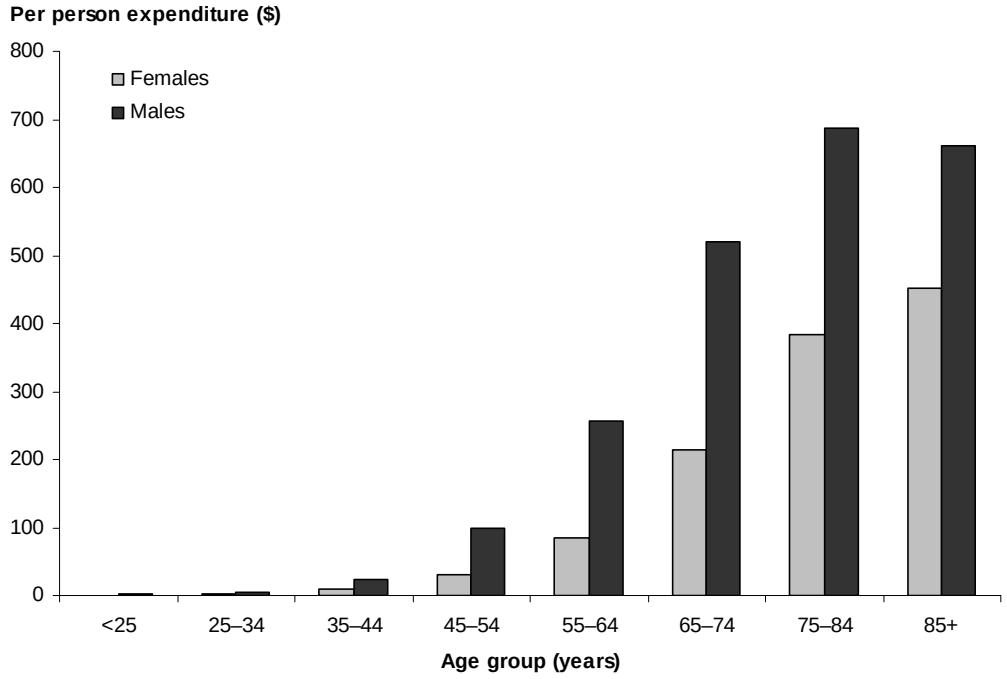


Notes

1. Does not include expenditure on research. Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under co-payment prescriptions, but excludes highly specialised medicines. Also excludes over-the-counter medicines such as vitamins and minerals, first aid and wound care products, pain-killers and a number of complementary health products sold in both pharmacies and other retail outlets. Includes private medical services provided in hospital.
2. Refer to Appendix Table A9.4.

Source: AIHW Disease Expenditure Database.

Figure 9.5: Health care expenditure for coronary heart disease, by age and sex, 2004–05

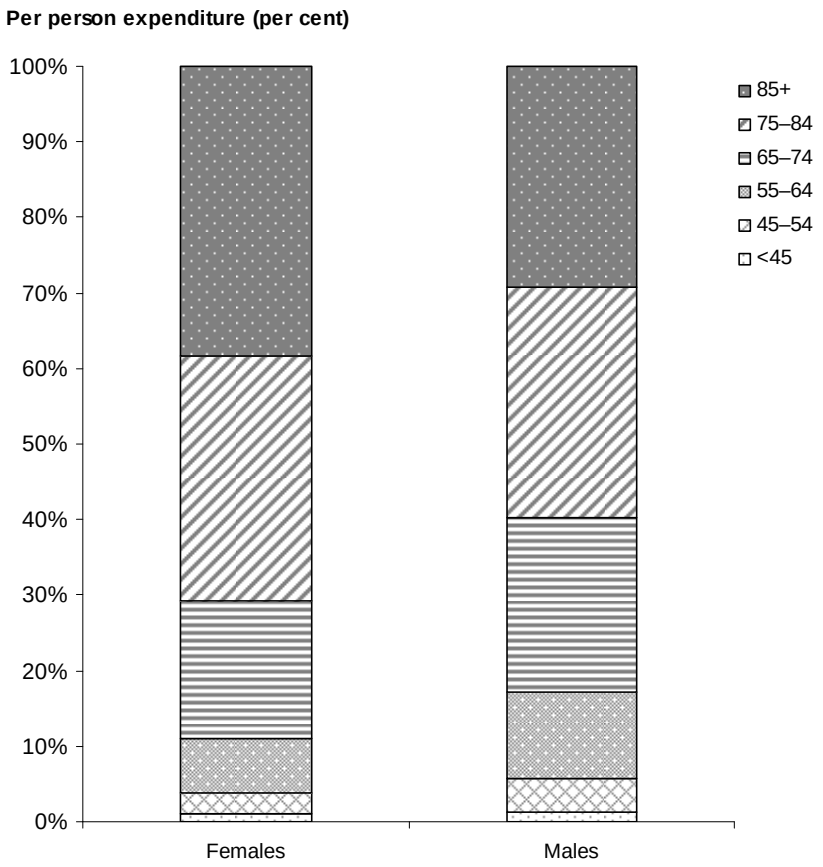


Notes

1. Does not include expenditure on research.
2. Refer to Appendix Table A9.5.

Source: AIHW Disease Expenditure Database.

Figure 9.6: Health care expenditure for coronary heart disease, per person, by age and sex, 2004–05

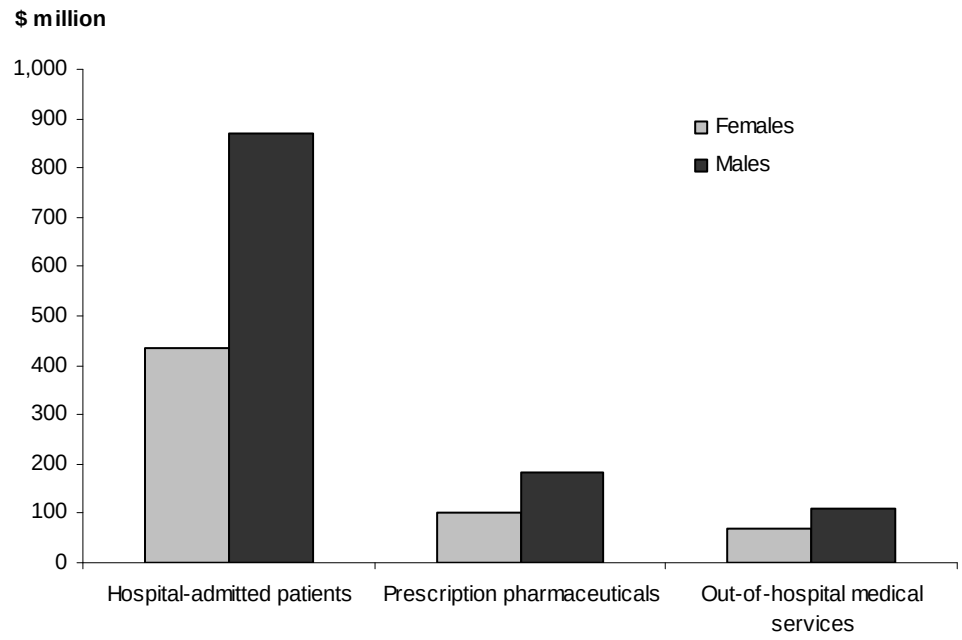


Notes

1. Does not include expenditure on research. Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under co-payment prescriptions, but excludes highly specialised medicines. Also excludes over-the-counter medicines such as vitamins and minerals, first aid and wound care products, pain-killers and a number of complementary health products sold in both pharmacies and other retail outlets. Includes private medical services provided in hospital.
2. Refer to Appendix Table A9.6.

Source: AIHW Disease Expenditure Database.

Figure 9.7: Proportion of health care expenditure on coronary heart disease, per person, by age and sex, 2004–05



Notes

1. Does not include expenditure on research. Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under co-payment prescriptions, but excludes highly specialised medicines. Also excludes over-the-counter medicines such as vitamins and minerals, first aid and wound care products, pain-killers and a number of complementary health products sold in both pharmacies and other retail outlets. Includes private medical services provided in hospital.
2. Refer to Appendix Table A9.4.

Source: AIHW Disease Expenditure Database.

Figure 9.8: Health care expenditure for coronary heart disease, by sex and area of expenditure, 2004–05

Stroke

Health care expenditure on stroke amounted to $519.7 million in 2004–05, which is 9% of the total spent on CVD.

Expenditure on stroke increased markedly with age from about 35 years, and decreased in the most elderly (Figure 9.9; Table A9.7). The fall in expenditure in people aged 85 years and over is due to the smaller population in that age group. For females, those aged 75–84 years were the most expensive group.

Overall, slightly more was spent on females with stroke ($265.6 million) than on males ($254.1 million) (Table A9.7). Expenditure on females was lower than for males in the age groups up to 75 years, but beyond that age, expenditure on females was greater, reflecting longer life expectancy for females.

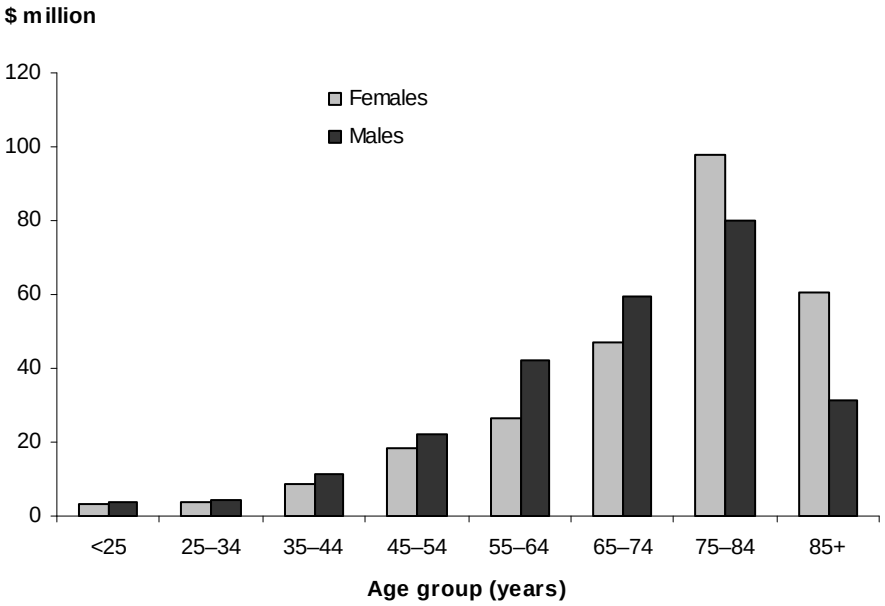
Expenditure for stroke per person increased markedly with age, from around $1 for females aged below 25 years to $293 for females aged 85 years and over (Figure 9.10; Table A9.8).

For stroke, the largest proportion of expenditure among females was in those aged 75 years and over, as was the case in males (Figure 9.11).

Overall, on average, around the same amount was spent per person on females ($26) compared with males ($25). However, in almost every age group expenditure per person on females was exceeded by that for males. The largest gap was in those aged 55–64 years, where on average for every dollar spent on males, about $0.63 was spent on females (Table A9.8).

Patients admitted to hospital accounted for the largest share of expenditure for stroke, followed by prescription medicines (Figure 9.12). For females, expenditure amounted to $210.9 million for hospital-admitted patients, $31.9 million for prescription medicines and $22.9 million for out-of-hospital medical services (Table A9.7).

Similar amounts were spent for stroke on females and males, across all areas. Expenditure on hospital-admitted patients for females was slightly higher than for males—$210.9 million and $203.1 million, respectively (Table A9.7). The largest difference was in people aged 55–64 years, with on average $0.61 spent on hospital-admitted females for every dollar spent on males (Table A9.9).

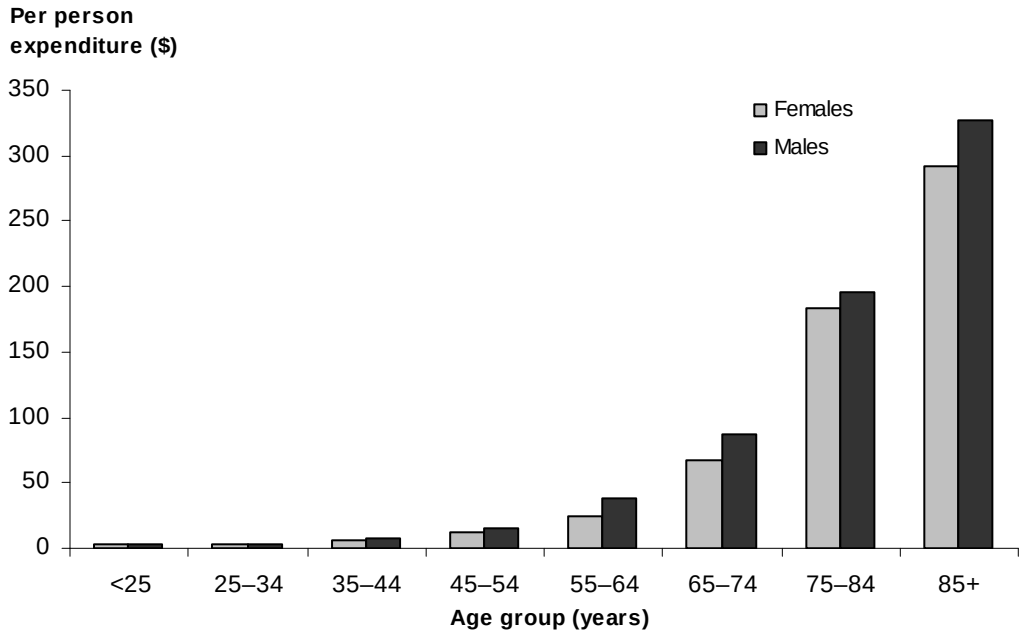


Notes

1. Does not include expenditure on research. Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under co-payment prescriptions, but excludes highly specialised medicines. Also excludes over-the-counter medicines such as vitamins and minerals, first aid and wound care products, pain-killers and a number of complementary health products sold in both pharmacies and other retail outlets. Includes private medical services provided in hospital.
2. Refer to Appendix Table A9.7.

Source: AIHW Disease Expenditure Database.

Figure 9.9: Health care expenditure for stroke, by age and sex, 2004–05

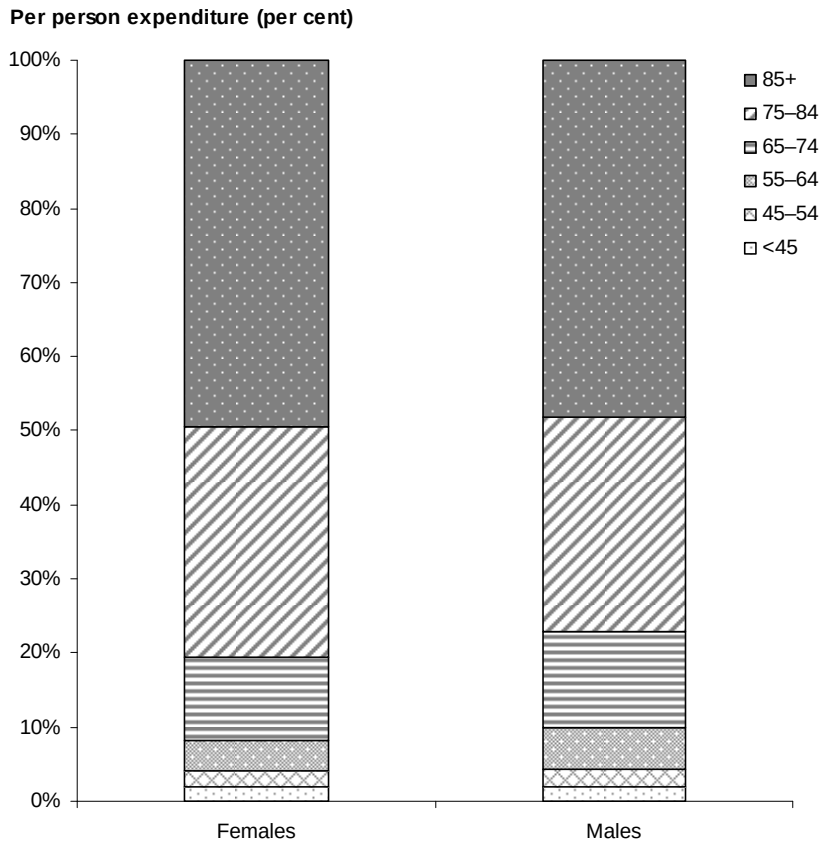


Notes

1. Does not include expenditure on research.
2. Refer to Appendix Table A9.8.

Source: AIHW Disease Expenditure Database.

Figure 9.10: Health care expenditure for stroke, per person, by age and sex, 2004–05



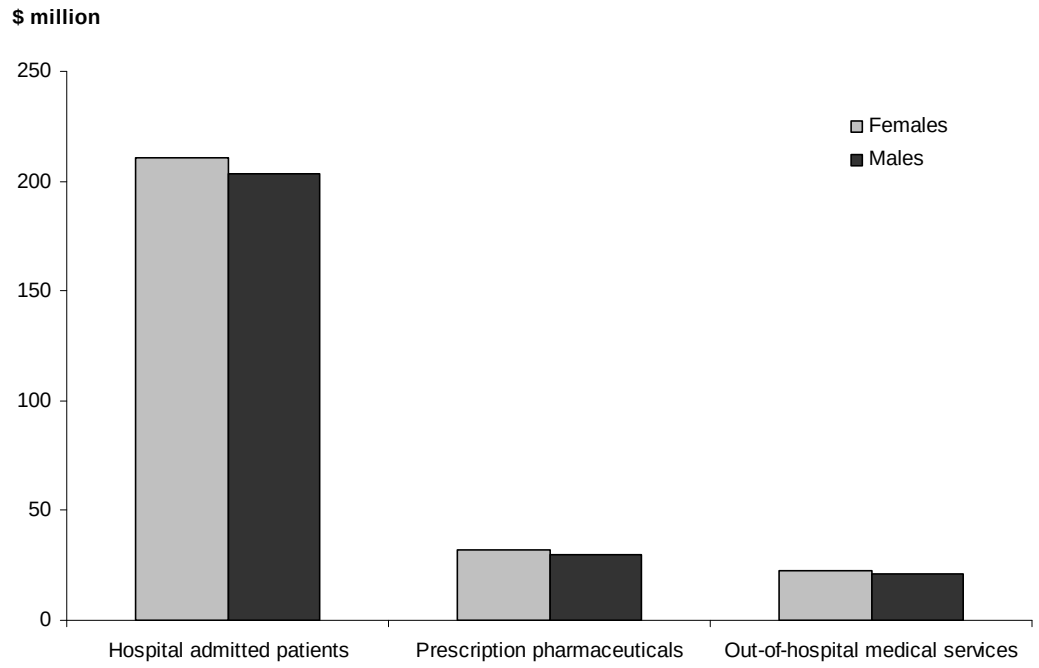
Notes

1. Does not include expenditure on research. Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under co-payment prescriptions, but excludes highly specialised medicines. Also excludes over-the-counter medicines such as vitamins and minerals, first aid and wound care products, pain-killers and a number of complementary health products sold in both pharmacies and other retail outlets. Includes private medical services provided in hospital.

2. Refer to Appendix Table A9.9.

Source: AIHW Disease Expenditure Database.

Figure 9.11: Proportion of health care expenditure on stroke, per person, by age and sex, 2004–05



Notes

1. Does not include expenditure on research. Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under co-payment prescriptions, but excludes highly specialised medicines. Also excludes over-the-counter medicines such as vitamins and minerals, first aid and wound care products, pain-killers and a number of complementary health products sold in both pharmacies and other retail outlets. Includes private medical services provided in hospital.
2. Refer to Appendix Table A9.7.

Source: AIHW Disease Expenditure Database.

Figure 9.12: Health care expenditure for stroke, by sex and area of expenditure, 2004–05

Heart failure

Note that this section shows health care expenditure on hospital-admitted patients only, as this is the level of detail available for heart failure. Information on expenditure on prescription medicines and out-of-hospital medical services is not currently available. Thus, these figures should not be compared with total health expenditure figures for other diseases presented in this report.

In 2004–05, $316.2 million was spent on hospital-admitted patients with heart failure (as a principal diagnosis).

Expenditure on hospital-admitted patients with heart failure increased markedly with age from about 35 years, and decreased in the most elderly (Figure 9.13; Table A9.10). The fall in expenditure in people aged 85 years and over is due to the smaller population in that age group. For females, those aged 75–84 years were the most expensive group.

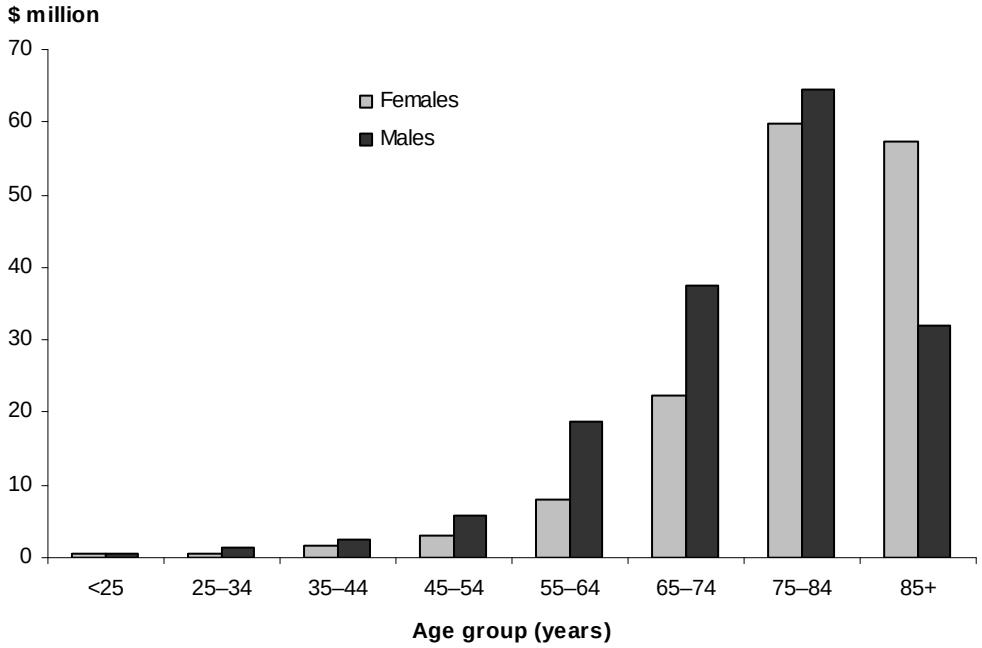
Overall, expenditure for hospital-admitted patients with heart failure in females was similar to that in males ($153.2 million and $162.9 million, respectively) (Table A9.10). Less was

spent on females than on males at all ages except in people aged 85 years and over, where expenditure on females was greater, reflecting longer life expectancy for females.

Expenditure on hospital-admitted patients with heart failure per person increased markedly with age, from under $1 for females aged below 25 years to $278 for females aged 85 years and over (Figure 9.14; Table A9.11).

For hospital-admitted patients with heart failure, the largest proportion of expenditure among females was in those aged 85 years and over, as was the case in males (Figure 9.15).

Overall, on average, less was spent per person on females compared with males ($15 and $16, respectively). This pattern was observed in every age group from 35 years on. The largest gap was in those aged 25–34 and 55–64 years, where on average for every dollar spent on males, about $0.44 was spent on females (Table A9.11).

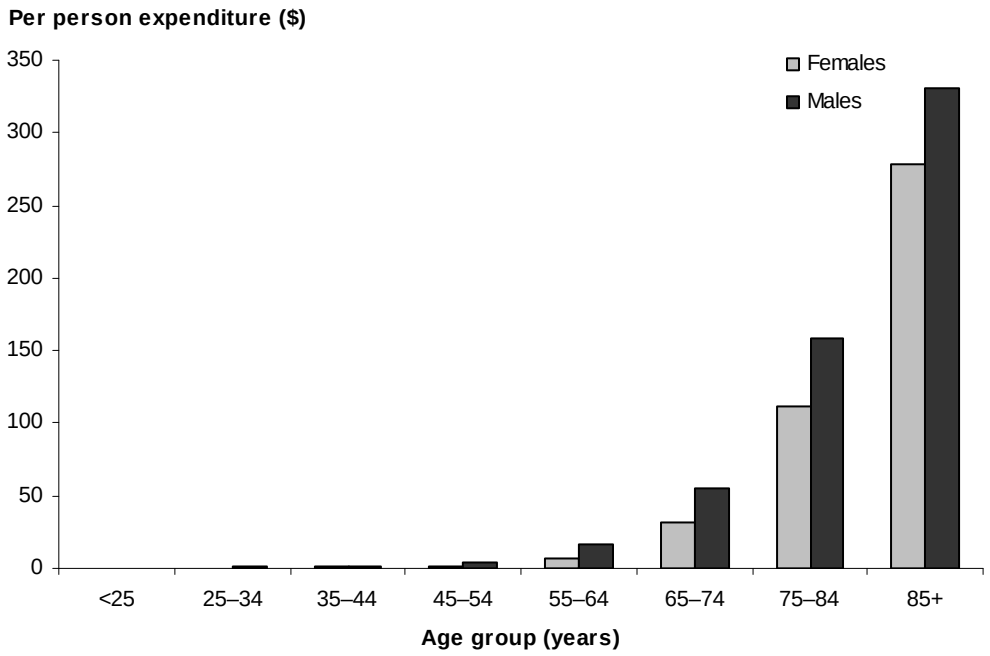


Notes

1. Includes medical services provided to public and private admitted patients in public and private acute hospitals, and psychiatric hospitals.
2. Refer to Appendix Table A9.10.

Source: AIHW Disease Expenditure Database.

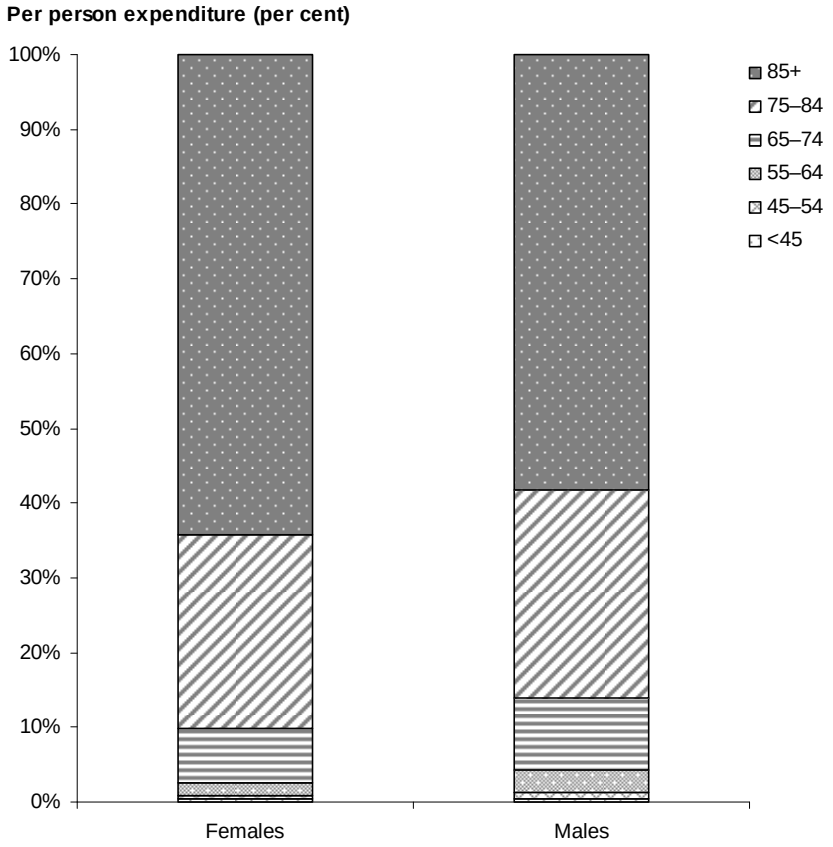
Figure 9.13: Health care expenditure on hospital-admitted patients with heart failure, by age and sex, 2004–05



Note: Refer to Appendix Table A9.11.

Source: AIHW Disease Expenditure Database.

Figure 9.14: Health care expenditure on hospital-admitted patients with heart failure, per person, by age and sex, 2004–05



Note: Refer to Appendix Table A9.11.

Source: AIHW Disease Expenditure Database.

Figure 9.15: Proportion of health care expenditure on hospital-admitted patients with heart failure, per person, by age and sex, 2004–05

10 Cardiovascular disease in context

Key points

- Among Australian women overall, CHD, stroke and heart failure are all less common than asthma, chronic obstructive pulmonary disease and diabetes, and more common than breast cancer, dementia and lung cancer.
- In younger women, CHD, stroke and heart failure are relatively rare. Among middle aged women, heart failure, CHD and breast cancer are all similar in prevalence, but lower than asthma and diabetes.
- Among women aged 65–74 years, CHD is less common than asthma or diabetes, but more common than breast cancer. Stroke and heart failure are similar in prevalence to breast cancer.
- For women aged 75 years and over, CHD affects one in every seven and stroke affects one in eight. This is roughly on par with dementia, and higher than any of the other major diseases listed above.
- CHD is by far the biggest cause of death among Australian females overall, responsible for one in every six female deaths in 2006. Stroke is the second leading cause of death, followed closely by dementia.
- In terms of disease burden for females overall, CHD (9% of total) is second only to anxiety and depression (10%), followed by stroke (5%). Most of the burden of CHD and stroke occurs in females aged 75 years and over.

To better understand the impact of CVD on the lives of Australian women, it is useful to look at other major diseases that affect women. This chapter presents data on the prevalence, deaths and burden of these diseases for females across various ages to provide context.

How common are cardiovascular conditions in women compared with other diseases?

Overall, among Australian females CHD (2.3%), heart failure (1.8%) and stroke (1.7%) are all less common than asthma (12%), chronic obstructive pulmonary disease (COPD) (3.2%) and diagnosed diabetes (3.2%), and more common than breast cancer (1.3%), dementia (1.2%) and lung cancer (0.1%) (Figure 10.1; Table A10.1).

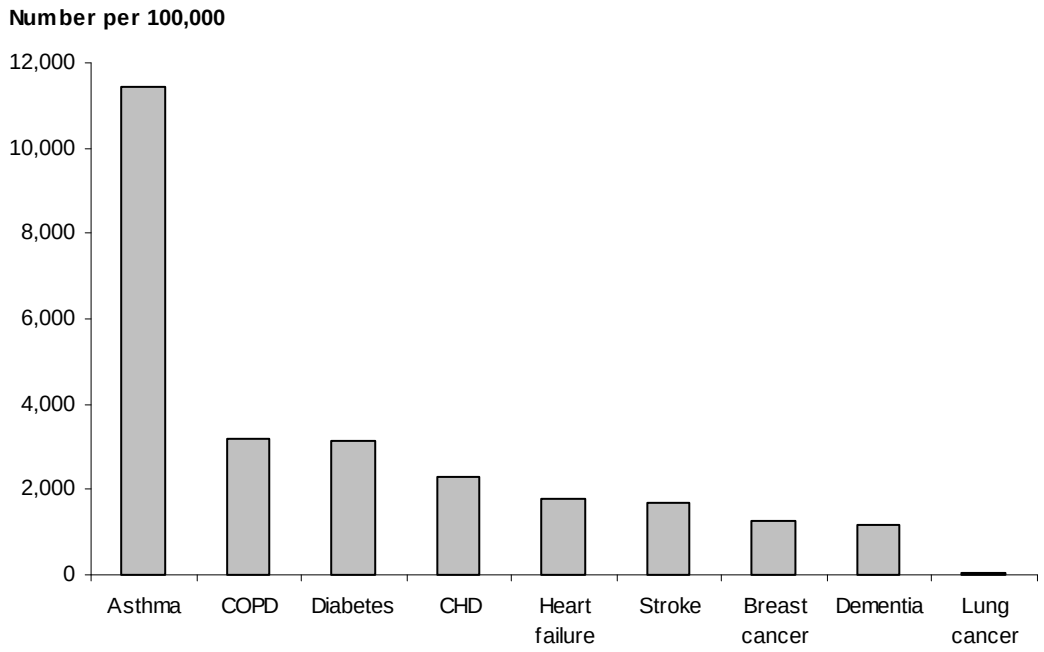
However, cardiovascular conditions tend not to manifest until after menopause. Therefore, the numbers affected by CHD, heart failure and stroke among younger females (25–44 years) are relatively small (Figure 10.2; Table A10.1).

In middle life (45–64 years), heart failure (2.8%), CHD (2.5%) and breast cancer (2.3%) are all similar in prevalence, while stroke is lower (1.3%), and asthma (11%) and diagnosed diabetes (5%) much higher (Figure 10.3; Table A10.1).

Among females aged 65–74 years, diagnosed diabetes (12%), CHD (9%), stroke (5%), heart failure (5%) and breast cancer (5%) all become much more common, while the prevalence of asthma (12%) remains high and dementia is on the rise (2%) (Figure 10.4; Table A10.1).

For females aged 75 years and over, CHD (15%) affects about one in every seven and stroke (13%) affects one in eight (Figure 10.5; Table A10.1). This is similar to the number with dementia (14%) and higher than those with diagnosed diabetes (11%). The prevalence of heart failure (8%) rises at this age, while that of asthma (8%) and breast cancer (5%) fall.

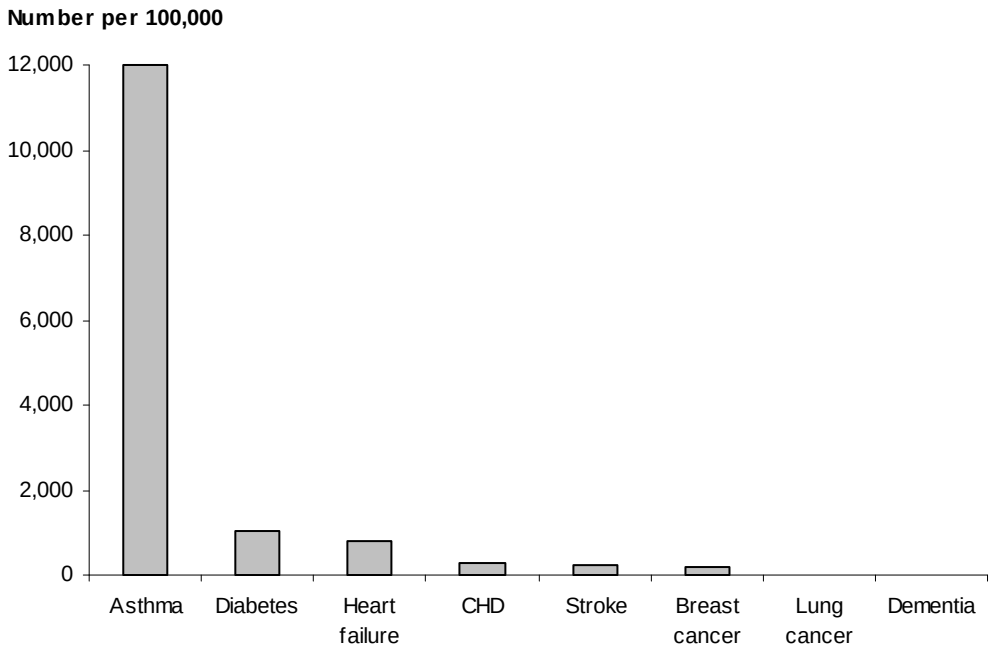
It is important to note that although these estimates are the best available, they come from various data sources that differ in data collection methods. The estimates for CHD, heart failure, asthma, COPD and diabetes are based on self-reports from the 2004–05 National Health Survey, while prevalence estimates for cancers are ascertained cases from registries as at the end of 2004; stroke estimates come from the 2003 Survey of Disability Ageing and Carers; and dementia estimates are projections for 2006 derived from a study by Lobo et al. (2000). Thus, these figures should be viewed as indicative only, and any comparisons made with caution.



Note: Refer to Appendix Table A10.1.

Sources: AIHW analysis of ABS 2004–05 National Health Survey, 2003 Survey of Disability Ageing and Carers, and Cancer Clearing House; AIHW 2008a.

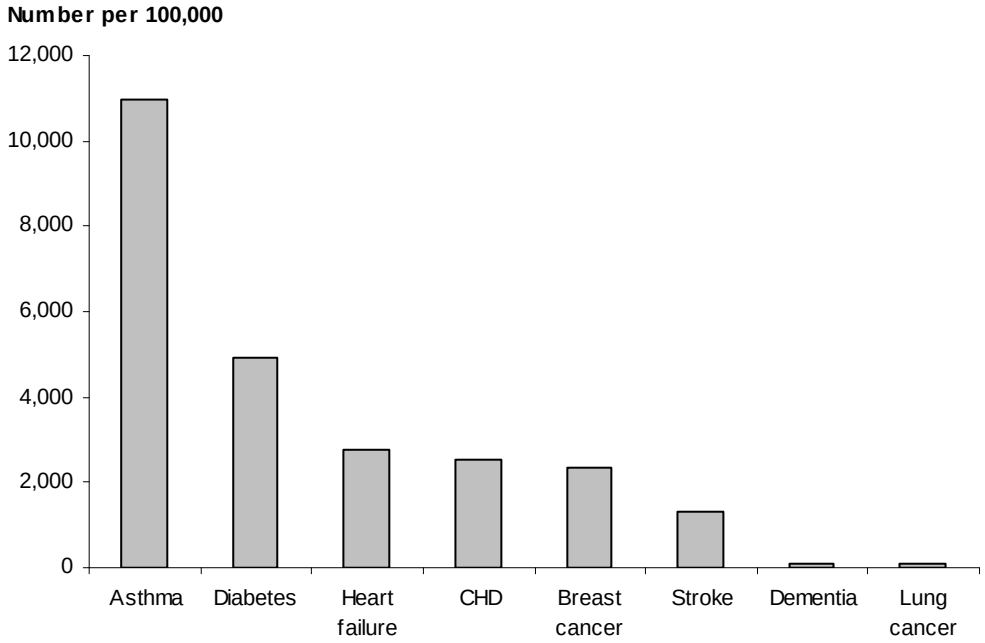
Figure 10.1: Prevalence of selected conditions among females of all ages



Note: Refer to Appendix Table A10.1.

Sources: AIHW analysis of ABS 2004–05 National Health Survey, 2003 Survey of Disability Ageing and Carers, and Cancer Clearing House; AIHW 2008a.

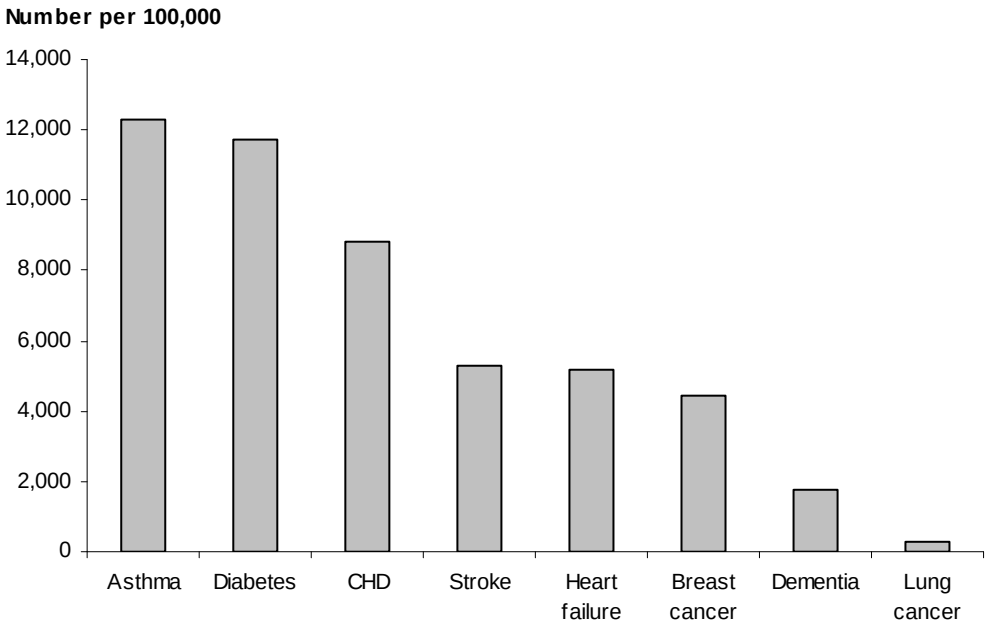
Figure 10.2: Prevalence of selected conditions among females aged 25–44 years



Note: Refer to Appendix Table A10.1.

Sources: AIHW analysis of ABS 2004–05 National Health Survey, 2003 Survey of Disability Ageing and Carers, and Cancer Clearing House; AIHW 2008a.

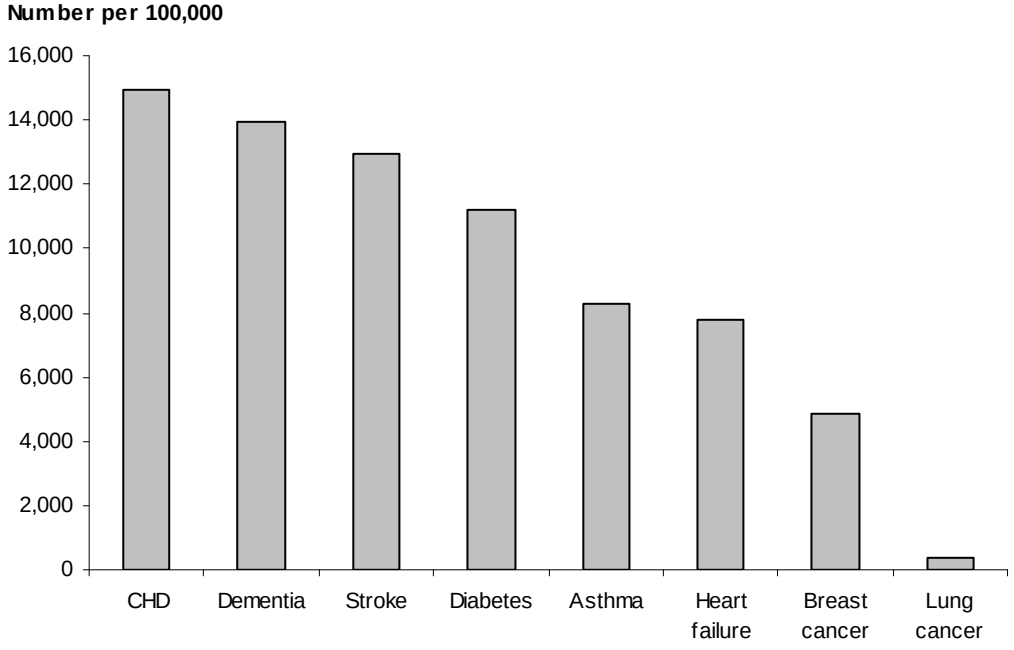
Figure 10.3: Prevalence of selected conditions among females aged 45–64 years



Note: Refer to Appendix Table A10.1.

Sources: AIHW analysis of ABS 2004–05 National Health Survey, 2003 Survey of Disability Ageing and Carers, and Cancer Clearing House; AIHW 2008a.

Figure 10.4: Prevalence of selected conditions among females aged 65–74 years



Note: Refer to Appendix Table A10.1.

Sources: AIHW analysis of ABS 2004–05 National Health Survey, 2003 Survey of Disability Ageing and Carers, and Cancer Clearing House; AIHW 2008a.

Figure 10.5: Prevalence of selected conditions among females aged 75 years and over

What are the main causes of death among women?

Overall, CHD was by far the biggest cause of death among Australian females, responsible for one in every six female deaths (10,797 deaths, 17% of female deaths) in 2006 (Figure 10.6; Table A10.2). Stroke was the second leading cause of death (5,137 deaths, 8%), followed closely by dementia (4,551 deaths, 7%). Lung cancer and breast cancer were responsible for about 4% of female deaths each, with 2,683 and 2,618 deaths, respectively. Chronic obstructive pulmonary disease (COPD) (3.2%), diabetes (2.8%), colorectal cancer (2.6%) and heart failure (2.3%) were other important causes of death for females.

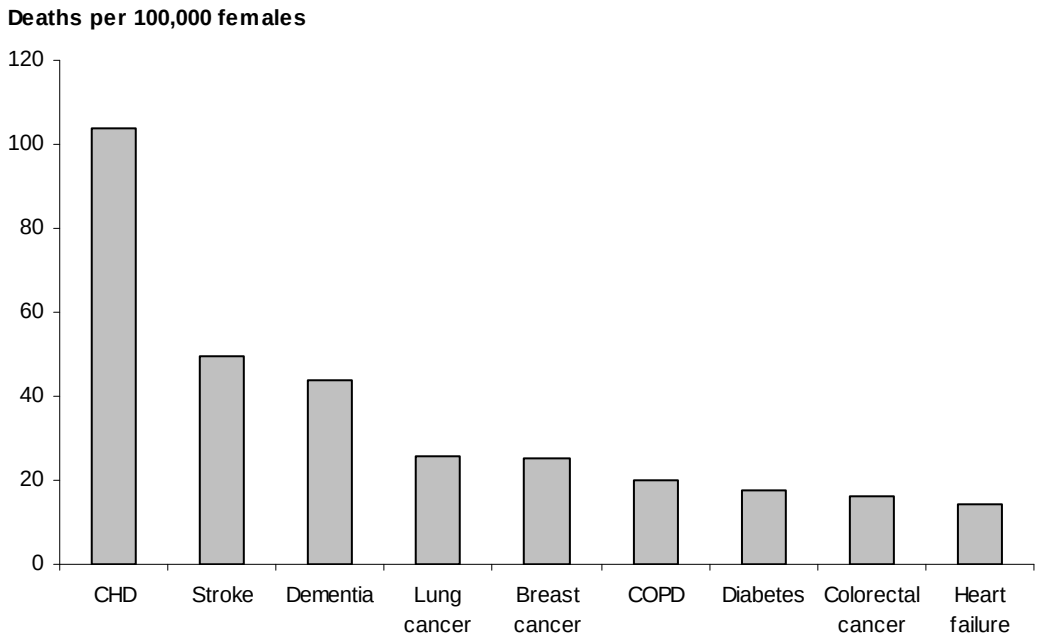
Next this chapter looks at the impact of these diseases as causes of death at various ages. However, these conditions are not necessarily the leading causes of death at each of the age subgroups considered, despite being the biggest causes of death for females overall.

As would be expected, in younger females (25–44 years) none of the diseases mentioned above led to many deaths, relatively speaking, and cardiovascular conditions in particular did not feature largely as causes of death (Figure 10.7; Table A10.2). Breast cancer took 176 lives and CHD, lung cancer and stroke claimed less than 50 lives each.

Among middle aged females (45–64 years), breast and lung cancers caused 978 and 750 deaths, respectively (Figure 10.8; Table A10.2). This compares with 433 deaths from CHD, 305 from colorectal cancer, 265 from stroke and 23 from heart failure.

For females aged 65–74 years, CHD claimed the most lives at 841, with lung cancer a close second at 710 (Figure 10.9; Table A10.2). They were followed by breast cancer (485 deaths), COPD (401), stroke (392) and colorectal cancer (381).

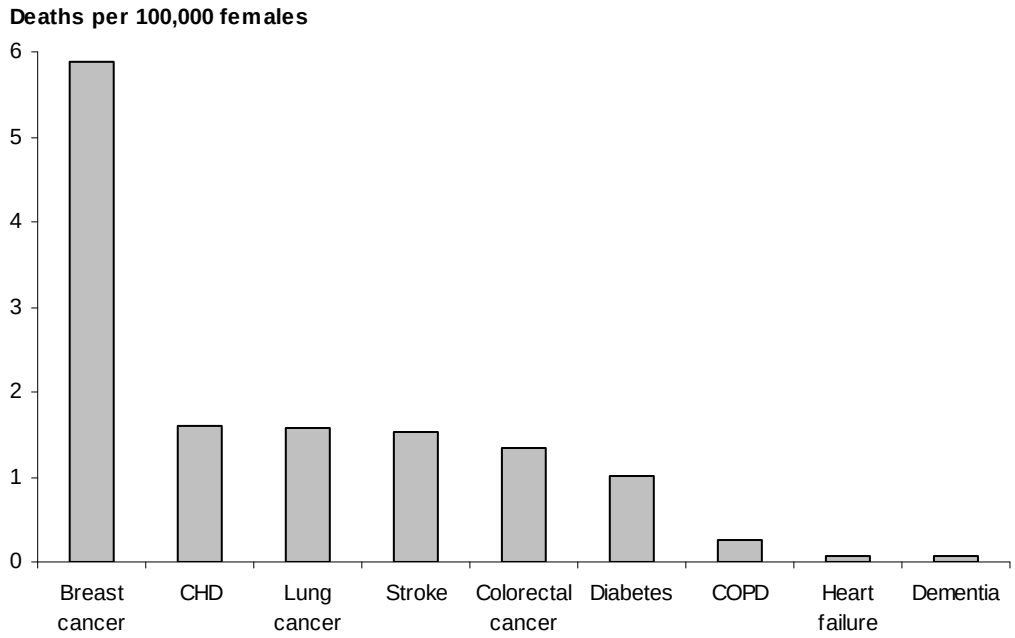
In females aged 75 years and over, CHD caused the most deaths at 9,473 (Figure 10.10; Table A10.2). Stroke and dementia were similar in toll at 4,420 and 4,340 deaths, respectively, while the rest of the leading overall causes of death claimed less than 1,500 lives each.



Note: Refer to Appendix Table A10.2.

Source: AIHW National Mortality Database

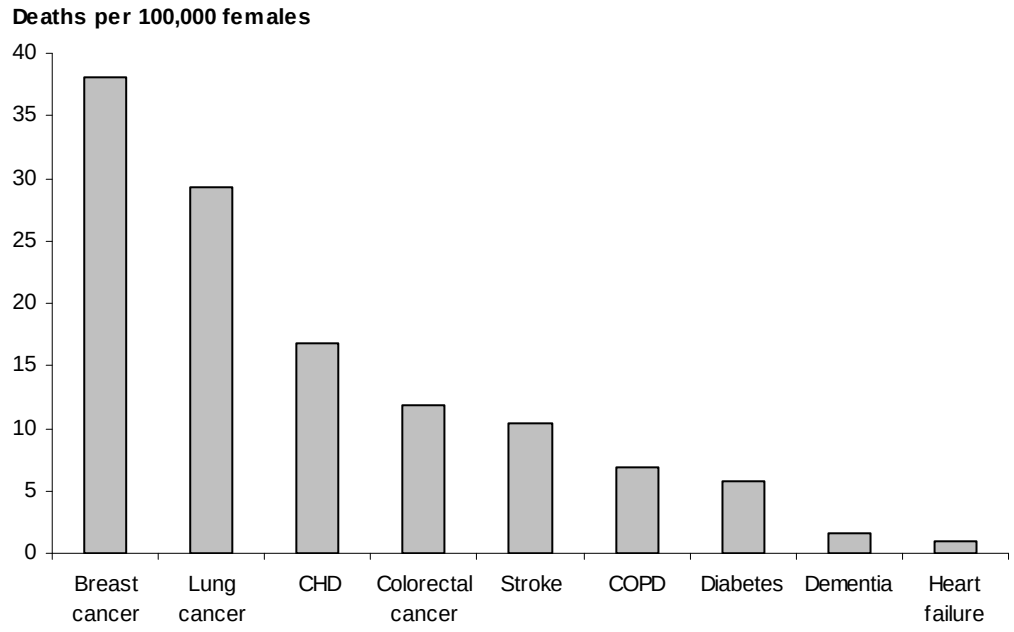
Figure 10.6: Leading underlying causes of death for females, all ages, 2006



Note: Refer to Appendix Table A10.2.

Source: AIHW National Mortality Database

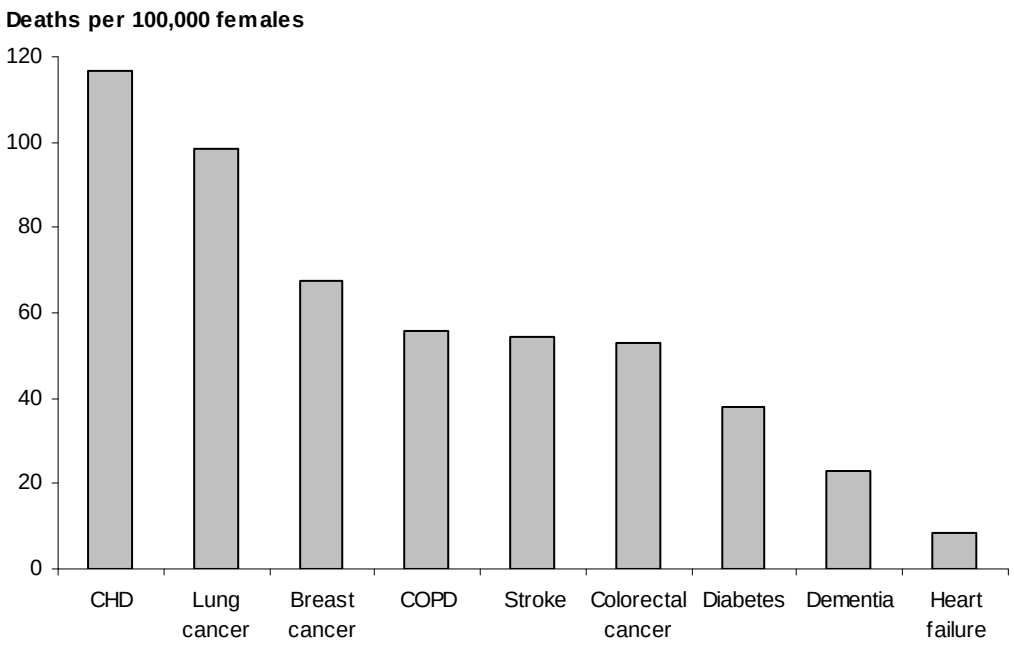
Figure 10.7: Selected underlying causes of death for females aged 25–44 years, 2006



Note: Refer to Appendix Table A10.2.

Source: AIHW National Mortality Database.

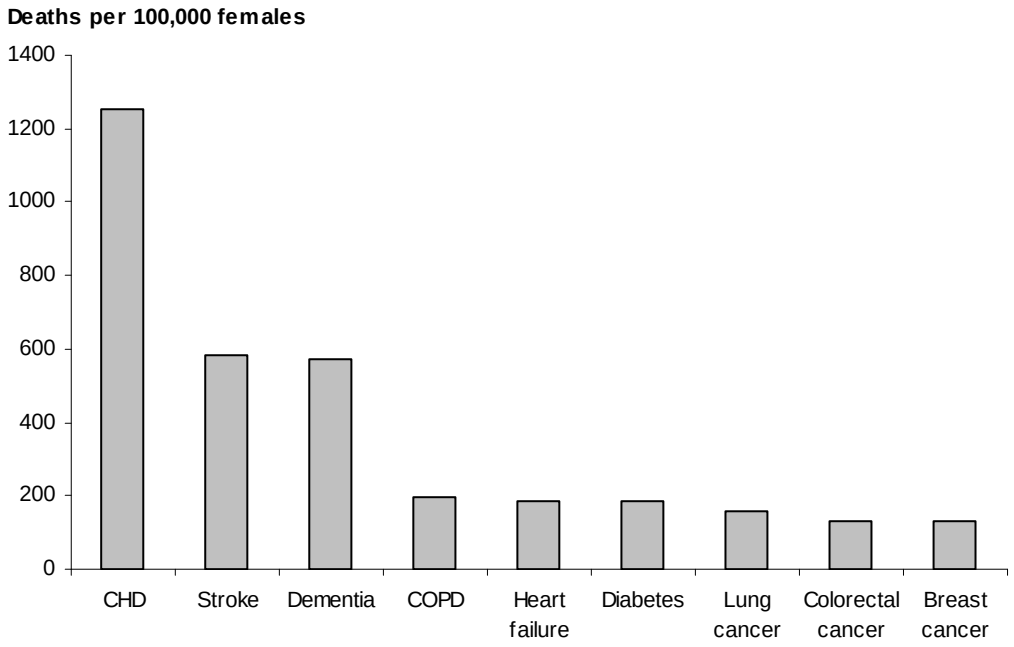
Figure 10.8: Selected underlying causes of death for females aged 45–64 years, 2006



Note: Refer to Appendix Table A10.2.

Source: AIHW National Mortality Database.

Figure 10.9: Selected underlying causes of death for females aged 65–74 years, 2006



Note: Refer to Appendix Table A10.2.

Source: AIHW National Mortality Database.

Figure 10.10: Selected underlying causes of death for females aged 75 years and over, 2006

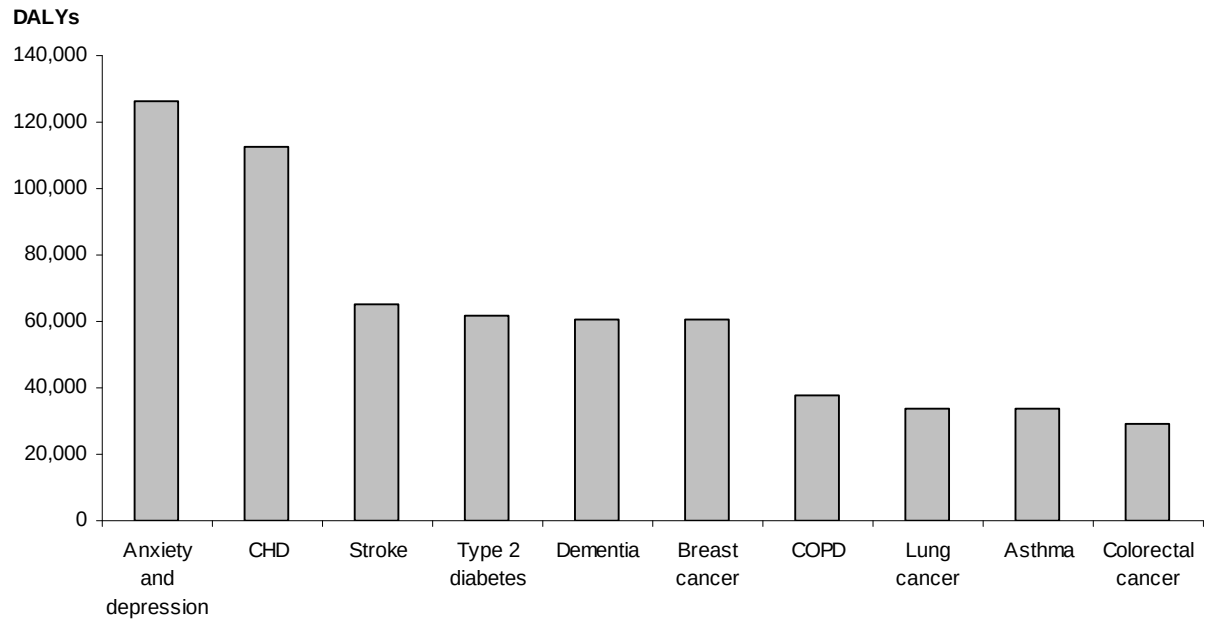
How does the disease burden for cardiovascular conditions in women compare with other diseases?

According to the 2003 study of the burden of disease and injury in Australia (Begg et al. 2007), in terms of disease burden for females overall, CHD (9% of total) comes in a close second to anxiety and depression (10%), followed by stroke (5%), Type 2 diabetes (5%), dementia (5%) and breast cancer (5%) (Figure 10.11; Table A10.3).

However, the life stages at which each of the leading causes of disease burden exert a major effect differ. Anxiety and depression, Type 2 diabetes and breast cancer are all a greater burden at ages 25–64 years, and this diminishes at older ages (Figure 10.12; Table A10.3). By contrast, most of the disease burden for CHD, stroke and dementia occurs in females aged 75 years and over. For chronic obstructive pulmonary disease, lung cancer, asthma and colorectal cancer, the burden is more evenly distributed across adult life.

It is worth noting that the overall burden of CHD and stroke is largely attributable to the premature deaths they cause (CHD and stroke are the leading causes of premature death among females). For other diseases, such as anxiety and depression and dementia, most of the burden is accounted for by the healthy years of life lost due to the disability and poor health associated with them.

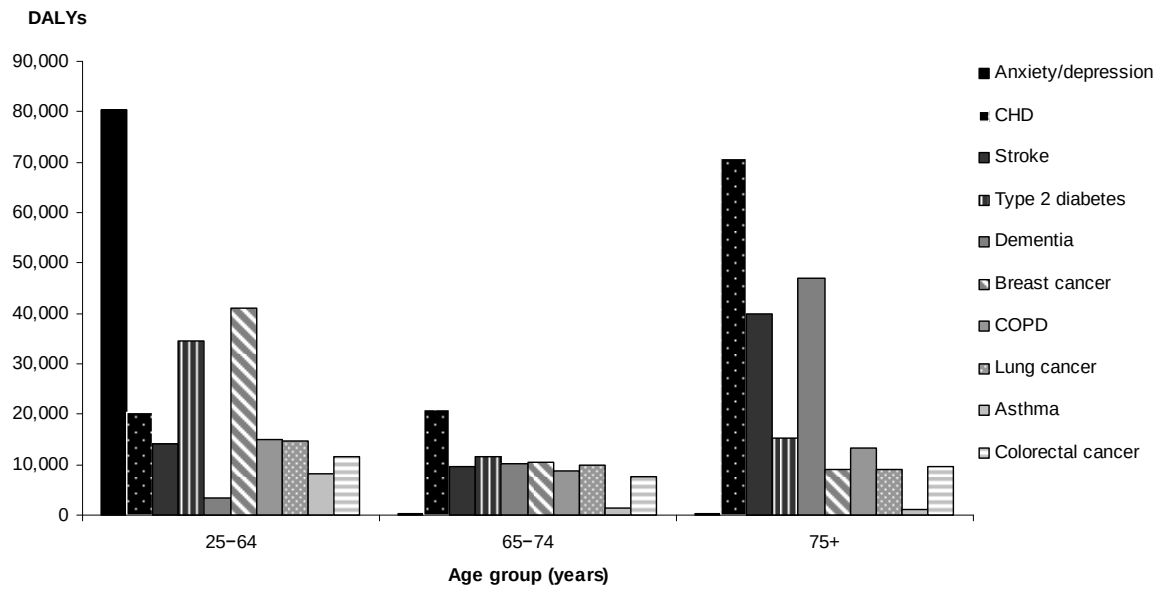
The diseases shown in this section are the leading causes of burden for females overall, but they are not necessarily the most burdensome at each of the age subgroups discussed.



Note: Refer to Appendix Table A10.3.

Source: Begg et al. 2007.

Figure 10.11: Leading causes of burden for females, all ages, 2003



Note: Refer to Appendix Table A10.3.

Source: Begg et al. 2007.

Figure 10.12: Selected causes of burden for females aged 25 years and over, by age, 2003

11 Discussion

This report aims to document the current impact of CVD on Australian women to provide a baseline for comparison in the future, and to dispel the perception that this disease does not pose a major threat to women (NHFA 2009).

CVD is the largest cause of death among females, accounting for more than one in every three (37%) female deaths. Importantly, many CVD deaths are premature, as they occur in women aged less than 84 years, which is the current life expectancy for women. However, the public health impact of CVD among women is wider than the deaths it causes. About two million (20%) females are living with CVD, and even more are at risk. With prevalence rates of high blood pressure at 27%, overweight and obesity at 54%, high cholesterol at 48%, insufficient physical activity at 76% and daily smoking at 15% in women, there is ample scope for prevention. CVD accounted for 18% of the overall disease burden for females in 2003. As life expectancy rises, the burden of CVD on women will increase.

The economic impact of CVD is also large. In Australia $5,942.1 million was spent on health care for people with CVD, compared with $4,128.2 million for mental disorders and $3,787.2 million for cancer. Expenditure on CVD represented 11% of total recurrent health system expenditure. Nearly half (45%) of CVD expenditure was spent on females—$1,214.3 million on hospitalisations, $816.6 million on prescription medicines and $577.9 million on out-of-hospital medical services.

In 2006–07, there were nearly 200,000 hospitalisations for CVD among women; that is, 5% of all hospitalisations for females in that year. Females were hospitalised for CVD less often than males, with age-standardised rates of 1,690 per 100,000 population compared with 2,675. Age-standardised hospitalisation rates for CHD among females were less than half those of males. Although the age-standardised hospitalisation rates for stroke and heart failure among males were higher than for females, about half the number of hospitalisations for these conditions were for females.

General practitioners (GPs) managed at least one cardiovascular problem in 20% of encounters with females in 2007–08, with hypertension the most commonly managed problem overall (managed in 11% of encounters with females). In those aged 35 years and over, CHD problems were managed less often in females than in males. Similarly, females aged 35–54 years had lower attendance rates for hypertension than males. The rates of stroke and heart failure problems managed by GPs were similar for females and males. GPs treated cardiovascular problems similarly in females and males.

Females accounted for about half (52%) of patients dispensed PBS/RPBS cardiovascular medicines in 2007–08, amounting to about two million users—9% more than male users. In 2007–08 females filled 36.5 million prescriptions for cardiovascular medicines through the PBS/RPBS—8% more than males.

Age-standardised rates of PBS/RPBS cardiovascular prescriptions dispensed were lower among females than males for antithrombotics, cardiac therapy medicines and lipid-lowering medicines; but higher for diuretics, calcium-channel blockers and renin-angiotensin system agents; while rates for beta-blockers were similar in both sexes.

Overall, based on self-reports, compared with males, females are less than half (48%) as likely to have CHD, 22% less likely to have stroke and 76% more likely to have heart failure.

Analysis shows that many important diagnostic and therapeutic procedures for CVD tend to be less common among females than males. In 2006–07, compared with males, females hospitalised with relevant cardiovascular diagnoses were less likely to: have coronary angiography or echocardiography, undergo carotid endarterectomy, receive CABG or have a heart defibrillator implanted. But females were as likely as males to have heart valves repaired or replaced, or have a CT or MRI scan of the brain when hospitalised with stroke or TIA.

Despite the effectiveness of PCI in reducing heart attacks and deaths in people with CHD, only 26% of PCIs were performed on women in Australia in 2006–07. In other words, females hospitalised with CHD were less likely to undergo PCI than males. This echoes the experience overseas where women make up only 15–38% of those receiving PCI (Lansky et al. 2005).

Some of the difference in rates of these procedures between sexes can be attributed to the overall higher prevalence of CHD in males. However, the differences were present even in the older age groups where the prevalence of CHD in women rises considerably. Note that these results have not been risk adjusted to take into account comorbidities and disease severity, as this would require access to clinical records that are unavailable at a national level. This highlights an important data gap in the monitoring of CHD in Australia. Further research, evaluation and better monitoring systems are needed to determine whether women are receiving appropriate and equitable access to recommended interventions.

This report shows that, on average, about 20% less was spent per person on health care for CVD on females than on males. This disparity is mostly related to hospital-admitted patients and partly reflects the difference in hospitalisation and procedure rates discussed above.

Compared with men, women tend to be protected from CHD until after menopause, but when they have a heart attack, they often have worse outcomes than men (Vaccarino et al. 1999, 2001). Contributing factors may be under-recognition and under-treatment of CHD early on in women. This may lead to more advanced disease at the time of heart attack.

In women, CHD usually first manifests as angina, and symptoms may be atypical, making diagnosis of CHD harder (Arslanian-Engoren et al. 2006). Lower use of diagnostic tests at this initial point may lead to delayed diagnosis, delayed start of treatment and worse outcomes (Vaccarino 2006).

Women also appear to be perceived as being at lower risk of CHD than men. There is some evidence suggesting that doctors are more likely to classify women at lower risk of CVD than men despite similar calculated risk (Mosca et al. 2005), and that doctors may not recognise CHD in women at its initial manifestation (Daly et al. 2006). Similarly, triage nurses in emergency departments may have difficulty recognising presenting symptoms in middle aged women with heart attack, and so may cause delays in access to diagnostic tests and treatment (Arslanian-Engoren 2001).

A European study showed lower use of treatments (such as antithrombotic and lipid-lowering medicines) and diagnostic procedures (such as electrocardiogram stress test and coronary angiography) in women with angina than in men (Daly et al. 2006). Furthermore, among patients with CHD demonstrated by coronary angiography, women were less likely to receive coronary revascularisation procedures despite having more angina and higher rates of heart attack and death than men. Other overseas studies have previously shown that women have longer delays to intervention (Angeja et al. 2002), and are referred for coronary angiography less often than men (Rathore et al. 2002; Shaw et al. 1994).

Suggested reasons for referral differences include women's older age at presentation, increased risk for adverse procedure outcomes, differences in symptoms between men and women, and lower accuracy of non-invasive tests in women (Lansky et al. 2005). However, evidence from overseas has shown that once women are referred for coronary angiography, coronary revascularisation rates are similar to those of men (Ghali et al. 2002; Roeters van Lennep et al. 2000). Advances in PCI equipment, technique and medicines have improved outcomes for patients with smaller coronary arteries such as women (Lansky et al. 2005).

The average lifetime risk for CVD in women is very high—39% (Lloyd-Jones et al. 1999, 2006). Fortunately, most CVD in women is preventable. Tools for health professionals to assess the absolute risk of CVD in women without known CVD and guidelines for prevention are available in Australia and have been approved by the NHMRC (NVDPA 2009).

One in two Australians are female, and the Australian female population is ageing, with important implications for Australia's health care system. The prevalence of many CVD risk factors is high and/or rising (AIHW 2009c). This, together with the ageing of the population and falling CVD death rates (AIHW 2010), will lead to larger numbers of older Australian women at risk of or with CVD in coming years, and increased pressure on preventive, medical and care services. The Australian Government has recognised that "women are the majority of health care consumers, the majority of health service providers and the majority of carers in the Australian community", and that "improving the health of Australian women will improve the health of the whole community". A national women's health policy to improve the health and wellbeing of women in Australia is being developed (DoHA 2009).

Australia's ability to effectively monitor CVD and cardiovascular risk factors is seriously impaired by some important data gaps, such as a lack of data that are national, recent, of sufficient quality (that is, measured), or a combination of the above, on: the prevalence and incidence of diseases (for example, heart failure, peripheral vascular disease, rheumatic heart disease); services (for example, cardiac rehabilitation services); and risk factors (for example, high blood pressure, high blood cholesterol, diabetes and diet). Similarly, without more detailed data on individual patients, at present it is not possible to properly monitor disease management, outcomes such as case fatality, and access to interventions at a national level. Such data could come from disease registers or through linkage of existing records in various collections. Some steps have been taken towards filling these gaps: a national health risk survey is being planned; a coordinated register for rheumatic heart fever covering Northern Territory, Queensland and Western Australia is being established; and a national clinical register for stroke is being piloted (AuSCR 2009).

Appendix 1: Detailed statistical tables

Table A2.1: Australia's estimated resident population, 31 December 2006

Age group (years)	Females		Males		Persons		Percentage female
	Number	Per cent	Number	Per cent	Number	Per cent	
0–4	637,648	6.1	672,434	6.5	1,310,082	6.3	48.7
5–9	653,157	6.3	687,052	6.7	1,340,209	6.5	48.7
10–14	681,239	6.5	718,915	7.0	1,400,154	6.8	48.7
15–19	689,033	6.6	726,172	7.1	1,415,205	6.8	48.7
20–24	723,531	6.9	748,327	7.3	1,471,858	7.1	49.2
25–29	696,460	6.7	707.47	6.9	1,403,930	6.8	49.6
30–34	748,090	7.2	741,714	7.2	1,489,804	7.2	50.2
35–39	766,937	7.4	757,919	7.4	1,524,856	7.4	50.3
40–44	771,590	7.4	760,964	7.4	1,532,554	7.4	50.3
45–49	754,066	7.2	739,364	7.2	1,493,430	7.2	50.5
50–54	684,947	6.6	677,356	6.6	1,362,303	6.6	50.3
55–59	635,851	6.1	635,643	6.2	1,271,494	6.1	50.0
60–64	493,166	4.7	496,176	4.8	989,342	4.8	49.8
65–69	395,284	3.8	386,135	3.8	781,419	3.8	50.6
70–74	327,264	3.1	303,566	3.0	630,830	3.0	51.9
75–79	299,871	2.9	252,678	2.5	552,549	2.7	54.3
80–84	239,575	2.3	166,173	1.6	405,748	2.0	59.0
85+	217,738	2.1	104,375	1.0	322,113	1.6	67.6
Total	**10,415,447**	**100.0**	**10,282,433**	**100.0**	**20,697,880**	**100.0**	**50.3**

Source: AIHW population database.

Table A2.2: Age distribution of the Australian female population, in 1956 and 2006

	1956			2006		
Age group (years)	**Number**	**Per cent**	**Percentage females**	**Number**	**Per cent**	**Percentage females**
0–4	494,100	10.6	48.9	637,648	6.1	48.7
5–9	478,000	10.3	48.8	653,157	6.3	48.7
10–14	381,200	8.2	48.9	681,239	6.5	48.7
15–19	310,600	6.7	48.8	689,033	6.6	48.7
20–24	283,700	6.1	47.6	723,531	6.9	49.2
25–29	330,800	7.1	47.3	696,460	6.7	49.6
30–34	356,300	7.7	48.2	748,090	7.2	50.2
35–39	326,800	7.0	49.1	766,937	7.4	50.3
40–44	322,400	6.9	48.9	771,590	7.4	50.3
45–49	274,900	5.9	47.8	754,066	7.2	50.5
50–54	232,100	5.0	47.9	684,947	6.6	50.3
55–59	217,700	4.7	50.8	635,851	6.1	50.0
60–64	200,700	4.3	53.1	493,166	4.7	49.8
65–69	170,300	3.7	53.1	395,284	3.8	50.6
70–74	122,900	2.6	54.9	327,264	3.1	51.9
75–79	80,800	1.7	57.8	299,871	2.9	54.3
80–84	42,200	0.9	59.6	239,575	2.3	59.0
85+	24,000	0.5	62.0	217,738	2.1	67.6
Total	**4,649,500**	**100.0**	**49.3**	**10,415,447**	**100.0**	**50.3**

Source: ABS 2006a.

Table A3.1: Leading underlying specific causes of death, all ages, 2006

	Females			Males		
Rank	**Cause of death**	**Number of deaths**	**Percentage all female deaths**	**Cause of death**	**Number of deaths**	**Percentage all male deaths**
1	CHD	10,797	16.6	CHD	12,186	17.8
2	Cerebrovascular diseases	6,985	10.7	Lung cancer	4,665	6.8
3	Other heart diseases	4,558	7.0	Cerebrovascular diseases	4,480	6.5
4	Dementia and related disorders	4,551	7.0	Other heart diseases	3,303	4.8
5	Lung cancer	2,683	4.1	Prostate cancer	2,952	5
6	Female breast cancer	2,618	4.0	Chronic obstructive pulmonary disease	2,702	3.9
7	Chronic obstructive pulmonary disease	2,059	3.2	Dementia and related disorders	2,168	3.2
8	Unknown primary site cancers	1,917	2.9	Colorectal cancer	2,149	3.1
9	Diabetes	1,837	2.8	Unknown primary site cancers	1,993	2.9
10	Colorectal cancer	1,709	2.6	Diabetes	1,825	2.7
. .	**All circulatory**	**24,108**	**37.0**	**All circulatory**	**21,562**	**31.5**
. .	**All cancers**	**16,863**	**25.9**	**All cancers**	**21,858**	**31.9**
. .	**All causes**	**65,183**	**100.0**	**All causes**	**68,556**	**100.0**

Source: AIHW National Mortality Database.

Table A3.2: Deaths from all cardiovascular diseases[a], 2006

Age group (years)	Females		Males		Persons	
	Number	Age-specific rate[b]	Number	Age-specific rate[b]	Number	Age-specific rate[b]
0–4	17	2.7	11	1.6	28	2.1
5–9	1	0.2	2	0.3	3	0.2
10–14	5	0.7	3	0.4	8	0.6
15–19	12	1.7	7	1.0	19	1.3
20–24	19	2.6	26	3.5	45	3.1
25–29	26	3.7	26	3.7	52	3.7
30–34	39	5.2	86	11.6	125	8.4
35–39	51	6.6	154	20.3	205	13.4
40–44	82	10.6	256	33.6	338	22.0
45–49	149	19.8	397	53.6	546	36.5
50–54	216	31.5	594	87.5	810	59.4
55–59	265	41.7	815	128.0	1,080	84.9
60–64	394	80.1	1,106	223.0	1,500	151.8
65–69	606	153.8	1,457	378.2	2,063	264.8
70–74	1,186	363.4	1,989	656.9	3,175	504.7
75–79	2,505	836.9	3,383	1,341.6	5,888	1,067.7
80–84	4,617	1,929.2	4,438	2,673.5	9,055	2,234.0
85+	13,918	6,394.6	6,811	6,527.9	20,729	6,437.8
Total	**24,108**	**. .**	**21,562[c]**	**. .**	**45,669**	**. .**
ASR[d]	**. .**	**171.5**	**. .**	**236.8**	**. .**	**201.9**

(a) Underlying causes of death.

(b) Age-specific rate—number per 100,000 population.

(c) One male had age missing so sub-groups do not add to the total.

(d) Age-standardised rate—number of deaths per 100,000 people, age-standardised to the 2001 Australian population.

Source: AIHW National Mortality Database.

Table A4.1: Prevalence of coronary heart disease, by sex and age group, 2004–05

Age group (years)	Females		Males		Persons	
	Number[a]	Age-specific rate[a,b]	Number[a]	Age-specific rate[a,b]	Number[a]	Age-specific rate[a,b]
0–4	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
5–9	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
10–14	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
15–19	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
20–24	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
25–29	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
30–34	n.p.	n.p.	n.p.	n.p.	*4,666	*314.0
35–39	n.p.	n.p.	n.p.	n.p.	*4,302	*298.4
40–44	n.p.	n.p.	*13,441	*1,784.1	16,866	1,111.4
45–49	*9,735	*1,353.6	*13,056	*1,847.0	22,791	1,598.2
50–54	*7,626	*1,147.9	16,804	2,607.6	24,431	1,866.6
55–59	23,917	3,971.2	47,522	7,863.0	71,439	5,920.5
60–64	20,293	4,474.3	67,505	14,673.6	87,798	9,610.2
65–69	27,918	7,410.0	57,758	15,685.1	85,676	11,500.2
70–74	33,350	10,503.6	61,728	21,200.6	95,078	15,620.5
75–79	38,404	12,986.2	65,711	27,519.7	104,115	19,478.6
80–84	32,965	15,021.7	43,231	31,017.3	76,196	21,234.8
85+	22,072	20,000.4	18,269	22,093.4	40,342	20,897.4
Total	**225,575**	**. .**	**412,322**	**. .**	**637,897**	**. .**
ASR[c]	**. .**	**2,121.0**	**. .**	**4,353.2**	**. .**	**3,174.5**

(a) Estimates marked with * have a relative standard error between 25% and 50% and should be interpreted with caution. Estimates marked n.p. (not published) have a relative standard error of more than 50%, and are therefore not shown.

(b) Rates are number per 100,000 population.

(c) Age-standardised rate—number of deaths per 100,000 people, age-standardised to the 2001 Australian population.

Source: AIHW analysis of the ABS 2004–05 National Health Survey data.

Table A4.2: Deaths from coronary heart disease[a], 2006

Age group (years)	Females		Males		Persons	
	Number	Age-specific rate[b]	Number	Age-specific rate[b]	Number	Age-specific rate[b]
0–4	1	0.2	–	–	1	0.1
5–9	–	–	–	–	–	–
10–14	–	–	–	–	–	–
15–19	–	–	2	0.3	2	0.1
20–24	1	0.1	4	0.5	5	0.3
25–29	3	0.4	10	1.4	13	0.9
30–34	8	1.1	41	5.5	49	3.3
35–39	11	1.4	82	10.8	93	6.1
40–44	26	3.4	154	20.2	180	11.7
45–49	45	6.0	259	34.9	304	20.3
50–54	79	11.5	413	60.8	492	36.1
55–59	117	18.4	544	85.4	661	52.0
60–64	192	39.0	730	147.2	922	93.3
65–69	311	78.9	926	240.4	1,237	158.8
70–74	530	162.4	1,169	386.1	1,699	270.1
75–79	1,142	381.5	1,840	729.7	2,982	540.7
80–84	2,086	871.6	2,429	1,463.3	4,515	1,113.9
85+	6,245	2,869.2	3,582	3,433.1	9,827	3,051.9
Total	**10,797**	**. .**	**12,186[c]**	**. .**	**22,982**	**. .**
ASR[d]	**. .**	**76.6**	**. .**	**132.6**	**. .**	**101.8**

(a) Underlying causes of death.

(b) Age-specific rate—per 100,000 population.

(c) One male had age missing so sub-groups do not add to the total.

(d) Age-standardised rate—number of deaths per 100,000 people, age-standardised to the 2001 Australian population.

Source: AIHW National Mortality Database.

Table A5.1: Prevalence of stroke, by age and sex, 2003

Age group (years)	Females		Males		Persons	
	Number[a]	Age-specific rate[a,b]	Number[a]	Age-specific rate[a,b]	Number[a]	Age-specific rate[a,b]
0–4	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
5–9	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
10–14	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
15–19	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
20–24	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
25–29	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
30–34	n.p.	n.p.	n.p.	n.p.	*3,683	*242.3
35–39	*3,376	*459.3	*2,871	*395.3	*6,248	*427.5
40–44	n.p.	n.p.	*5,538	*724.9	*7,909	*515.5
45–49	*3,919	*554.9	*3,307	*475.0	*7,226	*515.3
50–54	*5,246	*797.8	*8,017	*1,225.8	13,263	1,011.2
55–59	13,519	2,368.5	10,435	1,786.6	23,954	2,074.2
60–64	*8,477	*1,967.6	18,324	4,168.6	26,800	3,079.0
65–69	13,714	3,749.6	25,237	7,094.8	38,951	5,398.9
70–74	23,199	7,035.5	27,763	9,174.7	50,962	8,059.2
75–79	30,539	10,232.5	30,243	12,567.5	60,782	11,274.8
80–84	28,486	12,872.4	26,498	18,178.3	54,984	14,979.4
85+	33,554	17,076.8	13,615	15,132.0	47,169	16,465.9
Total	**168,376**	**. .**	**178,336**	**. .**	**346,711**	**. .**
ASR[c]	**. .**	**1,474.8**	**. .**	**1,897.7**	**. .**	**. .**

(a) Estimates marked with * have a relative standard error between 25% and 50% and should be interpreted with caution. Estimates marked n.p. (not published) have a relative standard error of more than 50%, and are therefore not shown.

(b) Rates are number per 100,000 population.

(c) Age-standardised rate—number of deaths per 100,000 people, age-standardised to the 2001 Australian population.

Source: ABS Survey of Disability Ageing and Carers 2003.

Table A5.2: Deaths from stroke[a], by age and sex, 2006

Age group (years)	Females		Males		Persons	
	Number	Age-specific rate[b]	Number	Age-specific rate[b]	Number	Age-specific rate[b]
0–4	2	0.3	4	0.6	6	0.5
5–9	1	0.2	–	–	1	0.1
10–14	2	0.3	–	–	2	0.1
15–19	2	0.3	–	–	2	0.1
20–24	7	1.0	4	0.5	11	0.7
25–29	5	0.7	3	0.4	8	0.6
30–34	8	1.1	12	1.6	20	1.3
35–39	15	2.0	17	2.2	32	2.1
40–44	18	2.3	29	3.8	47	3.1
45–49	49	6.5	53	7.2	102	6.8
50–54	70	10.2	75	11.0	145	10.6
55–59	60	9.5	92	14.4	152	12.0
60–64	86	17.5	131	26.4	217	22.0
65–69	119	30.2	177	45.9	296	38.0
70–74	273	83.6	305	100.7	578	91.9
75–79	591	197.4	568	225.3	1,159	210.2
80–84	1,035	432.5	770	463.9	1,805	445.3
85+	2,794	1,283.7	1,107	1,061.0	3,901	1,211.5
Total	**5,137**	**. .**	**3,347**	**. .**	**8,484**	**. .**
ASR[c]	**. .**	**37.0**	**. .**	**37.1**	**. .**	**37.5**

(a) Underlying cause only, ICD-10 codes I60–64.

(b) Number per 100,000 population as at 2006.

(c) Age-standardised rate—number of deaths per 100,000 people, age-standardised to the 2001 Australian population.

Source: AIHW National Mortality Database.

Table A6.1: Prevalence of heart failure and oedema, 2004–05

Age group (years)	Females		Males		Persons	
	Number[a]	Age-specific rate[a,b]	Number[a]	Age-specific rate[a,b]	Number[a]	Age-specific rate[a,b]
0–4	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
5–9	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
10–14	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
15–19	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
20–24	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
25–29	*3,956	*595.9	n.p.	n.p.	*4,145	*312.3
30–34	*3,599	*477.6	n.p.	n.p.	*3,599	*242.1
35–39	*8,498	*1,169.2	n.p.	n.p.	*9,892	*686.1
40–44	*7,179	*939.4	n.p.	n.p.	*8,966	*590.8
45–49	*14,395	*2,001.7	n.p.	n.p.	17,440	1,223.0
50–54	16,553	2,491.5	*7,368	*1,109.0	23,921	1,827.7
55–59	18,731	3,110.1	*6,749	*1,116.7	25,480	2,111.7
60–64	17,745	3,912.5	*9,180	*2,024.0	26,925	2,947.2
65–69	*9,357	*2,483.4	*10,867	*2,951.1	20,224	2,714.6
70–74	26,778	8,433.7	*5,012	*1,578.4	31,789	5,222.7
75–79	18,952	6,408.5	*11,670	*4,887.4	30,622	5,729.0
80–84	17,358	7,909.8	16,647	7,585.8	34,005	9,476.7
85+	*12,205	*11,059.5	*12,197	*14,750.3	24,402	12,640.4
Total	**176,298**	**. .**	**86,690**	**. .**	**262,988**	**. .**
ASR[c]	**. .**	**1,682.4**	**. .**	**955.1**	**. .**	**1,318.3**

(a) Estimates marked with * have a relative standard error between 25% and 50% and should be interpreted with caution. Estimates marked n.p. (not published) have a relative standard error of more than 50%, and are therefore not shown.

(b) Rates are number per 100,000 population.

(c) Age-standardised rate—number of deaths per 100,000 people, age-standardised to the 2001 Australian population.

Source: AIHW analysis of the ABS 2004-05 National Health Survey data.

Table A6.2: Deaths from heart failure, by age and sex, 2006[a]

Age group (years)	Females		Males		Persons	
	Number	Age-specific rate[b]	Number	Age-specific rate[b]	Number	Age-specific rate[b]
0–4	1	0.2	–	–	1	0.1
5–9	–	–	–	–	–	–
10–14	–	–	–	–	–	–
15–19	1	0.1	–	–	1	0.1
20–24	1	0.1	1	0.1	2	0.1
25–29	–	–	–	–	–	–
30–34	–	–	1	0.1	1	0.1
35–39	1	0.1	1	0.1	2	0.1
40–44	1	0.1	1	0.1	2	0.1
45–49	4	0.5	3	0.4	7	0.5
50–54	5	0.7	5	0.7	10	0.7
55–59	5	0.8	9	1.4	14	1.1
60–64	9	1.8	14	2.8	23	2.3
65–69	11	2.8	34	8.8	45	5.8
70–74	49	15.0	49	16.2	98	15.6
75–79	95	31.7	120	47.6	215	39.0
80–84	240	100.3	175	105.4	415	102.4
85+	1,061	487.5	455	436.1	1,516	470.8
Total	**1,484**	**. .**	**868**	**. .**	**2,352**	**. .**
ASR[c]	**. .**	**10.1**	**. .**	**10.2**	**. .**	**10.2**

(a) Heart failure as the underlying cause of death,ICD-10 codes I50 underlying cause only.

(b) Number per 100,000 population as at 2006.

(c) Age-standardised rate—number of deaths per 100,000 people, age-standardised to the 2001 Australian population.

Source: AIHW National Mortality Database.

Table A7.1: Prevalence of multiple risk factors[(a)], by age and sex, 2001

Age group (years)	Sex	0 risk factors		1 risk factor		2 risk factors		3 risk factors		4 risk factors		5 or more risk factors	
		Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
18–24	Female	57,524	6.6	271,190	31.1	300,808	34.5	153,408	17.6	72,470	8.3	17,245	2.0
	Male	51,673	5.7	201,325	22.1	314,543	34.5	238,664	26.2	88,061	9.7	16,141	1.8
25–34	Female	141,342	9.9	391,393	27.5	462,336	32.4	274,236	19.2	130,005	9.1	26,388	1.9
	Male	84,328	6.1	289,974	21.0	453,882	32.9	326,113	23.6	170,511	12.4	54,353	3.9
35–44	Female	149,980	10.1	407,241	27.4	437,037	29.4	314,665	21.2	134,687	9.1	41,333	2.8
	Male	85,953	6.0	272,169	19.0	441,902	30.8	382,697	26.7	175,274	12.2	77,889	5.4
45–54	Female	146,424	11.1	353,609	26.8	357,019	27.1	254,648	19.3	140,007	10.6	66,183	5.0
	Male	78,889	6.1	279,490	21.5	351,198	27.0	311,236	24.0	182,888	14.1	94,933	7.3
55–64	Female	104,220	11.6	223,797	24.9	230,689	25.7	189,934	21.2	92,319	10.3	56,526	6.3
	Male	56,002	6.2	150,147	16.7	229,019	25.5	258,069	28.7	141,922	15.8	64,504	7.2
65–74	Female	55,339	8.3	136,970	20.7	171,557	25.9	147,807	22.3	77,433	11.7	73,930	11.2
	Male	37,468	6.0	121,147	19.5	186,894	30.1	161,724	26.1	79,228	12.8	34,009	5.5
75+	Female	36,271	6.3	116,692	20.3	162,197	28.2	142,006	24.6	75,726	13.1	43,224	7.5
	Male	26,019	6.5	106,330	26.6	93,895	23.5	97,923	24.5	54,583	13.7	20,630	5.2
Total	**Female**	**691,099**	**9.5**	**1,900,892**	**26.3**	**2,121,642**	**29.3**	**1,476,705**	**20.4**	**722,646**	**10.0**	**324,829**	**4.5**
	Male	**420,332**	**6.1**	**1,420,581**	**20.5**	**2,071,333**	**29.8**	**1,776,426**	**25.6**	**892,467**	**12.9**	**362,460**	**5.2**

(a) Risk factors include obesity, high blood pressure, high blood cholesterol, diabetes, physical inactivity, smoking, risky alcohol consumption, low vegetable consumption and low fruit consumption.

Source: AIHW: O'Brien 2005; AIHW analysis of the 2001 NHS.

Table A7.2: Proportion of multiple risk factors[a] for selected heart/circulatory conditions (adults aged 18 years and over), 2001

Condition	Number of risk factors						
	None	One	Two	Three	Four	Five	Six or more
	Per cent						
Heart attack	1.5	1.7	2.2	3.3	4.1	5.2	9.7
Stroke	1.0	1.0	1.4	1.4	2.1	3.5	6.9

(a) Risk factors include obesity, high blood pressure, high blood cholesterol, diabetes, physical inactivity, smoking, risky alcohol consumption, low vegetable consumption and low fruit consumption.

Note: Estimates are based on self-reported data.

Source: AIHW: O'Brien 2005; AIHW analysis of the 2001 National Health Survey.

Table A7.3: Prevalence of high blood pressure (adults aged 25 years and over), 1999-2000

Age group (years)	Females		Males		Persons	
	Number	Per cent	Number	Per cent	Number	Per cent
25–34	47,620	3.3	101,511	7.1	149,131	5.2
35–44	109,273	7.6	201,208	14.1	310,481	10.8
45–54	284,128	23.6	377,875	30.6	662,002	27.1
55–64	353,307	44.6	394,366	49.4	747,673	47.0
65–74	544,976	67.4	468,131	69.7	1,013,107	68.5
75+	343,730	75.9	251,410	80.0	595,140	77.6
Total	**1,683,035**	**27.4**	**1,794,500**	**32.5**	**3,477,535**	**29.9**

Note: Based on WHO definition of high blood pressure—systolic blood pressure of 140 mmHg or more, or diastolic blood pressure of 90 mmHg or more, or receiving medication for high blood pressure.

Source: AIHW analysis of the 1999–2000 AusDiab study.

Table A7.4: Prevalence of high blood cholesterol (adults aged 25 years and over), 1999-2000

Age group (years)	Females		Males		Persons	
	Number	Per cent	Number	Per cent	Number	Per cent
25–34	405,848	28.4	412,496	28.8	818,344	28.6
35–44	498,500	34.3	741,583	51.4	1,240,083	42.8
45–54	647,676	53.4	703,527	56.8	1,351,204	55.1
55–64	536,751	67.5	460,602	56.9	997,352	62.2
65–74	575,746	70.3	330,416	48.9	906,163	60.6
75+	281,760	61.4	153,462	47.7	435,223	55.8
Total	**2,946,281**	**47.8**	**2,802,087**	**47.6**	**5,748,368**	**47.9**

Note: High blood cholesterol is a total cholesterol level of 5.5 mmol/L or more.

Source: AIHW analysis of the 1999–2000 AusDiab study.

Table A7.5: Prevalence of overweight and obesity, (aged 15 years and over), 2007-08

Age group (years)		Females		Males		Persons	
		Number	Per cent	Number	Per cent	Number	Per cent
15–24	Overweight	216,400	21.5	253,968	24.6	470,368	23.1
	Obese	127,630	12.7	133,702	13.0	261,333	12.8
25–34	Overweight	261,131	26.5	460,789	42.4	721,920	26.5
	Obese	177,055	18.0	211,678	19.5	388,733	18.0
35–44	Overweight	351,936	32.5	470,542	44.2	822,478	32.5
	Obese	247,186	22.8	282,860	26.6	530,046	22.8
45–54	Overweight	320,952	32.5	477,539	47.0	798,491	32.5
	Obese	260,717	26.4	302,667	29.8	563,384	26.4
55–64	Overweight	283,824	34.7	346,990	40.0	630,814	34.7
	Obese	271,409	33.2	302,892	34.9	574,301	33.2
65–74	Overweight	221,614	41.9	231,791	45.1	453,405	41.9
	Obese	154,884	29.3	173,526	33.8	328,410	29.3
75+	Overweight	142,058	32.5	191,222	52.8	333,280	32.5
	Obese	105,559	24.2	77,727	21.5	183,286	24.2
Total	**Overweight**	**1,797,915**	**30.7**	**2,432,841**	**41.0**	**4,230,756**	**35.9**
	Obese	**1,344,440**	**23.0**	**1,485,052**	**25.0**	**2,829,493**	**24.0**
Waist circumference —increased risk (aged 18+)	**. .**	**3,514,990**	**63.6**	**3,125,417**	**55.3**	**6,640,407**	**59.4**

Notes

1. Based on measurements.
2. Overweight is defined as a person having a body mass index of 25 or more, but less than 30. Obese is defined as a person having a body mass index of 30 or more.
3. Waist circumference—increased risk is defined as 80 centimetres or more in women and 94 centimetres or more in men; waist circumference data shown here are for people aged 18 years and over.

Source: AIHW analysis of the 2007–08 National Health Survey.

Table A7.6: Prevalence of Type 2 diabetes, 2004-05

Age group (years)	Females		Males		Persons	
	Number	Per cent	Number	Per cent	Number	Per cent
0–44	25,986	0.4	30,618	0.5	56,604	0.5
45–54	33,857	2.4	59,197	4.4	93,054	3.4
55–64	63,765	6.0	81,278	7.6	145,044	6.8
65-74	70,597	10.2	93,728	14.2	164,325	12.1
75+	59,063	26.9	64,677	17.1	123,740	13.9
Total	**253,268**	**2**	**329,499**	**3**	**582,766**	**3**

Source: AIHW analysis of the 2004–05 National Health Survey.

Table A7.7: Proportion of people with insufficient physical activity, by sex and age group, 2007-08

Age group (years)	Activity level	Females	Males	Persons
			Per cent	
15–17	Sedentary	25.2	19.8	22.5
	Low physical activity	42.1	31.6	37.0
18–24	Sedentary	31.1	27.2	29.1
	Low physical activity	43.0	32.6	37.7
25–34	Sedentary	30.6	30.2	30.4
	Low physical activity	44.6	37.5	41.0
35–44	Sedentary	35.5	33.8	34.7
	Low physical activity	42.7	36.7	39.8
45–54	Sedentary	34.3	38.6	36.4
	Low physical activity	41.1	33.0	37.1
55–64	Sedentary	37.8	35.2	36.5
	Low physical activity	37.2	33.8	35.5
65–74	Sedentary	41.4	37.5	39.5
	Low physical activity	33.4	31.2	32.3
75+	Sedentary	59.7	53.9	57.2
	Low physical activity	27.2	25.1	26.3
Total	**Sedentary**	**36.1**	**34.2**	**35.2**
	Low physical activity	**40.0**	**33.8**	**36.9**

Note: Low physical activity levels are defined as an exercise score of 100 to less than 1,600 over a 2-week period. Sedentary physical activity levels are defined as an exercise score of less than 100 over a 2-week period (includes no exercise); see *Methods* for further details.

Source: ABS National Health Survey 2007–08 (ABS 2009).

Table A7.8: Proportion of people with inadequate fruit and vegetable intake, by sex and age group, 2007-08

Age group (years)	Females	Males	Persons
		Per cent	
15–17	92.3	96.7	94.5
18–24	96.1	96.3	96.2
25–34	95.9	97.1	96.5
35–44	94.3	96.6	95.4
45–54	90.0	96.2	93.1
55–64	89.6	92.9	91.3
65–74	89.7	90.7	90.2
75+	88.6	90.6	89.5
Total	**92.4**	**95.2**	**93.8**

Note: Usual daily intake of fruit and vegetables, compared with NHMRC recommendations of a minimum of two serves of fruit and five serves of vegetables per day for adults.

Source: ABS National Health Survey 2007–08 (ABS 2009).

Table A7.9: Prevalence of daily smokers (aged 14 years and over), 2007

Age group (years)	Females		Males		Persons	
	Number	Per cent	Number	Per cent	Number	Per cent
14–19	72,800	8.7	52,800	6.0	125,500	7.3
20–29	272,100	19.0	350,700	23.7	622,700	21.4
30–39	285,300	18.9	339,300	22.7	624,600	20.8
40–49	313,900	20.6	328,900	21.8	642,800	21.2
50–59	201,000	15.0	265,600	20.1	466,600	17.5
60+	182,800	8.8	196,400	10.8	379,200	9.7
Total	**1,328,400**	**15.2**	**1,533,900**	**18.0**	**2,862,400**	**16.6**

Source: AIHW analysis of the 2007 National Drug Strategy Household Survey.

Table A7.10: Proportion of risky and high-risk drinkers, by age and sex, 2007

Age group (years)	Females				Males				Persons			
	Abstainer	Low-risk	Risky	High-risk	Abstainer	Low-risk	Risky	High-risk	Abstainer	Low-risk	Risky	High-risk
						Per cent						
14–19	28.7	60.7	6.7	3.9	29.2	63.7	4.4	2.6	29.0	62.2	5.6	3.2
20–29	14.8	68.8	11.0	5.4	11.1	73.4	9.3	6.2	12.9	71.1	10.2	5.8
30–39	13.5	75.8	7.7	3.0	10.9	79.2	6.2	3.7	12.2	77.5	7.0	3.3
40–49	13.9	74.1	9.3	2.6	10.8	79.6	6.0	3.5	12.4	76.8	7.7	3.1
50–59	18.1	72.3	6.9	2.7	9.9	78.9	6.1	5.1	14.0	75.6	6.5	3.9
60+	31.1	63.4	4.7	0.8	17.3	75.3	4.9	2.5	24.7	68.9	4.8	1.6
Total 14+	**20.1**	**69.4**	**7.6**	**2.8**	**14.0**	**75.8**	**6.2**	**3.9**	**17.1**	**72.6**	**6.9**	**3.4**

Note: For females, the consumption of 15–28 drinks per week is considered 'risky', and 29 or more per week 'high risk'. For males, the consumption of 29–42 drinks per week is considered 'risky', and 43 or more per week 'high risk'. Drinking levels considered a long-term risk only. Long-term risk of harm is associated with regular daily patterns of drinking. The model used is that outlined in the 2001 Australian Alcohol Guidelines (NHMRC 2001).

Source: 2007 National Drug Strategy Household Survey (AIHW 2008e).

Table A7.11: Prevalence of lifetime depressive episode[a], by cardiovascular disease, 2007

	Age group (years)	Females		Males		Persons	
		Number per 100,000	Per cent[b]	Number per 100,000	Per cent[b]	Number per 100,000	Per cent[b]
Stroke[c]							
	18–64	*20.9	32.0	*9.7	15.6	*30.6	24.0
	65–85	*12.4	14.5	*6.9	6.3	*19.3	9.9
	Total	*33.3*	*22.1*	*16.6*	*9.7*	*49.9*	*15.5*
Heart or circulatory condition[d]							
	18–64	199.1	20.8	139.6	12.0	338.7	16.0
	65–85	52.4	7.8	39.8	6.8	92.2	7.3
	Total	*251.6*	*15.4*	*179.4*	*10.3*	*430.9*	*1.3*
Cardiovascular disease[e]							
	18–64	207.9	21.1	140.7	12.0	348.6	16.1
	65–85	55.7	8.0	40.4	6.6	96.1	7.4
	Total	*263.5*	*15.7*	*181.1*	*10.2*	*444.7*	*12.8*
Total[f]							
	18–64	**1,043.3**	**16.1**	**624.5**	**9.6**	**1,667.7**	**12.9**
	65–85	**107.4**	**8.5**	**70.1**	**6.2**	**177.5**	**7.4**
	Total	**1,150.7**	**14.8**	**694.6**	**9.1**	**1,845.3**	**12.0**

(a) Persons who met criteria for mild depressive episode, moderate depressive episode or severe depressive episode at some stage in their lifetime.

(b) Percentage within that age group of that CVD group.

(c) Persons who had ever had a stroke in their lifetime.

(d) Persons who had ever had a circulatory condition like a heart attack, angina or high blood pressure in their lifetime.

(e) Persons who had ever had a stroke or circulatory condition like a heart attack, angina or high blood pressure in their lifetime. Persons may have had more than one CVD. The components when added may therefore not add to the total shown.

(f) Includes persons who did not have CVD.

Note: Estimates marked with * have a relative standard error between 25% and 50% and should be interpreted with caution.

Source: ABS 2007 Survey of Mental Health and Wellbeing.

Table A7.12: Contact with family or friends, by sex and age group, 2007

	18–24		25–34		35–44		45–54		55–64		65–74		75–85		Total	
	'000	Per cent	'000	Per cent	'000	Per cent	'000	Per cent	'000	Per cent	'000	Per cent	'000	Per cent	'000	Per cent
Females																
No contact with or no family	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	***49.7**	***0.6**
Contact with family members[(a)]	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	**7,701.3**	**99.4**
0 family members to rely on	*33.9	*3.6	54.2	3.9	114.8	7.5	69.2	4.8	72.4	6.2	23.2	3.2	*21.9	*4.1	**389.5**	**5.0**
0 family members to confide in	34.6	3.7	89.0	6.4	125.8	8.2	107.6	7.4	81.4	7.0	40.2	5.5	31.7	6.0	**510.3**	**6.6**
No contact or no friends	n.p.	n.p	n.p.	n.p	n.p.	n.p	*41.9	*2.9	*26.8	*2.3	*19.2	*2.6	20.8	3.9	**140.1**	**1.8**
Contact with friends[(a)]	923.3	99.1	1,395.0	99.7	1,516.9	98.8	1,411.3	97.1	1,138.1	97.7	715.9	97.4	510.4	96.1	**7,611.0**	**98.2**
0 friends to rely on	50.1	5.4	83.2	5.9	127.3	8.3	98.6	6.8	102.2	8.8	91.1	12.4	95.5	18.0	**648.1**	**8.4**
0 friends to confide in	43.2	4.6	90.5	6.5	119.9	7.8	99.2	6.8	109.9	9.4	102.4	13.9	123.0	23.2	**688.2**	**8.9**
Total females[(a)]	*931.6*	..	*1,399.2*	..	*1,535.8*	..	*1,453.2*	..	*1,165.0*	..	*735.1*	..	*531.2*	..	*7,751.1*	..
Males																
No contact with or no family	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	**72.1**	**0.9**
Contact with family members[(a)]	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	**7,540.3**	**99.1**
0 family members to rely on	*33.6	*3.5	*74.4	*5.3	102.4	6.7	89.0	6.3	*77.2	*6.7	30.1	4.3	*25.7	*5.8	**432.3**	**5.7**
0 family members to confide in	52.3	5.4	82.2	5.8	140.4	9.1	127.9	9.1	99.2	8.6	45.7	6.5	25.5	5.8	**573.1**	**7.5**
No contact or no friends	n.p.	-	*14.3	*1.0	*58.5	*3.8	*45.9	*3.3	45.5	3.9	*21.7	*3.1	*20.6	*4.7	**212.5**	**2.8**
Contact with friends[(a)]	955.7	99.4	1,398.3	99.0	1,476.0	96.2	1,359.5	96.7	1,113.3	96.1	677.6	96.9	419.4	95.3	**7,399.8**	**97.2**
0 friends to rely on	45.5	4.7	*145.1	*10.3	196.9	12.8	156.9	11.2	182.8	15.8	102.0	14.6	84.0	19.1	**913.1**	**12.0**
0 friends to confide in	47.5	4.9	*156.1	*11.1	232.3	15.1	181.5	12.9	198.3	17.1	123.4	17.6	118.5	26.9	**1,057.6**	**13.9**
Total males[(a)]	*961.8*	..	*1,412.6*	..	*1,534.5*	..	*1,405.4*	..	*1,158.8*	..	*699.2*	..	*440.0*	..	*7,612.3*	..

(continued)

Table A7.12 (continued): Contact with family or friends, by sex and age group, 2007

	18–24		25–34		35–44		45–54		55–64		65–74		75–85		Total persons	
	'000	Per cent	'000	Per cent	'000	Per cent	'000	Per cent	'000	Per cent	'000	Per cent	'000	Per cent	'000	Per cent
								Persons								
No contact with or no family	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	**121.8**	**0.8**
Contact with family members[(a)]	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	**15,241.6**	**99.2**
0 family members to rely on	67.5	3.6	128.5	4.6	217.2	7.1	158.2	5.5	149.7	6.4	53.2	3.7	47.5	4.9	**821.8**	**5.3**
0 family members to confide in	86.9	4.6	171.2	6.1	266.2	8.7	235.5	8.2	180.6	7.8	85.8	6.0	57.2	5.9	**1,083.4**	**7.1**
No contact or no friends	*14.4	*0.8	*18.5	*0.7	*77.3	*2.5	*87.7	*3.1	72.3	3.1	40.9	2.8	41.4	4.3	**352.5**	**2.3**
Contact with friends[(a)]	1,879.0	99.2	2,793.3	99.3	2,992.9	97.5	2,770.9	96.9	2,251.4	96.9	1,393.4	97.2	929.8	95.7	**15,010.8**	**97.7**
0 friends to rely on	95.6	5.0	228.3	8.1	324.2	10.6	255.6	8.9	285.0	12.3	193.1	13.5	179.5	18.5	**1,561.2**	**10.2**
0 friends to confide in	90.7	4.8	246.6	8.8	352.2	11.5	280.8	9.8	308.3	13.3	225.8	15.7	241.5	24.9	**1,745.8**	**11.4**
Total persons[(a)]	**1,893.5**	**. .**	**2,811.8**	**. .**	**3,070.3**	**. .**	**2,858.6**	**. .**	**2,323.8**	**. .**	**1,434.3**	**. .**	**971.2**	**. .**	**15,363.4**	**. .**

(a) Includes 'not stated' how many family/friends a person can rely on/confide in.

Notes

1. Estimates marked with * have a relative standard error between 25% and 50% and should be interpreted with caution.
2. Estimates marked n.p. (not published) have a relative standard error of more than 50%, or were not available by this age group breakdown, and are therefore not shown.

Source: ABS 2007 Survey of Mental Health and Wellbeing.

Table A7.13: Frequency of contact with family or friends, by sex, 2007

	Females		Males		Persons	
	Number	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Frequency of contact with family members						
Nearly every day	5,097,000	65.8	4,610,000	60.6	9,708,000	63.2
At least once a week	2,094,000	27.0	2,071,000	27.2	4,165,000	27.1
At least once a month	364,000	4.7	558,000	7.3	922,000	6.0
Less than once a month	145,000	1.9	301,000	4.0	446,000	2.9
No contact or no family	*50,000	0.6	72,000	0.9	122,000	0.8
Total	**7,751,100**	**100.0**	**7,612,300**	**100.0**	**15,363,400**	**100.0**
Frequency of contact with friends						
Nearly every day	3,144,000	40.6	3,134,000	41.2	6,277,000	40.9
At least once a week	3,528,000	45.5	3,233,000	42.5	6,761,000	44.0
At least once a month	652,000	8.4	746,000	9.8	1,398,000	9.1
Less than once a month	287,000	3.7	287,000	3.8	574,000	3.7
No contact or no friends	140,000	1.8	212,000	2.8	353,000	2.3
Total	**7,751,100**	**100.0**	**7,612,300**	**100.0**	**15,363,400**	**100.0**

Note: Estimates marked with * have a relative standard error between 25% and 50% and should be interpreted with caution

Source: ABS 2007 Survey of Mental Health and Wellbeing.

Table A8.1: Number and age-specific rates of cardiovascular disease hospitalisations, by age and sex, 2006–07

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–24	3,917	4,897	8,814	115.7	137.8	125.7
25–34	5,540	6,740	12,280	383.5	465.1	421.6
35–44	12,444	16,635	29,079	808.8	1,095.2	942.6
45–54	20,290	35,106	55,396	1,410.0	2,478.0	1,904.3
55–64	29,940	58,241	88,181	2,651.9	5,145.8	3,779.0
65–74	38,940	64,654	103,594	5,389.3	9,374.2	7,125.2
75–84	55,676	62,484	118,160	10,321.0	14,918.0	12,218.3
85+	33,202	21,102	54,304	15,248.6	20,217.5	15,779.9
Total	**199,949**	**269,859**	**469,808**	**. .**	**. .**	**. .**
ASR[(b)]	**. .**	**. .**	**. .**	**1,690.0**	**2,675.2**	**2,102.0**
95% CIs	**. .**	**. .**	**. .**	**1,682.5–1,697.5**	**2,665.0–2,685.3**	**2,095.9–2,108.0**

(a) Age-specific rate—number per 100,000 population.

(b) Age-standardised rate—standardised to the Australian population as at 30 June 2001.

Source: AIHW National Hospital Morbidity Database.

Table A8.2: Number and age-specific rates of coronary heart disease hospitalisations, by age and sex, 2006–07

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–24	30	88	118	0.9	2.5	1.7
25–34	197	597	794	13.6	41.2	27.3
35–44	1,449	4,489	5,938	94.2	295.5	192.5
45–54	4,978	15,247	20,226	345.9	1,076.2	695.3
55–64	9,520	28,187	37,707	843.2	2,490.4	1,615.9
65–74	13,806	29,384	43,190	1,910.7	4,260.4	2,970.6
75–84	16,977	23,106	40,085	3,147.1	5,516.5	4,145.0
85+	8,122	6,148	14,270	3,730.2	5,890.3	4,146.6
Total	**55,079**	**107,246**	**162,328**	**. .**	**. .**	**. .**
ASR[(b)]	**. .**	**. .**	**. .**	**462.3**	**1,046.2**	**721.8**
95% CIs	**. .**	**. .**	**. .**	**458.4–466.2**	**1,039.9–1,052.5**	**718.3–725.4**

(a) Age-specific rate—number per 100,000 population.

(b) Age-standardised rate—standardised to the Australian population as at 30 June 2001.

Source: AIHW National Hospital Morbidity Database.

Table A8.3: Number and age-specific rates of stroke hospitalisations, by age and sex, 2006–07

Age group (years)	Number			Age-specific rate[a]		
	Females	Males	Persons	Females	Males	Persons
0–24	175	189	364	5.2	5.3	5.2
25–34	250	211	461	17.3	14.6	15.8
35–44	555	635	1,190	36.1	41.8	38.6
45–54	999	1,492	2,491	69.4	105.3	85.6
55–64	1,549	2,675	4,224	137.2	236.3	181.0
65–74	2,612	4,204	6,816	361.5	609.5	468.8
75–84	5,811	5,727	11,542	1,077.2	1,367.3	1,193.5
85+	4,886	2,502	7,388	2,244.0	2,397.1	2,146.8
Total	**16,837**	**17,635**	**34,476**	**. .**	**. .**	**. .**
ASR[b]	**. .**	**. .**	**. .**	**134.7**	**181.1**	**152.3**
95% CIs	**. .**	**. .**	**. .**	**132.6–136.8**	**178.5–183.9**	**150.7–153.9**

(a) Age-specific rate—number per 100,000 population.

(b) Age-standardised rate—standardised to the Australian population as at 30 June 2001.

Source: AIHW National Hospital Morbidity Database.

Table A8.4: Number and age-specific rates of heart failure hospitalisations, by age and sex, 2006–07

Age group (years)	Number			Age-specific rate[a]		
	Females	Males	Persons	Females	Males	Persons
0–24	63	87	150	1.9	2.4	2.1
25–34	70	151	221	4.8	10.4	7.6
35–44	212	303	515	13.8	19.9	16.7
45–54	429	858	1,287	29.8	60.6	44.2
55–64	1,214	2,405	3,619	107.5	212.5	155.1
65–74	3,070	4,714	7,784	424.9	683.5	535.4
75–84	8,038	8,849	16,887	1,490.0	2,112.7	1,746.2
85+	8,183	5,035	13,218	3,758.2	4,824.0	3,840.9
Total	**21,279**	**22,402**	**43,681**	**. .**	**. .**	**. .**
ASR[b]	**. .**	**. .**	**. .**	**163.1**	**238.6**	**190.4**
95% CIs	**. .**	**. .**	**. .**	**160.9–165.4**	**235.5–241.8**	**188.6–192.2**

(a) Age-specific rate—number per 100,000 population.

(b) Age-standardised rate—standardised to the Australian population as at 30 June 2001.

Source: AIHW National Hospital Morbidity Database.

Table A8.5: ICD-10-AM codes for procedures in hospital

Procedure codes	ICD-10-AM code
Coronary angiography in hospitalisations	38215-00, 38218-00, 38218-01, 38218-02 (block:668)
	and diagnosis codes I20–I25, I30–I52
Percutaneous coronary interventions in hospitalisations	35304-00, 35305-00 (block:670)
	35304-01, 35305-01 (block:670)
	35310-00, 35310-01, 35310-02 (block: 671)
	35310-03, 35310-04, 35310-05 (block: 671)
	and diagnosis codes I20–I25
Coronary artery bypass grafting in hospitalisations	38497-00 to 38497-07, 38500-00 to 38500-04, 38503-00 to 38503-04, 90201-00 to 90201-03 (blocks: 672–679)
	and diagnosis codes I20–I25, I34, I35
Heart transplant	90205-00, 90205-01 (block: 660)
Cardiac defibrillator implants	38524-00, 38521-01, 38521-02, 38521-03 (block:653)
	and diagnosis codes I20, I21,I25, I42–I51
Valve replacement, repair or reconstruction	• Aortic Valve (Blocks 621, 622, 623, 624):
	38456-10, 38483-00, 38270-01, 38480-00, 38481-00, 38488-00, 38488-01, 38489-00, 38489-01, 38456-15, 38653-04, 38475-02, 38477-02.
	• Mitral valve (Blocks 625, 626, 627, 628, 629, 630):
	38487-00, 38485-01, 38270-02, 38480-01, 38481-01, 38475-00, 38477-00, 38488-02, 38488-03, 38489-02, 38485-00, 38456-16, 38653-05.
	• Tricuspid valve (Blocks 631, 632, 633, 634, 635):
	38456-11, 38480-02, 38481-02, 38475-01, 38477-01, 38488-04, 38488-05, 38489-03, 38456-17, 38653-06.
	• Pulmonary valve (Blocks 636, 637, 638):
	38456-01, 38270-03, 38488-06, 38488-07, 38489-04, 38489-05, 38456-18, 38653-07.
	and diagnosis codes I01–I09, I20–I25, I33–I39, I42–I52, Q20–Q25, T82
Pacemaker insertion	38281-00, 38281-01, 38281-02, 38281-03, 38281-04, 38281-05, 38281-06,
	38281-07, 38281-08, 38281-09, 38281-10, 38281-11, 38281-12, 38281-13
	(blocks: 650, 651, 652)
	and diagnosis codes I08, I20, I21, I25, I34–I39, I42–I52
Echocardiography	55112-00, 55118-00, 55130-00 (block: 1942)
	and diagnosis codes I00–I52
Carotid endarterectomy	33500–00 (block: 700)
	and diagnosis codes G45, I63–I67
Computerised tomographic (CT) brain scan in hospitalisations	56001-00, 56007-00, 56010-02, 56010-03 (blocks: 1952, 1953) and diagnosis codes G45, I60–I64
Magnetic resonance imaging (MRI) brain scan in hospitalisations	90901-00 (block: 2015) and diagnosis codes G45, I60–I64

Table A8.6: Number and age-specific rates of coronary angiography procedures in hospitals, by age and sex, 2006–07

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–24	32	81	113	2.8	4.5	3.9
25–34	88	343	431	7.7	13.9	12.0
35–44	671	2,342	3,013	21.2	29.7	27.3
45–54	2,495	8,505	11,000	29.3	38.0	35.6
55–64	5,318	16,669	21,987	32.7	40.3	38.2
65–74	7,628	17,001	24,629	30.2	36.7	34.4
75–84	7,820	11,519	19,339	21.1	26.5	24.0
85+	1,259	1,473	2,732	5.7	10.1	7.5
Total	**25,311**	**57,933**	**83,244**	**. .**	**. .**	**. .**
ASR[(b)]	**. .**	**. .**	**. .**	**23.8**	**30.3**	
95% CIs	**. .**	**. .**	**. .**	**23.5–24.1**	**30.0–30.5**	

(a) Age-specific rate—number per 100 hospitalisations for CHD or other forms of heart disease (I20–I25, I30–I52).

(b) The age-standardised rate was calculated using the total number of hospitalisations with any CVD diagnosis in 2006–07 as the standard population.

Source: AIHW National Hospital Morbidity Database.

Table A8.7: Number and age-specific rates of echocardiography procedures in hospitals, by age and sex, 2006–07

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–24	103	151	254	6.8	7.0	6.9
25–34	139	188	327	8.6	6.7	7.4
35–44	210	500	710	5.2	5.8	5.6
45–54	476	1,478	1,954	4.9	6.3	5.9
55–64	945	3,071	4,016	5.2	7.1	6.6
65–74	1,523	3,455	4,978	5.5	7.2	6.6
75–84	1,673	2,622	4,295	4.2	5.8	5.0
85+	369	342	711	1.6	2.3	1.8
Total	**5,438**	**11,807**	**17,245**	4.3	6.3	5.5
ASR[(b)]	**. .**	**. .**	**. .**	**4.7**	**6.0**	
95% CIs	**. .**	**. .**	**. .**	**4.6–4.8**	**5.9–6.2**	

(a) Age-specific rate—number per 100 hospitalisations for any form of heart disease (I00–I52).

(b) The age-standardised rate was calculated using the total number of hospitalisations with any CVD diagnosis in 2006–07 as the standard population.

Source: AIHW National Hospital Morbidity Database.

Table A8.8: Number and age-specific rates of CT brain scan procedures performed in hospitals in patients with a principal diagnosis of stroke or TIA, by age and sex, 2006–07

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–24	111	130	241	56.3	62.5	59.5
25–34	205	164	369	63.9	65.9	64.7
35–44	526	584	1,110	68.0	70.7	69.4
45–54	991	1,428	2,419	69.7	69.8	69.8
55–64	1,707	2,820	4,527	72.4	72.0	72.2
65–74	2,745	4,210	6,955	71.7	71.3	71.5
75–84	5,758	5,592	11,350	70.2	69.7	69.9
85+	4,386	2,336	6,722	65.4	66.5	65.8
Total	**16,429**	**17,264**	**33,693**	69.0	69.9	69.5
ASR[(b)]	**. .**	**. .**	**. .**	**69.8**	**70.0**	
95% CIs	**. .**	**. .**	**. .**	**68.6–71.0**	**68.9–71.1**	

(a) Age-specific rate—number per 100 hospitalisations for stroke or transient ischaemic attack (I60–I64, G45).

(b) The age-standardised rate was calculated using the total number of hospitalisations with any CVD diagnosis in 2006–07 as the standard population.

Source: AIHW National Hospital Morbidity Database.

Table A8.9: Number and age-specific rates of MRI brain scan procedures performed in hospitals in patients with a principal diagnosis of stroke or TIA, by age and sex, 2006–07

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–24	76	81	157	38.6	38.9	38.8
25–34	83	67	150	25.9	26.9	26.3
35–44	183	218	401	23.7	26.4	25.1
45–54	299	486	785	21.0	23.8	22.6
55–64	475	888	1,363	20.2	22.7	21.7
65–74	652	1,048	1,700	17.0	17.8	17.5
75–84	983	1,069	2,052	12.0	13.3	12.6
85+	384	257	641	5.7	7.3	6.3
Total	**3,135**	**4,114**	**7,249**	13.2	16.7	14.9
ASR[(b)]	**. .**	**. .**	**. .**	**16.6**	**18.2**	
95% CIs	**. .**	**. .**	**. .**	**15.9–17.2**	**17.7–18.8**	

(a) Age-specific rate—number per 100 hospitalisations for stroke or TIA (I60–I64, G45).

(b) The age-standardised rate was calculated using the total number of hospitalisations with any CVD diagnosis in 2006–07 as the standard population.

Source: AIHW National Hospital Morbidity Database.

Table A8.10: Number and age-specific rates of percutaneous coronary interventions in hospitals, by age and sex, 2006–07

Age group (years)	Number			Age-specific rate[a]		
	Females	Males	Persons	Females	Males	Persons
0–24	1	6	7	3.3	6.8	5.9
25–34	25	104	129	12.7	17.4	16.2
35–44	219	1,212	1,431	15.1	27.0	24.1
45–54	830	4,534	5,364	16.7	29.7	26.5
55–64	1,895	7,856	9,751	19.9	27.9	25.9
65–74	2,646	7,014	9,660	19.2	23.9	22.4
75–84	2,693	4,336	7,029	15.9	18.8	17.5
85+	533	577	1,110	6.6	9.4	7.8
Total	**8,842**	**25,639**	**34,481**	16.1	23.9	21.2
ASR[b]	**. .**	**. .**	**. .**	**16.0**	**22.1**	
95% CIs	**. .**	**. .**	**. .**	**15.6–16.4**	**21.8–22.4**	

(a) Age-specific rate—number per 100 hospitalisations for CHD or other forms of heart disease (I08, I20, I21, I25, I34–I39, I42–I52).

(b) The age-standardised rate was calculated using the total number of hospitalisations with any CVD diagnosis in 2006–07 as the standard population.

Source: AIHW National Hospital Morbidity Database.

Table A8.11: Number and age-specific rates of coronary artery bypass grafting procedures, by age and sex, 2006–07

Age group (years)	Number			Age-specific rate[a]		
	Females	Males	Persons	Females	Males	Persons
0–24	–	1	1	–	0.6	0.5
25–34	6	12	18	2.6	1.8	2.0
35–44	55	230	285	3.6	4.9	4.6
45–54	203	1, 228	1,431	3.9	7.8	6.8
55–64	512	3, 026	3,538	5.2	10.3	9.0
65–74	1, 023	3, 515	4,538	7.0	11.4	10.0
75–84	1, 080	2, 356	3,436	5.9	9.6	8.0
85+	95	220	315	1.1	3.4	2.1
Total	**2, 974**	**10, 588**	**13,562**	5.1	9.4	7.9
ASR[b]	**. .**	**. .**	**. .**	**4.9**	**8.5**	
95% CIs	**. .**	**. .**	**. .**	**4.7–5.1**	**8.4–8.7**	

(a) Age-specific rate—number per 100 hospitalisations for CHD or other forms of heart disease (I20–I25, I34, I35).

(b) The age-standardised rate was calculated using the total number of hospitalisations with any CVD diagnosis in 2006–07 as the standard population.

Source: AIHW National Hospital Morbidity Database.

Table A8.12: Number and age-specific rates of heart valve repair or replacement procedures, by age and sex, 2006–07

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–24	234	318	552	7.5	8.5	8.0
25–34	75	95	170	5.2	4.1	4.5
35–44	125	200	325	3.4	2.5	2.8
45–54	223	383	606	2.4	1.7	1.9
55–64	419	802	1,221	2.4	1.9	2.1
65–74	751	1,277	2,028	2.8	2.7	2.7
75–84	992	1,275	2,267	2.6	2.8	2.7
85+	182	163	345	0.8	1.1	0.9
Total	**3,001**	**4,513**	**7,514**	**. .**	**. .**	**. .**
ASR[(b)]	**. .**	**. .**	**. .**	**2.6**	**2.4**	
95% CIs	**. .**	**. .**	**. .**	**2.5–2.7**	**2.3–2.5**	

(a) Age-specific rate—number per 100 hospitalisations for CHD or other forms of heart disease, including acute rheumatic fever and rheumatic heart disease (I01–I09, I20–I25, I33–I39, I42–I52, Q20–Q25, and T82).

(b) The age-standardised rate was calculated using the total number of hospitalisations with any CVD diagnosis in 2006–07 as the standard population.

Source: AIHW National Hospital Morbidity Database.

Table A8.13: Number and age-specific rates of pacemaker insertion procedures in hospitals, by age and sex, 2006–07

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–24	18	28	46	1.8	2.0	1.9
25–34	20	24	44	2.0	1.2	1.5
35–44	54	84	138	1.8	1.1	1.3
45–54	105	205	310	1.3	0.9	1.0
55–64	320	684	1,004	2.0	1.7	1.8
65–74	800	1,538	2,338	3.2	3.3	3.3
75–84	1,768	2,441	4,209	4.8	5.6	5.2
85+	976	1,016	1,992	4.5	7.0	5.5
Total	**4,061**	**6,020**	**10,081**	**. .**	**. .**	**. .**
ASR[(b)]	**. .**	**. .**	**. .**	**3.1**	**3.5**	
95% CIs	**. .**	**. .**	**. .**	**3.0–3.2**	**3.4–3.6**	

(a) Age-specific rate—number per 100 hospitalisations for selected forms of heart disease (I08, I20, I21, I25, I34–I39, and I42–I52).

(b) The age-standardised rate was calculated using the total number of hospitalisations with any CVD diagnosis in 2006–07 as the standard population.

Source: AIHW National Hospital Morbidity Database.

Table A8.14: Number and age-specific rates of cardiac defibrillator procedures in hospitals, by age and sex, 2006–07

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–24	18	34	52	2	3	2
25–34	17	25	42	2	1	1
35–44	38	83	121	1	1	1
45–54	67	236	303	1	1	1
55–64	111	528	639	1	1	1
65–74	163	748	911	1	2	1
75–84	116	488	604	–	1	1
85+	12	31	43	–	–	–
Total	**542**	**2,173**	**2,715**	–	1	1
ASR[(b)]	**. .**	**. .**	**. .**	**0.6**	**1.2**	
95% CIs	**. .**	**. .**	**. .**	**0.6–0.7**	**1.2–1.3**	

(a) Age-specific rate—number per 100 hospitalisations for selected forms of heart disease (I20, I21, I25, I42–I51).

(b) The age-standardised rate was calculated using the total number of hospitalisations with any CVD diagnosis in 2006–07 as the standard population.

Source: AIHW National Hospital Morbidity Database.

Table A8.15: Number and age-specific rates of heart transplant procedures, by age and sex, 2006–07

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–24	6	6	12	0.2	0.2	0.2
25–34	6	8	14	0.4	0.6	0.5
35–44	2	5	7	0.1	0.3	0.2
45–54	4	19	23	0.3	1.3	0.8
55–64	4	18	22	0.4	1.6	0.9
65–74	–	2	2	–	0.3	0.1
75–84	–	–	– –	–	–	–
85+	–	–	– –	–	–	–
Total	**22**	**58**	**80**	**. .**	**. .**	**. .**
ASR[(b)]	**. .**	**. .**	**. .**	**0.2**	**0.5**	
95% CIs	**. .**	**. .**	**. .**	**0.1–0.3**	**0.4–0.7**	

(a) Age-specific rate—number per 100,000 population.

(b) Age-standardised rate—standardised to the Australian population as at 30 June 2001.

Source: AIHW National Hospital Morbidity Database.

Table A8.16: Number and age-specific rates of carotid endarterectomy procedures in hospitals, by age and sex, 2006–07

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–24	–	–	–	–	–	–
25–34	–	–	–	–	–	–
35–44	5	5	10	0.7	0.7	0.7
45–54	27	46	73	2.2	2.7	2.5
55–64	96	273	369	4.3	7.1	6.1
65–74	235	584	819	6.3	9.7	8.4
75–84	258	614	872	3.4	7.8	5.7
85+	58	89	147	1.0	2.8	1.6
Total	**679**	**1,611**	**2,290**	3.1	6.8	5.0
ASR[(b)]	. .	. .	. .	**3.5**	**6.1**	
95% CIs	. .	. .	. .	**3.2–3.8**	**5.8–6.4**	

(a) Age-specific rate—number per 100 hospitalisations for stroke or TIA (I63–I67, G45).

(b) The age-standardised rate was calculated using the total number of hospitalisations with any CVD diagnosis in 2006–07 as the standard population.

Source: AIHW National Hospital Morbidity Database.

Table A8.17: Encounters with at least one cardiovascular disease problem[(a)] managed, April 2007–March 2008

Age group (years)	Females		Males	
	Problems per 100 encounters	95% CIs	Problems per 100 encounters	95% CIs
18–24	1.71	1.29–2.13	1.81	1.19–2.44
25–34	2.95	2.51–3.40	4.85	4.03–5.67
35–44	6.82	6.11–7.53	11.37	10.16–12.58
45–54	15.63	14.60–16.66	21.88	20.45–23.31
55–64	26.88	25.47–28.29	30.81	29.10–32.52
65–74	35.87	34.16–37.57	37.60	35.80–39.39
75+	39.17	37.49–40.85	37.98	36.04–39.91
Total	**19.53**		**24.07**	

(a) Includes lipid disorders; refer to Appendix for specific codes.

Source: 2007–08 Bettering the Evaluation and Care of Health program, Australian General Practice Statistics and Classification Centre.

Table A8.18: Encounters with at least one ischaemic heart disease[a] problem managed, April 2007–March 2008

	Females		Males	
Age group (years)	Problems per 100 encounters	95% CIs	Problems per 100 encounters	95% CIs
18–24	0.01	0–0.04	–	–
25–34	0.03	0–0.09	0.19	0.02–0.35
35–44	–	–	0.36	0.14–0.59
45–54	0.31	0.17–0.45	1.16	0.84–1.48
55–64	0.76	0.53–0.99	2.09	1.67–2.51
65–74	1.65	1.27–2.03	3.66	2.96–4.36
75+	2.68	2.17–3.18	4.50	3.79–5.21
Total	**0.84**		**2.01**	

(a) The majority of ischaemic heart disease is CHD.

Source: 2007–08 Bettering the Evaluation and Care of Health program, Australian General Practice Statistics and Classification Centre.

Table A8.19: Encounters with at least one stroke problem managed, April 2007–March 2008

Age group (years)	Females		Males	
	Problems per 100 encounters	95% CIs	Problems per 100 encounters	95% CIs
18–24	0.02	0.00–0.04	0.03	0.00–0.07
25–34	0.07	0.00–0.16	0.04	0.00–0.10
35-44	0.12	0.04–0.19	0.10	0.02–0.19
45–54	0.17	0.07–0.28	0.15	0.05–0.25
55–64	0.38	0.21–0.55	0.50	0.30–0.70
65–74	0.85	0.59–1.11	1.06	0.75–1.37
75+	1.80	1.43–2.17	1.44	1.09–1.79
Total	**0.53**		**0.56**	

Source: 2007–08 Bettering the Evaluation and Care of Health program, Australian General Practice Statistics and Classification Centre.

Table A8.20: Encounters with at least one hypertension[(a)] problem managed, April 2007–March 2008

Age group (years)	Females		Males	
	Problems per 100 encounters	95% CIs	Problems per 100 encounters	95% CIs
18–24	0.42	0.17–0.66	0.49	0.18–0.80
25–34	0.88	0.63–1.13	1.57	1.11–2.03
35–44	3.06	2.59–3.53	5.39	4.59–6.19
45–54	7.82	7.00–8.63	11.54	10.52–12.57
55–64	15.60	14.38–16.83	17.63	16.18–19.08
65–74	21.57	20.06–23.07	20.56	19.06–22.05
75+	21.20	19.68–22.73	19.01	17.45–20.57
Total	**10.68**		**12.66**	

(a) Hypertension refers to medically diagnosed hypertension and excludes high blood pressure that may be transient; see Appendix for specific codes.

Source: 2007–08 Bettering the Evaluation and Care of Health program, Australian General Practice Statistics and Classification Centre.

Table A8.21: Encounters with at least one heart failure problem managed, April 2007–March 2008

Age group (years)	Females		Males	
	Problems per 100 encounters	95% CIs	Problems per 100 encounters	95% CIs
18–24	–	–	–	–
25–34	–	–	–	–
35–44	–	–	–	–
45–54	0.03	0–0.07	0.13	0.02–0.24
55–64	0.19	0.06–0.31	0.50	0.31–0.69
65–74	0.74	0.47–1.01	1.41	0.98–1.83
75+	3.12	2.61–3.62	2.92	2.39–3.45
Total	**0.66**		**0.84**	

Source: 2007–08 Bettering the Evaluation and Care of Health program, Australian General Practice Statistics and Classification Centre.

Table A8.22: Population filling PBS/RPBS prescriptions for cardiovascular medicines, by age and sex, 2007–08

Age group (years)	Number		Per cent	
	Females	Males	Females	Males
0–4	3,861	6,490	37.3	62.7
5–9	5,731	10,490	35.3	64.7
10–14	4,569	9,236	33.1	66.9
15–19	5,834	5,585	51.1	48.9
20–24	8,571	5,655	60.2	39.8
25–29	12,033	8,755	57.9	42.1
30–34	19,217	17,829	51.9	48.1
35–39	33,480	37,993	46.8	53.2
40–44	52,784	69,678	43.1	56.9
45–49	91,184	116,398	43.9	56.1
50–54	142,867	163,211	46.7	53.3
55–59	209,460	219,243	48.9	51.1
60–64	261,458	254,200	50.7	49.3
65–69	267,702	257,284	51.0	49.0
70–74	251,609	226,450	52.6	47.4
75–79	241,844	199,059	54.9	45.1
80–84	204,079	140,021	59.3	40.7
85+	189,286	90,124	67.7	32.3
Total	**2,005,569**	**1,837,701**	**52.1**	**47.8**

Note: There were 3,518 persons whose age and sex were not stated, and therefore excluded from the above table.

Source: AIHW analysis of PBS/RPBS data.

Table A8.23: Beneficiary category of patients receiving cardiovascular medicines through the PBS/RPBS, by sex, 2007–08

	Number				Per cent		
	Females	Males	Not stated	Total	Female	Male	Not stated
Concessional safety net	183,630	139,449	51	323,130	56.8	43.2	–
Concessional ordinary	1,328,980	968,642	600	2,298,222	57.8	42.1	–
General safety net	30,448	26,385	1	56,834	53.6	46.4	–
General ordinary	367,887	588,134	274	956,295	38.5	61.5	–
RPBS safety net	8,214	24,140	2,546	34,900	23.5	69.2	7.3
RPBS ordinary	86,410	90,951	46	177,407	48.7	51.3	–
Total	**2,005,569**	**1,837,701**	**3,518**	**3,846,788**	**52.1**	**47.8**	**0.1**

Source: AIHW analysis of PBS/RPBS data.

Table A8.24: Number and rates of PBS/RPBS prescriptions dispensed for all cardiovascular medicines, by age and sex, 2007–08

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–4	7,170	10,871	18,041	1,105.0	1,588.3	1,353.1
5–9	10,973	23,011	33,984	1,678.0	3,346.8	2,533.3
10–14	12,863	29,921	42,784	1,887.1	4,162.4	3,054.9
15–19	16,745	21,939	38,684	2,389.5	2,966.7	2,685.9
20–24	30,471	27,949	58,420	4,149.0	3,678.9	3,910.0
25–29	47,435	47,971	95,406	6,636.7	6,573.9	6,605.0
30–34	91,253	113,694	204,947	12,400.0	15,525.6	13,958.9
35–39	202,059	280,863	482,922	25,667.1	36,112.3	30,858.0
40–44	391,312	594,684	985,996	51,178.1	78,720.5	64,866.2
45–49	788,577	1,142,416	1,930,993	102,623.8	151,618.4	126,880.7
50–54	1,444,236	1,862,691	3,306,927	206,818.5	270,406.3	238,395.5
55–59	2,556,499	2,965,268	5,521,767	401,788.4	468,596.3	435,100.7
60–64	4,075,430	4,306,057	8,381,487	767,187.4	807,658.8	787,459.9
65–69	5,272,933	5,508,932	10,781,865	1,293,288.9	1,377,615.3	1,335,043.5
70–74	5,686,754	5,577,413	11,264,167	1,697,249.7	1,791,997.5	1,742,877.8
75–79	5,916,023	5,159,728	11,075,751	1,982,129.7	2,033,446.4	2,005,710.0
80–84	5,279,263	3,749,139	9,028,402	2,176,306.7	2,176,126.2	2,176,231.7
85+	4,695,184	2,249,664	6,944,848	2,039,097.0	1,975,521.0	2,018,059.2
Not stated	–	–	72,451			
Total	**36,525,180**	**33,672,211**	**70,269,842**	**. .**	**. .**	**. .**
ASR[(b)]	**. .**	**. .**	**. .**	**301,627.2**	**324,532.1**	**313,060.0**
95% CIs	**. .**	**. .**	**. .**	**301,528.3–301,726.2**	**324,421.7–324,642.5**	**312,986.5–313,133.6**

(a) Age-specific rate—number per 100,000 population.

(b) Age-standardised rate—standardised to the Australian population as at 30 June 2001.

Source: AIHW analysis of PBS/RPBS data.

Table A8.25: Number and rates of PBS/RPBS prescriptions dispensed for antithrombotic agents, by age and sex, 2007–08

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–4	273	279	552	42.1	40.8	41.4
5–9	495	873	1,368	75.7	127.0	102.0
10–14	926	1,144	2,070	135.8	159.1	147.8
15–19	2,004	2,397	4,401	286.0	324.1	305.6
20–24	4,803	3,830	8,633	654.0	504.1	577.8
25–29	9,524	4,671	14,195	1,332.5	640.1	982.7
30–34	16,023	9,248	25,271	2,177.3	1,262.9	1,721.2
35–39	24,310	19,095	43,405	3,088.0	2,455.2	2,773.5
40–44	29,081	40,373	69,454	3,803.4	5,344.3	4,569.2
45–49	46,669	80,817	127,486	6,073.4	10,725.8	8,376.8
50–54	73,800	143,155	216,955	10,568.4	20,781.8	15,640.2
55–59	133,572	248,202	381,774	20,992.6	39,222.9	30,082.8
60–64	232,343	401,289	633,632	43,737.9	75,267.1	59,531.2
65–69	351,869	552,743	904,612	86,302.7	138,224.1	112,011.8
70–74	469,133	657,230	1,126,363	140,015.9	211,165.0	174,279.5
75–79	606,674	702,387	1,309,061	203,262.7	276,810.4	237,058.1
80–84	650,588	594,416	1,245,004	268,196.3	345,019.0	300,099.3
85+	660,710	403,851	1,064,561	286,943.3	354,637.9	309,344.0
Not stated	–	–	12,488			
Total	**3,312,797**	**3,866,000**	**7,191,285**			
ASR[(b)]	**. .**	**. .**	**. .**	**26,501.9**	**38,105.1**	**31,900.4**
95% CIs	**. .**	**. .**	**. .**	**26,472.9–26,530.9**	**38,066.8–38,143.3**	**31,877.0–31,923.9**

(a) Age-specific rate—number per 100,000 population.

(b) Age-standardised rate—standardised to the Australian population as at 30 June 2001.

Source: AIHW analysis of PBS/RPBS data.

Table A8.26: Number and rates of PBS/RPBS prescriptions dispensed for cardiac therapy medicines, by age and sex, 2007–08

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–4	3,667	6,143	9,810	565.1	897.5	735.7
5–9	5,212	7,936	13,148	797.0	1,154.2	980.1
10–14	3,079	4,577	7,656	451.7	636.7	546.7
15–19	1,844	2,172	4,016	263.1	293.7	278.8
20–24	1,903	1,599	3,502	259.1	210.5	234.4
25–29	1,945	1,775	3,720	272.1	243.2	257.5
30–34	2,656	2,890	5,546	360.9	394.6	377.7
35–39	4,159	5,283	9,442	528.3	679.3	603.3
40–44	7,359	10,072	17,431	962.5	1,333.3	1,146.7
45–49	14,350	21,201	35,551	1,867.5	2,813.7	2,336.0
50–54	25,587	40,006	65,593	3,664.1	5,807.7	4,728.6
55–59	50,375	79,849	130,224	7,917.1	12,618.4	10,261.3
60–64	92,528	146,001	238,529	17,418.1	27,384.4	22,410.3
65–69	150,246	226,157	376,403	36,850.7	56,554.9	46,607.4
70–74	217,748	285,272	503,020	64,988.3	91,656.6	77,831.1
75–79	309,106	334,694	643,800	103,564.2	131,902.8	116,585.9
80–84	375,812	313,737	689,549	154,923.6	182,103.5	166,210.9
85+	507,442	259,468	766,910	220,379.7	227,849.3	222,851.5
Not stated	–	–	7,882			
Total	**1,775,018**	**1,748,832**	**3,531,732**			
ASR[(b)]	**. .**	**. .**	**. .**	**13,694.2**	**17,561.3**	**15,521.0**
95% CIs	**. .**	**. .**	**. .**	**13,673.7–13,714.7**	**17,535.1–17,587.5**	**15,504.7–15,537.3**

(a) Age-specific rate—number per 100,000 population.

(b) Age-standardised rate—standardised to the Australian population as at 30 June 2001.

Source: AIHW analysis of PBS/RPBS data.

Table A8.27: Number and rates of PBS/RPBS prescriptions dispensed for antihypertensives, by age and sex, 2007–08

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–4	270	802	1,072	41.6	117.2	80.4
5–9	3,017	9,786	12,803	461.4	1,423.3	954.4
10–14	4,074	16,811	20,885	597.7	2,338.6	1,491.3
15–19	1,781	5,510	7,291	254.2	745.1	506.2
20–24	1,296	1,482	2,778	176.5	195.1	185.9
25–29	2,196	1,865	4,061	307.2	255.6	281.1
30–34	3,436	2,083	5,519	466.9	284.4	375.9
35–39	4,698	3,018	7,716	596.8	388.0	493.0
40–44	4,850	4,115	8,965	634.3	544.7	589.8
45–49	6,171	6,632	12,803	803.1	880.2	841.3
50–54	10,380	12,287	22,667	1,486.4	1,783.7	1,634.1
55–59	16,984	25,421	42,405	2,669.3	4,017.2	3,341.4
60–64	29,247	49,242	78,489	5,505.7	9,236.0	7,374.2
65–69	42,934	84,390	127,324	10,530.4	21,103.4	15,765.6
70–74	52,930	98,660	151,590	15,797.3	31,699.0	23,455.2
75–79	57,100	93,796	150,896	19,131.0	36,965.0	27,325.8
80–84	52,031	63,348	115,379	21,449.1	36,769.3	27,811.3
85+	38,232	34,327	72,559	16,604.0	30,143.9	21,084.5
Not stated	–	–	866			
Total	**331,627**	**513,575**	**846,068**			
ASR[(b)]	**. .**	**. .**	**. .**	**2,778.5**	**5,037.3**	**3,826.8**
95% CIs	**. .**	**. .**	**. .**	**2,768.9–2,788.1**	**5,023.5–5,051.2**	**3,818.6–3,835.0**

(a) Age-specific rate—number per 100,000 population.

(b) Age-standardised rate—standardised to the Australian population as at 30 June 2001.

Source: AIHW analysis of PBS/RPBS data.

Table A8.28: Number and rates of PBS/RPBS prescriptions dispensed for diuretics, by age and sex, 2007–08

Age group (years)	Number			Age-specific rate[a]		
	Females	Males	Persons	Females	Males	Persons
0–4	1,046	1,018	2,064	161.2	148.7	154.8
5–9	235	306	541	35.9	44.5	40.3
10–14	343	218	561	50.3	30.3	40.1
15–19	2,238	330	2,568	319.4	44.6	178.3
20–24	4,339	714	5,053	590.8	94.0	338.2
25–29	5,070	962	6,032	709.3	131.8	417.6
30–34	6,496	1,868	8,364	882.7	255.1	569.7
35–39	11,492	3,710	15,202	1,459.8	477.0	971.4
40–44	16,981	7,335	24,316	2,220.9	971.0	1,599.7
45–49	26,755	14,097	40,852	3,481.8	1,870.9	2,684.3
50–54	41,203	24,540	65,743	5,900.4	3,562.5	4,739.4
55–59	69,162	44,488	113,650	10,869.7	7,030.4	8,955.3
60–64	118,498	76,799	195,297	22,306.9	14,404.7	18,348.6
65–69	169,951	119,238	289,189	41,683.8	29,817.8	35,808.3
70–74	201,754	149,526	351,280	60,214.8	48,042.0	54,352.7
75–79	238,842	173,978	412,820	80,022.6	68,564.7	74,757.7
80–84	263,008	169,421	432,429	108,421.6	98,337.6	104,233.9
85+	352,998	156,560	509,558	153,305.4	137,481.7	148,069.2
Not stated	–	–	3,870			
Total	**1,530,411**	**945,108**	**2,479,389**			
ASR[b]	**. .**	**. .**	**. .**	**12,150.7**	**9,521.5**	**10,909.8**
95% CIs	**. .**	**. .**	**. .**	**12,131.2–12,170.3**	**9,502.1–9,540.8**	**10,896.2–10,923.5**

(a) Age-specific rate—number per 100,000 population.

(b) Age-standardised rate—standardised to the Australian population as at 30 June 2001.

Source: AIHW analysis of PBS/RPBS data.

Table A8.29: Number and rates of PBS/RPBS prescriptions dispensed for peripheral vasodilators, by age and sex, 2007–08

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–4	1	–	1	0.2	–	0.1
5–9	–	1	1	–	0.1	0.1
10–14	1	3	4	0.1	0.4	0.3
15–19	8	2	10	1.1	0.3	0.7
20–24	5	37	42	0.7	4.9	2.8
25–29	13	37	50	1.8	5.1	3.5
30–34	36	91	127	4.9	12.4	8.6
35–39	3	161	164	0.4	20.7	10.5
40–44	51	204	255	6.7	27.0	16.8
45–49	39	258	297	5.1	34.2	19.5
50–54	63	250	313	9.0	36.3	22.6
55–59	62	247	309	9.7	39.0	24.3
60–64	65	209	274	12.2	39.2	25.7
65–69	76	175	251	18.6	43.8	31.1
70–74	59	76	135	17.6	24.4	20.9
75–79	99	88	187	33.2	34.7	33.9
80–84	63	60	123	26.0	34.8	29.6
85+	35	47	82	15.2	41.3	23.8
Not stated	–	–	8			
Total	**679**	**1,946**	**2,633**			
ASR[(b)]	**. .**	**. .**	**. .**	**5.9**	**18.3**	**12.0**
95% CIs	**. .**	**. .**	**. .**	**5.5–6.4**	**17.5–19.1**	**11.5–12.5**

(a) Age-specific rate—number per 100,000 population.

(b) Age-standardised rate—standardised to the Australian population as at 30 June 2001.

Source: AIHW analysis of PBS/RPBS data.

Table A8.30: Number and rates of PBS/RPBS prescriptions dispensed for beta-blocking agents, by age and sex, 2007–08

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–4	382	378	760	58.9	55.2	57.0
5–9	566	652	1,218	86.6	94.8	90.8
10–14	1,400	1,493	2,893	205.4	207.7	206.6
15–19	2,930	2,356	5,286	418.1	318.6	367.0
20–24	4,856	3,702	8,558	661.2	487.3	572.8
25–29	6,055	5,495	11,550	847.2	753.0	799.6
30–34	10,016	9,319	19,335	1,361.0	1,272.6	1,316.9
35–39	19,291	19,793	39,084	2,450.5	2,544.9	2,497.4
40–44	32,066	35,292	67,358	4,193.8	4,671.7	4,431.3
45–49	54,585	65,389	119,974	7,103.6	8,678.3	7,883.2
50–54	92,281	110,084	202,365	13,214.9	15,980.9	14,588.4
55–59	163,635	194,819	358,454	25,717.5	30,786.9	28,245.2
60–64	308,623	321,379	630,002	58,097.4	60,278.9	59,190.1
65–69	453,385	468,038	921,423	111,201.5	117,042.0	114,093.4
70–74	516,530	492,144	1,008,674	154,161.8	158,123.6	156,069.7
75–79	549,226	458,674	1,007,900	184,015.0	180,763.2	182,520.8
80–84	495,306	324,604	819,910	204,183.4	188,411.1	197,633.4
85+	435,126	188,358	623,484	188,973.2	165,404.8	181,174.2
Not stated	–	–	5,971			
Total	**3,146,259**	**2,701,969**	**5,854,199**			
ASR[(b)]	**. .**	**. .**	**. .**	**25,904.0**	**26,225.8**	**26,140.4**
95% CIs	**. .**	**. .**	**. .**	**25,875.0–25,932.9**	**26,194.4–26,257.3**	**26,119.1–26,161.7**

(a) Age-specific rate—number per 100,000 population.

(b) Age-standardised rate—standardised to the Australian population as at 30 June 2001.

Source: AIHW analysis of PBS/RPBS data.

Table A8.31: Number and rates of PBS/RPBS prescriptions dispensed for calcium-channel blockers, by age and sex, 2007–08

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–4	190	138	328	29.3	20.2	24.6
5–9	227	348	575	34.7	50.6	42.9
10–14	545	717	1,262	80.0	99.7	90.1
15–19	1,042	1,202	2,244	148.7	162.5	155.8
20–24	1,742	1,929	3,671	237.2	253.9	245.7
25–29	2,722	2,939	5,661	380.8	402.8	391.9
30–34	5,631	6,922	12,553	765.2	945.2	855.0
35–39	13,666	16,082	29,748	1,736.0	2,067.8	1,900.9
40–44	28,085	32,940	61,025	3,673.1	4,360.4	4,014.7
45–49	57,202	66,013	123,215	7,444.2	8,761.1	8,096.2
50–54	110,647	118,403	229,050	15,844.9	17,188.5	16,512.2
55–59	221,289	218,528	439,817	34,778.6	34,533.6	34,656.4
60–64	414,585	375,637	790,222	78,044.4	70,455.8	74,243.2
65–69	632,405	590,888	1,223,293	155,109.6	147,763.0	151,471.9
70–74	732,818	620,603	1,353,421	218,714.4	199,396.9	209,411.6
75–79	796,084	576,771	1,372,855	266,723.4	227,305.2	248,610.6
80–84	722,011	412,701	1,134,712	297,639.5	239,545.5	273,514.2
85+	632,596	233,168	865,764	274,733.6	204,754.3	251,576.9
Not stated	–	–	7,704			
Total	**4,373,487**	**3,275,929**	**7,657,120**			
ASR[(b)]	**. .**	**. .**	**. .**	**35,824.2**	**31,877.6**	**34,150.7**
95% CIs	**. .**	**. .**	**. .**	**35,790.3–35,858.2**	**31,842.8–31,912.3**	**34,126.4–34,175.0**

(a) Age-specific rate—number per 100,000 population.

(b) Age-standardised rate—standardised to the Australian population as at 30 June 2001.

Source: AIHW analysis of PBS/RPBS data.

Table A8.32: Number and rates of PBS/RPBS prescriptions dispensed for agents acting on the renin-angiotensin system, by age and sex, 2007–08

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–4	1,123	1,595	2,718	173.1	233.0	203.8
5–9	898	2,096	2,994	137.3	304.8	223.2
10–14	1,778	3,013	4,791	260.8	419.1	342.1
15–19	2,834	4,822	7,656	404.4	652.0	531.6
20–24	6,022	7,959	13,981	820.0	1,047.6	935.7
25–29	9,516	12,732	22,248	1,331.4	1,744.8	1,540.2
30–34	23,582	29,113	52,695	3,204.5	3,975.5	3,589.1
35–39	61,781	68,534	130,315	7,847.9	8,811.9	8,326.9
40–44	128,899	138,548	267,447	16,858.2	18,340.1	17,594.7
45–49	251,306	254,673	505,979	32,704.5	33,799.5	33,246.6
50–54	428,690	418,752	847,442	61,389.6	60,790.1	61,091.9
55–59	761,810	708,220	1,470,030	119,728.7	111,918.8	115,834.5
60–64	1,332,028	1,146,513	2,478,541	250,750.3	215,043.9	232,864.6
65–69	1,833,601	1,744,805	3,578,406	449,726.2	436,322.3	443,089.2
70–74	1,882,856	1,711,365	3,594,221	561,951.0	549,853.8	556,125.3
75–79	1,848,011	1,499,574	3,347,585	619,165.5	590,981.4	606,214.8
80–84	1,568,484	1,021,814	2,590,298	646,586.9	593,095.2	624,372.8
85+	1,342,653	576,108	1,918,761	583,108.1	505,903.7	557,560.6
Not stated	–	–	17,589			
Total	**11,485,872**	**9,350,236**	**20,853,697**			
ASR[(b)]	**. .**	**. .**	**. .**	**95,404.2**	**90,270.0**	**93,131.8**
95% CIs	**. .**	**. .**	**. .**	**95,348.4–95,460.0**	**90,211.8–90,328.3**	**93,091.7–93,172.0**

(a) Age-specific rate—number per 100,000 population.

(b) Age-standardised rate—standardised to the Australian population as at 30 June 2001.

Source: AIHW analysis of PBS/RPBS data.

Table A8.33: Number and rates of PBS/RPBS prescriptions dispensed for serum-lipid-reducing agents, by age and sex, 2007–08

Age group (years)	Number			Age-specific rate[(a)]		
	Females	Males	Persons	Females	Males	Persons
0–4	218	518	736	33.6	75.7	55.2
5–9	323	1,013	1,336	49.4	147.3	99.6
10–14	717	1,945	2,662	105.2	270.6	190.1
15–19	2,064	3,148	5,212	294.5	425.7	361.9
20–24	5,505	6,697	12,202	749.6	881.5	816.7
25–29	10,394	17,495	27,889	1,454.2	2,397.5	1,930.8
30–34	23,377	52,160	75,537	3,176.6	7,122.7	5,144.8
35–39	62,659	145,187	207,846	7,959.4	18,667.6	13,281.1
40–44	143,940	325,805	469,745	18,825.3	43,128.0	30,903.3
45–49	331,500	633,336	964,836	43,140.8	84,054.7	63,397.0
50–54	661,585	995,214	1,656,799	94,740.7	144,474.9	119,438.2
55–59	1,139,610	1,445,494	2,585,104	179,105.1	228,429.0	203,699.4
60–64	1,547,513	1,788,988	3,336,501	291,314.7	335,548.7	313,471.9
65–69	1,638,466	1,722,498	3,360,964	401,865.5	430,744.0	416,164.9
70–74	1,612,926	1,562,537	3,175,463	481,388.5	502,036.0	491,331.8
75–79	1,510,881	1,319,766	2,830,647	506,212.1	520,119.2	512,602.4
80–84	1,151,960	849,038	2,000,998	474,880.3	492,810.2	482,326.3
85+	725,392	397,777	1,123,169	315,034.4	349,304.1	326,374.5
Not stated	–	–	16,073			
Total	**10,569,030**	**11,268,616**	**21,853,719**			
ASR[(b)]	. .	. .	. .	**89,363.6**	**105,915.2**	**97,467.1**
95% CIs	. .	. .	. .	**89,309.3–89,417.9**	**105,853.0–105,977.5**	**97,426.0–97,508.1**

(a) Age-specific rate—number per 100,000 population.

(b) Age-standardised rate—standardised to the Australian population as at 30 June 2001.

Source: AIHW analysis of PBS/RPBS data.

Table A9.1: Health care expenditure on all cardiovascular diseases, by area of expenditure, age and sex, 2004–05 ($ millions)

Age group (years)	Sex	Hospital-admitted patients[a]	Out-of-hospital medical services	Prescription pharma-ceuticals[b]	Research	Total expenditure allocated for cardiovascular diseases
				$ million		
0–4	Females	3.5	0.3	1.3	0.2	**5.3**
	Males	3.9	0.2	2.7	0.2	**7.1**
	Persons	7.4	0.6	4.0	0.3	**12.3**
5–14	Females	5.9	2.2	0.7	0.3	**9.0**
	Males	6.1	1.6	1.3	0.3	**9.3**
	Persons	12.0	3.8	2.0	0.5	**18.3**
15–24	Females	9.8	6.2	2.3	0.5	**18.8**
	Males	10.8	5.9	2.5	0.6	**19.8**
	Persons	20.6	12.2	4.8	1.1	**38.6**
25–34	Females	21.8	19.1	7.4	1.4	**49.7**
	Males	26.2	17.1	8.3	1.5	**53.1**
	Persons	48.0	36.2	15.7	2.8	**102.7**
35–44	Females	47.7	39.8	26.2	3.2	**116.9**
	Males	70.0	34.2	32.9	3.9	**141.0**
	Persons	117.6	74.0	59.1	7.1	**257.8**
45–54	Females	87.6	80.2	84.1	7.1	**259.0**
	Males	189.6	80.3	103.7	10.6	**384.2**
	Persons	277.1	160.5	187.8	17.7	**643.2**

(continued)

Table A9.1 (continued): Health care expenditure on all cardiovascular diseases, by area of expenditure, age and sex, 2004–05 ($ millions)

Age group (years)	Sex	Hospital-admitted patients[a]	Out-of-hospital medical services	Prescription pharma-ceuticals[b]	Research	Total expenditure allocated for cardiovascular diseases
				$ million		
55–64	Females	150.3	118.3	169.0	12.4	**450.0**
	Males	365.4	130.1	199.2	19.7	**714.4**
	Persons	515.7	248.4	368.1	32.1	**1,164.3**
65–74	Females	256.3	125.7	213.5	16.9	**612.4**
	Males	494.4	140.7	242.0	24.9	**902.0**
	Persons	750.7	266.4	455.5	41.8	**1,514.3**
75–84	Females	408.8	139.2	238.6	22.3	**808.9**
	Males	490.9	114.9	186.5	22.5	**814.7**
	Persons	899.7	254.2	425.1	44.8	**1,623.6**
85+	Females	222.7	46.8	73.6	9.7	**352.9**
	Males	137.8	29.9	40.3	5.9	**213.9**
	Persons	360.6	76.7	113.9	15.6	**566.8**
Total	**Females**	**1,214.3**	**577.9**	**816.6**	**74.0**	**2,682.8**
	Males	**1,795.1**	**555.1**	**819.3**	**89.9**	**3,259.4**
	Persons	**3,009.4**	**1,133.0**	**1,635.9**	**163.9**	**5,942.1**

(a) Includes private medical services provided in hospital.

(b) Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under co-payment prescriptions, but excludes highly specialised medicines. Also excludes over-the-counter medicines such as vitamins and minerals, first aid and wound care products, pain-killers and a number of complementary health products sold in both pharmacies and other retail outlets.

Source: AIHW Disease Expenditure Database.

Table A9.2: Health care expenditure on cardiovascular diseases, per person, by age and sex, 2004–05 ($)

Age group (years)	Females	Males	Female to male ratio
	$ per person		
0–4	8.0	11.0	0.8
5–14	7.0	7.0	1.0
15–24	14.0	14.0	1.0
25–34	34.0	37.0	0.9
35–44	77.0	94.0	0.8
45–54	183.0	276.0	0.7
55–64	414.0	652.0	0.6
65–74	861.0	1,333.0	0.6
75–84	1,511.0	1,990.0	0.8
85+	1,699.0	2,195.0	0.8
Total	**261.3**	**321.8**	**0.6**

Source: AIHW Disease Expenditure Database.

Table A9.3: Health care expenditure on all cardiovascular diseases, per person, by area of expenditure, age and sex, 2004–05 ($)

Age group (years)	Sex	Hospital-admitted patients[a]	Out-of-hospital medical services	Prescription pharma-ceuticals[b]	Research	Total expenditure allocated for cardiovascular diseases
				$ per person		
0–4	Females	5.56	0.54	2.11	0.23	**8.44**
	Males	5.92	0.35	4.09	0.29	**10.66**
	Ratio	0.94	1.51	0.52	0.79	**0.79**
5–14	Females	4.42	1.62	0.51	0.19	**6.74**
	Males	4.36	1.17	0.93	0.18	**6.65**
	Ratio	1.01	1.39	0.55	1.01	**1.01**
15–24	Females	7.10	4.52	1.66	0.38	**13.66**
	Males	7.50	4.10	1.72	0.38	**13.70**
	Ratio	0.95	1.10	0.96	1.00	**1.00**
25–34	Females	14.99	13.18	5.11	0.94	**34.23**
	Males	18.08	11.79	5.72	1.01	**36.59**
	Ratio	0.83	1.12	0.89	0.94	**0.94**
35–44	Females	31.23	26.05	17.18	2.11	**76.58**
	Males	46.37	22.70	21.81	2.58	**93.46**
	Ratio	0.67	1.15	0.79	0.82	**0.82**
45–54	Females	61.97	56.76	59.51	5.06	**183.30**
	Males	135.69	57.51	74.21	7.59	**274.99**
	Ratio	0.46	0.99	0.80	0.67	**0.67**

(continued)

Table A9.3 (continued): Health care expenditure on all cardiovascular diseases, per person, by area of expenditure, age and sex, 2004–05 ($)

Age group (years)	Sex	Hospital-admitted patients[(a)]	Out-of-hospital medical services	Prescription pharma-ceuticals[(b)]	Research	Total expenditure allocated for cardiovascular diseases
				$ per person		
55–64	Females	138.42	108.93	155.60	11.43	**414.38**
	Males	333.08	118.58	181.52	17.96	**651.15**
	Ratio	0.42	0.92	0.86	0.64	**0.64**
65–74	Females	361.04	177.00	300.67	23.79	**862.51**
	Males	730.83	208.05	357.75	36.78	**1,333.42**
	Ratio	0.49	0.85	0.84	0.65	**0.65**
75–84	Females	764.40	260.35	446.10	41.73	**1,512.58**
	Males	1,201.44	281.27	456.42	55.01	**1,994.15**
	Ratio	0.64	0.93	0.98	0.76	**0.76**
85+	Females	1,080.69	227.26	356.93	47.23	**1,712.11**
	Males	1,427.13	309.68	417.23	61.11	**2,215.15**
	Ratio	0.76	0.73	0.86	0.77	**0.77**
Total	**Females**	**118.29**	**56.29**	**79.55**	**7.21**	**261.35**
	Males	**176.96**	**54.72**	**80.77**	**8.86**	**321.31**
	Ratio	**0.67**	**1.03**	**0.98**	**0.81**	**0.81**

(a) Includes private medical services provided in hospital.

(b) Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under co-payment prescriptions, but excludes highly specialised medicines. Also excludes over-the-counter medicines such as vitamins and minerals, first aid and wound care products, pain-killers and a number of complementary health products sold in both pharmacies and other retail outlets.

Source: AIHW Disease Expenditure Database.

Table A9.4: Health care expenditure on coronary heart disease, by area of expenditure, age and sex, 2004–05 ($ millions)

Age group (years)	Sex	Hospital-admitted patients[a]	Out-of-hospital medical services	Prescription pharmaceuticals[b]	Total expenditure allocated by disease[c]
			$ million		
0–4	Females	–	–	0.19	**0.19**
	Males	0.02	0.02	0.68	**0.72**
	Persons	0.02	0.02	0.87	**0.91**
5–14	Females	–	–	0.01	**0.01**
	Males	0.06	–	0.02	**0.08**
	Persons	0.06	–	0.03	**0.09**
15–24	Females	0.11	0.06	0.07	**0.24**
	Males	0.17	0.18	0.05	**0.40**
	Persons	0.27	0.24	0.12	**0.64**
25–34	Females	1.40	1.52	0.54	**3.46**
	Males	4.52	2.27	0.49	**7.28**
	Persons	5.92	3.79	1.03	**10.74**
35–44	Females	9.53	3.20	1.64	**14.38**
	Males	29.64	3.43	3.83	**36.89**
	Persons	39.16	6.63	5.47	**51.27**
45–54	Females	28.43	11.00	5.34	**44.77**
	Males	106.52	12.10	20.95	**139.57**
	Persons	134.95	23.10	26.29	**184.34**

(continued)

Table A9.4 (continued): Health care expenditure on coronary heart disease, by area of expenditure, age and sex, 2004–05 ($ millions)

Age group (years)	Sex	Hospital-admitted patients[a]	Out-of-hospital medical services	Prescription pharmaceuticals[b]	Total expenditure allocated by disease[c]
			$ million		
55–64	Females	61.32	14.59	16.22	**92.13**
	Males	210.49	30.41	41.12	**282.02**
	Persons	271.81	45.00	57.34	**374.15**
65–74	Females	108.86	18.55	25.44	**152.85**
	Males	258.14	36.24	58.03	**352.42**
	Persons	367.00	54.79	83.48	**505.27**
75–84	Females	149.96	16.11	38.58	**204.64**
	Males	212.51	21.19	46.87	**280.57**
	Persons	362.46	37.30	85.45	**485.21**
85+	Females	75.70	2.48	14.76	**92.94**
	Males	48.81	3.34	11.68	**63.84**
	Persons	124.52	5.82	26.45	**156.78**
Total	**Females**	**435.30**	**67.50**	**102.81**	**605.61**
	Males	**870.87**	**109.19**	**183.72**	**1,163.79**
	Persons	**1,306.18**	**176.69**	**286.53**	**1,769.40**

(a) Includes private medical services provided in hospital.

(b) Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under co-payment prescriptions, but excludes highly specialised medicines. Also excludes over-the-counter medicines such as vitamins and minerals, first aid and wound care products, pain-killers and a number of complementary health products sold in both pharmacies and other retail outlets.

(c) Excludes expenditure on research.

Source: AIHW Disease Expenditure Database.

Table A9.5: Health care expenditure on coronary heart disease[(a)], per person, by age and sex, 2004–05 ($)

Age group (years)	Females	Males	Female to male ratio
	$ per person		
0–4	–	1	. .
5–14	–	–	. .
15–24	–	–	. .
25–34	2	5	0.40
35–44	9	24	0.38
45–54	32	100	0.32
55–64	85	257	0.33
65–74	215	521	0.41
75–84	383	687	0.56
85+	451	661	0.68
Total	**59**	**115**	**0.51**

(a) Excludes expenditure on research.

Source: AIHW Disease Expenditure Database.

Table A9.6: Health care expenditure on coronary heart disease, per person, by area of expenditure, age and sex, 2004-05 ($)

Age group (years)	Sex	Hospital-admitted patients[a]	Out-of-hospital medical services	Prescription pharmaceuticals[b]	Total expenditure allocated for coronary heart disease[c]
			$ per person		
0–4	Females	–	–	0.30	**0.31**
	Males	0.02	0.03	1.03	**1.09**
	Persons	0.01	0.02	0.68	**0.71**
5–14	Females	–	–	0.01	**0.01**
	Males	0.04	–	0.01	**0.05**
	Persons	0.02	–	0.01	**0.03**
15–24	Females	0.08	0.04	0.05	**0.17**
	Males	0.11	0.13	0.04	**0.28**
	Persons	0.10	0.09	0.04	**0.23**
25–34	Females	0.96	1.05	0.37	**2.38**
	Males	3.12	1.57	0.34	**5.02**
	Persons	2.04	1.31	0.35	**3.70**
35–44	Females	6.24	2.10	1.08	**9.42**
	Males	19.64	2.27	2.54	**24.46**
	Persons	12.91	2.19	1.80	**16.90**
45–54	Females	20.12	7.78	3.78	**31.69**
	Males	76.25	8.66	14.99	**99.90**
	Persons	48.03	8.22	9.36	**65.60**

(continued)

Table A9.6 (continued): Health care expenditure on coronary heart disease, per person, by area of expenditure, age and sex, 2004-05 ($)

Age group (years)	Sex	Hospital-admitted patients[a]	Out-of-hospital medical services	Prescription pharmaceuticals[b]	Total expenditure allocated for coronary heart disease[c]
			$ per person		
55–64	Females	56.47	13.43	14.94	**84.85**
	Males	191.86	27.72	37.48	**257.05**
	Persons	124.52	20.61	26.27	**171.40**
65–74	Females	153.32	26.12	35.83	**215.27**
	Males	381.63	53.58	85.80	**521.01**
	Persons	264.71	39.52	60.21	**364.44**
75–84	Females	280.39	30.12	72.14	**382.65**
	Males	520.15	51.87	114.73	**686.74**
	Persons	384.23	39.54	90.58	**514.35**
85+	Females	367.33	12.01	71.64	**450.98**
	Males	505.41	34.60	120.96	**660.98**
	Persons	411.39	19.22	87.38	**517.99**
Total	**Females**	**42.41**	**6.58**	**10.02**	**59.00**
	Males	**85.85**	**10.76**	**18.11**	**114.73**
	Persons	**64.00**	**8.66**	**14.04**	**86.70**

(a) Includes private medical services provided in hospital.

(b) Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under co-payment prescriptions, but excludes highly specialised medicines. Also excludes over-the-counter medicines such as vitamins and minerals, first aid and wound care products, pain-killers and a number of complementary health products sold in both pharmacies and other retail outlets.

(c) Excludes expenditure on research.

Source: AIHW Disease Expenditure Database.

Table A9.7: Health care expenditure on stroke, by area of expenditure, age and sex, 2004–05 ($ millions)

Age group (years)	Sex	Hospital-admitted patients[a]	Out-of-hospital medical services	Prescription pharmaceuticals[b]	Total expenditure allocated for stroke[c]
			$ million		
0–4	Females	0.52	–	–	**0.52**
	Males	0.60	–	0.34	**0.93**
	Persons	1.11	–	0.34	**1.45**
5–14	Females	0.96	0.01	0.01	**0.98**
	Males	1.57	–	0.02	**1.59**
	Persons	2.54	0.01	0.03	**2.57**
15–24	Females	1.31	0.28	0.15	**1.74**
	Males	1.29	0.00	0.02	**1.31**
	Persons	2.60	0.28	0.17	**3.05**
25–34	Females	3.20	0.09	0.55	**3.84**
	Males	3.53	0.25	0.38	**4.17**
	Persons	6.73	0.35	0.93	**8.01**
35–44	Females	7.66	0.50	0.33	**8.48**
	Males	7.48	2.84	0.82	**11.14**
	Persons	15.14	3.33	1.15	**19.62**
45–54	Females	15.62	1.50	1.05	**18.16**
	Males	17.16	1.50	3.31	**21.98**
	Persons	32.78	3.00	4.36	**40.14**

(continued)

Table A9.7 (continued): Health care expenditure on stroke, by area of expenditure, age and sex, 2004–05 ($ millions)

Age group (years)	Sex	Hospital-admitted patients[a]	Out-of-hospital medical services	Prescription pharmaceuticals[b]	Total expenditure allocated for stroke[c]
			$ million		
55–64	Females	19.41	3.19	3.74	**26.35**
	Males	32.32	4.58	5.07	**41.97**
	Persons	51.73	7.78	8.81	**68.32**
65–74	Females	35.71	3.00	8.57	**47.28**
	Males	46.23	4.33	8.88	**59.44**
	Persons	81.95	7.33	17.45	**106.73**
75–84	Females	73.19	12.46	12.35	**98.00**
	Males	65.35	5.87	8.70	**79.92**
	Persons	138.54	18.33	21.06	**177.93**
85+	Females	53.33	1.85	5.10	**60.29**
	Males	27.58	1.71	2.32	**31.61**
	Persons	80.91	3.56	7.42	**91.89**
Total	**Females**	**210.90**	**22.88**	**31.86**	**265.64**
	Males	**203.12**	**21.09**	**29.85**	**254.06**
	Persons	**414.02**	**43.96**	**61.72**	**519.70**

(a) Includes private medical services provided in hospital.

(b) Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under co-payment prescriptions, but excludes highly specialised medicines. Also excludes over-the-counter medicines such as vitamins and minerals, first aid and wound care products, pain-killers and a number of complementary health products sold in both pharmacies and other retail outlets.

(c) Excludes expenditure on research.

Source: AIHW Disease Expenditure Database.

Table A9.8: Health care expenditure on stroke[(a)], per person, by age and sex, 2004–05 ($)

Age group (years)	Females	Males	Female to male ratio
	$ per person		
0–4	1	1	1.00
5–14	1	1	1.00
15–24	1	1	1.00
25–34	3	3	1.00
35–44	6	7	0.86
45–54	13	16	0.81
55–64	24	38	0.63
65–74	67	88	0.76
75–84	183	196	0.93
85+	293	327	0.90
Total	**26**	**25**	**1.03**

(a) Excludes expenditure on research.

Source: AIHW Disease Expenditure Database

Table A9.9: Health care expenditure on stroke, per person, by area of expenditure, age and sex, 2004–05 ($)

Age group (years)	Sex	Hospital-admitted patients[a]	Out-of-hospital medical services	Prescription pharmaceuticals[b]	Total expenditure allocated for stroke[c]
			$ per person		
0–4	Females	0.82	–	–	**0.82**
	Males	0.90	–	0.51	**1.41**
	Ratio	0.91	–	–	**0.58**
5–14	Females	0.72	0.01	0.01	**0.74**
	Males	1.12	–	0.01	**1.13**
	Ratio	0.65	–	0.72	**0.65**
15–24	Females	0.95	0.20	0.11	**1.26**
	Males	0.89	–	0.01	**0.91**
	Ratio	1.06	–	7.35	**1.39**
25–34	Females	2.20	0.06	0.38	**2.64**
	Males	2.44	0.18	0.26	**2.87**
	Ratio	0.90	0.36	1.43	**0.92**
35–44	Females	5.02	0.32	0.22	**5.56**
	Males	4.96	1.88	0.54	**7.38**
	Ratio	1.01	0.17	0.40	**0.75**
45–54	Females	11.05	1.06	0.74	**12.85**
	Males	12.29	1.08	2.37	**15.73**
	Ratio	0.90	0.98	0.31	**0.82**

(continued)

Table A9.9 (continued): Health care expenditure on stroke, per person, by area of expenditure, age and sex, 2004–05 ($)

Age group (years)	Sex	Hospital-admitted patients[(a)]	Out-of-hospital medical services	Prescription pharmaceuticals[(b)]	Total expenditure allocated for stroke[(c)]
			$ per person		
55–64	Females	17.88	2.94	3.45	**24.27**
	Males	29.46	4.18	4.62	**38.25**
	Ratio	0.61	0.70	0.75	**0.63**
65–74	Females	50.30	4.23	12.07	**66.60**
	Males	68.35	6.40	13.13	**87.88**
	Ratio	0.74	0.66	0.92	**0.76**
75–84	Females	136.85	23.30	23.10	**183.25**
	Males	159.96	14.37	21.30	**195.62**
	Ratio	0.86	1.62	1.08	**0.94**
85+	Females	258.78	8.97	24.77	**292.52**
	Males	285.57	17.73	23.97	**327.27**
	Ratio	0.91	0.51	1.03	**0.89**
Total	**Females**	**20.55**	**2.23**	**3.10**	**25.88**
	Males	**20.02**	**2.08**	**2.94**	**25.05**
	Ratio	**1.03**	**1.07**	**1.05**	**1.03**

(a) Includes private medical services provided in hospital.

(b) Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under co-payment prescriptions, but excludes highly specialised medicines. Also excludes over-the-counter medicines such as vitamins and minerals, first aid and wound care products, pain-killers and a number of complementary health products sold in both pharmacies and other retail outlets.

(c) Excludes expenditure on research.

Source: AIHW Disease Expenditure Database.

Table A9.10: Health care expenditure (hospital-admitted patients only) on heart failure, by age and sex, 2004–05 ($ millions)

Age group (years)	Sex	$ million[(a)]
0–4	Females	0.19
	Males	0.20
	Persons	0.39
5–14	Females	0.03
	Males	0.03
	Persons	0.06
15–24	Females	0.34
	Males	0.33
	Persons	0.67
25–34	Females	0.61
	Males	1.39
	Persons	1.10
35–44	Females	1.57
	Males	2.51
	Persons	4.08
45–54	Females	2.91
	Males	5.91
	Persons	8.82
55–64	Females	8.13
	Males	18.64
	Persons	26.77
65–74	Females	22.23
	Males	37.45
	Persons	59.68
75–84	Female	59.84
	Male	64.59
	Persons	124.43
85+	Females	57.40
	Males	31.90
	Persons	89.30
Total	**Females**	**153.24**
	Males	**162.94**
	Persons	**316.18**

(a) Includes medical services provided to public and private admitted patients in public and private acute hospitals, and psychiatric hospitals.

Source: AIHW Disease Expenditure Database.

Table A9.11: Health care expenditure (hospital-admitted patients only) on heart failure, per person, by age and sex, 2004–05 ($)

Age group (years)	Females	Males	Female to male ratio
	$ per person		
0–4	0.3	0.3	1.0
5–14	–	–	. .
15–24	0.2	0.2	1.0
25–34	0.4	1.0	0.4
35–44	1.0	1.7	0.6
45–54	2.1	4.2	0.5
55–64	7.5	17.0	0.4
65–74	31.3	55.4	0.6
75–84	111.9	158.1	0.7
85+	278.5	330.3	0.8

Source: AIHW Disease Expenditure Database.

Table A10.1: Prevalence of selected conditions among females, various years

Age group (years)	Condition	Number	Number per 100,000
25–44	Asthma	349,574	12,020.5
	Breast cancer	6,142	207.5
	CHD	8,841	304.0
	COPD	..	..
	Dementia	..	..
	Diabetes	29,815	1,025.3
	Heart failure	23,231	798.8
	Lung cancer	175	5.9
	Stroke	7,102	240.8
45–64	Asthma	267,835	10,979.8
	Breast cancer	56,712	2,333.1
	CHD	61,571	2,524.1
	COPD	..	..
	Dementia	2,900	112.9
	Diabetes	120,440	4,937.4
	Heart failure	67,424	2,764.0
	Lung cancer	2,011	82.7
	Stroke	31,161	1,317.4
65–74	Asthma	85,370	12,296.3
	Breast cancer	31,237	4,457.1
	CHD	61,268	8,824.8
	COPD	..	..
	Dementia	12,600	1,743.8
	Diabetes	81,283	11,707.7
	Heart failure	36,135	5,204.7
	Lung cancer	1,980	282.5
	Stroke	36,913	5,307.5

(continued)

Table A10.1 (continued): Prevalence of selected conditions among females, various years

Age group (years)	Condition	Number	Number per 100,000
75+	Asthma	51,756	8,273.8
	Breast cancer	35,333	4,860.8
	CHD	93,441	14,937.7
	COPD	. .	. .
	Dementia	105,600	13,946.4
	Diabetes	70,032	11,195.4
	Heart failure	48,515	7,755.7
	Lung cancer	2,637	362.8
	Stroke	92,579	12,925.8
All ages	**Asthma**	**1,133,560**	**11,458.1**
	Breast cancer	**129,438**	**1,277.2**
	CHD	**225,575**	**2,280.1**
	COPD	**316,600**	**3,200.2**
	Dementia	**121,100**	**1,162.7**
	Diabetes	**311,845**	**3,152.2**
	Heart failure	**176,299**	**1,782.1**
	Lung cancer	**6,817**	**67.3**
	Stroke	**168,376**	**1,683.9**

Sources: Prevalence of asthma, chronic heart disease, chronic obstructive pulmonary disease, diabetes and heart failure are estimated from the 2004–05 National Health Survey. Prevalence of breast and lung cancer is estimated from the Cancer Clearing House as at end of 2004. Prevalence of dementia is based on projections for 2006 of estimates from Lobo et al. 2000.

Table A10.2: Deaths from selected conditions among females, 2006

Age group (years)	Condition	Number	Number per 100,000
25–44	Breast cancer	176	5.9
	CHD	48	1.6
	Colorectal cancer	40	1.3
	COPD	8	0.3
	Dementia and related disorders	2	0.1
	Diabetes	30	1.0
	Heart failure	2	0.1
	Lung cancer	47	1.6
	Stroke	46	1.5
45–64	Breast cancer	978	38.1
	CHD	433	16.9
	Colorectal cancer	305	11.9
	COPD	178	6.9
	Dementia and related disorders	42	1.6
	Diabetes	149	5.8
	Heart failure	23	0.9
	Lung cancer	750	29.2
	Stroke	265	10.3
65–74	Breast cancer	485	67.3
	CHD	841	116.8
	Colorectal cancer	381	52.9
	COPD	401	55.7
	Dementia and related disorders	167	23.2
	Diabetes	272	37.8
	Heart failure	60	8.3
	Lung cancer	710	98.6
	Stroke	392	54.4
75+	Breast cancer	977	129.2
	CHD	9,473	1,252.5
	Colorectal cancer	980	129.6
	COPD	1,471	194.5
	Dementia and related disorders	4,340	573.8
	Diabetes	1,384	183.0
	Heart failure	1,396	184.6
	Lung cancer	1,176	155.5
	Stroke	4,420	584.4

(continued)

Table A10.2 (continued): Deaths from selected conditions among females, 2006

Age group (years)	Condition	Number	Number per 100,000
All ages	Breast cancer	2,618	25.2
	CHD	10,797	103.7
	Colorectal cancer	1,709	16.4
	COPD	2,059	19.8
	Dementia and related disorders	4,551	43.7
	Diabetes	1,837	17.6
	Heart failure	1,484	14.3
	Lung cancer	2,683	25.8
	Stroke	5,137	49.3

Source: AIHW National Mortality Database.

Table A10.3: Disease burden from selected conditions among females, 2003

Age group (years)	Condition	DALYs[(a)]
25–64	Anxiety and depression	80,515
	Asthma	8,069
	Breast cancer	41,056
	CHD	20,352
	Colorectal cancer	11,693
	COPD	14,923
	Dementia	3,340
	Lung cancer	14,848
	Stroke	14,237
	Type 2 diabetes	34,388
65–74	Anxiety and depression	321
	Asthma	1,412
	Breast cancer	10,445
	CHD	21,052
	Colorectal cancer	7,513
	COPD	8,855
	Dementia	10,236
	Lung cancer	9,937
	Stroke	9,635
	Type 2 diabetes	11,517
75+	Anxiety and depression	175
	Asthma	1,216
	Breast cancer	8,995
	CHD	70,853
	Colorectal cancer	9,703
	COPD	13,318
	Dementia	46,984
	Lung cancer	9,059
	Stroke	39,830
	Type 2 diabetes	15,330

(continued)

Table A10.3 (continued): Disease burden from selected conditions among females, 2003

Age group (years)	Condition	DALYs[(a)]
All ages	Anxiety and depression	126,464
	Asthma	33,828
	Breast cancer	60,520
	CHD	112,390
	Colorectal cancer	28,962
	COPD	37,550
	Dementia	60,747
	Lung cancer	33,876
	Stroke	65,166
	Type 2 diabetes	61,763

(a) DALYs—disability adjusted life years

Source: Begg et al. 2007.

Appendix 2: Methods

Statistical methods

Prevalence

Prevalence refers to the number or proportion (of cases, instances, and so on) present in a population at a given time.

Crude rates

A crude rate is defined as the number of events over a specified period divided by the total population (or hospitalisations).

Age-specific rates

Age-specific rates are calculated by dividing the number of cases occurring in each specified age group by the corresponding population (or hospitalisations) in the same age group, expressed as a number per 100,000 persons (or 100 hospitalisations).

Age-standardised rates

Age standardisation is a method used to eliminate the effect of differences in population age structures when comparing rates for different periods, and/or different geographic areas and/or different population groups.

There are two methods of age standardisation: direct and indirect. For this report, the direct method is used.

Direct age standardisation

This method of age standardisation is generally used when the population under study is large and the age-specific rates can be reliably estimated. The calculation of direct age-standardised rates consists of three steps:

Step 1: Calculate the age-specific rate for each age group.

Step 2: Calculate the expected number of cases in each age group by multiplying the age-specific rates by the corresponding standard population for each age group.

Step 3: Sum the expected number of cases in each age group and divide this sum by the total of the standard population to give the age-standardised rate.

Significance testing

The observed value of a rate may vary because of the influence of chance and natural variation. Therefore, to provide an approximate indication of whether two rates are statistically different, 95% confidence intervals (CIs) have been calculated.

Where the confidence intervals of two rates do not overlap, the corresponding rates are considered to statistically significantly different from each other; that is, there is at least 95% confidence that the change in a rate is greater than that which could be explained by chance.

As with all statistical comparisons, care should be exercised in interpreting the results. In cases where differences for a health condition in the population are not statistically significant, this can be due to the fact that there is actually little difference, or because the numbers of cases or observations are so small it is difficult to discern any real statistically significant difference. Judgment should be exercised in deciding whether or not the significant or non-significant difference is of any practical significance.

Defining exercise levels in the 2007–08 National Health Survey

Information was recorded from each respondent aged 15 years and over about the frequency, duration and intensity of exercise done for sport, recreation or fitness during the previous 2 weeks, and an exercise level was derived for each respondent.

The level is based on a score derived from: number of times the activity was done, average time per session, and intensity.

Exercise level was derived using intensity values of:

3.5 for walking

5.0 for moderate exercise; and

7.5 for vigorous exercise.

Score ranges were grouped and labelled as follows:

Sedentary	Scores less than 100 (includes no exercise)
Low exercise level	Scores of 100 to less than 1,600
Moderate exercise level	Scores of 1,600 to 3,200 but less than 2 hours vigorous exercise
High exercise level	Scores greater than 3,200 and 2 hours or more of vigorous exercise

Inadequate exercise levels are sedentary and low exercise levels. Sedentary refers to sitting in one place for extended periods of time (ABS 2009).

Hospitalisations

The data reported here refer to counts of hospitalisations for 2006–07 in the National Hospital Morbidity Database excluding unqualified neonates, boarders and organ procurement (that is, excluding care types 7.3, 9, 10). ICD-10-AM codes used in this analysis are shown below (Table A11).

Hospital procedures

The data reported here are rates of procedures among those hospitalised with a particular diagnosis. This is as opposed to a rate of procedures for the whole population, as has been presented in other AIHW publications. For this reason, findings presented in this report are not comparable with earlier work. The method adopted here enables an investigation of treatment patterns among those diagnosed with a particular condition, giving a more robust comparison of the female and male rates. Age-standardised rates were calculated using the hospitalisations with any CVD diagnosis in that year as the standard population.

ICD codes used in this analysis are shown in Table A8.5.

Codes used in this report

Anatomical Therapeutic Chemical classification

Anatomical Therapeutic Chemical (ATC) codes are used in this report to classify medicines from PBS/RPBS data and from the BEACH survey. A complete list of the medicine classes included in this report is shown in Table 8.6.

International Classification of Diseases (ICD-10) codes

Australia uses the International Statistical Classification of Diseases and Related Health Conditions, 10th Revision (ICD-10) classification for coding of causes of death. Note that only the underlying cause of death is analysed in this report.

For hospital diagnoses and procedures, these codes have been modified for Australia. Hospital data use the ICD-10-AM classification (International Statistical Classification of Diseases and Related Health Conditions, 10th Revision, Australian Modification). Details of the codes used in this report are given below (Table A11).

Table A11: ICD-10 and ICD-10-AM disease codes used in this report

Disease codes	ICD-10 and ICD-10-AM codes
Breast cancer	C50
Cardiovascular disease	I00–I99
Cerebrovascular disease	I60–I69
Colorectal cancer	C18–C21
Chronic obstructive pulmonary disease	J41–J44
Coronary heart disease	I20–I25
Dementia (and related disorders)	F00–F03, G30-G32
Diabetes	E10–E14
Heart failure	I50
Lung cancer	C33,C34
Stroke	I60–I64

International Classification of Primary Care Version 2 codes

The International Classification of Primary Care Version 2 (ICPC-2) is the Australian national standard for reporting health data from general practice, and is used by the BEACH survey to classify the problem managed at encounter. A list of the ICPC-2 codes used in this report is given in Table A12.

Table A12: ICPC-2 codes used in this report

ICPC-2 code	Description
Circulatory and lipid disorders[(a)]	
K01	Pain, heart
K02	Pressure/tightness of heart
K03	Pain, cardiovascular not otherwise specified
K04	Palpitations/awareness of heart
K05	Irregular heartbeat, other
K06	Prominent veins
K07	Swollen ankles/oedema
K22	Risk factor for cardiovascular disease
K24	Fear of heart disease
K25	Fear of hypertension
K27	Fear of cardiovascular disease, other
K28	Limited function/disability cardiovascular
K29	Cardiovascular symptom/complaint, other
K30	Cardiovascular check-up, complete
K31	Cardiovascular check-up, partial
K32–K49	Problems labelled as diagnostic, screening and preventive procedures of the cardiovascular system
K50–K59	Problems labelled as medication, treatment or procedures of the cardiovascular system
K60–K69	Problems labelled in terms of test results, administrative action, referrals etc, associated with the cardiovascular system
K70	Cardiovascular system infection
K71	Rheumatic fever/heart disease
K73	Congenital anomaly cardiovascular
K74	Ischaemic heart disease with angina
K75	Acute myocardial infarction
K76	Ischaemic heart disease without angina
K77	Heart failure
K78	Atrial fibrillation/flutter
K79	Paroxysmal tachycardia
K80	Cardiac arrhythmia not otherwise specified
K81	Heart/arterial murmur not otherwise specified
K82	Pulmonary heart disease
K83	Heart valve disease not otherwise specified
K84	Heart disease, other
K85	Elevated blood pressure

(continued)

Table A12 (continued): ICPC-2 codes used in this report

ICPC-2 code	Description
K86	Hypertension, uncomplicated
K87	Hypertension, complicated
K88	Postural hypotension (low blood pressure)
K89	Transient cerebral ischaemia
K90	Stroke/cerebrovascular accident
K91	Cerebrovascular disease (excluding heart/brain)
K92	Atherosclerosis/peripheral vascular disease
K93	Pulmonary embolism
K94	Phlebitis and thrombophlebitis
K95	Varicose veins of leg
K96	Haemorrhoids
K99	Cardiovascular disease, other
T93	Lipid disorder
T99075	Lipodystrophy
W81002	Hypertension pre-eclamptic
W81003	Hypertension in pregnancy
Hypertension	
K86	Hypertension, uncomplicated
K87	Hypertension, complicated
W81002	Hypertension pre-eclamptic
W81003	Hypertension in pregnancy
Ischaemic heart disease	
K74	Ischaemic heart disease with angina
K75	Acute myocardial infarction
K76	Ischaemic heart disease without angina
Stroke	
K89	Transient cerebral ischaemia
K90	Stroke/cerebrovascular accident
K91	Cerebrovascular disease (excluding heart/brain)
Heart failure	
K77	Heart failure

(a) Cardiovascular neoplasm is excluded but lipid disorders are included.

Data sources

ABS Survey of Disability, Ageing and Carers collects information about people of all ages with a disability, older people (aged 60 years and over) and people who provide assistance to older people with disabilities. The 2003 Survey of Disability, Ageing and Carers survey was done throughout Australia, from June to November 2003. The survey included people in both private and non-private dwellings, including people in cared-accommodation establishments, but excluded those in gaols and correctional institutions.

ABS Survey of Mental Health and Wellbeing 2007 was done by the ABS from August to December 2007. The survey collected information from about 8,800 Australians aged 16–85 years. The survey provides information on the prevalence of selected lifetime and 12-month mental disorders, by the major disorder groups:

- anxiety disorders (for example, social phobia)
- affective disorders (for example, depression)
- substance use disorders (for example, alcohol harmful use).

The survey also provides information on the level of impairment, health services used for mental health problems, physical conditions, social networks and care-giving, as well as demographic and socioeconomic characteristics.

ABS National Health Survey (2001 and 2004–05) was done by the ABS, and designed to obtain national information on the health status of Australians, their use of health services and facilities, and health-related aspects of their lifestyle. The 2004–05 survey included 25,906 persons across all ages, and the 2001 survey collected information from a sample of 26,900 people from February to November 2001.

ABS National Health Survey (2007–08) was done by the ABS from August 2007 to June 2008. About 22, 000 people from all states and territories and across all age groups were included. One adult (aged 18 years or over) and one child (where applicable) for each sampled dwelling were included in the survey. The survey was designed to obtain national benchmarks on a wide range of health issues, and to enable change in health to be monitored over time. Information was collected about: the health status of the population; health-related aspects of lifestyle and other health risk factors; and the use of health services and other actions people had recently taken for their health.

AIHW Disease Expenditure Database is a comprehensive database that allows expenditure estimates to be produced by source of funds (that is, Australian Government, state government or private) for each area of expenditure. Use measures such as bed days, separations, number of medical encounters and services, and pharmaceutical scripts can also be estimated (AIHW 2005c). There are some key exclusions in the 2004–05 health expenditure data, compared with that presented in previous reports. High-level residential aged care expenditure (which was $5,807 million in 2004–05) has now been reclassified out of health expenditure to welfare expenditure. Also note that expenditure by disease for non-admitted

hospital services, other health practitioner services (excluding optometry) and over-the-counter pharmaceuticals was unable to be allocated in 2004–05.

This report provides direct health expenditure on cardiovascular diseases under four categories:

- admitted patient hospital services covering the expenditure on services provided to an admitted patient, including expenditure on medical services delivered to private admitted patients in hospitals
- prescription pharmaceuticals including prescriptions subsidised under government schemes (for example, Pharmaceutical Benefits Scheme) and private prescriptions
- out-of-hospital medical services comprising medical services funded under the Medical Benefits Schedule, such as primary health visits, pathology and specialist services. Practice Incentive Payments are also included in this category
- research including health socioeconomic research funded by tertiary institutions, private non-profit organisations and government. Commercial research funded by private business is not included.

AIHW National Hospital Morbidity Database contains demographic, diagnostic, procedural and duration-of-stay information on episodes of care for patients admitted to hospital. The data collection is maintained by the AIHW using data supplied by state and territory health authorities. The database is episode-based, and it is not possible to count patients individually. In this report, disease data relate to the principal diagnosis reported for hospitalisations unless otherwise specified. Data presented in this report are for the period July 2006 to June 2007.

AIHW National Mortality Database contains information on the cause of death supplied by the medical practitioner certifying the death or by a coroner. Registration of deaths is the responsibility of the state and territory registrars of Births, Deaths and Marriages. Registrars provide the information to the ABS for coding of cause of death, which is then provided to AIHW. In this report, unless otherwise specified, death data relate only to the underlying cause of death. Data presented in this report are for the period January to December 2006, as year of death/year of registration.

The Australian Diabetes, Obesity and Lifestyle Study (AusDiab) (1999–2000) was done by the International Diabetes Institute, and designed to provide national estimates of the prevalence of diagnosed and undiagnosed diabetes. It also provided national measurements of blood pressure, blood lipids, blood glucose, body fat, height and weight, and waist and hip circumference, as well as self-reported information on CVD, anti-hypertensive and lipid lowering medication use, diet, smoking, alcohol consumption, physical activity, and general health and wellbeing. The study collected information in urban and non-urban areas in all states and the Northern Territory for more than 11,000 people aged 25 years and over who underwent a physical examination. This represents a response rate of 37% (Dunstan et al. 2002b). Analysis of this data by the AIHW included only those people for whom all relevant data were available. In this report, measured prevalence data on high blood pressure, high blood cholesterol and diabetes were obtained from this source.

The Bettering the Evaluation and Care of Health (BEACH) program is a continuous national study of general practice activity in Australia. Data are collected by the Australian General Practice Statistics and Classification Centre, the University of Sydney, in collaboration with the AIHW. BEACH began in April 1998 and involves ever-changing random samples of about 1,000 GPs per year, each of whom records details about 100 consecutive patient encounters.

The 2007 National Drug Strategy Household Survey was done between July and November 2007. This was the ninth survey in a series which began in 1985, and was the fourth to be managed by the AIHW. Almost 25,000 Australians aged 12 years and over participated in the survey, in which they were asked about their knowledge of and attitudes towards drugs, their drug consumption histories, and related behaviours. Most of the analyses in this report are based on the population aged 14 years and over, as this allows consistent comparison with earlier survey results.

Glossary

Acute Coming on sharply and often brief, intense and severe.

Acute hospitals Public and private hospitals that provide services mainly to admitted patients with acute or temporary ailments. The average length of stay is relatively short.

Admission Admission to hospital. In this report, the number of separations has been taken as the number of admissions; hence, an admission rate is the same as a separation rate.

Admitted patient A patient who undergoes a hospital's formal admission process.

Age-specific rate A rate for a specific age group. The numerator and denominator relate to the same age group.

Age-standardisation A method of removing the influence of age when comparing populations with different age structures. This is usually necessary because the rates of many diseases vary strongly (usually increasing) with age. The age structures of the different populations are converted to the same 'standard' structure, then the disease rates that would have occurred with that structure are calculated and compared.

Angina Temporary chest pain or discomfort when the heart's own blood supply is inadequate to meet extra needs, as in exercise. See also *unstable angina* and *cardiovascular disease*.

Angioplasty A method of reducing a blockage in an artery by opening out a balloon placed inside the artery at the point of narrowing. If the artery is a coronary artery, the procedure is technically known as percutaneous transluminal coronary angioplasty.

Arrhythmia A disturbed rhythm of the heart beat—either too fast, too slow or irregular.

Associated cause(s) of death Any condition(s), diseases and injuries—other than the underlying cause—considered to contribute to a death. See also *cause of death*.

Asthma A common, chronic inflammatory disease of the air passages causing their widespread narrowing, with obstruction of airflow and episodes of wheezing, chest tightness and shortness of breath. Different medications can prevent the episodes or relieve them.

Atherosclerosis A process in which fatty and fibre-like deposits build up on the inner walls of arteries, often forming plaques that can then cause blockages. It is the main underlying condition in heart attack, angina, stroke and peripheral vascular disease.

Atrial fibrillation A condition marked by an irregular, rapid heartbeat. It arises because the heart's collecting chambers (atria) stop beating rhythmically and quiver uselessly (fibrillate).

Blood cholesterol Fatty substance produced by the liver and carried by the blood to supply the rest of the body. Its natural function is to supply material for cell walls and for steroid hormones, but if levels in the blood become too high this can lead to atherosclerosis and heart disease.

Body mass index (BMI) The most commonly used method of assessing whether a person is normal weight, underweight, overweight or obese. It is calculated by dividing the person's weight (in kilograms) by their height (in metres) squared; that is, kg ÷ m^2. For both men and women, underweight is a BMI below 18.5, acceptable weight is from 18.5 to less than 25, overweight is 25 and above (includes obese), and obese is 30 and over.

Cancer A large range of diseases, in which some of the body's cells become defective, begin to multiply out of control, can invade and damage the area around them, and can also spread to other parts of the body to cause further damage.

Cardiovascular disease Any disease of the circulatory system, namely the heart (cardio) or blood vessels (vascular). Includes heart attack, angina, stroke and peripheral vascular disease. Also known as circulatory disease.

Cause of death From information reported on the medical certificate of cause of death, each death is classified by the underlying cause of death according to rules and conventions of the 10th revision of the International Classification of Diseases. The underlying cause is defined as the disease that initiated the train of events leading directly to death. Deaths from injury or poisoning are classified according to the circumstances of the violence that produced the fatal injury, rather than to the nature of the injury. See also underlying cause of death.

Cerebrovascular disease Any disorder of the blood vessels supplying the brain or its covering membranes. A notable and major form of cerebrovascular disease is stroke.

Cholesterol See *blood cholesterol*.

Chronic Persistent and long lasting.

Chronic diseases Term applied to a diverse group of diseases, such as heart disease, cancer and arthritis that tend to be long-lasting and persistent in their symptoms or development. Although these features also apply to some communicable diseases (infections), the term is usually confined to non-communicable diseases.

Chronic obstructive pulmonary disease (COPD) Serious, progressive and disabling long-term lung disease where damage to the lungs, usually because of both emphysema and chronic bronchitis, obstructs oxygen intake and causes increasing shortness of breath. By far the greatest cause is cigarette smoking.

Circulatory disease See *cardiovascular disease* (alternative name).

Colorectal cancer Cancer of the colon (the lower part of the intestine, usually 1.5 to 2 metres) or of the rectum (the final 15 centimetres of the colon, ending with the anus).

Comorbidity When a person has two or more health problems at the same time.

Complication A secondary problem that arises from a disease, injury or treatment (such as surgery) that worsens the patient's condition and makes treatment more complicated.

Condition (health condition) A broad term that can be applied to any health problem, including symptoms, diseases, and various risk factors such as high blood cholesterol, obesity and so on. Often used synonymously with disorder or problem.

Confidence interval (CI) A statistical term describing a range (interval) of values within which we can be 'confident' that the true value lies, usually because it has a 95% or higher chance of doing so.

Congenital A condition that is recognised at birth, or that is believed to have been present since birth, including conditions that are inherited or caused by environmental factors.

Coronary artery bypass graft (CABG) A surgical procedure using blood vessel grafts to bypass blockages in the coronary arteries and restore adequate blood flow to the heart muscle.

Coronary heart disease Disease due to blockages in the heart's own (coronary) arteries, expressed as angina or a heart attack. Also known as ischaemic heart disease.

Dementia A general and worsening loss of brain power such as memory, understanding and reasoning.

Depression A mood disorder with prolonged feelings of being sad, hopeless, low and inadequate, with a loss of interest or pleasure in activities and often with suicidal thoughts or self-blame.

Determinant Any factor that can increase the chances of ill health (risk factors) or good health (protective factors) in a population or individual. By convention, services or other programs that aim to improve health are often not included in this definition.

Diabetes (diabetes mellitus) A chronic condition in which the body cannot properly use its main energy source, the sugar glucose. This is due to a relative or absolute deficiency in insulin, a hormone produced by the pancreas. Insulin helps glucose enter the body's cells from the bloodstream and then be processed by them. Diabetes is marked by an abnormal build-up of glucose in the blood and it can have serious short- and long-term effects. For the three main types of diabetes see *Type 1 diabetes*, *Type 2 diabetes* and *gestational diabetes*.

Disability Described by the International Classification of Functioning, Disability and Health as a concept of several dimensions relating to an impairment in body structure or function, a limitation in activities (such as mobility and communication), a restriction in participation (involvement in life situations such as work, social interaction and education), and the affected person's physical and social environment.

Disability-adjusted life year (DALY) Years of healthy life lost through premature death or living with disability due to illness or injury.

Disease A physical or mental disturbance involving symptoms (such as pain or feeling unwell), dysfunction or tissue damage, especially if these symptoms and signs form a recognisable clinical pattern.

Disorder (health disorder) Used synonymously with condition.

Gestational diabetes Diabetes that is first diagnosed during pregnancy (gestation). It may disappear after pregnancy but signals a high risk of diabetes occurring later on.

Health Term relating to whether the body (which includes the mind) is in a good or bad state. With good health the state of the body and mind are such that a person feels and functions well and can continue to do so for as long as possible. See also public health.

Health status An individual's or population's overall level of health, taking into account various aspects such as life expectancy, amount of disability, levels of disease risk factors and so on.

Heart attack Life-threatening emergency that occurs when a vessel supplying blood to the heart muscle is suddenly blocked completely by a blood clot. The medical term commonly used for a heart attack is myocardial infarction. See also cardiovascular disease.

Heart failure When the heart functions less effectively in pumping blood around the body. It can result from a wide variety of diseases and conditions that can impair or overload the heart, such as heart attack, other conditions that damage the heart muscle directly (cardiomyopathies), high blood pressure, or a damaged heart valve.

Illness A state of feeling unwell, although the term is also often used synonymously with disease.

Impairment Any loss or abnormality of psychological, physiological or anatomical structure or function.

Incidence The number of new cases (of an illness or event, and so on) occurring during a given period. Compare with *prevalence*.

Insulin Hormone that is produced by the pancreas and regulates the body's energy sources, most notably the sugar glucose.

International Classification of Diseases International Statistical Classification of Diseases and Related Health Problems. The World Health Organization's internationally accepted classification of death and disease. The 10th Revision (ICD-10) is currently in use. In this report, causes of death classified before 1979 under previous revisions have been reclassified to ICD-10 by the AIHW. ICD-10-AM is the Australian modification of ICD-10, used for diagnoses and procedures recorded for patients admitted to hospitals.

Intervention (for health) Any action taken by society or an individual which 'steps in' (intervenes) to improve health, such as medical treatment and preventive campaigns.

Ischaemia Reduced or blocked blood supply. See also *ischaemic heart disease*.

Ischaemic heart disease Heart attack and angina (chest pain). Also known as coronary heart disease. See also *ischaemia*.

Life expectancy An indication of how long a person can expect to live. Technically it is the number of years of life remaining to a person at a particular age if death rates do not change.

Long-term condition A term used in the ABS National Health Surveys to describe a health condition that has lasted, or is expected to last, at least 6 months. See also chronic diseases.

Mental illness Disturbances of mood or thought that can affect behaviour and distress the person or those around them, so the person often has trouble functioning normally. They include anxiety disorders, depression and schizophrenia.

Morbidity Refers to ill health in an individual and to levels of ill health in a population or group.

Mortality Death.

Myocardial infarction Term still commonly used to mean a heart attack, but more correctly refers only to those heart attacks that have caused some death of heart muscle.

Obesity Marked degree of overweight, defined as body mass index of 30 or over. See also *overweight*.

Outcome (health outcome) A health-related change due to a preventive or clinical intervention or service. (The intervention may be single or multiple, and the outcome may relate to a person, group or population, or be partly or wholly due to the intervention.)

Overweight Defined as a body mass index of 25 or over. See also *obesity*.

Peripheral vascular disease Pain in the legs due to an inadequate blood supply to them.

Pharmaceutical Benefits Scheme (PBS) A national, government-funded scheme that subsidises the cost of a wide range of pharmaceutical drugs, and that covers all Australians to help them afford standard medications.

Plaque (atherosclerotic) A localised area of atherosclerosis, especially when raised or built up, and which may cause blockages in arteries.

Potential years of life lost (PYLL) Number of potential years of life lost in a population as a result of premature death.

Prevalence The number or proportion (of cases, instances, and so on) present in a population at a given time. Compare with *incidence*.

Prevention (of disease or ill health) Action to reduce or eliminate the onset, causes, complications or recurrence of disease or ill health.

Principal diagnosis The diagnosis describing the problem that was chiefly responsible for the patient's episode of care in hospital.

Private hospital A privately owned and operated institution, catering for patients who are treated by a doctor of their own choice. Patients are charged fees for accommodation and other services provided by the hospital and relevant medical and allied health practitioners. The term includes private freestanding day hospital facilities.

Problem (health problem) Another poorly defined term often used synonymously with condition or disorder. May also be used more specifically to refer to symptoms and other health factors that a person or the doctor perceives as a concern—a problem—that needs attention, and which, for example, the person may record in a survey or their doctor may list in clinical notes to form a 'problem list'.

Public health Term variously referring to the level of health in the population, to actions that improve that level or to related study. Activities aimed at benefitting a population tend to emphasise prevention, protection and health promotion as distinct from treatment tailored to individuals with symptoms. Examples include provision of a clean water supply and good sewerage, conduct of anti-smoking education campaigns, and screening for diseases such as cancer of the breast and cervix.

Public hospital A hospital controlled by a state or territory health authority. In Australia public hospitals offer free diagnostic services, treatment, care and accommodation to all Australians who need them.

Recurrent expenditure Expenditure on goods and services that are used up during the year—for example, salaries. It may be contrasted with capital expenditure.

Repatriation Pharmaceutical Benefits Scheme (RPBS) A national, government-funded scheme that subsidises the cost of a wide range of pharmaceutical drugs, and that covers eligible veterans and their dependants to help them afford medicines listed on the PBS or a supplementary repatriation list.

Revascularisation ('re-vesselling') Restoring adequate blood flow to the heart or other part of the body, usually after the supply has been reduced or blocked, as in angina or a heart attack. Revascularisation includes methods such as angioplasty and coronary artery bypass graft surgery.

Rheumatic fever An acute, serious disease that affects mainly children and young adults and can damage the heart valves, the heart muscle and its lining, the joints and the brain. Is brought on by a reaction to a throat infection by a particular bacterium. Now very rare in the non-Indigenous population, it is still at unacceptably high levels among Aboriginal and Torres Strait Islander people living in remote areas. See rheumatic heart disease.

Rheumatic heart disease Chronic disease from damaged heart valves caused by earlier attack(s) of rheumatic fever.

Risk factor Any factor that represents a greater risk of a health disorder or other unwanted condition or event. Some risk factors are regarded as causes of disease, others are not necessarily so. Along with their opposites, protective factors, risk factors are known as determinants.

Separation The formal process by which a hospital records the completion of treatment and/or care for an admitted patient.

Statistical significance An indication from a statistical test that an observed difference or association may be significant or 'real' because it is unlikely to be due just to chance. A statistical result is usually said to be 'significant' if it would occur by chance only once in 20 times or less often. See *confidence interval*.

Stent A metal mesh tube that is expanded within an artery at a point of narrowing and left there to hold the artery open.

Stroke When an artery supplying blood to the brain suddenly becomes blocked or bleeds. Often causes paralysis of parts of the body normally controlled by that area of the brain, or speech problems and other symptoms.

Symptom Any indication of a disorder that is apparent to the person affected.

Thrombosis Clotting of blood, with the term usually applied to clotting within a blood vessel due to disease, as in a heart attack or stroke.

Transient ischaemic attack (TIA) A 'mini' stroke, with temporary problems in speech or paralysis that last for 24 hours or less, often only minutes. It is a strong warning sign of a more severe stroke.

Type 1 diabetes A form of diabetes mostly arising among children or younger adults, marked by a complete lack of insulin and needing insulin replacement for survival.

Type 2 diabetes The most common form of diabetes, occurring mostly in people aged 40 years or over, and marked by reduced or less effective insulin.

Underlying cause of death The condition, disease or injury initiating the sequence of events leading directly to death; that is, the primary or main cause. Compare with *associated cause(s) of death*.

Unstable angina A form of angina that is more dangerous than normal angina but less so than a heart attack. It can feature chest pain that occurs at rest; in someone who already has angina, it can be marked by new patterns of onset with exertion or by pain that comes on more easily, more often or for longer than previously.

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