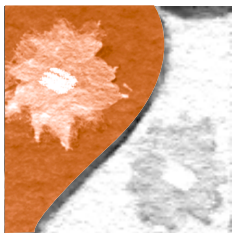
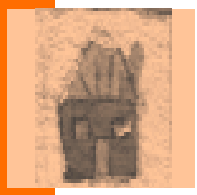




Chronic diseases

Coronary heart disease
Stroke
Lung cancer
Colorectal cancer
Depression
Diabetes
Asthma
Chronic obstructive pulmonary disease
Chronic renal disease
Oral diseases
Arthritis
Osteoporosis

Chapter 2

2 Chronic diseases

This chapter provides brief statistical overviews of 12 chronic diseases and conditions that have a large impact on the health and quality of life of Australians. The diseases and conditions selected for this baseline report are:

- coronary heart disease
- stroke
- lung cancer
- colorectal cancer
- depression
- diabetes
- asthma
- chronic obstructive pulmonary disease
- chronic renal disease
- oral diseases
- arthritis
- osteoporosis.

The choice of chronic diseases was determined by the following criteria:

- They show features typical of chronic diseases in their development or clinical course.
- They make up a major part of the burden of chronic diseases.
- As a group, they are strongly influenced by a limited number of risk factors.
- Those risk factors are all modifiable at the population and individual level and offer major prospects for prevention.

The overviews cover disease incidence and prevalence, risk factors (both causal or contributory to their development and continuity), associated complications, disability and mortality. Information from several different sources—including disease registers, population surveys, general practitioner visits, hospital separations and death certificates—has been compiled to generate a statistical profile of each disease. The impact of various diseases in terms of the use of health services and other health system costs is also reported.

Since each disease has been presented in a 'stand-alone' fashion, there has been some unavoidable repetition. Also there is limited cross-referencing from the discussion of one disease to another.

Seven of the chronic diseases covered in this report—coronary heart disease, stroke, lung cancer, colorectal cancer, diabetes, asthma and depression—are the focus of action under the National Health Priority Areas initiative. Some of these conditions are also subject to priority attention by various State and Territory Governments.

2.1 Coronary heart disease

Coronary heart disease (CHD), also known as ischaemic heart disease (ICD-9 codes 410–414; ICD-10-AM codes I20–I25), is the largest single cause of premature death in Australia. While mortality from CHD is most common among elderly people, it also affects many in middle age. The morbidity and disability associated with CHD is also considerable.

Description

The two main forms of CHD are heart attack and angina. Both involve an inadequate blood flow (ischaemia) to the heart itself, resulting from blockages in the coronary arteries that supply blood to the heart muscle. A heart attack (often also referred to as acute myocardial infarction) occurs when a coronary artery is suddenly blocked completely by a blood clot. If the flow cannot be restored quickly enough, the heart muscle downstream may begin to die. Angina refers to bouts of chest pain that arise when a diseased coronary artery cannot meet a temporary demand to increase the blood flow to the heart, or can occur with physical exertion or emotion. Heart attacks are often fatal, while angina can cause much disability and those with the condition are at greater risk of heart attack.

One form of angina is known as 'unstable angina'. It usually occurs in someone who already has angina, and is marked by pain occurring at rest or a significant increase in the frequency or severity of attacks. It predicts a greater risk of heart attack than occurs with normal angina.

In both heart attack and angina, the underlying problem is a condition known as atherosclerosis. This refers to abnormal build-ups of fatty and fibre-like substances that form in the inner wall of the artery, narrowing the channel through which the blood flows. An individual build-up of atherosclerosis is known as a plaque. If the plaque ruptures, a blood clot will be formed which may partially or completely block the artery. The process leading to atherosclerosis may start in childhood, but it usually does not develop to the point where associated disease symptoms appear until at least middle age or older.

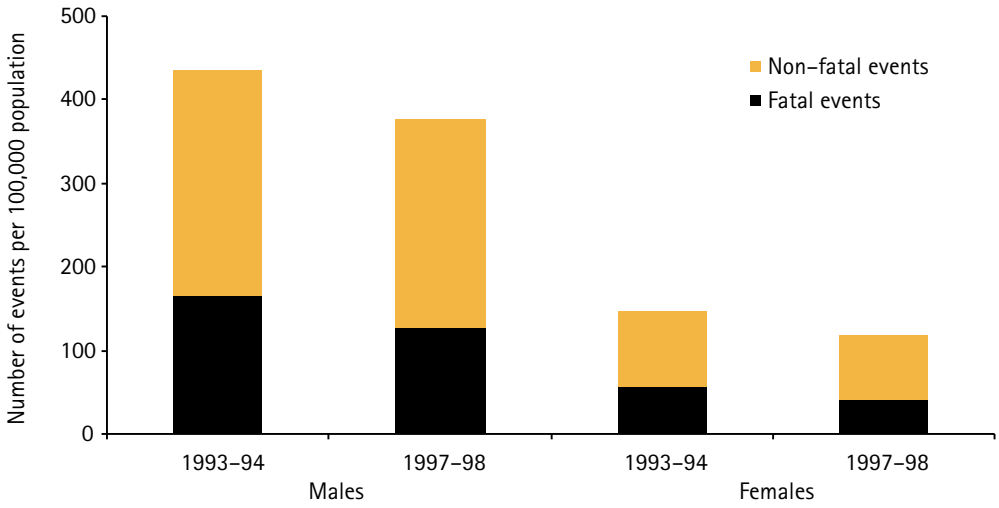
Signs and symptoms

The most common symptom of a heart attack is severe chest pain, but there can also be a sudden and often fatal collapse from a major disturbance in the rhythm of the heartbeat. Before a heart attack, the plaque involved has often not been large enough to limit blood flow, so the person has often had no previous symptoms. Angina, by contrast, is marked by temporary chest pains caused by reduced blood supply to the heart muscle and does not cause permanent damage to the heart muscle.

Disease severity and survival

CHD, in particular heart attack, is highly fatal. Those who survive may continue to have significant morbidity. In 1993–94, about 38% of those aged 35–69 years having a heart attack died within a year. This proportion declined to 34% in 1997–98 (Figure 2.1.1). The likelihood of a heart attack being fatal within a year increases with age, especially for males. Among those aged 65–69, the proportions in 1997–98

Figure 2.1.1: Fatal and non-fatal heart events among those aged 35–69 years, 1993–94 and 1997–98



Source: Based on AIHW National Hospital Morbidity Database and AIHW National Mortality Database.

were 46% for males and 37% for females. Furthermore, the risk of a fatal heart attack is much higher among persons who have previously experienced a heart attack (AIHW 2001:20).

Co-morbidities

Persons with CHD often have or are at increased risk for other vascular conditions (such as stroke or peripheral vascular disease), or diabetes, as these conditions share many of the same risk factors. Depression is also a common problem associated with heart disease, with some studies showing that 10–20% of patients with CHD have depressive symptoms, and 5% may suffer from major depression (DHAC & AIHW 1999:19).

Risk factors

Major risk factors for CHD are listed in Box 2.1.1. Males are much more likely to have CHD than females and for both sexes the risk greatly increases with age. From a behavioural viewpoint, the major preventable risk factors are physical inactivity, poor nutrition, and tobacco smoking. Physical inactivity and poor nutrition, principally a high intake of saturated fats and salt, are expressed through the biomedical factors of high blood pressure, high blood cholesterol and excess body weight.

Box 2.1.1: Risk factors for coronary heart disease

Predisposing factors

Age

Sex

Family history of heart disease

Behavioural factors

Tobacco smoking

Physical inactivity

Alcohol misuse

Poor nutrition

Biomedical factors

High blood pressure

High blood cholesterol

Excess body weight

Source: AIHW 2001:20.

In addition to the risk factors shown in Box 2.1.1, diabetes is recognised as a contributing factor in the development of atherosclerosis, and therefore is a major risk factor for CHD.

Because many factors contribute to CHD, it is difficult to precisely quantify their specific contribution. However, estimates can be made of the population impact of each risk factor, based on how many people have the factor and how much the factor increases the risk of disease or death for an individual. These estimates (also called attributable fractions) suggest that in Australia the preventable risk factors that contribute to the greatest number of deaths from CHD are high blood pressure, physical inactivity, and high blood cholesterol (Table 2.1.1).

Table 2.1.1: Coronary heart disease deaths attributable to various risk factors, 1996

Risk factors	Attributable proportion of deaths (%)
High blood pressure	24
Physical inactivity	21
High blood cholesterol	20
Tobacco smoking	8
Excess body weight	7

Source: AIHW: Mathers et al. 1999:101–31.

Impacts

Deaths

CHD accounted for 28,103 deaths (22% of all deaths) in Australia in 1998. Death rates for CHD in Australia peaked in 1968 for males at nearly 500 deaths per 100,000 and for females at 250 per 100,000 (Figure 2.1.2). These rates have declined by about 65% since then, to 173 and 94 per 100,000 for males and females respectively in 1998. The fall in death rates was initially due to lower heart attack rates but, more recently, improved survival after a heart attack has played an important part. Despite these large declines, CHD is still the leading single cause of death in Australia.

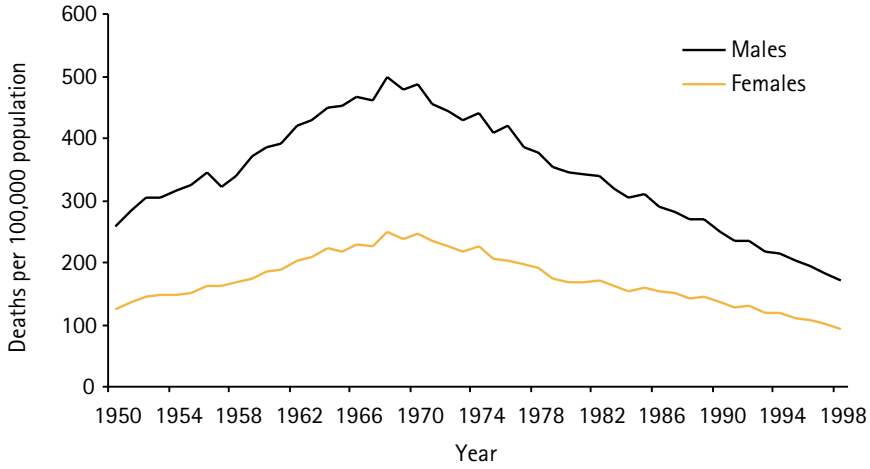
Male CHD death rates in Australia have consistently been nearly twice those of females, a finding common to most affluent Western societies. It is also recognised that socioeconomically disadvantaged groups have higher CHD death rates than those who are better off. Australians (aged 25–64) from the lowest socioeconomic category are twice as likely to die from CHD as those from the highest socioeconomic category (AIHW 2001:22).

CHD death rates increase rapidly from about age 50. The pattern of higher male rates is consistent across all age groups, with the ratio of male to female death rates decreasing with age, from 4.6 at ages 50–54 to 1.2 at ages 85 and above (Figure 2.1.3).

Death rates for CHD are slightly higher in males from rural areas than in those from metropolitan areas. No significant differences in CHD death rates across metropolitan, rural and remote areas of Australia have been noted among females (AIHW 2001:22).

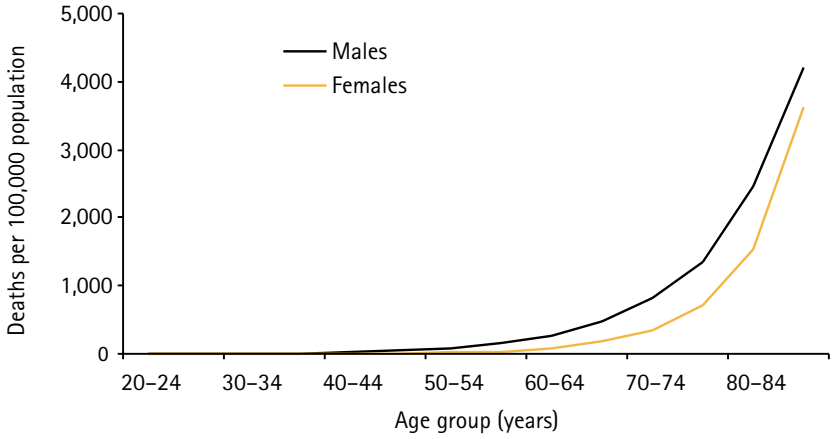
Indigenous Australians have much higher CHD death rates than the rest of the Australian population. In South Australia, Western Australia, and the Northern Territory (the three jurisdictions with adequate Indigenous identification on death certificates), CHD death rates for the Indigenous population in 1996–98 were twice the rates of other Australians in those jurisdictions. The ratios were much higher in the younger age groups. In the 25–64 years age group, the rates for Indigenous males and females were six and eight times the rates for non-Indigenous males and females respectively (AIHW 2001:22).

Figure 2.1.2: Death rates for coronary heart disease, 1950 to 1998



Source: AIHW National Mortality Database.

Figure 2.1.3: Age-specific death rates for coronary heart disease, 1998



Source: AIHW National Mortality Database.

In comparison to other developed countries, CHD death rates in Australia are in the middle range. Australia's rates in 1997 were below those of the United Kingdom, Germany and the United States, but much higher than those of Italy, France and Japan (Figure 2.1.4).

Incidence and prevalence

There are no established national data on the incidence (number of new cases) or prevalence (number of persons with the disease) of CHD. Estimates from the Burden of Disease and Injury Study (AIHW: Mathers et al. 1999:208) indicate that the prevalence of angina was close to 1% of the population in 1996.

The lifetime risk for CHD is considerable. For a 40-year-old, the risk of having CHD at some time in future life is 1 in 2 for males and 1 in 3 for females (AIHW 2001:23).

Complications

There can be a range of complications from CHD that immediately or more gradually affect the heart's ability to pump blood or that can cause further pain. This can be due to disturbed heart rhythm, to weakening of damaged heart muscle, or to residual artery blockage. In some cases, a heart attack may damage the heart muscle so severely that the heart cannot pump blood around the body well enough, a condition known as heart failure.

Disability

According to the 1998 ABS Survey of Disability, Ageing and Carers, nearly 8,000 people, all aged 45 and over, reported that they had a disability due to a heart attack. This figure translates to a rate of 126 per 100,000 persons in that age group.

Use of health services

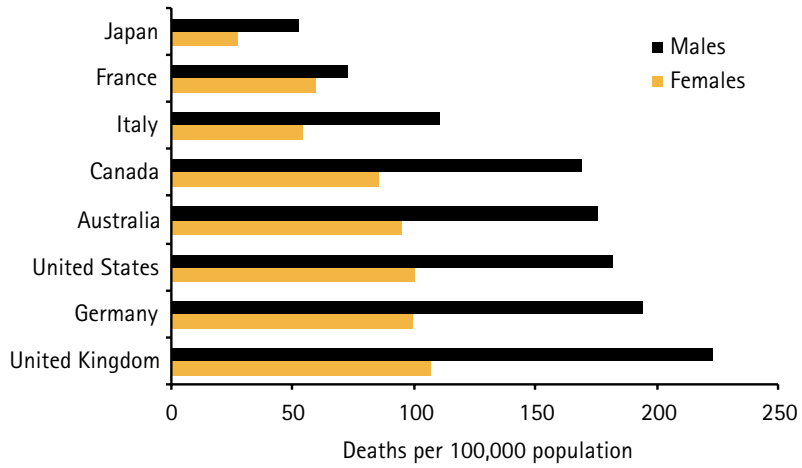
In 1999–00, there were 157,913 hospitalisations for CHD. Males accounted for 65% of these. The hospital separation rate for CHD increased with age, from 799 per 100,000 males aged 35–54 to 5,859 per 100,000 for males over 75. Comparable rates for females were 227 and 3,615.

Just over 1% of problems managed by general practitioners (GPs) in 1999–00 were CHD-related; a further 1% were for cardiac check-up. This equates to abut 1.6 million GP encounters for CHD yearly (AIHW: Senes & Britt 2001:xi).

Several risk factors for CHD were also among the major problems managed by GPs, including high blood pressure (5.7% of problems) and high blood cholesterol (1.8% of problems) (AIHW: Britt et al. 2000:35–6). While high blood pressure remained the most common problem managed by GPs, the rate per 100 encounters has declined slightly over the past 10 years. In contrast, the management rate for blood cholesterol has increased, probably because of raised awareness both among GPs and the public of the need to monitor and control cholesterol levels (AIHW 2000:57).

In 1993–94, CHD accounted for an estimated $894 million (3%) of total direct health system costs, or $50 per person. Hospital costs

Figure 2.1.4: International comparison of death rates for coronary heart disease, 1997



Note: Rates standardised to the total 1980 OECD population.

Source: OECD 2001.

accounted for about 64% of this amount, pharmaceuticals and nursing homes for about 12% each, and medical services (general practitioners and specialists) for 10%. Per capita costs were higher for males than for females, and increased sharply with age (AIHW: Mathers & Penm 1999:7, 11).

Management

There are several aspects to the management of CHD, both in acute (heart attack) and chronic (angina) situations.

A heart attack is a life-threatening emergency and must receive immediate treatment. Some techniques used to manage heart attack are outlined in Box 2.1.2. Cardio-pulmonary resuscitation (CPR) can be performed by bystanders if the person suffering a heart attack is unconscious and has no detectable pulse. Most ambulances have defibrillators. Management in hospital aims to remove the blockage in the coronary artery and restore blood flow to the threatened muscle as soon as possible, through thrombolytic ('clot-busting') drugs, coronary artery bypass grafting, or coronary angioplasty.

Box 2.1.2: Emergency management for heart attack

Cardio-pulmonary resuscitation (CPR): *external chest compression to maintain blood circulation in a person who has collapsed and has no detectable pulse.*

Defibrillator: *a machine that delivers external electric shocks to the chest to restore normal pumping action of the heart.*

Thrombolytic drugs: *administered to dissolve the clot in the coronary artery.*

Coronary bypass grafting and angioplasty: *see Box 2.1.3.*

In its most common form, angina is not an emergency, although it may at first be treated as one until it is distinguished from a heart attack. Once angina is diagnosed, the initial treatment will be with drugs to reduce the severity and frequency of attacks, along with counselling and treatment for risk factors. People with angina often undergo procedures such as coronary bypass surgery and angioplasty, described on the next page. Unstable angina, however, needs to be treated as an emergency.

A number of procedures have been developed in recent years to treat CHD, and their use in Australia has increased steadily (Box 2.1.3). In 1998, coronary angioplasty (18,094 procedures) replaced coronary artery bypass grafting (17,448 operations) as the most common procedure. The use of stents is also becoming a routine procedure, with stents being inserted in 82% of all coronary angioplasty procedures in 1998 (AIHW 2001:74).

Cardiac rehabilitation aims to maximise physical, psychological and social functioning to enable patients to live productively and with confidence, and to assist and encourage behaviours that are likely to minimise the risk of further heart attacks (AIHW 2001:77). Such measures include dietary changes, increased exercise, weight control, and cessation of smoking (Newschaffer et al. 1998:310).

Prevention and screening

Despite the declines in death rates for CHD in the past three decades, considerable potential remains for reducing both the incidence of and mortality from CHD. Key factors for further reductions include lowering the levels of excess body weight, reducing dietary fat and salt intake, and increasing levels of physical activity in the general population. For individuals at risk, reductions in tobacco smoking and high blood pressure are also important strategies (DHAC & AIHW 1999:83).

Box 2.1.3: Procedures for treating coronary heart disease

Coronary artery bypass grafting: *blood vessel grafts used to bypass blockages in the coronary arteries to restore adequate blood supply to the heart muscle; less invasive techniques for performing the procedure are being introduced.*

Coronary angioplasty: *inserting a catheter with a balloon into a major artery via the skin and threading it to the area of coronary blockage; the balloon is then inflated to create a wider passage for blood flow.*

Coronary stenting: *placing a metal mesh tube within the artery to form a supporting structure to hold the artery open at a point previously narrowed.*

Source: AIHW 2001:74; AIHW: Davies and Senes 2001: 1.

Models have been developed to estimate the possible reductions in coronary events and deaths that could be achieved by (a) partial improvements in national levels of blood cholesterol, blood pressure, tobacco smoking, and physical activity, and (b) more extensive use of medical and surgical treatment and optimal acute treatment of people with a heart attack. Applying these models to the Australian population aged 35–79 suggests that 38% of coronary events and 41% of deaths could be prevented with these improvements (DHAC & AIHW 1999:86–9).

The National Health and Medical Research Council (NHMRC) has published guidelines for prevention of CHD (NHMRC 1997). Although these guidelines do not recommend that healthy people should be routinely screened for CHD (e.g. given exercise stress or electrocardiogram tests), they do suggest that attention should be given to preventable risk factors, including smoking, high blood pressure, obesity, lack of exercise, diabetes, and high blood cholesterol. Another recommendation is for general practitioners to consider low dose aspirin therapy for the prevention of CHD in males aged 50 and over.

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2.2 Stroke

Stroke (ICD-9 codes 430–438; ICD-10-AM codes G45, G46, I60–I69) includes a group of diseases that affect the arteries supplying blood to the brain. Stroke is also known as 'cerebrovascular disease'. It is the second leading cause of death in Australia, a large contributor to disability, and places a heavy burden on family members and care providers.

Description

Stroke can take a number of forms (see Box 2.2.1). Ischaemic and haemorrhagic strokes are much more severe than transient ischaemic attacks. Of the former, about 85% are ischaemic or 'blockage' strokes, and 15% are haemorrhagic or 'bleeding' strokes. Both ischaemic and haemorrhagic strokes can damage part of the brain, resulting in the impairment of a range of functions, especially movement of body parts and communication (AIHW 2001:24). Transient ischaemic attacks are a risk factor for an impending, more permanent, stroke event, and individuals who experience these should seek immediate medical advice for preventive steps.

The principal cause of ischaemic stroke (as with many vascular and heart diseases) is atherosclerosis, the partial or complete blocking of arteries due to abnormal build up of fatty and fibre-like substances on the inner surface of the artery wall, with further blockage by clots formed around such build-ups. These clots may form in vessels of the neck (or less commonly in the heart) and move to the brain, or less often may form in the brain itself.

Box 2.2.1: Types of stroke

Ischaemic stroke: *when an artery supplying blood to a part of the brain suddenly becomes blocked.*

Haemorrhagic stroke: *when an artery supplying blood to a part of the brain suddenly bleeds.*

Transient ischaemic attack: *a 'mini stroke' resulting from a temporary reduction of blood supply to part of the brain; over 75% are believed to last less than 5 minutes, but by definition they can last up to an hour.*

Source: Newschaffer et al. 1999:315–6.

Disease severity

Death and disability are two common outcomes of stroke due to a severe lack of oxygen in areas of the brain and the resulting death of affected brain cells. Death can occur very soon after the stroke; about one-quarter of all people who have a stroke die within a month and one-third within a year. A further one-third are permanently disabled, with some degree of paralysis, difficulty with speech, or a range of other problems that may affect their quality of life and their ability to function in society (AIHW 2001:24, 27). Some patients, particularly those with 'transient' attacks, recover within 24 hours. However, transient strokes are a major risk factor for disabling stroke, with a 13-fold increase in risk of such a stroke in the following year (Allen & Lueck 1999:974).

Co-morbidities

Persons who have suffered a stroke are often predisposed to other vascular diseases such as coronary heart disease (CHD) and peripheral vascular disease. This is because these diseases have similar underlying disease processes and risk factors. Persons with diabetes are more prone to stroke as high sugar levels increase the effect of elevated blood pressure (DHAC & AIHW 1999:18).

Risk factors

The risk of stroke increases significantly with age. Males have a slightly higher risk of stroke than females. Because of the common underlying condition of atherosclerosis, stroke has many risk factors in common with CHD (Box 2.2.2). These include high blood pressure, physical inactivity, tobacco smoking and high blood cholesterol. Some risk factors, such as atrial fibrillation and transient ischaemic attack, are specific to stroke. The use of oral contraceptives has also been linked to a higher risk for stroke in females (Allen & Lueck 1999:982).

While some risk factors contribute more to a particular type of stroke, high blood pressure is considered to be the major risk factor for all types. The risk of stroke increases rapidly as diastolic blood pressure increases, with an increase of 7.5 mmHg doubling the risk (Newschaffer et al. 1999:319).

Box 2.2.2: Risk factors for stroke

Predisposing factors

Age
Sex
Family history of stroke

Biomedical factors

High blood pressure
High blood cholesterol
Atrial fibrillation
Transient ischaemic attack

Behavioural factors

Tobacco smoking
Alcohol misuse
Excess body weight
Physical inactivity
Poor diet and nutrition

Source: DHAC & AIHW 1999:14.

Estimates of the population impact of the various risk factors, based on how many people have the factor and how much the factor increases the risk for the person affected, indicate that about one-third of stroke deaths are attributable to high blood pressure (Table 2.2.1). Physical inactivity is also a major risk factor.

Table 2.2.1: Stroke deaths attributable to various risk factors, 1996

Risk factor	Attributable proportion of deaths (%)
High blood pressure	34
Physical inactivity	22
Tobacco smoking	6
Excess alcohol consumption	5
Excess weight	3

Source: AIHW: Mathers et al. 1999:101–31.

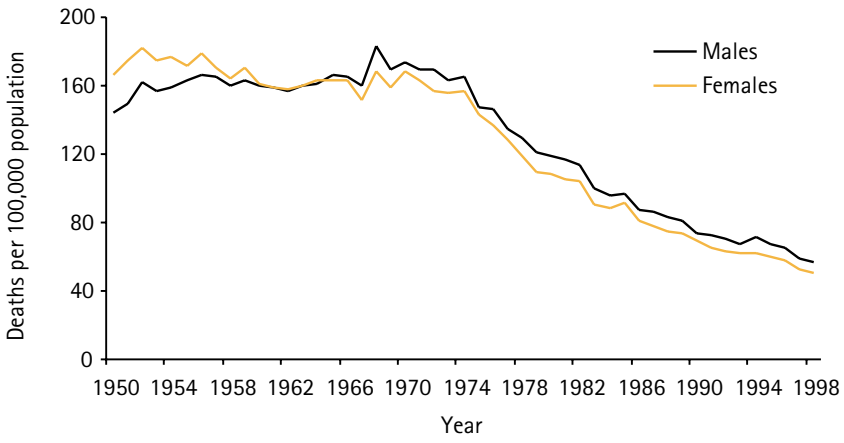
Impacts

Deaths

Stroke claimed 12,613 lives in 1998, representing more than 9% of all deaths. The death rates were 59 per 100,000 males and 54 per 100,000 females. These rates are less than one-third the prevailing rates three decades earlier, reflecting a progressive decline over that period (Figure 2.2.1).

The declines in stroke death rates are similar to those for CHD. Unlike CHD, there is much less difference in the rates between the sexes. The stroke death rate for males has consistently been about 10% higher than the rate for females since about 1978, while for CHD the male rate has always been about double the female rate.

Figure 2.2.1: Death rates for stroke, 1950 to 1998



Source: AIHW National Mortality Database.

Death rates for stroke rise steeply after age 60, doubling for each increasing 5-year age group (Figure 2.2.2). The rate for males is generally higher than that for females, except in the oldest age group of 85 and over, with the female rate (2,340 per 100,000) being 13% higher than the male rate (2,067 per 100,000). The lower rate for females notwithstanding, the number of female deaths from stroke is greater than the number of male deaths (7,170 compared to 4,812 in 1998). This is due to the greater number of women who survive into old age, where deaths from stroke are much higher (AIHW 2001:24).

There are considerable differences in stroke death rates among population groups in Australia. In 1997, people (aged 25–64) from the most socioeconomically disadvantaged category were almost twice as likely to die from stroke as those in the least disadvantaged category. Similarly, Indigenous Australians in 1996–98 had stroke death rates twice the rate of non-Indigenous Australians. At ages 25–64, the Indigenous male death rate was seven times that of non-Indigenous males, and for females the ratio was eight times (AIHW 2001:26).

Australia's stroke death rates in 1997 were well below those in Japan, Germany, Italy and the United Kingdom, but above those in France, Canada and the USA (Figure 2.2.3).

Incidence and prevalence

It has been estimated that each year around 40,000 Australians have a stroke, with 73% of these being first-ever strokes. The 1995 ABS National Health Survey estimated that 116,500 Australians, or 0.6% of the total population, had ever had a stroke (AIHW 2001:24).

The incidence rates for stroke have been estimated to be 2.9 per 1,000 for males and 3.3 per 1,000 for females, with corresponding prevalence rates of 7.4 per 1,000 and 5.9 per 1,000 (AIHW: Mathers et al. 1999).

Complications

Depending on the severity of the stroke, there may be numerous complications. These include pneumonia, dehydration, seizures, deep vein thrombosis, frozen shoulder, pressure sores, urinary infection and constipation. Stroke patients often require careful nursing care to avoid or mitigate these, especially when they are unconscious or bed-ridden for long periods (Allen & Lueck 1999:982).

People with stroke are more prone to have emotional problems, particularly post-stroke depressive disorders, which may be severe and lengthy if untreated (DHAC & AIHW 1999:19).

Disability

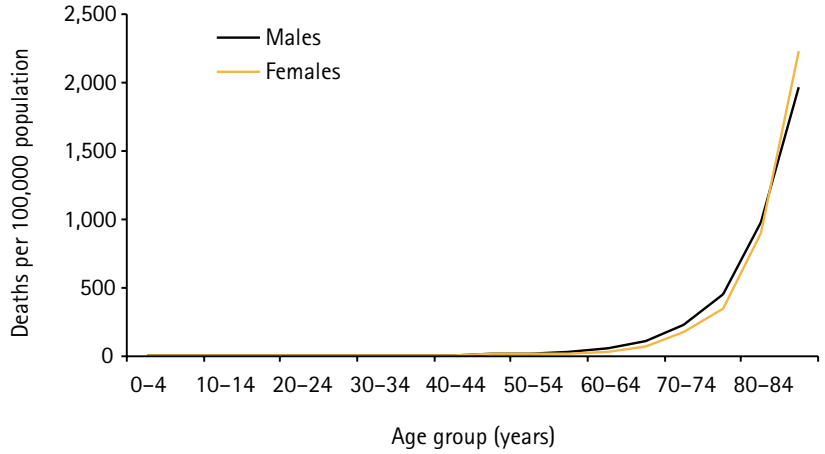
Stroke is a major cause of disability. In 1998, more than 63,500 Australians, or 0.3% of the total population, were classified as disabled with stroke as the primary cause of their disability.

The rate for the population aged 45 and over was nearly 1% and for the population aged 85 and over almost 6% (1998 ABS Survey of Disability, Ageing and Carers, unpublished data). Over 75% of stroke sufferers with a disability need assistance with self-care, mobility or communication (AIHW 2001:24).

Use of health services

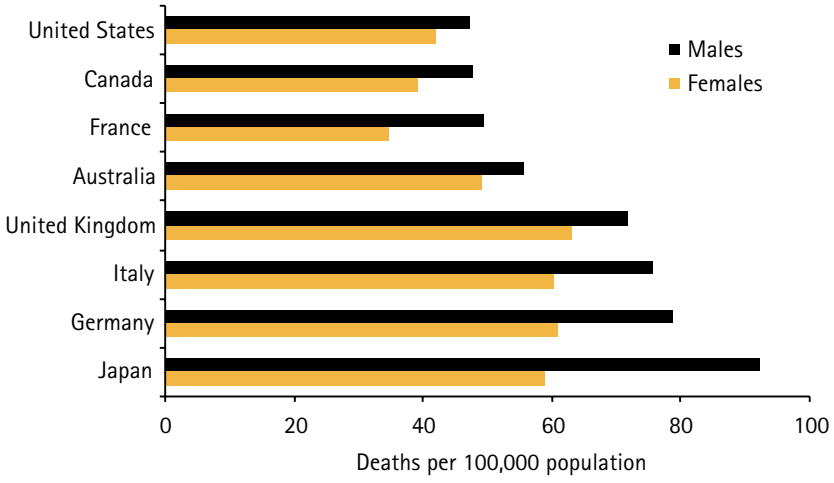
In 1999–00, there were 52,843 hospitalisations for stroke, accounting for 0.9% of all

Figure 2.2.2: Age-specific death rates for stroke, 1998



Source: AIHW National Mortality Database.

Figure 2.2.3: International comparison of death rates for stroke, 1997



Note: Rates standardised to the total 1980 OECD population.

Source: OECD 2001.

separations. Hospital use for stroke increases rapidly with age, with the rate exceeding 2,600 per 100,000 persons aged 75 and over.

Stroke is one of the main reasons for service usage in hospitals. Over 2% of hospital beds on average are occupied by a person hospitalised for stroke (AIHW 2001:24–5). In 1999–00, there were 512,264 bed days for stroke. The average length of stay for stroke was 9.7 days.

Limited information is available regarding primary care for stroke. Several disorders that are major risk factors for stroke and other vascular and heart diseases, including high blood pressure, are among the most frequently managed problems by general practitioners (AIHW 2000:57).

In 1993–94, stroke accounted for $630 million (2%) of total direct health system costs. Hospital and nursing home costs each accounted for about 45% of this amount, medical services (general practitioners and specialists) for 5%, and pharmaceuticals for another 2% (AIHW: Mathers & Penm 1999:7).

Management

There is increased emphasis on the need to provide urgent medical attention to commence appropriate treatment for stroke, which reduces the chances of complications and improves the likelihood of better outcomes.

The management of stroke patients is influenced by the cause, type and severity of the stroke. Most non-transient cases require most or all of the elements of stroke management described in Box 2.2.3. Accurate diagnosis is essential to distinguish between ischaemic and haemorrhagic stroke, as anti-clotting agents are routinely used for treating the former, but may be hazardous for the latter (Ebrahim & Harwood 1999:59).

Box 2.2.3: Elements in the management of stroke

Diagnosis: *computerised tomography (CT) scanning of the brain is used in most patients suspected of suffering a stroke; its main role is to confirm a stroke and distinguish between the various stroke types.*

Dedicated stroke units: *provide a coordinated approach to the management of stroke, with staffing by a multidisciplinary team of experts.*

Drugs: *to date, the only anti-clotting agent proven to be effective in acute management is aspirin.*

Surgery: *when swelling compresses the brain stem due to cerebral haemorrhage or blockage, surgery can be a life-saving treatment; the relative risks and benefits of surgery for other haemorrhages in the brain remain uncertain.*

Source: DHAC & AIHW 1999:59–61.

Aspirin is the only anti-clotting agent proven to be effective for acute stroke. Thrombolysis (treatment by clot-dissolving drugs) is being used in the USA, but is still regarded as experimental in Australia and other countries. Nerve-protecting therapies to prevent death of brain cells following stroke are also being assessed, but to date no clear proof of benefit has been found (DHAC & AIHW 1999:60–1).

There is some evidence that management in special stroke units improves the outcome from stroke, with one study reporting reductions in the risk of death and dependency after stroke of about 29%. In 1998, there were 20 stroke units in Australia, managing about 25% of the total stroke burden (DHAC & AIHW 1999).

Persons who have survived a stroke are at high risk of having another, and thus need a program of secondary prevention. Most important are blood pressure reduction and smoking cessation, with due attention also

being given to other factors mentioned in Box 2.2.2 where they apply. Regular use of drugs such as aspirin and warfarin are helpful in many cases. Surgery may also be recommended in patients with severe carotid stenosis (internal haemorrhage of a neck artery that supplies the brain) (DHAC & AIHW 1999).

Rehabilitation is an integral part of the immediate and long-term care of those who have had a stroke. The process of rehabilitation requires the active participation of the person with stroke and of family members and other supporters. A multi-disciplinary team approach is used, involving doctors, nurses, physiotherapists, occupational therapists, speech pathologists, and neuropsychologists (AIHW 2001:78).

Prevention

The greatest reduction of stroke burden may be achieved by control of modifiable risk factors. Small reductions in diastolic blood pressure (reductions of as little as 5 mmHg) are associated with significant reductions in the incidence of both fatal and non-fatal strokes. Smoking cessation also reduces the risk of stroke. Within the first 5 years of quitting, the risk for quitters approaches those of people who never smoked (Newschaffer et al. 1999:320).

The National Health and Medical Research Council (NHMRC) has produced guidelines for preventing stroke (NHMRC 1997). The most effective prevention is to encourage lifestyle measures to control blood pressure and reduce smoking, along with regular checks of blood pressure in the general population, with treatment where necessary.

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2.3 Lung cancer

Lung cancer (ICD-9 code 162; ICD-10-AM codes C33, C34) is a chronic disease with a high burden of mortality, morbidity and associated costs. It is a major cause of death in Australia, accounting for about 7,000 deaths annually (approximately 5% of all deaths). The prognosis for persons with lung cancer is usually poor and only a small proportion survive beyond 1 year.

Description

Lung cancer is an aggressive form of cancer originating in the trachea, windpipe and lung. There are often no symptoms until the cancer has progressed to the point where treatment is unlikely to be successful. The typical symptoms of lung cancer are blood-stained sputum or a new or changed cough, but can take many other forms (Crompton et al. 1999:359).

Lung cancer is often diagnosed after complaint of other conditions such as persistent coughs, pneumonia or bronchitis. It is confirmed by chest x-rays, analysis of cells in the sputum, imaging tests to detect cancerous growth, or by a tube passed down into the lungs to examine and sample any growth.

Disease severity and survival

Most people diagnosed with lung cancer will die of it. It has low cure rates and a short survival time, with the worldwide annual survival rate estimated to be just 14% (Presant & Kaiserman 2000:24).

The mortality to incidence ratio (MIR), which can be used as a proxy measure of the likelihood of survival from cancer, is 0.88 for persons with lung cancer in Australia. The ratio is much greater than that for most other cancers including melanoma (0.12), breast cancer (0.24) and colorectal cancer (0.41) (Figure 2.3.1).

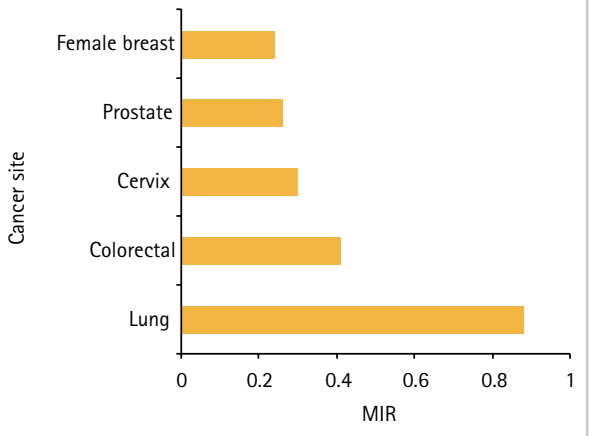
Risk factors

There are several, well-known risk factors for lung cancer (see Box 2.3.1), the foremost among these being tobacco smoking. There is an overwhelming body of evidence implicating tobacco smoking as the major cause of lung cancer (Rothenberg et al. 1987)—tobacco smoke contains approximately 60 known or suspected cancer causing chemicals (NHMRC 1997).

In 1996, smoking was estimated to be responsible for approximately 92% of lung cancer cases in Australia (AIHW: Mathers et al. 1999:106). A lifetime smoker has a relative risk of developing lung cancer some 20–30 times that of a non-smoker (WCRF & AICR 1997).

Exposure to environmental tobacco smoke is also a risk factor for lung cancer. An analysis of 34 studies has ascertained an increased risk of about 30% in never-smokers who live

Figure 2.3.1: Mortality to incidence ratio (MIR) for selected cancers, 1998



Source: AIHW National Cancer Statistics Clearing House.

with a smoker, compared with never-smokers living with a non-smoker (NHMRC 1997).

Both asbestos (a fibrous, incombustible mineral, commonly used at one time as a building material) and radon (a naturally occurring radioactive gas released when uranium decays in the soil) increase the risk of lung cancer, but are minor contributors when compared to tobacco smoking.

The risk for developing lung cancer increases with age. This is partly due to the accumulation of random genetic mutations with age and the failure of the DNA repair mechanisms. Age can also be a proxy for the length of time spent as a smoker and exposure to tobacco. The risk is higher in males, reflecting their higher levels of tobacco smoking and exposure to environmental tobacco smoke.

Box 2.3.1: Risk factors for lung cancer

Tobacco smoking
Environmental tobacco smoke
Exposure to asbestos or radon
Age
Sex

Source: WCRF & AICR 1997; Schairer & Schoniger 2001.

Impacts

Deaths

Lung cancer is the third-largest cause of death overall in Australia, surpassed only by deaths from coronary heart disease and stroke. In 1998, there were 6,893 deaths from lung cancer (4,817 males, 2,076 females), a death rate of 34 per 100,000 population.

Death rates for lung cancer increase dramatically with age (Figure 2.3.2), and are greatest in males aged 80 and above (472 per 100,000) and females aged 80–84 (140 per 100,000). These patterns may represent lifetime exposure to cancer-causing agents in tobacco.

Lung cancer death rates in Australia are declining overall. The decline is mainly due to reduction in death rate among males, which has declined from 66 per 100,000 in 1978 to 53 in 1998 (Figure 2.3.3). In contrast, the lung cancer death rate among females is on the increase (from 12 per 100,000 in 1978 to 19 per 100,000 in 1998).

Trends in lung cancer death rates largely reflect smoking trends, with a time lapse of about 20 years (AIHW: de Looper & Bhatia 2001). As overall tobacco consumption has declined, mortality from lung cancer has followed. For example, the male smoking rate started to fall decades ago and the benefits have had time to flow through. For females, the fall in smoking has been too recent to show this benefit and the female lung cancer death rate is still rising (Figure 2.3.3).

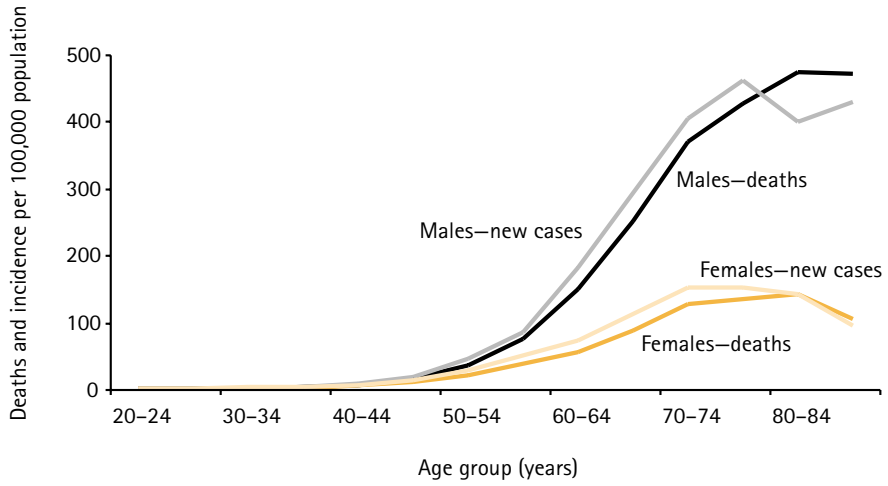
Lung cancer mortality patterns vary internationally. Australian males have relatively lower death rates for lung cancer, whereas Australian females show a slightly higher ranking in comparison to other countries (Figure 2.3.4).

Incidence

Lung cancer is the fifth most commonly diagnosed cancer in Australia after colorectal, breast and prostate cancers, and melanoma. There were 7,795 new cases in 1998, with an incidence rate of 39 per 100,000.

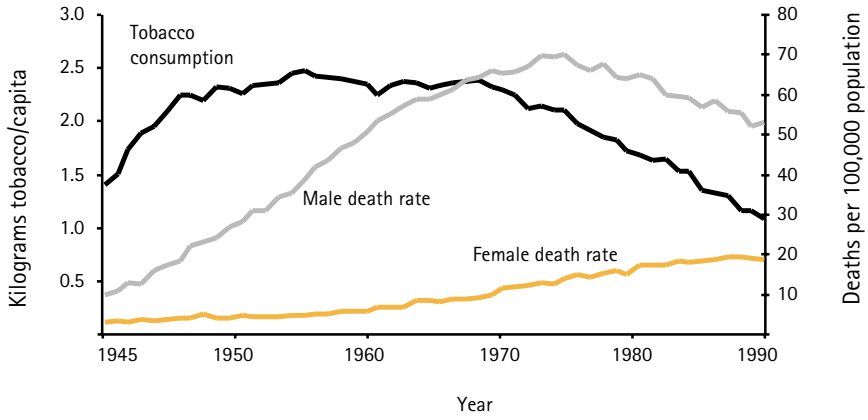
New cases of lung cancer currently occur in males at twice the rate among females: 58 per 100,000 compared to 23 per 100,000 in 1998. There were 5,307 new cases diagnosed in males, accounting for 12% of all new cancer cases in males. In females, 7% of all new cancer cases were lung cancers (2,488 new cases).

Figure 2.3.2: Age-specific incidence and death rates for lung cancer, 1998



Sources: AIHW & AACR 2000; AIHW National Mortality Database.

Figure 2.3.3: Per capita consumption of tobacco and death rates for lung cancer, 1945 to 1998



Source: AIHW: de Looper & Bhatia 2001.

Lung cancer incidence increases with age (Figure 2.3.2), with the highest incidence occurring in those aged 75–79. In 1998, new cases peaked at 460 per 100,000 in 75–79 year old males and 152 per 100,000 in 75–79 year old females. These patterns are similar to those found for lung cancer deaths, reflecting the short survival time for persons with lung cancer.

Since the early 1980s, there has been a steady decline in lung cancer incidence in males, while in females it has increased (Figure 2.3.5). These trends are also reflected in death rates for lung cancer over time (see Figure 2.3.3).

Jurisdictional and inter-population variation

Incidence and mortality

Lung cancer is disproportionately high in the Northern Territory and among Indigenous Australians.

The incidence of lung cancer is highest in the Northern Territory (80 per 100,000 males, 42 per 100,000 females in 1994–98). Lowest incidence rates are reported for males in the Australian Capital Territory (42 per 100,000) and for females in South Australia (22 per 100,000). The much higher incidence of lung cancer among Indigenous Australians is a large contributor to the higher rates in the Northern Territory. Lung cancer is reported as being among the top four most common cancers in both Indigenous males and females (ABS & AIHW 2001:95).

Death rates for lung cancer are also high in the Northern Territory, affected again by the high lung cancer mortality among Indigenous persons. Indigenous lung cancer deaths occur at a rate greater than expected, based on all-Australian rates, in all age groups above 35 (ABS & AIHW 2001:119).

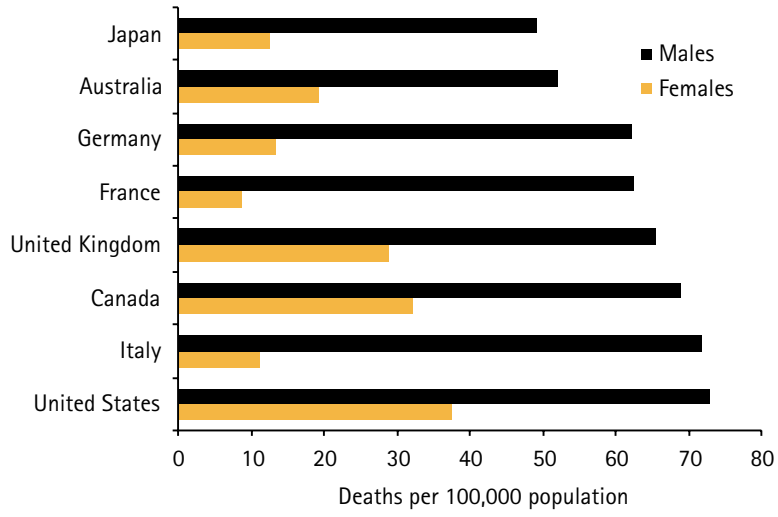
Disability

The burden of lung cancer is high, not only for the person with the disease but also for the family, community and the population. Many persons diagnosed with lung cancer will have disabilities. Secondary tumours and pneumonia are common in persons with lung cancer. Late in the disease, they may experience fatigue, loss of weight, extreme shortness of breath, hoarseness, difficulty in swallowing and accumulation of fluid in the chest cavity.

Use of health services

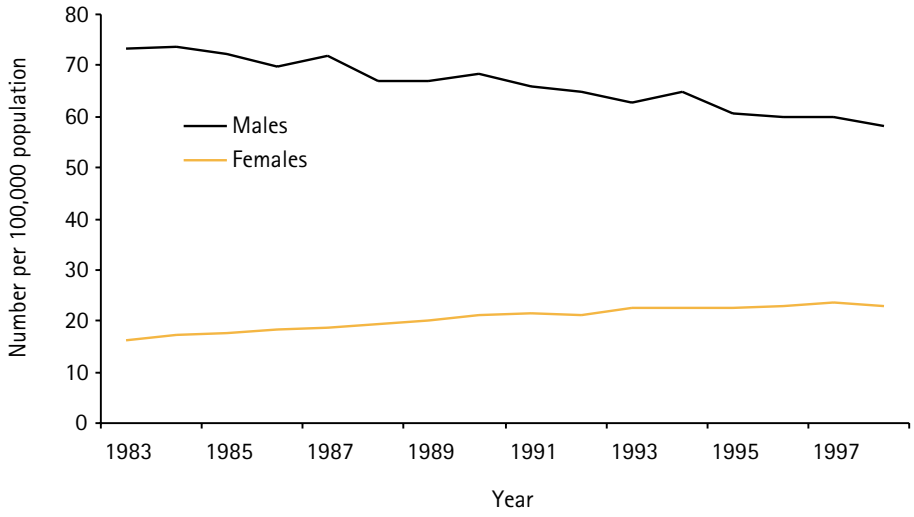
There were 16,783 hospital separations recorded for lung cancer in 1999–00 (11,153 for males and 5,630 for females), accounting for 127,409 patient days. The average length of stay for cancers of the trachea in 1999–00 was 5.1 days, whereas cancers of the bronchus and lung had an average length of stay of 7.6 days. One-fifth of lung cancer separations were same-day separations.

Figure 2.3.4: International comparison of death rates for lung cancer, 1997



Note: Rates standardised to the total 1980 OECD population.
Source: OECD 2001.

Figure 2.3.5: Incidence of lung cancer, 1983 to 1998



Source: AIHW National Cancer Statistics Clearing House.

In 1993–94, lung cancer ranked as the fifth largest contributor to direct cancer costs ($107 million). Hospital costs accounted for 76% of the cost ($81 million), medical costs were $7 million, and other costs, including pharmaceuticals and nursing home costs, contributed the remaining $19 million (AIHW: Mathers et al. 1998).

Treatment and management

Treatment options for lung cancer focus primarily on surgery, radiotherapy (x-ray treatment) and chemotherapy. If the cancer is small enough to be removed entirely and not invading vital or surrounding organs, surgery may lead to remission; however, only a small proportion of cases are considered amenable to 'curative' treatment (Crompton et al. 1999). Otherwise, radiotherapy and/or chemotherapy are the recommended treatments to 'kill' the cancer cells. Palliative care, which offers relief from pain and discomfort but does not cure the illness, is the typical form of management for lung cancer.

Prevention

Prevention of lung cancer depends primarily on reducing tobacco smoking in the population. Current prevention programs incorporate health education, price disincentives, bans on tobacco promotion and advertising, legislative changes, and restriction of tobacco sales to minors. Restrictions on tobacco smoking in public places, public transport, health care facilities and workplaces are also being increasingly imposed.

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