



Health and functioning

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The health of older Australians is one of the most important medical and economic challenges facing Australia. There will be an increasing number of older Australians in coming decades (see Topic 2: *The changing demographic profile*), and there will be personal and national benefits if they are healthy. Healthy older Australians are less likely to leave the workforce for health reasons, and are more likely to enjoy retirement, with fewer health-care needs and less chronic disease and disability, hence placing less pressure on the national health budget.

A number of factors influence older people's ability to maintain good health and to participate in their community, such as sufficient income, adequate and safe housing, and a physical environment that facilitates independence and mobility. These issues are discussed elsewhere in this report. Older people's own behaviours regarding health risks are also an important influence on their health status. It is worth noting that people's health experiences in later life are affected by their health behaviour during their younger years, and in later life.

Table 15.1: Prevalence of risk behaviours among Australians aged 55 and over, by age and sex, 2004–05

Risk behaviour	55–64	65–74	75+	Total 65+
Percentage within age group				
Males				
Smoking ^(a)	20.2	12.7	5.5	9.7
Physical inactivity ^(b)	38.5	31.9	51.5	40.0
Poor diet				
Low fruit consumption ^(c)	43.9	39.4	38.1	38.9
Low vegetable consumption ^(d)	62.2	55.2	56.6	55.8
Usually consume whole milk ^(e)	37.5	38.0	46.6	41.5
Usually add salt to food ^(f)	38.6	40.5	39.8	40.2
Risky alcohol consumption ^(g)	17.6	11.5	4.9	8.8
Females				
Smoking ^(a)	14.2	8.4	4.0	6.3
Physical inactivity ^(b)	31.5	40.5	58.6	49.1
Poor diet				
Low fruit consumption ^(c)	29.7	31.8	30.0	30.9
Low vegetable consumption ^(d)	55.5	53.9	61.0	57.3
Usually consume whole milk ^(e)	25.2	31.8	39.9	35.6
Usually add salt to food ^(f)	23.9	22.1	27.5	24.7
Risky alcohol consumption ^(g)	13.4	9.3	5.6	7.5
Persons				
Smoking ^(a)	17.2	10.5	4.6	7.9
Physical inactivity ^(b)	35.0	36.3	55.6	44.9
Poor diet				
Low fruit consumption ^(c)	36.8	35.5	33.4	34.6
Low vegetable consumption ^(d)	58.9	54.5	59.1	56.6
Usually consume whole milk ^(e)	31.4	34.8	42.7	38.3
Usually add salt to food ^(f)	31.3	31.1	32.7	31.8
Risky alcohol consumption ^(g)	15.5	10.4	5.3	8.1

(a) Current regular (daily) smoker or current smoker not regular.

(b) Sedentary (exercise score less than 100, including no exercise) during previous 2 weeks. The exercise score was based on frequency, intensity and duration of exercise (for recreation, sport or fitness).

(c) Usual daily intake of one serve or less. Dietary guidelines recommend at least two serves of fruit per day for older Australians (NHMRC 2003).

(d) Usual daily intake of three serves or less. Dietary guidelines recommend at least five serves of vegetables per day for older Australians (NHMRC 2003).

(e) An indicator of total fat intake and saturated fat intake (Rutishauser et al. 2001).

(f) Dietary guidelines recommend choosing foods low in salt and using salt sparingly (NHMRC 2003). Estimates refer to 2001 as this data item was not collected in the 2004–05 NHS.

(g) Based on the NHMRC risk levels for harm in the long term (NHMRC 2001).

Note: Estimates are based on self-reported data. Individuals may be engaged in more than one type of behaviour.

Sources: ABS 2002c, 2006r.

Behavioural risk factors

Healthy behaviours are an important determinant of good health. Conversely, risky behaviours, usually termed 'risk factors', put an individual at increased risk of experiencing disease. Some risk factors have a cumulative effect over the life course and risk behaviours in middle age can lead to poorer health in later life. There is, however, potential for health gain at all stages of life through appropriate management of these risk behaviours in addition to early prevention. The prevalence of major preventable risk behaviours that can lead to ill-health in older Australians is shown in Table 15.1.

Smoking

Levels of smoking tobacco products have declined generally in Australia, particularly among older Australians (ABS 2006r). The lower rates among older Australians reflect a greater prevalence of smoking cessation in older age groups and greater mortality among smokers than non-smokers (AIHW 2004a). Smoking rates remain higher among older men than older women (Table 15.1). Smoking is a major risk factor for coronary heart disease, stroke, peripheral vascular disease, cancer, chronic obstructive pulmonary diseases and a variety of other diseases and conditions. There is evidence that smoking cessation can have a substantial beneficial effect on subsequent mortality (Anthonisen et al. 2005).

Physical inactivity

There was little change in exercise levels among older Australians during the 1980s and 1990s (AIHW 2004a, 2006c). Physical inactivity is relatively more common in older age groups (Table 15.1), perhaps reflecting reduced functioning and increased rates of disability in older age. Physical activity at all ages can help reduce the likelihood of obesity and delay functional decline and the onset of chronic disease. It can also reduce the severity of disability associated with chronic diseases, improve mental health, promote social contacts, prolong independent living and reduce the risk of falls (Bauman & Smith 2000; WHO 2002).

Poor diet

Many older Australians are not consuming adequate amounts of fruit and vegetables. Older men are more likely than older women to report low fruit intake and, to a lesser degree, low vegetable intake (Table 15.1). For men, both low fruit intake and low vegetable intake are less common in older age groups when compared to men aged 55–64. This is not the case for women. Older men are more likely than older women to report whole milk as their usual form of milk, and the prevalence was highest among men and women aged 75 and over. Main type of milk consumed is an indicator of total fat intake and of saturated fat intake in relation to energy intake (Rutishauser et al. 2001). The prevalence of older Australians who reported that they usually add salt to food varied little by age but was higher among men than women.

Risky alcohol consumption

The prevalence of alcohol consumption at levels that pose a risk to health in the longer term is lower in older age groups and is only 5% in Australians aged 75 years and older (Table 15.1). Alcohol in excessive levels over time increases the risk of developing some cancers, cirrhosis of the liver, alcohol dependence, cognitive problems, dementia, and sexual difficulties in men. Although there is evidence that low levels of alcohol may protect against heart disease and some types of stroke, heavy drinking has no additional benefits for heart disease and increases the risk of stroke. Although older people tend to drink less than people do in their younger or middle years, it remains an important part of social life that often expands in retirement. However, as people age their tolerance for alcohol tends to decrease; they are more likely to take medication, which may interact with alcohol; falls become a greater risk which is further increased with intoxication; and driving ability, which may be influenced by the effects of ageing, can be further impaired (NHMRC 2001).

Protective behaviours—influenza vaccination

A range of other behaviours influence the health of older Australians including protective behaviours such as vaccination against influenza. Vaccination against influenza is available free to Australians aged 65 years and over. The most recent national telephone survey estimated that 79% of Australians aged 65 years and over were vaccinated against influenza in 2004 (AIHW 2005a), which is a marked increase from 61% in 1998. When the vaccination status of aged care residents was taken into account, the estimated coverage for 2004 increased slightly to 80%.

Biomedical risk factors

Risk behaviours tend to interact with each other and influence a variety of biomedical factors, which are risk factors expressed as a body measurement. For example, both physical inactivity and a poor diet can adversely affect body weight, blood pressure and blood cholesterol. Behavioural and biomedical risk factors tend to increase each other's effects when they occur together in an individual. Information on four important biomedical risk factors that have been shown to carry comparatively direct and specific risks for health is presented in Table 15.2.

Obesity

Older Australians have been strongly caught up in the national obesity epidemic — it has been estimated that older Australians are 6–7 kg heavier on average than their counterparts some 20 years ago (AIHW: Bennett et al. 2004). Even Australians in their 50s and 60s have continued to gain weight as they gain years, at least into their mid-70s. The prevalence of obese Australians is around 25–30% among people approaching retirement (Table 15.2). It has been shown that the prevalence of abdominal obesity, as indicated by waist circumference, is also common among Australians in their 50s, and becomes more common among older age groups (AIHW: Bennett et al. 2004). This is consistent with a redistribution of body fat more into the abdominal area as age increases. The likely health consequences for older Australians of increased body fat are premature death from life-threatening diseases and debilitating conditions that impair quality of life (WHO 2000). This has implications for health-care costs, for aged care services, and for carers and their wellbeing (AIHW: Bennett et al. 2004).

Table 15.2: Prevalence of biomedical risk factors among Australians aged 55 and over, by age and sex, 1999–2000

Biomedical risk factors	55–64	65–74	75 +	Total 65+
Percentage within age group				
Males				
Obesity ^(a)	25.5	19.9	12.7	16.9
High blood pressure ^(b)	49.3	69.4	78.8	73.3
High blood cholesterol ^(c)	62.0	53.8	49.3	51.9
Impaired glucose tolerance ^(d)	14.8	20.4	24.8	22.2
Females				
Obesity ^(a)	32.8	29.4	15.6	22.9
High blood pressure ^(b)	44.5	66.8	74.6	70.5
High blood cholesterol ^(c)	70.3	74.6	65.4	70.2
Impaired glucose tolerance ^(d)	15.7	21.9	22.1	22.0
Persons				
Obesity ^(a)	29.1	24.8	14.4	20.1
High blood pressure ^(b)	46.9	68.1	76.4	71.8
High blood cholesterol ^(c)	66.1	64.5	58.6	61.8
Impaired glucose tolerance ^(d)	15.2	21.2	23.2	22.1

(a) Obese is a body mass index of 30 kg/m² or more.

(b) High blood pressure is a systolic blood pressure of 140 mmHg or more or diastolic blood pressure of 90 mmHg or more or taking hypertensive medication.

(c) High blood cholesterol is total cholesterol of 5.5 mmol/L or more.

(d) Impaired glucose tolerance is plasma glucose concentration of less than 7.0 mmol/L after fasting, and 7.8 or more but less than 11.1 mmol/L 2 hours after an oral glucose load.

Sources: AIHW analysis of the 1999–2000 Australian Diabetes, Obesity and Lifestyle (AusDiab) Study; Dunstan et al. 2002.

High blood pressure

High blood pressure is very common among older Australians and increases with age (Table 15.2). Often referred to as hypertension, high blood pressure is a major risk factor for coronary heart disease, stroke, heart failure and kidney failure, with the risk of disease increasing as the level of blood pressure increases. Major causes of high blood pressure include diet (particularly a high salt intake), obesity, excessive alcohol consumption and insufficient physical activity. Attention to other health determinants such as body weight, physical activity and nutrition play an important role in maintaining healthy blood pressure. When high blood pressure is controlled, the risk of cardiovascular disease and overall mortality is reduced, but not necessarily to the levels of unaffected people (WHO-ISH 1999).

High blood cholesterol

High blood cholesterol is also very common among older Australians (Table 15.2), and is a major risk factor for coronary heart disease and ischaemic stroke. It is one of the main causes of atherosclerosis, the process by which the blood vessels that supply the heart and certain other parts of the body become clogged. For most people, saturated fat in the diet is the main factor that raises blood cholesterol levels (NHFA 1999). Genetic factors can also affect blood cholesterol levels, severely in some cases. Attention to health risk factors such as physical activity and nutrition plays an important role in maintaining a healthy blood cholesterol level (NHFA & CSANZ 2001). Some societies have much lower average cholesterol levels than Australia, with a correspondingly lower rate of cardiovascular disease (e.g. Greece, Japan and many African countries). Diet is an important factor in maintaining low average blood cholesterol levels in the community (Forge 1999).

Impaired glucose tolerance

Impaired glucose tolerance (IGT) is a metabolic stage between normal glucose tolerance and diabetes. As well as being a risk factor for Type 2 diabetes, it is linked to a greater risk of heart disease. In people with IGT, blood glucose levels are higher than normal but less than the level required for a diagnosis of diabetes. IGT is common in people who are physically inactive or obese, particularly with high fat deposits in the abdominal region, and is more common in older people where such risk factors are more widespread. With increasing age, the cells in the pancreas that make insulin—beta cells—become less efficient. This, combined with decreased physical activity and increased body weight, contributes to higher prevalence among older people (Table 15.2). Dunstan et al. (2002) found that the increasing prevalence of obesity in Australia has been a significant contributing factor to the increasing prevalence of diabetes across all age groups. People who have a family history of diabetes are more likely to suffer from IGT and to develop diabetes.

Life expectancy

At age 65, Australia's men now expect to live for a further 17.5 years and women for another 21.1 years, which is about 6 years more than their counterparts at the beginning of the 20th century (AIHW 2006c). Men and women aged 85 years can expect to live for a further 5.7 and 6.9 years respectively, which is about 2 years more than for the early 1900s. Most of these gains in life expectancy among older Australians occurred during the latter three decades of the twentieth century, when deaths from cardiovascular diseases (notably heart disease and stroke) fell rapidly. However, most of the recent gain in life expectancy was spent with disability, much with a severe or profound core activity limitation (AIHW 2006e). These trends in life expectancy have important consequences for the number of Australians reaching older ages and for patterns of health, disease and disability in the community.

Health status

Many older people have a positive view of their health even though older age is generally associated with increasing levels of disability and illness. Self-assessed health status is used as an indicator of general health

and wellbeing, and has been found to be a strong indicator of future mortality (Idler & Benjamini 1997). By far the majority of older Australians consider themselves to be in good, very good or excellent health, although the proportion of older men and women reporting fair or poor health increases with age (Table 16.1). This was also the case in 1995 and 2001 (ABS 2006r). Over the decade to 2005 there has been an increase in the proportion of older Australians reporting their health as excellent or very good (ABS 2006r). Also, older women have consistently been more likely than older men to rate their health as excellent or very good, at any given age.

Causes of death

The top 12 specific causes of death were responsible for almost 70% of all deaths among older Australians in 2004 (Table 16.2).

Ischaemic heart diseases (coronary heart diseases) and cerebrovascular diseases (notably stroke) were the two leading causes of death accounting for about 30% of all deaths among older men and women in 2004 (see Topic 19: *Cardiovascular disease*). These diseases are also major causes of disability among older Australians (see Topic 17: *Disability levels*). Other heart diseases, which include heart failure, also featured prominently.

Table 16.1: Self-assessed^(a) health status of Australians aged 55 and over, by age and sex, 2004–05

	55–64	65–74	75+	65+
	Per cent			
Males				
Excellent/ very good	46.8	36.2	28.7	33.1
Good	27.8	31.0	34.7	32.5
Fair/ poor	25.4	32.8	36.5	34.3
Total	100.0	100.0	100.0	100.0
Females				
Excellent/ very good	47.7	41.2	33.3	37.5
Good	28.8	30.0	32.4	31.1
Fair/ poor	23.6	28.7	34.3	31.3
Total	100.0	100.0	100.0	100.0
Persons				
Excellent/ very good	47.2	38.8	31.3	35.5
Good	28.3	30.5	33.4	31.8
Fair/ poor	24.5	30.7	35.2	32.7
Total	100.0	100.0	100.0	100.0

(a) People's general assessment of their own health against a five-point scale ranging from excellent to poor.

Note: Components may not add to total because of rounding. Estimates for 2004–05 published by the ABS are age-standardised to permit comparison with 2001 and 1995 estimates.

Source: ABS 2006r.

Lung cancer was the third leading cause of death for older men and the sixth for older women. Colorectal cancer was also prominent for both sexes, and prostate cancer and breast cancer were two prominent sex-specific causes of death (see Topic 20: *Cancer*). Cancers where the primary site was unknown was ranked the 11th cause of death for both older men and women.

Chronic pulmonary obstructive disease, which includes emphysema, was a significant cause of death for older men and women (ranked fourth for men and fifth for women), responsible for just under 5% of all deaths among older Australians (see Topic 22: *Respiratory disease*).

Although the 'burden of disease' caused by dementia is mainly due to disability rather than premature death, dementia and related disorders, which include Alzheimer's disease, still cause many deaths among older Australians (ranked ninth for men and fourth for women) (see Topic 25: *Dementia*).

Diabetes was the underlying cause of over 3,000 deaths and was ranked the eighth leading cause

of death for both older men and women. It is more commonly listed as an associated cause of death, especially when coronary heart disease, cancer and stroke are the underlying causes of death (see Topic 21: *Diabetes mellitus*). It is also associated with much disability and poor quality of life.

Diseases of the arteries etc., which includes aortic aneurysm, atherosclerosis and other peripheral vascular diseases, was the twelfth leading cause of death for older men and women.

The top 12 leading causes of death for each of the age groups 65–74, 75–84 and 85+ are given in Tables A16.1–A16.3 and show important differences. For example, the top 12 causes of death for persons aged 65–74 years included pancreatic cancer, cirrhosis of the liver (men) and ovarian cancer (women). At ages 75–84 years, deaths from dementia and related disorders become relatively more important, and influenza and pneumonia appear in the top 12 causes of death for the first time. For those aged 85 years and over, influenza and pneumonia become relatively more important and deaths from kidney failure appear in the top 12 causes of death.

Table 16.2: Leading causes of death in Australians aged 65 and over, by sex, Australia, 2004

Rank	Males	Number	Per cent of total	Females	Number	Per cent of total
1	Ischaemic heart diseases	10,698	20.9	Ischaemic heart diseases	10,872	20.0
2	Cerebrovascular diseases	4,380	8.6	Cerebrovascular diseases	6,886	12.7
3	Lung cancer	3,539	6.9	Other heart diseases	3,950	7.3
4	Chronic obstructive pulmonary disease	2,736	5.3	Dementia & related disorders	3,223	5.9
5	Other heart diseases	2,688	5.3	Chronic obstructive pulmonary disease	1,991	3.7
6	Prostate cancer	2,534	5.0	Lung cancer	1,822	3.4
7	Colorectal cancer	1,610	3.1	Influenza & pneumonia	1,798	3.3
8	Diabetes	1,555	3.1	Diabetes	1,541	2.8
9	Dementia & related disorders	1,435	3.0	Colorectal cancer	1,489	2.7
10	Influenza & pneumonia	1,359	2.8	Breast cancer	1,477	2.7
11	Cancers (unknown primary site)	1,326	2.6	Cancers (unknown primary site)	1,423	2.6
12	Diseases of arteries etc.	1,134	2.2	Diseases of arteries etc.	1,157	2.1
	Total (12 leading causes)	34,994	68.4	Total (12 leading causes)	37,629	69.4
	Total (All deaths 65+)	51,163	100.0	Total (All deaths 65+)	54,237	100.0

Notes

1. See Appendix Table A16.4 for definitions of causes of death classification.
2. Information on the cause of death is gained from death certificates. The underlying cause of death is the disease or injury that initiated the train of events leading directly to death. Any other condition or event that is considered to contribute to the death is known as an associated cause.

Source: AIHW National Mortality Database.

Key factors affecting the ability of many people to take part in the daily activities of life—from workforce participation to independent living—include disability, illness or injury. Although the majority of older Australians are free from a disability for which they require personal care (77%), the proportion with more intensive care and assistance needs rises with age.

Disability status

In 2003, over half of all people aged 65 years and over (56% or 1.4 million) had at least one form of disability lasting (or expected to last) at least 6 months and which restricted everyday activities (Table A17.1). Disability rates increase with age group from 39% of those aged 60–64 years to 82% of those aged 85 years and over. There is little difference in the rates for males and females. Physical or multiple and diverse disability is the most common type of disability at older ages, affecting 45% of older people (AIHW 2005b:Table 5.2).

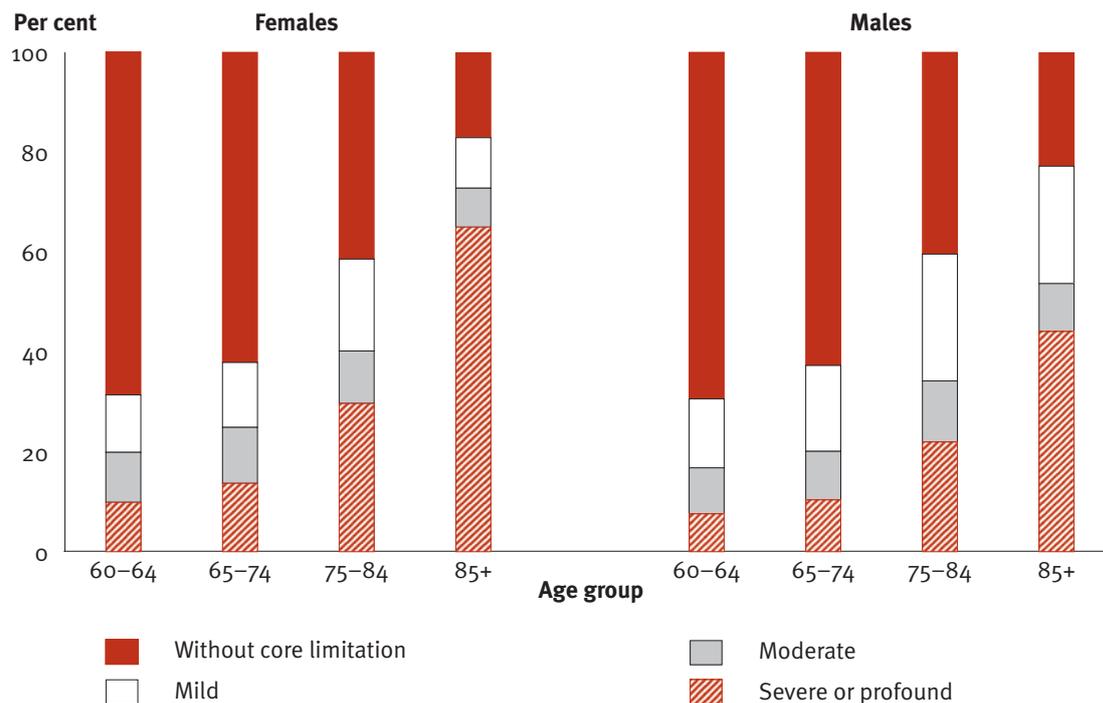
The presence of core activity limitations—which relate to difficulty or need for assistance in performing activities basic to daily living (self-care, mobility or communication)—is a useful indicator of the extent to which people are likely

to need some form of support (whether from a person or from modifications to the environment) in their daily life. These limitations range from mild or moderate, where assistance is not required but difficulty in performing core activities may be experienced or aids and equipment may be used, to severe and profound, where assistance is sometimes or always needed. Having a disability does not necessarily imply a need for assistance—for example, people may experience breathing difficulties which restrict the type and amount of physical activity they can undertake, but they do not need help or supervision with daily living activities.

Among older people with a disability, only 41% had a profound or severe limitation (derived from Table A17.1). A small proportion of older people with a disability have no core activity limitation (10%), and the remainder need no help with core activities although they may experience some difficulty with them or use aids and equipment. They may also experience difficulty with other activities such as using public transport (ABS 2004b). People with a severe or profound core activity limitation are those most likely to be in need of assistance from informal carers and aged care programs.

Almost one-quarter (23%) of all people aged 65

Figure 17.1: Proportion with core activity limitation, by age and sex, 2003



Source: Table A17.1.

years and over had a profound or severe core activity limitation in 2003 (Table A17.1). The severity of disability increases markedly with age, from 9% of those aged 60–64 years to 58% of those aged 85 years and over (Figure 17.1). Differences between males and females are mainly in the form of the severity of disability and reflect the older age structure of the female population aged 60 years and over—a higher proportion of women have a severe or profound core activity limitation (27% compared with 17%).

Disability and health conditions

Disability and its components (activity limitations, impairments etc.) are related to health conditions, environmental factors and personal factors (see AIHW 2005b:Figure 5.1). The relationship between health conditions and disability can be looked at in a number of ways. One way is by examining health conditions most likely to be associated with profound or severe core activity limitation. Among people aged 65 years and over, dementia is prominent as the health condition most likely to be associated with a severe or profound core activity limitation—98% of those with dementia identified through the Australian Bureau of Statistics (ABS), 2003 Survey of Disability, Ageing and Carers (SDAC) (97,300 people) reported a severe or profound core activity limitation (Table A17.2). Other highly disabling conditions were problems with speech (87% have a severe or profound core activity limitation), and Parkinson's disease (79%).

Another way of looking at the relationship between disability and health condition is to ask the question 'When looking at profound or severe limitation in the population, which are the most common associated diseases or conditions?' A different picture emerges here which is related to the prevalence of the health condition.

Among the 560,900 older Australians with a profound or severe limitation in 2003, arthritis was the most common health condition, affecting 50% of older people with a profound or severe core activity limitation (Table A17.2). Hearing disorders (43%), hypertension (38%), heart diseases (30%) and stroke (23%) were also common conditions among older people with a profound or severe disability. For each of these conditions, its prevalence in the population combined with its likelihood of being associated with a profound or severe core activity limitation leads to considerable burden on the community. For example, 10% of people aged 65 years and over reported a stroke and half of these reported a profound or severe core activity limitation, meaning that 126,200 older people had both a stroke and a profound or severe limitation. Conditions such as dementia and Parkinson's disease, although highly likely to be related to profound or severe core activity limitations, were less common as they were generally less prevalent in the population.

Each condition in Table A17.2 is relatively more common among older people with a profound or severe core activity limitation than among the general older population, with the exception of high cholesterol and hypertension (high blood pressure). For example, the prevalence of dementia and Alzheimer's disease was 17% among older people with a profound or severe core activity limitation compared with 4% among the older population in general.

Table A17.2 also shows the proportion of people for whom the selected health condition is considered to be their main disabling condition. The leading health conditions on this measure for people aged 65 years and over were dementia (68%) and Parkinson's disease (67%). The next group of health conditions which people reported as a main disabling condition were arthritis (48%), leg, knee, foot or hip damage from injury or accident (46%), back problems (45%) and cancer (42%).

Table 17.1: Average number of health conditions, by disability status and age group, 2003

Disability status	0–64	65 & over	Total
Profound	3.02	4.85	4.13
Severe	2.93	4.42	3.39
Moderate	3.10	4.18	3.50
Mild	2.58	3.31	2.88
Disability, no limitations or restrictions	1.79	2.78	2.03
Total with a disability	2.56	3.98	3.06
Total with any health condition	1.90	3.27	2.27
Total population	0.65	2.84	0.93

Source: AIHW 2005b:Table A5.6.

The presence of multiple health conditions tends to be associated with more severe disability (AIHW 2005b: Table A5.6). In 2003, the average number of health conditions for people aged 65 years and over was 2.84, but older people with a profound core activity limitation had an average of 4.85 health conditions and people with any health condition (with or without disability) had an average of 3.27 conditions (Table 17.1). Older age groups had higher average numbers of health conditions across all categories of disability status.

Table A17.2 also shows the average number of health conditions for people aged 65 years and over according to selected health conditions. Older people with depression reported the highest mean number of health conditions (5.5 conditions), followed by those with phobic and anxiety disorders and dementia (5.3 conditions), those with nervous tension/stress and head injury/acquired brain damage (5.1 conditions) and leg, knee, foot or hip damage from injury or accident and stroke (4.9 conditions).

An important caveat on health condition data from the ABS SDAC is that the survey relies on self-identification of health conditions, which can result in misreporting, particularly when conditions are in their mild or moderate stage or have not yet been diagnosed (e.g. dementia). This can lead to underestimation of the prevalence of some conditions when compared with prevalence estimates based on clinical assessment.

Disability and incontinence

Incontinence is not included as a long-term health condition in the 2003 SDAC Confidentialised Unit Record File (CURF). The symptoms of incontinence can result in a severe impact on an individual's quality of life and their ability to participate in many life areas. People who experience incontinence are identified in the SDAC from questions on need for assistance with managing bladder or bowel control and the use of continence aids (AIHW 2006b). In 2003, an estimated 128,300 people with disability always needed assistance with bladder or bowel control—about 71% of this group (90,900) were aged 70 years and over (derived from AIHW 2006b: Tables 4.1 and 4.2). A further 101,300 people with disability sometimes needed assistance with bladder or bowel control, of whom 59% (59,800) were aged 70 years and over. The majority (72%) of the 150,700 people with disability aged 70 years and over who sometimes or always needed such assistance lived in cared accommodation.

Life expectancy and disability

Growing life expectancy has been accompanied by the hope that extra years of life are spent in good health and without disability. Evidence from some overseas countries (notably the United States) during the 1990s had suggested that disability rates among older populations were declining (e.g. Schoeni et al. 2001; Waidmann & Manton 1998). A more recent OECD study which focused on trends in severe disability rates in 12 countries (including Australia) found mixed evidence (OECD: Lafortune et al. 2007). Rates of severe disability were declining in only five of the twelve countries; increasing rates were observed for three countries; rates were stable in two countries; and no conclusive trend was apparent for another two countries. Evidence for Australia suggests a relatively stable picture of severe disability rates over time in the older population (see AIHW 2001:201–3 for a discussion of this)—after age-standardisation there is virtually no change between the 1998 and 2003 Surveys of Disability, Ageing and Carers (ABS 2004b).

A recent analysis of Australian data over the 15-year period from 1988 to 2003 also suggests that a considerable proportion of additional years of life gained during this period are years of life spent with disability. Over this period, men's life expectancy at age 65 years increased by 1.5 years—of this gain, one additional year of life is spent with disability (67% of the gain) and 27% of the gain is life with disability and profound or severe core activity limitation. Older women increased their life expectancy at age 65 by 1.2 years—over 90% of the gain is estimated to be time spent with disability, and around 58% is likely to be time spent with disability and profound or severe limitation (AIHW 2006e).

Even though underlying age-specific prevalence rates of disability appear relatively stable, the ageing of the Australian population and the greater longevity of individuals are leading to more people, especially at older ages, with a disability and a severe or profound core activity limitation. Any increase in these numbers has important implications for service providers, planners and policy analysts. Assuming the continuation of current disability prevalence rates, the number of older people in this category is projected to rise by almost 100% over the next two decades—from an estimated 560,900 in 2003 to 1,116,200 in 2023.

Throughout this report various measures have been used to describe the impact of particular diseases on the health of older Australians, such as numbers and rates of disease prevalence, disability and death. A measure called disability-adjusted life years (DALYs) has been developed under the auspices of the World Bank and the World Health Organization to summarise the burden of disease, combining data on both fatal and non-fatal disease outcomes—this has been adapted by the AIHW for the Australian context. It has the advantage of identifying those health problems that cause much illness and disability even if they are not often fatal (such as dementia) and also conditions that may not cause many deaths but, when they do, those deaths occur among younger people.

The ‘burden of disease’ is a measure of the amount of ill health, disability and premature death caused by individual disease or health conditions. Measured by the DALYs (Box 18.1), it is the years of healthy life lost through living with a disability owing to illness or injury, or through premature death (Begg et al. 2007).

Box 18.1: Disability-adjusted life years

DALYs for a disease or health condition are calculated as the sum of the years of life lost owing to premature death (YLL) in the population and the years lost owing to disability (YLD) for incident cases of the health condition:

$$DALYs = YLL + YLD$$

where $YLL = \text{number of deaths} \times \text{standard life expectancy at age of death and}$

$YLD = \text{incidence} \times \text{duration} \times \text{severity weight.}$

The loss of healthy life owing to health conditions (YLD) requires estimation of the incidence of the disabling health condition (disease or injury) in the specified time period. For each new case, the number of years of healthy life lost is obtained by multiplying the average duration of the condition (to remission or death) by a severity weight that quantifies the equivalent loss of healthy years of life owing to living with the health condition or its sequelae.

The DALY methodology provides a useful way to link information on disease occurrence to information on both short-term and long-term health outcomes, including activity limitations and restrictions in participation in usual roles, and death. Results are given for older Australians aged 65–74 years and 75 years and over.

Older Australians aged 65–74

Adults aged 65–74 years made up 7% of the total population and experienced 16% of the total burden of disease and injury in Australia in 2003 (Begg et al. 2007). Cancer and cardiovascular diseases accounted for over half of the total burden in this age group (Figure 18.1). Females experienced a greater share of the burden than males from musculoskeletal conditions, but the reverse was true for all other broad cause groups. Overall, 60% of the burden in this age group was due to death.

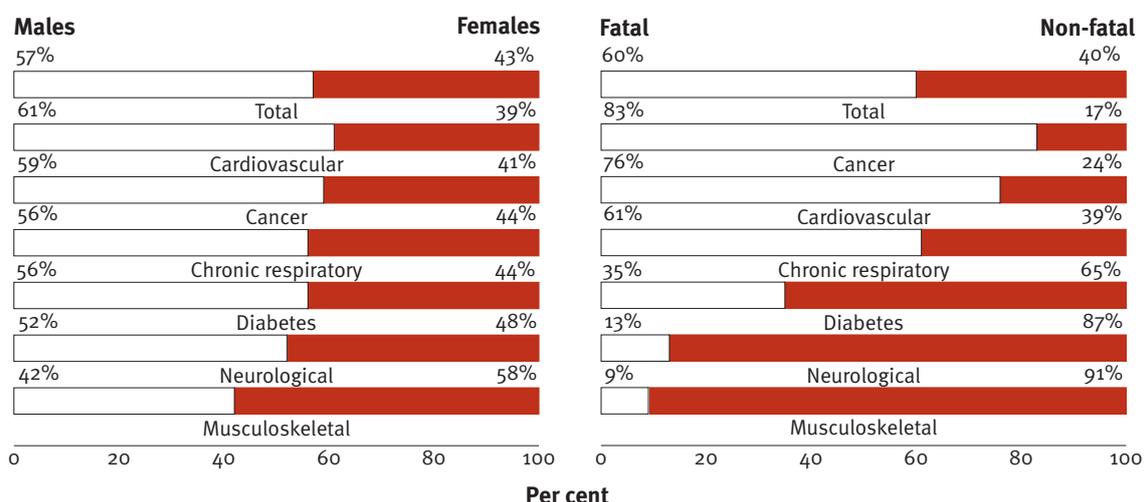
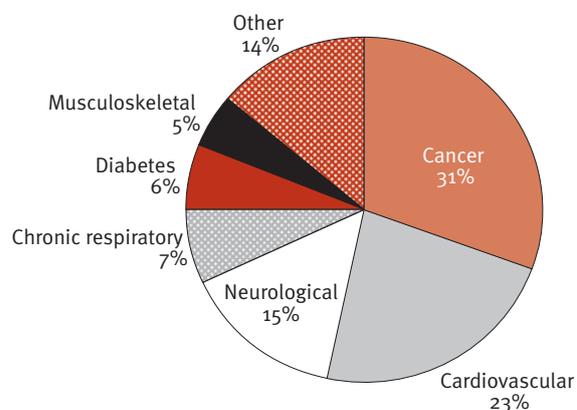
Ischaemic heart disease, lung cancer and Type 2 diabetes were the leading causes of burden in males, together accounting for 29% of total male burden (Table 18.1). In females, ischaemic heart disease, Type 2 diabetes and breast cancer were the leading causes, accounting for 23% of total burden. The top ten conditions accounted for 56% of total burden in this age group.

Older Australians aged 75 and over

Older people aged 75 years and over made up 6% of the total population and experienced 25% of the total burden in Australia in 2003 (Begg et al. 2007). Cardiovascular diseases and cancer accounted for over half of the total burden in this age group (Figure 18.2). Females experienced a greater share of the burden than males overall and for all broad cause groups except chronic respiratory diseases and cancer. Overall, 68% of the burden in this age group was due to death.

Ischaemic heart disease, stroke and dementia were the leading causes of burden in males, together accounting for 34% of total male burden (Table 18.2). In females, ischaemic heart disease, dementia and stroke were the leading causes, accounting for 42% of total burden. The top ten conditions account for 61% of the total burden in this age group.

Figure 18.1: Burden (DALYs) in 65–74 year olds by broad cause group expressed as: (a) proportions of total, (b) proportions by sex, and (c) proportions due to fatal and non-fatal outcomes, Australia, 2003



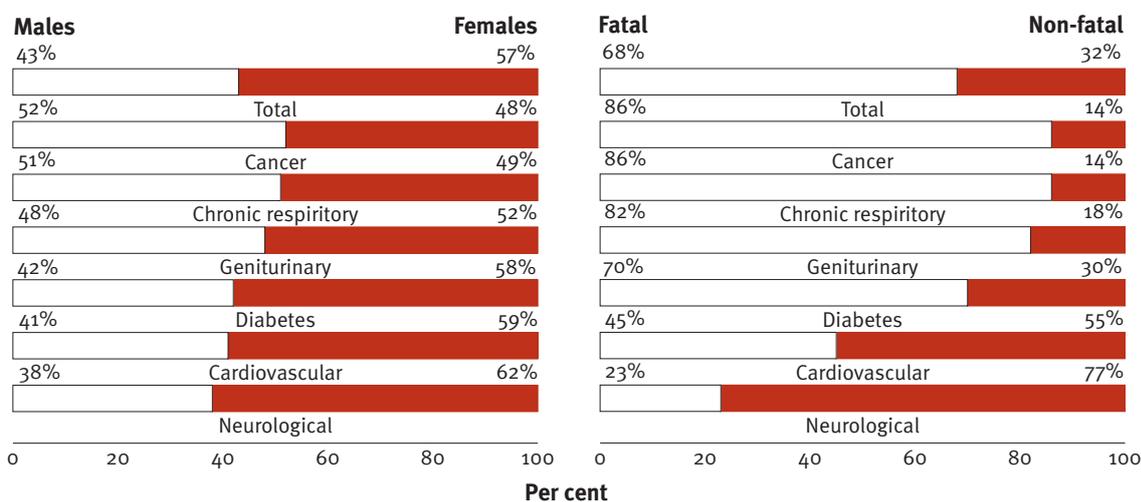
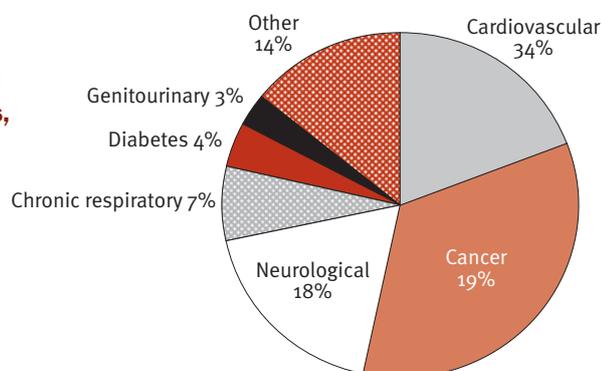
Source: Begg et al. 2007

Table 18.1: Leading causes of DALYs in 65–74 year olds, by sex, Australia, 2003

Rank	Males	DALYs	Per cent of total	Females	DALYs	Per cent of total
1	Ischaemic heart disease	37,860	15.5	Ischaemic heart disease	21,052	11.4
2	Lung cancer	19,258	7.9	Type 2 diabetes	11,517	6.2
3	Type 2 diabetes	14,203	5.8	Breast cancer	10,445	5.7
4	Prostate cancer	11,950	4.9	Dementia	10,236	5.5
5	Adult-onset hearing loss	11,920	4.9	Lung cancer	9,937	5.4
6	COPD ^(a)	11,693	4.8	Stroke	9,635	5.2
7	Stroke	10,938	4.5	COPD ^(a)	8,855	4.8
8	Colorectal cancer	10,531	4.3	Colorectal cancer	7,513	4.1
9	Dementia	7,872	3.2	Osteoarthritis	6,088	3.3
10	Parkinson's disease	3,958	1.6	Adult-onset hearing loss	5,834	3.2

(a) Chronic obstructive pulmonary disease.

Figure 18.2: Burden (DALYs) in those aged 75 and over by broad cause group expressed as: (a) proportions of total, (b) proportions by sex, and (c) proportions due to fatal and non-fatal outcomes, Australia, 2003



Source: Begg et al. 2007.

Table 18.2: Leading causes of DALYs in those aged 75 and over, by sex, Australia, 2003

Rank	Males	DALYs	Per cent of total	Females	DALYs	Per cent of total
1	Ischaemic heart disease	55,680	19.3	Ischaemic heart disease	70,853	18.7
2	Stroke	21,834	7.5	Dementia	46,984	12.4
3	Dementia	21,095	7.3	Stroke	39,830	10.5
4	Prostate cancer	15,484	5.4	Type 2 diabetes	15,330	4.1
5	COPD ^(a)	14,900	5.2	COPD ^(a)	13,318	3.5
6	Lung cancer	13,533	4.7	Colorectal cancer	9,703	2.6
7	Type 2 diabetes	11,262	3.9	Lower respiratory tract infections	9,137	2.4
8	Colorectal cancer	8,442	2.9	Lung cancer	9,059	2.4
9	Adult-onset hearing loss	7,052	2.4	Breast cancer	8,995	2.4
10	Lower respiratory tract infections	6,395	2.2	Falls	7,814	2.1

(a) Chronic obstructive pulmonary disease.

Cardiovascular disease

Cardiovascular disease (also known as circulatory disease or 'heart, stroke and vascular diseases') covers all diseases and conditions of the heart and blood vessels. The main underlying causal mechanism in cardiovascular disease is atherosclerosis, a process marked by abnormal build-ups of fat, cholesterol and other substances in the inner lining of the arteries. It is most serious when it reduces or blocks blood supply to the heart (causing angina or heart attack) or to the brain (causing a stroke) (AIHW 2006c).

Even in the absence of disease, however, the heart undergoes physiological change as a person ages. The heart muscles may relax less between beats and become stiffer, and the heart may not pump blood as efficiently as it once did. The older heart may become less responsive to stimulation by the nervous system, and it cannot increase the strength or rate of its contractions during exercise as well as it could in youth. The walls of the arteries tend to lose their elasticity and stiffen, which may lead to a form of systolic hypertension. The reflex that maintains blood pressure when standing up may become slower. A decline in

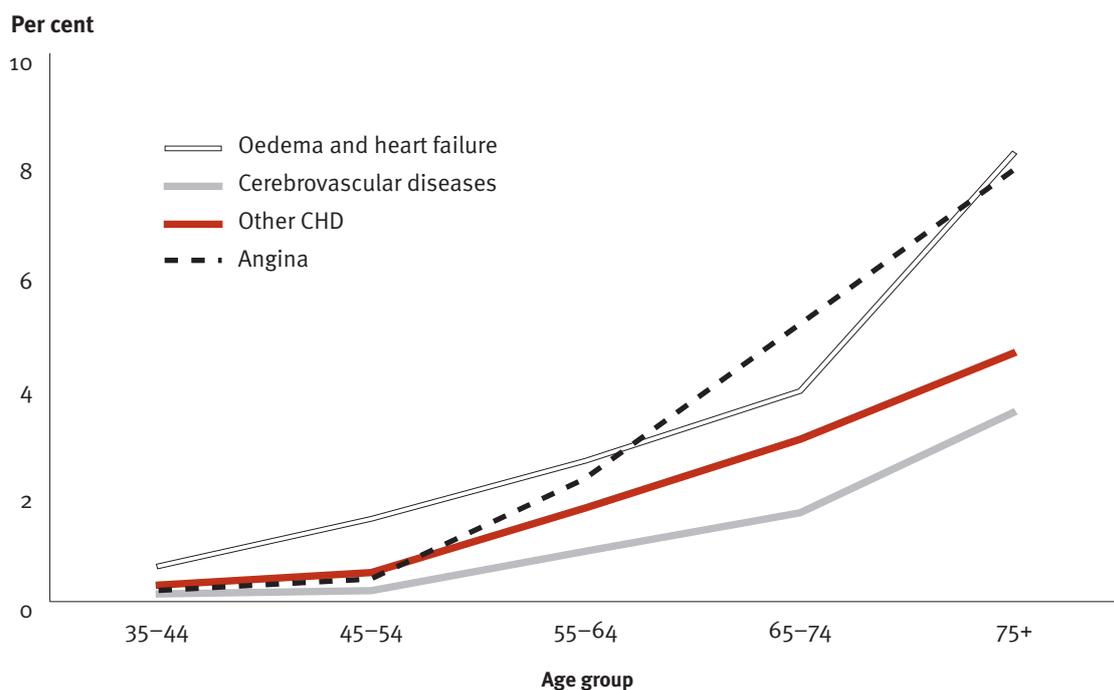
these functions with age may occur with other heart conditions such as atherosclerosis and compound their effect and treatment.

Cardiovascular problems in older age may affect quality of life, length of life, or both. Of these diseases, coronary heart disease (CHD), stroke, heart failure and peripheral vascular disease are major contributors to the disease burden in Australia and have their greatest impact among older Australians. Cardiovascular disease is a National Health Priority Area in Australia.

Coronary heart disease

CHD, also known as ischaemic heart disease, is the most common form of heart disease. There are two major clinical forms, heart attack (often known as acute myocardial infarction or AMI) and angina. A heart attack is a life-threatening event that occurs when a blood vessel supplying the heart itself is suddenly blocked completely, threatening to damage the heart and its functions. An angina attack is temporary chest pain or discomfort that occurs when the heart's own blood supply is inadequate to meet extra needs, as in exercise.

Figure 19.1: Prevalence of selected cardiovascular diseases, by age, 2004–05



Source: ABS 2006r, see also TableA19.1.

The prevalence of CHD increases with age (Figure 19.1, Table A19.1). In 2004–05, 2.2% of Australians aged 55–64 years had angina as a long-term (recurrent) condition, the proportion increasing to 7.8% among those aged 75 years and over (based on self-report) (ABS 2006r). Similarly, the prevalence rate for other forms of CHD rose from around 1.7% for people aged 55–64 to 4.5% for those aged 75 years and over. This equates to around 153,000 older Australians (aged 65 years and over) with angina as a long-term condition and 89,500 with another form of CHD (note that a person may report more than one disease).

In 2004–05, there were 162,277 hospital separations where CHD was the principal diagnosis, of which 97,100 (60%) were for older Australians (Table A19.2). Of these, angina accounted for around half and heart attack for around one-quarter. Hospitalisation rates for CHD increased rapidly with age (Figure 19.2). The CHD hospitalisation rate among older Australians increased by more than 10% over the past decade, during which time there were changes in diagnostic technology, changes in treatment regimes and reductions in deaths.

CHD is one of the major causes of disability among older Australians. In 2003, 166,900 older people with coronary heart disease had a disability and 22% (37,200) of these had coronary heart disease as their main disabling condition. Of these, 32% (11,800) had a severe or profound core activity limitation, meaning that they needed help with self-care, mobility and communication (AIHW analysis of the 2003 ABS Survey of Disability, Ageing and Carers).

CHD is the largest single cause of death in Australia, accounting for 21,570 deaths among older Australians in 2004, with 83% of these occurring among people aged 75 years and over (Figure 19.3, Table A19.3). In 2004, the CHD death rate among older men was nearly 1.5 times that for older women. CHD death rates have fallen rapidly since the 1970s. The declines are likely to be due to a reduction in heart attacks and to better survival resulting from improvements in treatment.

Cerebrovascular disease

Cerebrovascular disease refers to any disorder of the blood vessels supplying the brain and its covering membranes. Most cases of cerebrovascular death are due to stroke. Stroke occurs when a blood vessel to the brain is suddenly blocked or bleeds. This may result in part of the brain dying because of the lack of blood, leading to a loss of brain function or impairment in a range of activities including movement, thinking

and communication. Blockage is the most common cause of stroke. There can also be temporary strokes (where symptoms disappear within 24 hours), known as transient ischaemic attacks.

Based on self-reports from the 2004–05 National Health Survey, about 0.5% of Australians (90,800) had cerebrovascular disease and 66% (59,600) were aged 65 and over (ABS 2006r). Prevalence rates were higher among older men than older women and increased rapidly with age to 3.5% among Australians aged 75 years and over (Figure 19.1, Table A19.1). Based on the 2003 Survey of Disability, Ageing and Carers, which includes people in hospital, residential aged care and other non-private dwellings, 252,800 older Australians aged 75 and over were victims of a stroke.

In 2004–05, there were 40,718 hospital separations where cerebrovascular disease was the principal diagnosis, of which 30,100 (74%) were for older Australians (Table A19.2). Rates increased rapidly with age (Figure 19.2). The hospitalisation rate for cerebrovascular disease among older Australians decreased by about a third over the past decade, during which time death rates also fell markedly.

Stroke is one of the most disabling long-term health conditions among older people. In 2003, 213,200 older people with a history of stroke had a disability and 25% (52,700) of these had stroke as their main disabling condition. Of these, 76% (40,200) had a severe or profound core activity limitation, meaning that they always or sometimes needed assistance with self-care, mobility and communication. Stroke survivors with a disability were much more likely to have a severe or profound core activity limitation than the average person with a disability (AIHW: Senes 2006).

Cerebrovascular disease accounted for 11,266 deaths among older Australians in 2004, with 89% of these occurring among people aged 75 years and over (Figure 19.3, Table A19.3). More females than males (6,886 compared with 4,380) aged 65 years and over died of cerebrovascular disease. However, the age-standardised death rate was slightly higher among males, reflecting the high number of deaths among males in the (relatively) younger age groups. There was no downward trend in the death rates for cerebrovascular disease between 1950 and 1975; however, consistent declines have occurred for both males and females since then.

Heart failure

Heart failure occurs when the heart functions less effectively in pumping blood around the body. 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 to undertake physical activity, and shortness of breath.

Based on self-reports from the 2004–05 National Health Survey, about 1.3% of Australians (263,000) had heart failure (including oedema) of which 54% (141,000) were aged 65 years and over. Prevalence rates were higher among older women than older men and increased with age to 8.2% among Australians aged 75 years and over (Figure 19.1, Table A19.1).

In 2004–05, there were 41,321 hospital separations where heart failure was the principal diagnosis, of which 35,900 (87%) were for older Australians (Table A19.2). Again, rates increased rapidly with age (Figure 19.2). The hospitalisation rate for heart failure fell in Australia between 1996 and 2004 (Najafi et al. 2007).

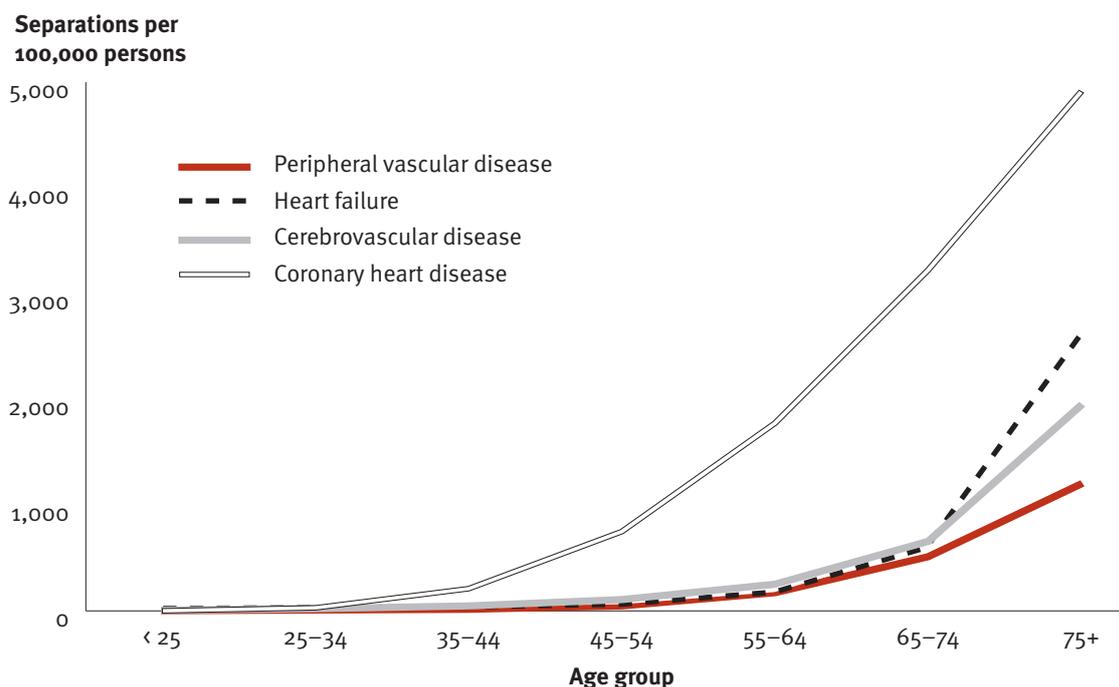
Heart failure accounted for 2,210 deaths of people

aged 65 and over in 2004, with 93% of these occurring among people aged 75 years and over (Figure 19.3, Table A19.3). More females than males (1,371 compared with 839) aged 65 years and over died of heart failure. The condition is more likely to be listed as an associated cause of death than as the underlying cause. It occurs frequently as an associated cause when the underlying cause of death is kidney failure, CHD, diabetes or chronic lower respiratory disease.

Peripheral vascular disease

Peripheral vascular disease refers to diseases of the arteries outside the heart and brain. It occurs when fatty deposits build up on the inner walls of these arteries and affect blood circulation, mainly in the arteries leading to the legs and feet. It ranges from asymptomatic disease, through pain on walking, to pain at rest and limb-threatening reduced blood supply that can lead to amputation. A major form of peripheral vascular disease is abdominal aortic aneurysm (the main artery leading from the heart) below the level of the diaphragm. These aneurysms can be life-threatening if they rupture, so surgery is performed in severe cases.

Figure 19.2: Hospital separations for selected cardiovascular diseases, by age, 2004–05



Source: AIHW National Hospital Morbidity Database, see Table A19.2.

In 2004–05, there were 25,682 hospital separations where peripheral vascular disease was the principal diagnosis, of which 20,000 (78%) were for older Australians (Table A19.2). Again, rates increase rapidly with age (Figure 19.2). The hospitalisation rate for peripheral vascular disease among older Australians increased by more than 20% over the past decade, and coincided with increased hospitalisation rates for CHD and heart failure, decreased rates for stroke, and large declines in deaths from peripheral vascular disease over the same period.

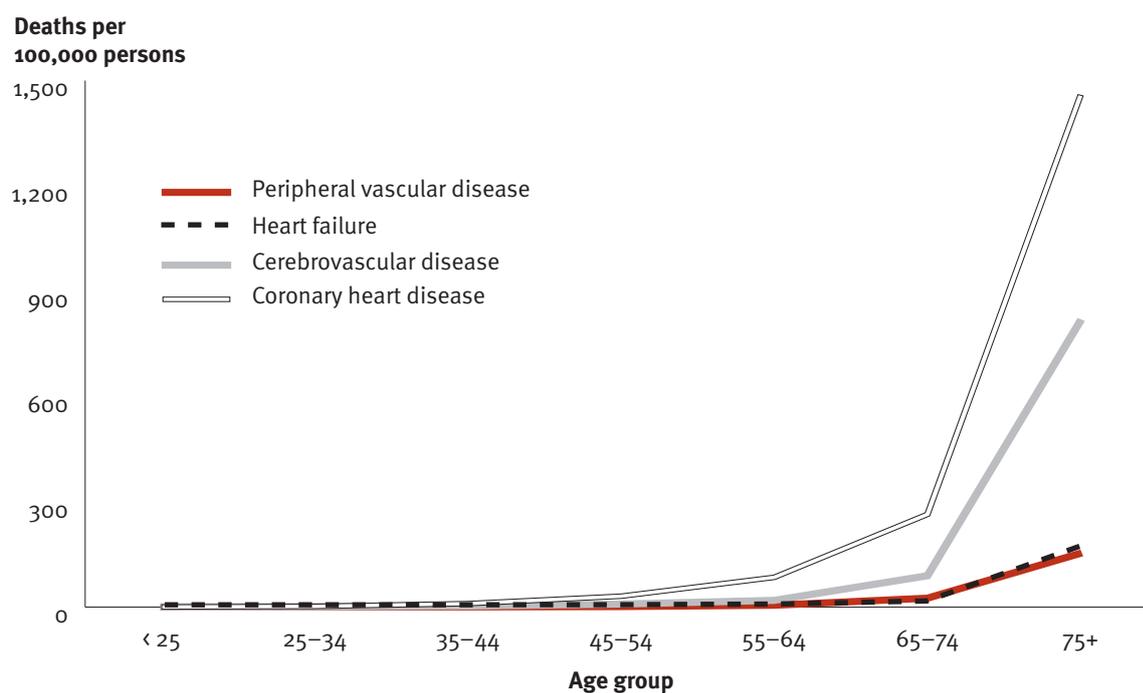
Peripheral vascular disease accounted for 2,233 deaths for people aged 65 and over in 2004, with 84% of these occurring among people aged 75 years and over (Table A19.3). In 2004, older males were more likely to die from peripheral vascular disease than older females. The major cause of death in people with peripheral vascular disease is CHD, reflecting the generalised nature of the disease process.

and diabetes. Atrial fibrillation, transient ischaemic attack and a high intake of alcohol also increase the risk of stroke. Some of these risk factors are discussed in Topic 16: *Ageing and health risk factors*.

Risk factors

The major preventable risk factors for these cardiovascular diseases are tobacco smoking, high blood pressure, high blood cholesterol, insufficient physical activity, overweight and obesity, poor nutrition

Figure 19.3: Deaths from selected cardiovascular diseases, by age, 2004



Source: AIHW National Mortality Database, see Table A19.3.

Cancer is a diverse group of diseases in which some of the body's cells become defective, begin to multiply out of control, can invade and damage the tissue around them, and can also spread (metastasise) to other parts of the body to cause further damage. They are a large cause of death in Australia and also contribute much to morbidity and disability. The National Health Priority Area cancers are lung cancer, melanoma skin cancer, non-melanocytic skin cancers, cancer of the cervix, breast cancer, colorectal cancer, prostate cancer and non-Hodgkin's lymphoma.

Information on new cases of cancer is collected by state and territory cancer registries, and compiled by the AIHW at the National Cancer Statistics Clearing House (see Box 20.1).

Incidence

Excluding non-melanocytic skin cancers, 52,994 new cases of cancer (31,441 males and 21,553 females) were diagnosed among older Australians in 2003 (AIHW 2007d). The incidence rate in 2003, of 2,076 cases per 100,000 older persons, is slightly lower than the incidence a decade earlier (2,147 cases per 100,000 older persons), but much higher than the rate two decades ago—1,712 cases per 100,000 older persons in 1983 (Table 20.1).

Much of the increase in the incidence of cancer in the decade between 1983 and 1993 may be attributed to better diagnostic techniques, opportunistic screening

Box 20.1: Cancer surveillance and monitoring in Australia

The registration of cancer is required by law in each of the states and territories, usually under the Public Health Acts, where the data are collated by cancer registries. These registries collect clinical and demographic information about people with newly diagnosed cancer from hospital, pathology, radiotherapy and physicians records.

All state and territory cancer registries supply records of all new cases of cancer (since 1982), excluding non-melanocytic skin cancers, to the National Cancer Statistics Clearing House (NCSCH). The NCSCH is operated by the AIHW under the supervision of the Australasian Association of Cancer Registries (AACR). Both the Australian Institute of Health and Welfare Act and Australian Government privacy law provide for the protection of confidentiality of records supplied to the NCSCH. In addition to generating national statistics, the NCSCH enables data to be released to researchers after a strict scientific and ethical review process which involves the AACR executive, the AIHW Ethics Committee, and the state and territory cancer registries.

and the establishment of organised screening programs. There were large increases in the diagnosis of prostate cancer, the most common cancer in males, mainly because of the introduction of prostate-specific antigen

Table 20.1: Incidence of selected cancers in older Australians, 1983, 1993 and 2003

Type of cancer	New cases			Incidence rates ^(a)		
	1983	1993	2003	1983	1993	2003
All cancers (C00–C96 ^(b) , D45–D47 ^(c))	25,204	43,141	52,994	1,711.6	2,146.9	2,075.7
NHPA cancers						
Colorectal cancer (C18–C20)	4,255	6,283	8,420	293.0	315.0	329.8
Prostate cancer (C61, males)	3,149	9,278	9,320	579.1	1126.1	831.9
Lung cancer (C33–C34)	3,492	4,974	5,802	226.0	243.0	227.8
Breast cancer (C50, females)	2,113	3,447	4,260	241.0	295.4	302.3
Melanoma (C43)	1,029	2,544	3,935	66.3	124.8	154.4
Non-Hodgkin lymphoma (C82–C85, C96)	760	1,401	2,012	51.3	70.0	78.7
Cervical cancer (C53, females)	244	259	188	26.8	22.0	13.1

(a) Incidence rates, given as number of new cases per 100,000 persons, were age-standardised to the 2001 Australian population.

(b) Excludes non-melanocytic skin cancer C44.

(c) Only includes D47.1 & D47.3.

Source: National Cancer Statistics Clearing House, AIHW.

testing. Similarly, for breast cancer, the most common cancer in females, the introduction of the national mammographic screening program (BreastScreen Australia) has improved detection of small-diameter breast cancers and may have contributed to those large increases (AIHW & National Breast Cancer Centre 2006; AIHW & Department of Health and Ageing 2007). Cancer incidence is higher among males than among females (Figure 20.1). Major contributors to this higher incidence are smoking-related cancers, melanoma and mesothelioma that have their origins up to 35 years earlier, in the higher smoking rates among males, and their higher exposure to the sun and to asbestos. In 2003, there were 5,133 new cases of smoking-related cancers among older males compared with 2,214 among older females; 2,470 new cases of melanoma among older males compared with 1,465 among older females; and 385 new cases of mesothelioma among older males compared with 76 among older females (AIHW 2007d).

The number of new cases of cancer among older Australians in 2003 (52,994) is a 23% increase on 1993. With the ageing of the population, the number of new cases of cancer among older people will increase over future decades, even if incidence rates remain relatively unchanged.

The current risk of a diagnosis of cancer in Australia by age 75 is 1 in 3 for males and 1 in 4 for females. The risk increases to 1 in 2 for males and 1 in 3 for females by the age of 85.

Most common cancers

Prostate cancer is the most commonly registered cancer in older males, with 9,320 cases diagnosed in 2003. It is followed by colorectal cancer (4,517 new cases), lung cancer (3,800) and melanoma (2,470). Together these four cancers accounted for 64% of all registered cancers in older males in 2003. The average age of first diagnosis for males (of any age) in 2003 was 66, and the median age was 68.

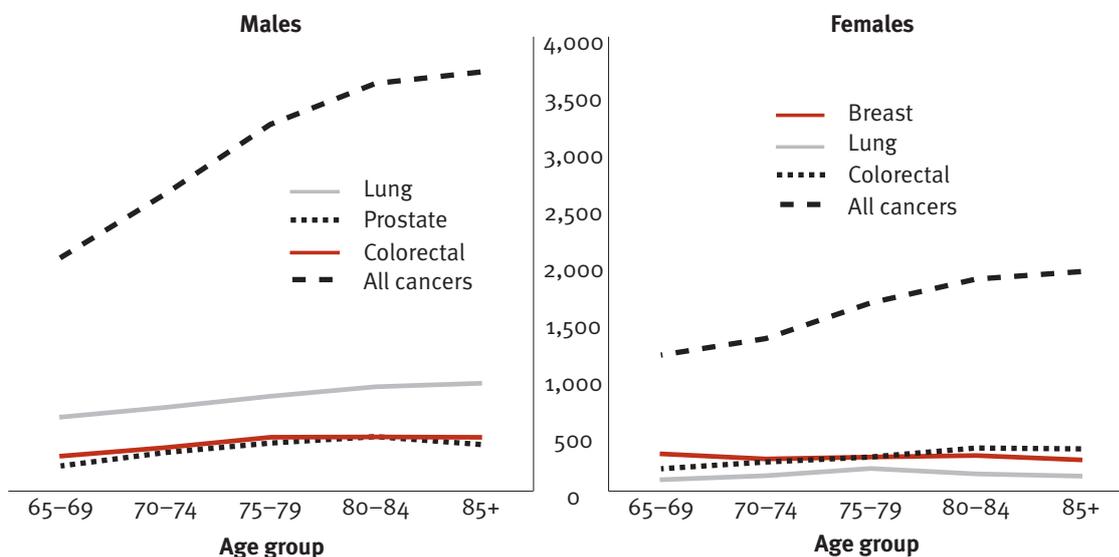
In older females, breast cancer (4,260 new cases in 2003) is the most commonly registered cancer, followed by colorectal cancer (3,903 new cases), lung cancer (2,002) and melanoma (1,465). These four cancers accounted in total for 54% of all registered cancers in older females in 2003. The average age of first diagnosis for females (of any age) in 2003 was 64, and the median age was 65.

Incidence rates by age and sex for the most common cancers are shown in Figure 20.1.

Non-melanocytic skin cancers

Complete incidence data on non-melanocytic skin cancers are not routinely collected by state and territory cancer registries as they are not legally notifiable. Periodic national household surveys collect data to estimate incidence of these cancers, the most common being basal cell carcinoma and squamous

Figure 20.1: Incidence rates per 100,000 people for all cancers, prostate, breast, colorectal and lung cancers, by age and sex, 2003



Source: National Cancer Statistics Clearing House, AIHW; see Table A20.1.

cell carcinoma NCCI (2003). Among older Australians in 2002, there were an estimated 151,400 new cases of basal cell carcinoma and 80,100 new cases of squamous cell carcinoma, a total of 231,500. Older males accounted for 60% of basal cell carcinoma and 58% of squamous cell carcinoma cases.

Prevalence of cancer

Compared with the other major chronic diseases, cancer has a relatively low prevalence. This is partly because the incidence is skewed to older age groups, and partly because the survival, duration and incidence rates for most cancers are much lower than for other chronic diseases such as cardiovascular disease, diabetes and mental disorders. However, cancers with relatively high survival rates (such as breast and prostate cancers) are much more prevalent in the population than those with a high fatality rate (such as lung cancer and mesothelioma).

Based on people reporting that they had been diagnosed by a doctor, an estimated 148,900 older persons living in private households in 2004 had a malignant cancer (0.2% of the older population) (ABS 2006r). A further 14,900 older persons had been diagnosed with a benign cancer or a cancer of uncertain nature. The overall self-reported prevalence of cancer among older Australians was 6.6%.

Deaths from cancer

Cancer is a large cause of death. In 2004, there were 28,200 deaths from cancer among older Australians, which was 27% of all deaths in this age group (Table 20.2). Of these, 16,057 were male (31% of all male deaths in this age group) and 12,143 were female (22% of all female deaths in this age group). The average age at death was 71.4 years in males and 71.8 years in females.

The current risk of dying from a malignant cancer before the age of 75 is 1 in 8 for males and 1 in 11 for females. The risk of dying from cancer before the age of 85 is double these proportions: 1 in 4 for males and 1 in 6 for females.

The age-standardised death rate for all cancers fell from 1,125 per 100,000 older persons in 1984 to 1,071 per 100,000 older persons in 2004 (Table 20.2). The fall since 1984 in death rates from cervical cancer among older females reflects the National Cervical Screening Program which has been successful in detecting and treating pre-cancerous abnormalities. Death rates have also fallen for lung cancer, colorectal cancer and breast cancer. The death rate from melanoma increased during the period.

Table 20.2: Trends in mortality, selected cancers for older Australians, 1984, 1994 and 2004

Type of cancer	Number of deaths			Death rate ^(a)		
	1984	1994	2004 ^(d)	1984	1994	2004 ^(b)
All cancers (C00–C97 ^(c) , D45–D47 ^(d))	16,599	23,905	28,200	1,125.1	1,187.1	1,071.2
NHPA cancers						
Lung cancer (C33–C34)	3,404	4,856	5,361	218.2	233.7	205.3
Colorectal cancer (C18–C20)	2,444	3,246	3,068	169.1	161.6	116.7
Prostate cancer (C61, males)	1,267	2,400	2,534	246.9	326.9	238.7
Breast cancer (C50, females)	1,103	1,435	1,477	123.9	121.1	98.3
Non-Hodgkin's lymphoma (C82–C85, C96)	479	949	1,122	31.8	47.2	42.6
Melanoma (C43)	257	507	728	16.8	24.9	27.6
Non-melanocytic skin cancers (C44)	167	264	325	12.5	13.5	12.2
Cervical cancer (C53, females)	160	157	110	17.9	13.2	7.1

(a) Death rates, given as number of deaths per 100,000 persons, were age-standardised to the 2001 Australian population.

(b) Mortality data for 2004 (the latest available) were extracted by year of registration. Data for 1984 and 1994 were extracted by year of death.

(c) Includes non-melanocytic skin cancer C44.

(d) Only includes D47.1 & D47.3.

Source: AIHW National Mortality Database.

Considerable levels of disability and poor quality of life are caused by diabetes. It is also associated with morbidity and premature death, especially if undetected or poorly controlled. If diagnosed at age 40 men will lose, on average, about 12 years of life and women about 14 years, compared with their non-diabetic peers (Narayan et al. 2003).

There are three main types of diabetes, each with different causes and clinical histories (Box 21.1). The underlying problem that causes Type 2 diabetes, the most common type of diabetes among older Australians, is insulin resistance, which increases with ageing, gaining weight or being sedentary (Chau et al. 2005).

Diagnosis and treatment of diabetes in older people is often complicated by the presence of physiological changes associated with ageing ADEA (2003). Care of older people with diabetes can be difficult because of co-morbidities, cognitive and functional disability, depression, frailty and social issues. When diabetes is under treated or poorly managed, then older people are likely to experience greater morbidity, disability and death as a result.

Box 21.1: Type of diabetes

Diabetes mellitus (diabetes) is a metabolic disease in which high blood glucose levels result from defective insulin secretion, insulin action or both (WHO 1999). Insulin is a hormone produced by the pancreas that helps the body to use glucose. There are three main types of diabetes:

- *Type 1 diabetes is marked by a total or near-total lack of insulin and results from destruction of insulin-producing cells in the pancreas. It is the most common type of childhood diabetes. People with this form of diabetes require daily insulin therapy to survive.*
- *Type 2 diabetes is marked by reduced levels of insulin or the inability of the body to use insulin properly (insulin resistance). It is more common among people aged 45 and over. It can be treated with oral hypoglycaemic (glucose-lowering) drugs, but some people may also need insulin therapy.*
- *Gestational diabetes is a form of diabetes that develops during pregnancy in some women. It is a marker of increased risk of developing Type 2 diabetes later in life.*

Risk factors

Type 1 diabetes is believed to be caused by particular biological interactions and exposure to environmental agents among people genetically predisposed to diabetes (Atkinson & Eisenbarth 2001).

In addition to genetic predisposition and ageing, several modifiable risk factors play a role in the onset of Type 2 diabetes, including obesity, physical inactivity and poor nutrition. (AIHW 2002a). Further information on the prevalence of modifiable risk factors is given in Topic 15: *Healthy ageing*.

Prevalence

There are two main sources of national diabetes prevalence data in Australia. The first is the 1999–2000 Australian Diabetes, Obesity and Lifestyle Study (AusDiab study), in which diabetes prevalence was estimated on the basis of measured blood glucose levels. The second is the ABS National Health Survey (NHS), in which prevalence estimates are based on self-reported information.

Measured data, such as those collected in the AusDiab study, provide more accurate estimates of the prevalence of diabetes than self-reported survey data. Diabetes prevalence derived from measured data can be estimated for both diagnosed and previously undiagnosed cases. The accuracy of self-reported data, such as those collected in the NHS, relies on respondents being aware of and accurately reporting their condition, and therefore will not include previously undiagnosed cases of diabetes. However, because the NHS is conducted regularly, it is able to provide more recent information and time series on the prevalence of diabetes over time.

Based on data from the AusDiab study, it has been estimated that nearly 19% (443,000) of older Australians had diabetes in 1999–00, many of whom were not aware that they had diabetes.

In 2004–05, based on self-reported data, 13% (333,200) of older Australians had been diagnosed with diabetes (Figure 21.1). Of these, 86% reported having Type 2 diabetes, 9% Type 1 diabetes, and 4% did not know which type of diabetes they had.

In the 15 years since 1989–90 the self-reported prevalence of diabetes in Australia has more than doubled for all people and for those aged 65 years and over, (Figure 21.2). Although a real increase in the incidence of diabetes may play a major role in this upward trend in diabetes prevalence, rising awareness in the community and better detection of the disease

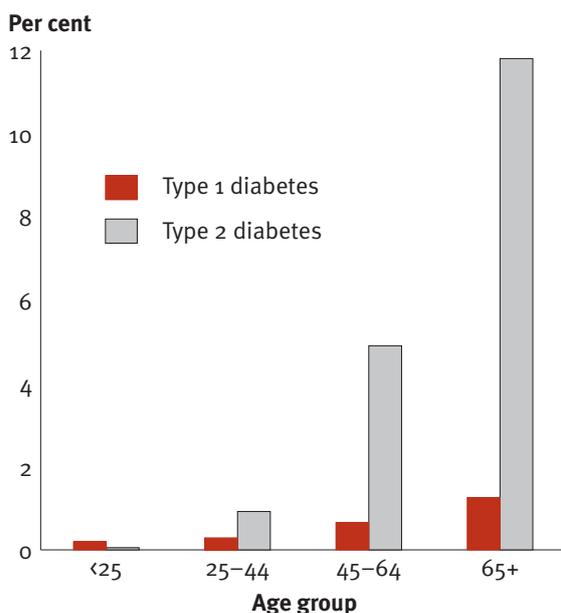
may also contribute. Measured data also show a similar upward trend: the prevalence of diabetes estimated from the 1999–00 AusDiab study was more than double that estimated from the 1981 Busselton survey (Dunstan et al. 2002).

Complications

Diabetes complications can arise quickly or develop over a number of years. Short-term complications are considered a medical emergency, and may lead to coma and death within a short period. These include a condition known as diabetic ketoacidosis, which can occur from a severe lack of insulin, and hypoglycaemia (low blood sugar), which is a complication of insulin treatment (AIHW 2002a).

Long-term complications include disease of large blood vessels (macrovascular disease) that leads to conditions such as coronary heart disease, stroke and peripheral vascular disease; and disease of small blood vessels (microvascular disease) that can cause chronic kidney disease, nerve damage and retinopathy (loss of vision).

Figure 21.1: Age-specific prevalence of diabetes, 2004–05



Note: Based on self-reported data.

Source: ABS 2006r, see also Table A21.1.

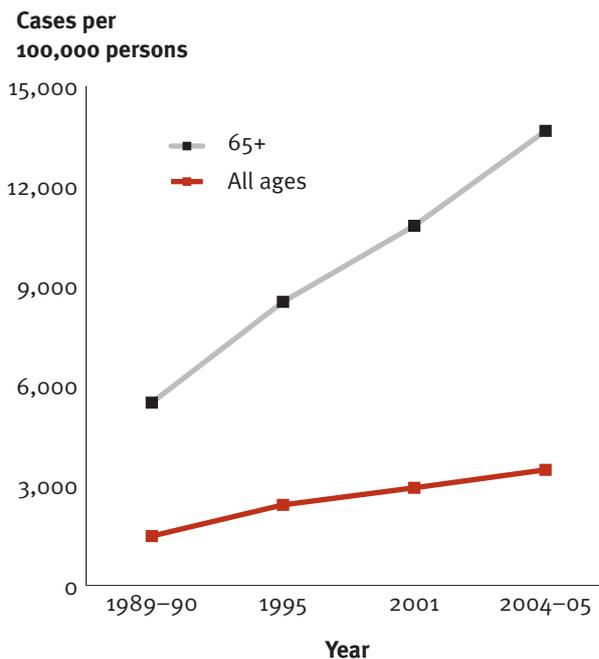
Hospitalisation rates for people with diabetic complications (neurological, ophthalmic and renal) increased with age (Figure 21.3). Ophthalmic complications were the most common for persons aged 65 years and over followed by renal and neurological complications.

Hospitalisations

Among people aged 65 years and over, diabetes was the principal diagnosis for 40,018 separations in 2004–05 and an additional diagnosis for 279,735 separations; together these accounted for 13% of all hospital separations for older Australians in that year.

For persons aged 65 years and over, 47% of hospital separations for diabetes as the principal diagnosis were for eye complications (ophthalmic), 13% for multiple complications, 12% for other specified complications of diabetes, 9% for circulatory complications, 8% for renal complications and 7% for poor control.

Figure 21.2: Prevalence of diabetes (self-reported), 1989–90 to 2004–05



Notes

1. Age-standardised to the 2001 Australian population.

2. Based on self-reported data.

Sources: AIHW analysis of the 1989–90, 1995 and 2001 ABS National Health Surveys; ABS 2006r, see also Table A21.2.

Disability

In 2003, 203,200 older people with diabetes had a disability and 22% (45,400) of these had diabetes as their main disabling condition. Of these, 29% (13,100) had a severe or profound core activity limitation, meaning that they always or sometimes needed assistance with self-care, mobility and communication (2003 ABS Survey of Disability, Ageing and Carers).

Deaths

A total of 10,203 deaths in Australia in 2004 were related to diabetes among people aged 65 years and over. Diabetes was listed as the underlying cause of 3,096 of these deaths (3% of all deaths among people aged 65 years and over) and as an associated cause in 7,107 deaths (7% of all deaths in this age group).

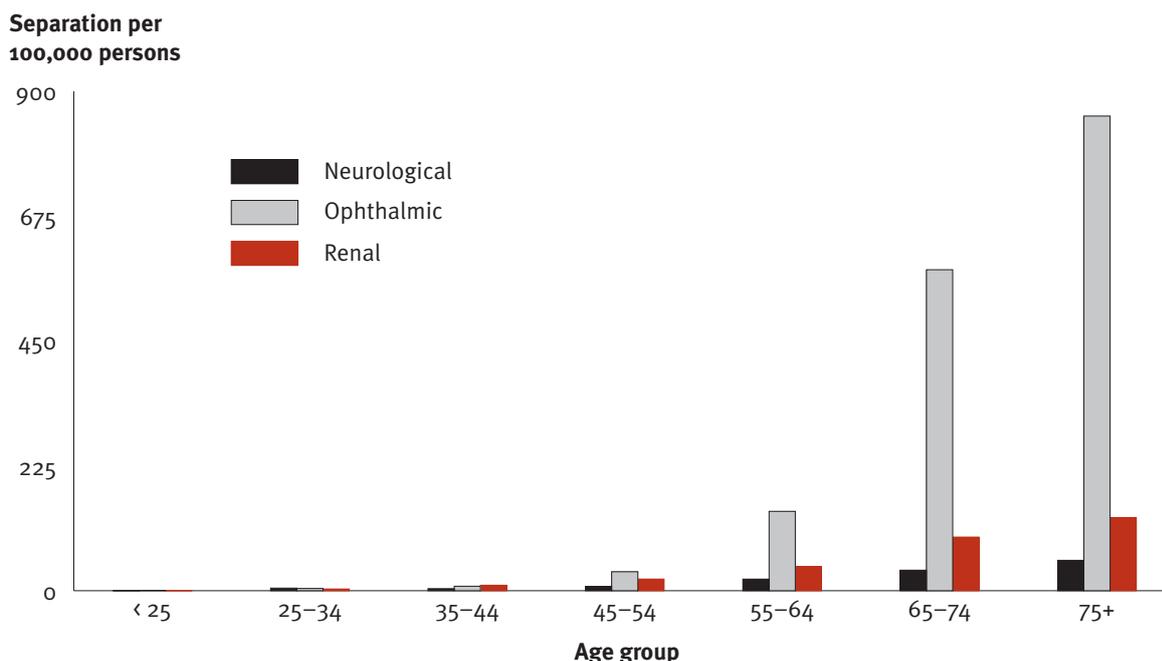
Where diabetes was the underlying cause of death, the most commonly listed associated causes of death for people aged 65 years and over were 'other cardiovascular disease' (27%), coronary heart disease

(21%) and stroke (8%). Where diabetes was listed as an associated cause of death in people aged 65 years and over, coronary heart disease was listed as the underlying cause of death in 31% of cases, neoplasms in 23% of cases and stroke in 11% of cases.

Although there has been an increase in the prevalence of diabetes in the population, the age-standardised death rate for diabetes as the underlying cause of death was stable for males and slightly decreased for females over the period 1997–2004.

There is some evidence of improved long-term survival for people with Type 1 diabetes, consistent with the introduction of glycosylated haemoglobin (HbA1C) testing, home blood glucose monitoring and improved blood pressure therapy (Nishimura et al. 2001).

Figure 21.3: Rate of hospitalisation for persons with diabetic complications, by age, 2004–05



Note: Age-standardised to the 2001 Australian population.

Source: AIHW analysis of 2004–05 National Hospital Morbidity Data, see also Table A21.3.

Respiratory diseases place significant demands on the health care system and are a considerable financial burden for the individual and the community (AIHW 2005c). This section looks at two chronic respiratory diseases that are particularly relevant to older Australians, namely chronic obstructive pulmonary disease (COPD) and asthma. Asthma is a National Health Priority Area in Australia. Acute respiratory infections, which include influenza and pneumonia, are also considered.

Chronic obstructive pulmonary disease

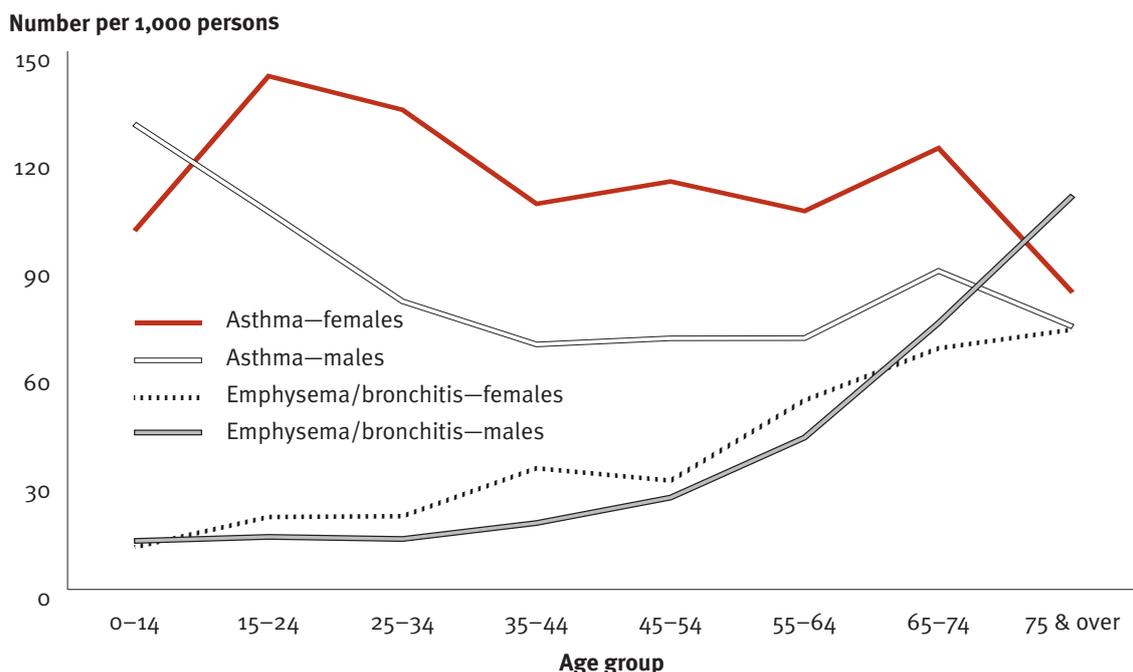
COPD is a serious long-term disease in which people have progressively worse shortness of breath on exertion. The main disease process underlying COPD is emphysema. This occurs as a result of the gradual destruction of lung tissue owing to the unopposed action of enzymes stimulated by inhaled irritants. The lungs become floppy and less able to move air in and out, thereby limiting the ability of the lungs to exchange gases. People with long-term cough and phlegm are regarded as having chronic bronchitis, a condition resulting from over-active mucous glands in

the large airways. Emphysema and chronic bronchitis are the main contributors to COPD and both are caused mostly by tobacco smoking, so they often coexist (AIHW 2006c).

The prevalence of emphysema or bronchitis increases with age (Figure 22.1). Estimates from respondents' self-reports to the 2004–05 National Health Survey (NHS) indicate that about 8% (191,400) of older Australians had emphysema or bronchitis, which is greater than the proportion in the total population (3%) (ABS 2006r). Although these estimates would contain some cases of bronchitis that were not chronic in nature, these numbers are probably underestimates because COPD is usually not diagnosed until it is moderately advanced and begins to restrict a person's daily activities (AIHW 2005c, 2006c). Also, the NHS is confined to private dwellings and does not include older people in, for example, residential care among whom the prevalence is likely to be greater.

Older Australians with COPD may require regular hospital care when symptoms worsen, lead to increased disability or become life-threatening. In 2004–05, there were 40,800 hospital separations among older Australians where the principal diagnosis was COPD, representing 1.7% of all hospital separations for that

Figure 22.1: Prevalence of emphysema/bronchitis and asthma, by age and sex, 2004–05



Source: ABS 2004–05 National Health Survey, see also Table A22.1.

age group. Hospital separations for COPD occur mainly among older Australians, with those aged 65 and over accounting for 77% of all COPD-related separations in 2004–05. At these ages, the male hospital separation rate for COPD is much higher than the female rate (Figure 22.2; AIHW 2005c). COPD hospital separation rates among older Australians have changed little over recent years (AIHW: Australian Centre for Asthma Monitoring 2006). Older Australians in hospital with a principal diagnosis of COPD often receive allied health services, especially physiotherapy (AIHW 2005c).

The shortness of breath experienced by people with emphysema, bronchitis or other types of COPD can be quite disabling. It can interrupt daily activity, the ability to exercise, and sleep patterns. It has been reported that, within about 8 years of being diagnosed, most people with COPD become incapable of productive work (Golding et al. 1993). In 2003, 75,100 older people with emphysema or bronchitis had a disability and 50% (37,400) of these had emphysema or bronchitis as their main disabling condition. Of these, 44% (16,500) had a severe or profound disability, that is, they sometimes or always needed personal assistance or supervision with one or more of the core activities—self-care, mobility and communication (2003 ABS Survey of Disability, Ageing and Carers).

COPD is a significant cause of death among older Australians, reflecting the end result of a progressive decline in lung function. It was the underlying cause of 4,730 deaths of older Australians in 2004 (2,740 males and 1,990 females), representing 4.5% of all deaths among older Australians that year. COPD is also listed commonly as a contributing or associated cause of death (6,470 deaths in 2004). The death rate among people aged 55 years and older declined by over 20% from 1997 to 2003 (AIHW: Australian Centre for Asthma Monitoring 2006).

Asthma

Asthma is a chronic inflammatory disease causing episodes of wheezing, breathlessness and chest tightness because of narrowing of the airways within the lungs and obstruction of airflow. The symptoms of an episode are usually reversible, either spontaneously or with treatment. Although the underlying causes of asthma are still not well understood, constitutional factors such as genetic traits, age and sex, as well as environmental factors such as diet and lifestyle, may increase the risk of developing asthma (AIHW: Australian Centre for Asthma Monitoring 2005). Many factors that trigger airway narrowing and symptoms in

people with asthma, including exercise, viral infections, irritants (such as smoking and other air pollutants), specific allergens (house dust mites and mould spores) and some food preservatives (AIHW 2005c). Among older Australians the disease often coincides with COPD (AIHW: Australian Centre for Asthma Monitoring 2006).

Estimates based on the 2004–05 NHS indicate that 229,400 older Australians currently have asthma, representing 9% of that population (ABS 2006r). Prevalence rates are higher among older females than older males (Figure 22.1) (see also AIHW: Ampon et al. 2007).

Acute or reactive management of asthma (for severe exacerbations or increased symptoms) often occurs in hospital emergency departments. In 2004–05, asthma was the principal diagnosis in 3,600 hospital separations for Australians aged 65 years and over, representing 0.1% of all hospital separations for that age group. Australians aged 65 years and over accounted for 10% of all asthma-related separations in 2004–05. The asthma hospital separation rate for older females is higher than for older males and both increase steadily with age (Figure 22.2). Among older Australians, hospital separation rates for asthma as the principal diagnosis have been declining over recent years (AIHW: Australian Centre for Asthma Monitoring 2006). The diagnosis of asthma is more problematic in adults over 50 (as well as in very young children) because other breathing disorders may be difficult to distinguish from asthma (AIHW: Australian Centre for Asthma Monitoring 2006). For this reason, hospital separation data among older Australians should be interpreted cautiously (as should prevalence and mortality data).

In 2003, 121,000 older people with asthma had a disability and 24% (29,500) of these reported asthma as their main disabling condition. Of these, 42% (12,500) had a severe or profound disability, meaning that they sometimes or always needed personal assistance or supervision with one or more of the core activities (self-care, mobility and communication) (2003 ABS Survey of Disability, Ageing and Carers).

Asthma is not a common cause of death in Australia. In 2004, it was identified as the underlying cause of 206 deaths among older Australians (60 males and 146 females). In addition, asthma was registered 738 times as an associated cause of death. Deaths rates increase markedly after the age of 50, and deaths among older Australians represent 66% of all deaths from asthma. The death rate among people aged 55

years and over declined by almost 50% from 1997 to 2003 (AIHW: Australian Centre for Asthma Monitoring 2006).

Deaths from asthma among older people are often complicated by the presence of COPD, so attributing the actual cause of death in this group may be problematic (AIHW: Australian Centre for Asthma Monitoring 2006). Nevertheless, those whose underlying cause of death was attributed to asthma died on average about 10 years younger than those whose underlying cause of death was attributed to COPD.

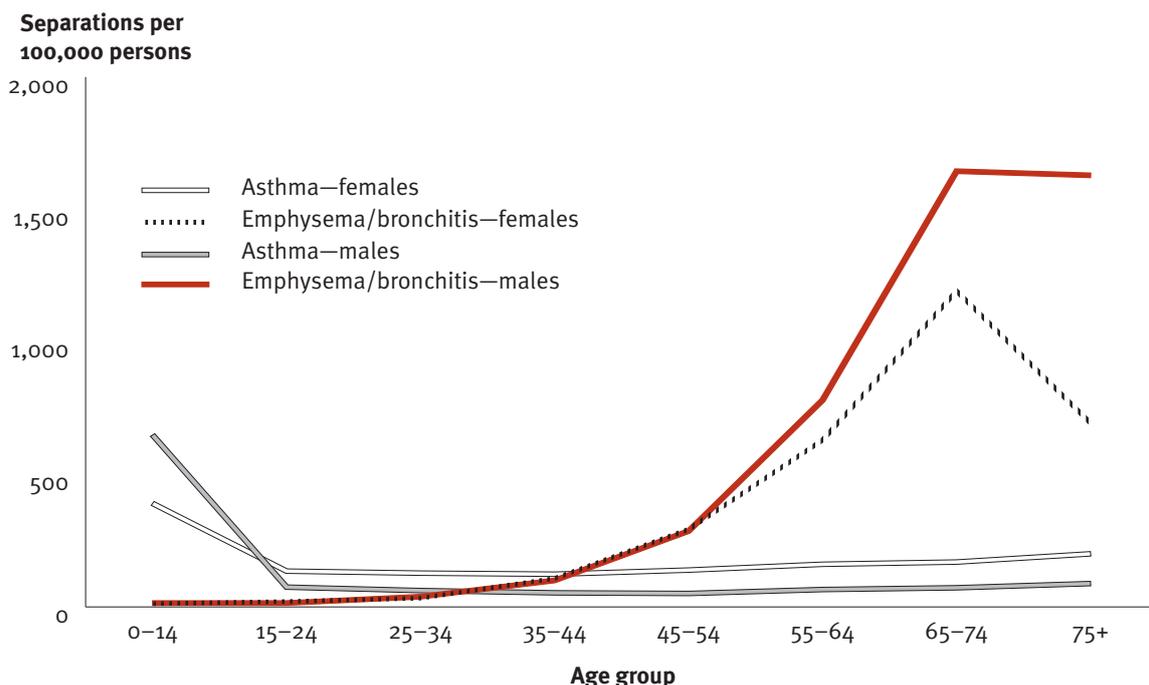
Acute respiratory infections

Acute respiratory infections (ARI) include the upper and lower respiratory tract infections, influenza and pneumonia. They are a major cause of acute illness, hospitalisation and mortality among older Australians (AIHW 2005c). Several different types of infectious agents cause ARI, notably influenza viruses, rhinoviruses, respiratory syncytial virus and bacteria such as *Streptococcus pneumoniae*. Older Australians, along with children, Indigenous Australians and people with chronic diseases, are at an increased risk for these infections (AIHW 2006c).

ARI was listed as the principal diagnosis in about 45,600 hospital separations for older Australians in 2004–05, representing 1.8% of all hospital separations for that age group. Australians aged 65 and over accounted for 35% of all ARI-related hospital separations in 2004–05. Most ARI hospital separations for older Australians resulted from pneumonia and influenza.

ARI was the underlying cause of 3,498 deaths (1,549 males; 1,949 females) in 2004, making ARI the leading cause of death from infectious diseases. Most ARI deaths occurred among older Australians—3,263 ARI deaths (93%) occurred among people aged 65 years and over. The average age at death was 79 years for males and 83 years for females in 2004. The vast majority of ARI deaths among older Australians were due to pneumonia (96%, 3,127 deaths). Most deaths from pneumonia (56%) occur among persons aged 85 years and over.

Figure 22.2: Hospital separations for COPD and asthma, by age and sex, 2004–05



Source: AIHW National Hospital morbidity database, see Table A22.2.

Although the majority of older people enjoy good mental health, a significant minority experience one or more mental or behavioural disorders (9.5% of older people), high levels of psychological distress (10.9%), or take medication for their mental wellbeing (24%).

Mental health problems can cause considerable suffering and may cause individuals to experience social isolation and poor quality of life, as well as having negative impacts on families and the wider community (WHO 2006). It is one of the leading causes of the total burden of disease and injury in Australia (Begg et al. 2007) and is associated with increased exposure to health risk factors, poorer physical health and higher rates of death from many causes including suicide (AIHW 2006c).

In view of its impact on the health of the Australian population and the possible reduction in disease burden with prevention and treatment, mental health has been declared a National Health Priority Area.

The literature on mental health in older people tends to focus on dementia (see Topic 25: *Dementia*), however, functional disorders such as schizophrenia, anxiety disorders and clinical depression are more prevalent (Collier 2006). Major life changes such as divorce, involuntary unemployment, retirement, becoming grandparents, illness or disability, caring or bereavement may contribute to mental health problems in older adulthood. For example, Gill et al. (2006) report that younger male retirees are more likely to have mental health problems relative to their working peers and older retirees, although poor mental health does not appear to be an enduring characteristic of those who retire early.

Older people and mental health data

The available data for mental disorders among older people are marked by reliability problems (Snowdon et al. 1998). Even more generally, methodological differences and the use of differing arbitrary cut-offs to distinguish cases from non-cases results in differences in estimates of prevalence between studies (Jorm 2006). The exclusion of individuals living in cared accommodation from the 1997 National Survey of Mental Health and Wellbeing and the 2004–05 National Health Survey (NHS) particularly affect analysis of mental health problems among older people. The former survey also excluded those with moderate or severe dementia—Snowdon (2001) notes that the prevalence of depression is considerably higher among those with physical disability, those in residential care and those with dementia.

Long-term mental health conditions

The overall proportion of people self-reporting a mental and behavioural condition has increased from 6% in 1995 to 11% in 2004–05. This may be partly due to more people being willing to report mental health problems as the stigma associated with mental illness diminishes (AIHW 2007c). Results from the 2004–05 NHS show that, with the exception of organic mental problems (which include dementia), mental and behavioural problems are not more common among older people compared with younger people (Table 23.1). However, significant numbers of older people (230,800 people or 9.5%) still reported having at least one long-term mental or behavioural problem. The most commonly reported problems among older people were mood (affective) disorders and anxiety-related problems (reported by 4.6% and 4.0% respectively of people aged 65 years and over). Men were more likely than women to have a substance use disorder and women were more likely than men to have an anxiety or affective disorder. The 2004–05 NHS respondents were not specifically asked whether they had been diagnosed with any mental disorder, so the information provided could be based on self-diagnosis rather than diagnosis by a health professional.

Other studies have found anxiety to be the most common mental disorder among older people, although it is also the most under-diagnosed and under-treated. For example, the 1997 National Survey of Mental Health and Wellbeing of Adults which used the Composite International Diagnostic Interview (CIDI) to provide diagnoses of mental disorders for research purposes, found that anxiety disorders were more prevalent than affective disorders across all age groups (ABS 1998).

There is evidence that rates of mental disorders are higher among those who have physical impairments, cancer, chronic conditions such as arthritis, or are experiencing the effects of a stroke (Jorm 1995, cited in DHAC 2000: 81).

These estimates of prevalence in the older population may be understated. For example, depression is often not well recognised or detected in older people because depression may present with symptoms such as sleep and appetite problems, forgetfulness and lack of concentration (rather than dysphoria) which may be dismissed as part of the ageing process or confused with conditions such as dementia (DHAC 2000:101; O'Connor 2006). Older people have been twice as likely to decline involvement in some surveys and refusers are more likely to be depressed (Snowdon 2001).

Additionally, older people more commonly attribute depressive symptoms to physical illness, which are discounted by CIDI (O'Connor 2006).

There is some evidence that ageing is associated with an intrinsic reduction in susceptibility to anxiety and depression (Jorm 2000). Possible reasons for this reduction include decreased emotional responsiveness with age, increased emotional control and psychological immunisation to stressful experiences. However, Jorm (2000) also noted that the research about the prevalence of depression and anxiety in old age is inconsistent, and argued for the need to distinguish ageing from cohort effects through longitudinal data covering the adult life span.

Psychological distress

The 2004–05 NHS includes questions about negative emotional states in the 4 weeks before interview. These questions are used to form the Kessler 10 Scale which groups results into four categories: low, moderate, high and very high levels of psychological distress. Adults reporting a long-term mental or behavioural problem were more likely to record higher levels of current psychological distress (ABS 2006r).

In 2004–05, 3.2% of people aged 65 years and over (78,300 people) reported very high levels of psychological distress (see Figure 23.1). A further 7.7%

(189,100 people) reported high levels of psychological distress. Proportionally fewer older males than older females reported high to very high levels of distress—11.6% for older females and 10.2% for older males.

O'Connor (2006) notes that results from the 1997 National Survey of Mental Health and Wellbeing show a small reduction in psychological distress with age—consistent with previous surveys of adult and aged community groups using a mental health scale which report similar reductions in scores with age. However, gerontological surveys that focus on the older population show either no change with age or a modest increase. This supports the suggestion by Jorm (2000) that measures for identifying psychological distress among older age groups need to be sensitive to possible age bias.

Suicides

Although suicide is a relatively uncommon event (1.6% of all deaths registered in 2005 were attributed to suicide), the human and economic costs are substantial. There were 2,101 suicides in 2005, of which 13% (283) were by older people. The pattern of age-specific suicide rates for males and females is shown in Figure 23.2. The highest age-specific suicide death rates are observed in middle age, and the lowest are observed in the youngest age group and the young

Table 23.1: Mental and behavioural problems, by age, 2004–05 (per cent)

Mental & behavioural problem	0–14	15–24	25–34	35–44	45–54	55–64	65–74	75+	Total
Alcohol & drug problems	n.p.	0.7	1.4	1.2	1.6	*0.7	*0.5	n.p.	0.8
Mood (affective) problems	0.8	5.4	6.6	7.8	7.7	6.6	4.6	4.8	5.3
Anxiety-related problems	2.3	4.6	5.1	6.7	6.4	6.8	4.2	3.7	4.9
Problems of psychological development	2.6	2.3	1.0	0.9	0.9	0.8	*0.5	*0.8	1.4
Behavioural & emotional problems with usual onset in childhood/adolescence	3.0	1.3	n.p.	n.p.	n.p.	**0.1	n.p.	n.p.	0.9
Organic mental problems	n.p.	–	n.p.	n.p.	n.p.	*0.2	n.p.	1.9	0.2
Other mental & behavioural problems	0.5	0.8	1.1	1.2	1.0	1.1	*0.4	*0.4	0.9
Symptoms & signs involving cognition, perceptions, emotional state & behaviour	*0.2	*0.3	0.6	1.4	1.3	1.4	*0.4	*1.1	0.8
Any mental or behavioural problem	6.7	9.9	11.5	13.6	13.1	12.4	8.8	10.3	10.7
Total population ('000)	3,920.6	2,693.0	2,813.6	2,959.2	2,734.8	2,120.2	1,353.7	1,086.4	19,681.5

* estimate has a relative standard error of 25% to 50% and should be used with caution.

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use.

– nil or rounded to zero (including null cells).

n.p. not available for publication but included in totals where applicable, unless otherwise indicated.

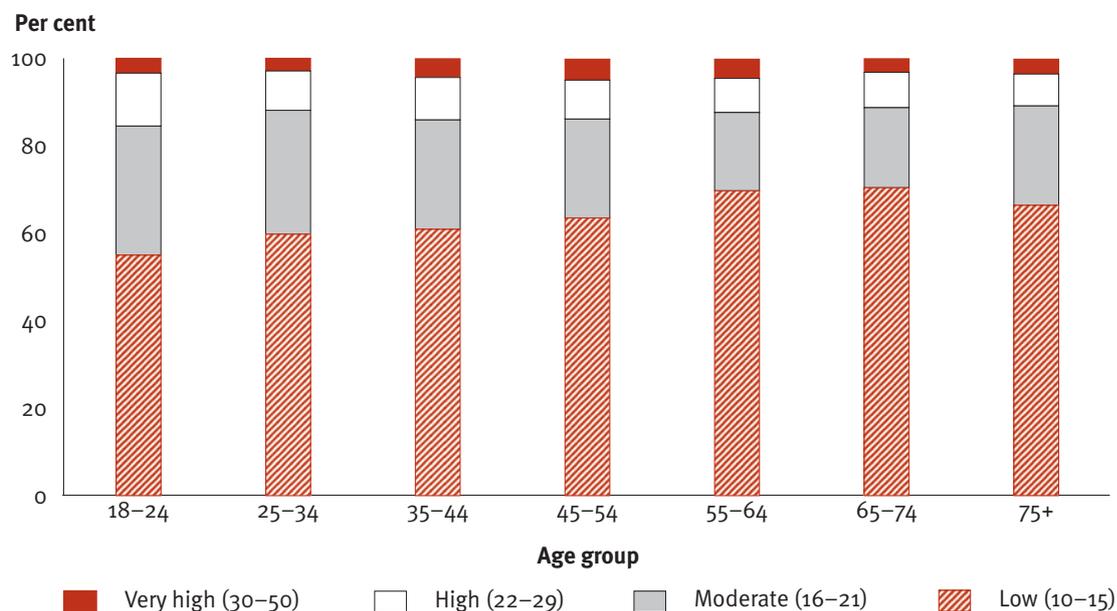
Source: Derived from ABS 2006r:Table 4.

old (aged 65–69 years). The rate of suicide among older men increases with age. Fairweather et al. (2007) note that although rates of suicidal ideation decrease with age, completion rates normally increase with age.

Despite more women than men reporting affective disorders, the suicide rate for women is considerably lower than that for men at all ages—males constitute

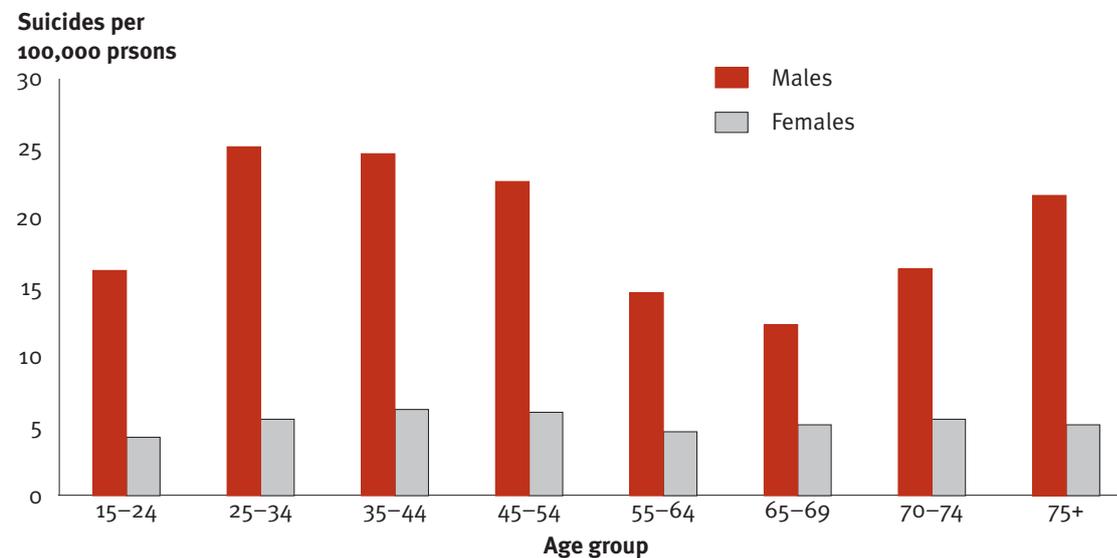
nearly three-quarters (73%) of older suicides in 2005. For those aged 65 years and over, the male age-standardised suicide death rate was over three times higher than the corresponding female rate.

Figure 23.1: Level of current psychological distress, by age, 2004–05



Note: As measured by the Kessler 10 scale, from which a score of 10 to 50 is produced.
Source: Table A23.1.

Figure 23.2: Suicide rates, by age, 2005



Source: Table A23.2.

Medications

In 2004–05, nearly a quarter (587,700) of older persons reported that they had used pharmaceutical medication and/or vitamins, minerals or herbal treatments for their mental wellbeing in the 2 weeks before interview (Table 23.2). Of those using medications for mental wellbeing, almost half reported using sleeping tablets or capsules, followed by other medications, antidepressants, and tablets or capsules for anxiety or nerves. Use of medications was higher overall in older age groups but this was largely because of the higher use of sleeping medications (11% of persons aged 65 years and over compared with 4.5% for the whole adult population).

Table 23.2: Medication used for mental wellbeing, by age, 2004–05

	18–34	35–44	45–54	55–64	65+	Total
Used medication	15.0	18.5	20.9	21.6	24.1	19.2
Sleeping tablets or capsules	1.8	2.8	4.0	5.3	11.4	4.5
Tablets or capsules for anxiety or nerves	1.1	1.7	2.4	2.9	3.1	2.0
Tranquillisers	*0.2	*0.4	1.0	1.0	1.1	0.7
Antidepressants	3.6	5.8	6.1	7.0	4.9	5.2
Mood stabilisers	0.4	0.9	*0.6	*0.7	*0.3	0.6
Other medications for mental wellbeing ^(a)	10.6	12.2	13.0	11.4	8.8	11.2
Did not use medication	85.0	81.5	79.1	78.4	75.9	80.8
Total^(b)	100.0	100.0	100.0	100.0	100.0	100.0
Number	4,708,800	2,959,200	2,734,800	2,120,200	2,440,100	14,963,100

* Estimate has a relative standard error of 25% to 50% and should be used with caution.

(a) Includes the use of vitamins, minerals and herbal treatments.

(b) Persons may have reported the use of more than one type of medication and therefore components may not add to totals.

Source: Reproduced from ABS 2006r:Table 16.

Highly prevalent, arthritis, osteoporosis and other diseases of the joints and bones place a significant burden on the individual and community, including disruptions to daily life, the use of hospital and primary care services and lost productivity (AIHW: Rahman et al. 2005). Significant activity limitation is associated with these conditions, particularly in the older population. More than 1.6 million older Australians are estimated to have had arthritis or a musculoskeletal condition in 2004–05 (ABS 2006r). The most commonly occurring conditions among older Australians are various forms of arthritis and back pain. Almost one in five older Australians with arthritis or a musculoskeletal condition is reported to have some disability. In view of this large disease burden—the number of people affected and the high disability impact—arthritis and musculoskeletal conditions were declared a National Health Priority Area in 2002. The focus of this initiative is osteoarthritis, rheumatoid arthritis, juvenile idiopathic arthritis and osteoporosis (AHMC 2005).

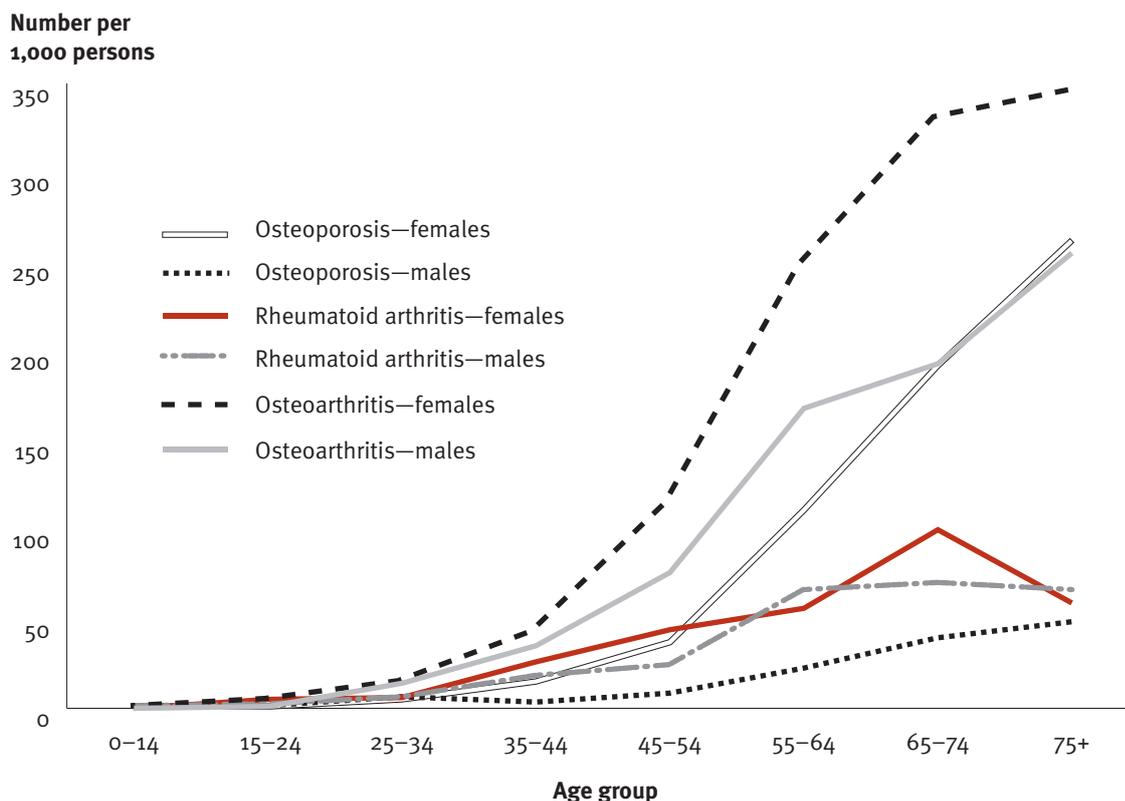
Osteoarthritis

Based on self-reported information from the 2004–05 National Health Survey (NHS), the most common form of arthritis, osteoarthritis, affected nearly 687,300 older Australians in that period (ABS 2006r). The condition mainly affects the hands, spine and weight-bearing joints such as the hips, knees and ankles. Osteoarthritis is usually a progressive disease, becoming worse with time and often leading to functional limitations. As the disease progresses, the pain becomes more severe and incapacitating, thus affecting the wellbeing of the individual. The prevalence of osteoarthritis increases with age and is more common among females than males (Figure 24.1).

Rheumatoid arthritis

Rheumatoid arthritis, the most common autoimmune disease in Australia, affected around 181,800 older persons in 2004–05, based on self-reports from the NHS (ABS 2006r). The disease involves inflammation

Figure 24.1: Prevalence of various forms of arthritis, by age, 2004–05



Source: AIHW analysis of 2004–05 ABS National Health Survey CURF, see Table A24.1.

of the joints, most often affecting the hand joints in a symmetrical fashion. Disability associated with rheumatoid arthritis starts early in the disease process and can seriously compromise the quality of life. The disease also produces a range of deformities.

Osteoporosis

Osteoporosis is the thinning and weakening of the bone substance, increasing the risk of fracture and deformity. Fractures after minimal trauma are a hallmark of osteoporosis. They can reduce a person's ability to walk unassisted, and may lead to loss of independence. Estimates based on self-reported information from the 2004–05 NHS suggest that almost 400,000 older Australians had osteoporosis (ABS 2006r). Osteoporosis has no symptoms and people often do not know that they have it until a fracture occurs. Therefore, estimates based on self-reported information are likely to underestimate its prevalence. The disease is more common in females than males, and is mostly limited to older people (Figure 24.1).

Disease severity and disability

Not everyone is affected in the same way by arthritis and musculoskeletal conditions. As the disease or condition progresses, decreased quality of life in terms of disability occurs because of more severe pain and limitations on activity. Depending on the amount of pain and stiffness, some people experience profound or severe activity limitation, whereas others have comparatively less.

Among people aged 65 years and over in 2003 who experienced disability associated with arthritis, 110,833 (38%) had profound or severe core activity limitation. This level of activity limitation implies an ongoing need for assistance with daily activities. The most common core activity limitation was mobility limitation, where people mainly needed assistance with going out of the house (74%), transferring to and from bed (30%) and getting about in the house (33%). Self-care was the second highest reported form of core-activity limitation. People in this group needed assistance with dressing (43%) and showering/bathing (28%). In both cases, the proportion with core-activity limitation was higher among females than males.

Diagnosis and treatment

Although arthritis and musculoskeletal conditions have a considerable impact on health and quality of life, their effects can be reduced through early diagnosis and appropriate management. There have been recent developments in understanding their causal mechanisms and risk factors, and improvements in medications for their treatment, mainly to control pain and improve functioning. Joint replacement surgery, in particular, has revolutionised the lives of many people.

Knee and hip replacements

Joint replacement (knee and hip replacement, or 'arthroplasty') is considered the most cost-effective intervention for severe osteoarthritis. The pain and disability of severe arthritis can be reduced by these procedures, restoring some patients to near-normal function (Brooks 2001; Bachmeier et al. 2001).

In 2004–05, there were 26,694 total joint replacements performed in Australia on people aged 65 years and over with the principal diagnosis of osteoarthritis, representing 69% of all total joint replacements in this age group. Arthroplasty of the knee was common among older females and arthroplasty of the hip was more common among older males. The numbers of knee and hip arthroplasties are increasing in Australia and, with the ageing of the population, this trend is likely to continue (AIHW: Rahman et al. 2005).

Early diagnosis of rheumatoid arthritis

Early treatment for rheumatoid arthritis improves outcomes in some people, limiting the pain, joint damage and disability that occurs (Taouli et al. 2002). However, rheumatoid arthritis can be difficult to diagnose in its early stages as symptoms vary in appearance and severity and can be similar to those of other types of arthritis and joint conditions.

Despite these difficulties, once the symptoms are brought to the attention of a rheumatologist an accurate diagnosis can often be made quickly. This is done through blood tests, joint x-rays showing damage or bone thinning, magnetic resonance imaging (MRI) or ultrasound, to diagnose the disease and to rule out other conditions. Several clinical trials have shown the benefits of early diagnosis of rheumatoid arthritis, and MRI has been found to be an important tool for this purpose (Oliver et al. 2005).

Osteoporosis and hip fractures

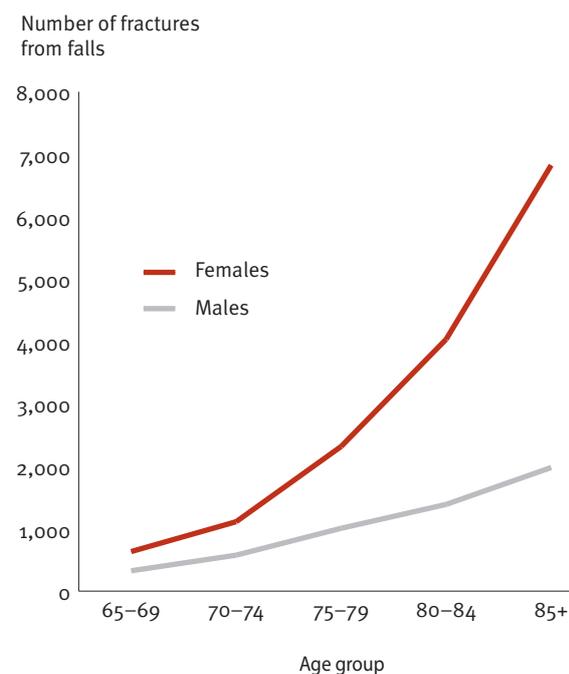
Fractures after minimal trauma (falls from standing height or less) are a hallmark of osteoporosis. A large proportion (92%) of fractures in people aged 65 years and over are osteoporotic in nature. Vertebral (spinal) fractures often occur without symptoms, almost 70% being clinically undetected. These fractures are often associated with height loss, vertebral deformity and vertebral compression. Activities such as lifting are a major cause of vertebral fractures.

Non-vertebral fractures, on the other hand, are painful and associated with swelling and deformity. In particular, hip fractures are highly debilitating and may shorten life expectancy, with almost 30% of those who have a hip fracture dying within 12 months (Woolf & Pfleger 2003). Many people with hip fractures do not regain their regular posture and mobility (Cumming et al. 1997), and the fracture almost always requires hospitalisation and major surgery.

In 2004–05, hip fracture was the most common reason for hospital separations among people aged 65 years and over with an additional diagnosis of osteoporosis. This was followed by fracture of the forearm and the lower leg. Hip fractures constituted more than 40% of all fracture separations among those aged 65 and over, and the proportion increased to 51% among those aged 85 years and over.

Falls are a major cause of hip fractures. In 2004–05, a fall was listed as the external cause of injury in 20,200 separations of persons aged 65 years and over with the principal diagnosis of hip fracture, representing 92% of all such separations. More females than males were hospitalised, with the hospital separation rate being higher for females at all ages. Hospital separations for fall-related hip fractures increase rapidly with age, from around the age of 65 years (Figure 24.2). The rates have changed little in recent years.

Figure 24.2: Hospital separations for fall-related hip fractures, by age and sex, 2004–05



Source: AIHW National Hospital Morbidity Database; see Table A24.2.

Dementia is not a single specific disease—it describes a syndrome associated with a range of diseases which are characterised by the impairment of brain functions, including language, memory, perception, personality and cognitive skills. It restricts daily activities and, in the long term, can result in high care needs. Many diseases can cause dementia, the most common being Alzheimer's disease. Other common forms of dementia include vascular dementia, dementia with Lewy bodies, front temporal dementia (including Pick's disease) and mixed forms of dementia. Dementia is a major health problem among older people, although it is not a natural part of ageing.

Governments at national and state level are developing responses to the challenges posed by dementia, through initiatives such as the Australian Government's *Helping Australians with dementia, and their carers—making dementia a National Health Priority* introduced in the 2005 Federal Budget. This funding package (\$320.6 million over five years) will support people with dementia and their carers through three measures: *Dementia—A National Health Priority, Extended Aged Care at Home Dementia Packages, and Training to Care for People with Dementia*.

Treatment and risk factors

There is currently no cure for dementia, although anticholinesterases can help manage the symptoms associated with Alzheimer's disease. There are more than 130 trials for Alzheimer's drugs under way in Australia, with several showing promise of curing the disease or slowing its development. However, controlling cardiovascular risk factors (e.g. diabetes and high blood pressure) and keeping physically, mentally and socially active can reduce the risk of dementia. Results from the Dubbo Study of the Health of the Elderly suggest that gardening has a strong protective effect against dementia (Simons et al. 2006). Other lifestyle activities that seemed to lower the risk of developing dementia included drinking a moderate amount of alcohol, daily walking and education. Pre-existing heart or lung disease, a physical disability and depression increased the risk of dementia.

Disability

Because of its disabling rather than fatal nature, dementia has a much greater effect on years of healthy life lost because of disability than it has on years of life lost because of premature death (Begg et al. 2007). In 2003, dementia was ranked the fifth leading cause of overall female burden of disease and was the most significant neurological disorder experienced. It is the greatest single contributor to burden of disease because of disability at older ages as well as the second greatest single contributor to the cost of care in residential aged care after incontinence (AIHW 2007e).

In older people, dementia is more likely than other health conditions to be associated with severe or profound limitations in self-care, mobility and communication, is more likely to be the main health condition resulting in disability, and is very likely to be associated with multiple health conditions (see Topic 17: *Disability levels* and Table A17.2). Other long-term health conditions include gait disturbance, slowed movement, fractures, arthritis, osteoporosis and urinary tract infections. The oral health of older people with dementia is also significantly worse than that of their unaffected age peers (AIHW Dental Statistics and Research Unit 2005).

Dementia is a progressive condition whose impact on the individual's functioning increases with the growing severity of the underlying disease. Dementia may be classified as 'mild' in about 55% of people, 'moderate' in 30% and 'severe' in 15%, based on the severity definitions of the Clinical Dementia Rating (CDR) scale (AIHW 2007e). Those with moderate dementia are described as having such severe memory loss that only highly learned material is retained, they are severely impaired in making judgments or solving problems and they often have no pretence of independent function outside the home, and require help with personal care.

Consequently, people with dementia use a significant quantity of health and aged care services including GPs, pharmaceuticals, aged care assessments, community care programs, hospitals and residential aged care. They also require a significant amount of time and help from their carers and many carers experience distress associated with the behavioural and psychological symptoms of dementia. Care and organisation of the environment can help with physical problems such as incontinence, difficulties of food intake and problems in lying down. Medication can improve the symptoms of dementia, which in turn may improve quality of life, ease the burden on caregivers, and delay admission to residential care.

Prevalence of dementia

Dementia prevalence by age and sex

Rates increase markedly with age. It is estimated that in 2006 about 6.5% of people aged 65 years and over and 22% of people aged 85 years and over had dementia (Table 25.1; AIHW 2007e). That is, there were around 181,000 people aged 65 years and over including 73,500 people aged 85 years and over with dementia. Almost two-thirds of older people with dementia (65% or 118,200 people) were female. The estimate for women is greater than that for men because women live longer, and the age-specific rates on which the estimates are based are higher for women in the older age groups.

According to these estimates, 43% of people with dementia are aged 75–84 years and 39% are aged 85 years and over. The age profile of males with dementia is different from that of females. For example, a higher proportion of males with dementia are aged less than 75 years (29%) than females (13%).

Dementia prevalence by place of residence

Because dementia is one of the most disabling health conditions, a large proportion of people with severe and advanced dementia require full-time care and live in cared accommodation. The 2003 Survey of Disability, Ageing and Carers (SDAC) is currently the best source of data about dementia in cared accommodation—there is evidence that the SDAC underestimates cases of mild and moderate dementia in households, but to a

lesser extent in cared accommodation.

The prevalence of dementia by place of residence (cared accommodation or households) is shown in Table 25.2. Of the 166,600 older people with dementia in 2003, 44% (74,100) were in cared accommodation, and consequently the remaining 56% (92,500 people) lived in households. The proportion of people with dementia who live in households decreases with age—79% of people with dementia aged 65–74 still live in the community, but for those aged 85 and over the proportion decreases to 36%.

The age profile of people with dementia in cared accommodation is older than for people in households. Almost one-quarter of people with dementia living in households are aged 85 years and over, compared with 55% of those in cared accommodation. Nearly half of males aged 85 and over with dementia still lived in households compared with 32% of females in the same age group. This pattern is reflected across all age groups where a greater proportion of men than women with dementia are still living in households.

The majority of people with dementia living in private households have mild dementia (93%); in contrast, 96% of people with dementia living in cared accommodation have moderate or severe dementia. Reflecting this pattern, most people with mild dementia are living in households (96%) and most people with moderate or severe dementia are in cared accommodation (91%). Accordingly, of the estimated \$1.4 billion health and aged care system expenditure for dementia in 2003, the majority (\$993 million) was in the residential aged care sector (AIHW 2007e).

Table 25.1: Prevalence of dementia in older Australians, by age and sex, 2006

	Rate (per cent)			Number		
	Males	Females	Persons	Males	Females	Persons
0–64	0.1	0.0	0.1	5,900	2,900	8,800
65–74	2.0	1.8	1.9	13,900	12,600	26,500
75–84	7.3	9.3	8.4	30,500	50,300	80,800
85+	17.1	24.9	22.4	18,300	55,300	73,600
Total 65+	5.0	7.8	6.5	62,700	118,200	180,900

Note: Derived from aggregated age- and sex-specific rates from a meta-analysis of data from European studies (Lobo et al. 2000). Percentages are of the estimated Australian resident population of that age and sex at 30 June 2006.

Source: Reproduced from AIHW 2007e based on data from Lobo et al. 2000 and Harvey et al. 2003.

Table 25.3 shows that the SDAC identified 67,650 people in permanent residential aged care with dementia, constituting 49% of the permanent resident population (as at June 2003). The age profile for people with dementia is slightly older than that for all permanent residents: 14% of residents are aged less than 75 years but this is true for only 8% of residents with dementia.

A person with dementia is also more likely to be in high-level care according to the Resident Classification Scale (RCS). The categories RCS 1 to RCS 4 of the RCS are designated high-level care. 83% of people with dementia (56,000 people) require high-level care compared with 64% of all permanent residents. Residents with dementia also dominate the high-level care categories—72% of residents in the highest care category (RCS 1) had dementia, dropping to 46% in RCS 4 and only 23% of residents in the low-level care categories RCS 5 to RCS 8 (Table 25.3).

Dementia prevalence in the future

Between 2006 and 2031, the number of older people with dementia is projected to increase from 180,800 to 452,600, an increase of 150% or 271,900 persons (Table 25.4). In the 5 years to 2011 the number of older people with dementia is projected to increase by 17% (31,300 persons) to around 212,000 persons.

This expected increase results from the projected increase in the number of older people over this period and is based on the assumption that prevalence rates for dementia remain stable. However, prevalence rates may change as a result of changes in prevention, detection, management and treatment of the disease.

Incidence of dementia

Based on information about prevalence, duration of illness and mortality it has been estimated that in 2003 there were around 37,000 incident (new) cases of dementia among Australians of all ages (AIHW 2007e:Table 4.9), of which 35,500 were among people aged 65 years and over. The majority among older Australians (64% or 22,700) were female and 12,800 were male. Incidence increased with age in both males and females, but decreased in those aged 85 years and over.

Not all of these incident cases of dementia will be initially visible because onset usually occurs with mild symptoms. However, as dementia is not reversible, these people will eventually become part of the visible prevalent population unless they die from other causes before that.

Table 25.2: Prevalence of dementia in households and cared accommodation, by age and sex, 2003

	^(a) Cared accommodation	Households	Total prevalence	Per cent living in households
Males				
0-64	600	4,900	5,500	90%
65-74	2,300	11,000	13,200	83%
75-84	7,300	20,900	28,200	74%
85+	7,900	7,700	15,600	49%
Total 65+	17,500	39,500	57,000	69%
Females				
0-64	600	2,000	2,600	76%
65-74	3,000	9,200	12,200	75%
75-84	20,000	28,100	48,100	58%
85+	33,600	15,700	49,300	32%
Total 65+	56,600	53,000	109,600	48%
Persons				
0-64	1,200	6,900	8,100	85%
65-74	5,300	20,100	25,400	79%
75-84	27,300	49,000	76,300	64%
85+	41,500	23,400	64,900	36%
Total 65+	74,100	92,500	166,600	56%

(a) 'Cared accommodation' includes accommodation for the retired or aged, home for the aged, home—other, hospital—general, and hospital—other. It is broader in scope than 'Residential aged care'.

Source: Reproduced from AIHW 2007e, based on data from Lobo et al. 2000 and Harvey et al. 2003 and AIHW analysis of ABS 2003 SDAC confidentialised unit record file.

Table 25.3: Dementia in residential aged care, by age and RCS category, 2003

Age	RCS 1	RCS 2	RCS 3	RCS 4	RCS 5	Total ^(a)	% total dementia	Total permanent residents ^(b)	% total permanent residents
					-RCS 8				
<65	325	135	270	0	221	951	1.4	6,038	4.3
65-74	1,121	1,247	802	60	1,173	4,403	6.5	13,065	9.4
75-84	6,548	7,367	4,656	1,494	4,489	24,554	36.3	49,165	35.4
85+	12,541	11,854	6,322	1,494	5,529	37,740	55.8	70,783	50.9
Total with dementia	20,535	20,603	12,051	3,049	11,413	67,650	100.0	139,051	100.0
<i>Percentage of persons with dementia in each RCS category</i>									
	30.4	30.5	17.8	4.5	16.9	100.0	..	..	..
Total permanent residents	28,470	34,213	20,255	6,558	49,555	139,051	..	..	..
<i>Percentage of permanent residents in each RCS category</i>									
	20.5	24.6	14.6	4.7	35.6	100.0	..	..	..
<i>Per cent of RCS category with dementia</i>									
	72.1	60.2	59.5	46.5	23.0	48.7	..	..	..

(a) Population with dementia in residential aged care is derived from analysis of the ABS 2003 Survey of Disability, Ageing and Carers.

(b) Total permanent residents of residential aged care (AIHW 2004d).

Note: see AIHW 2007e for a discussion of the methodology which allocated residents with dementia to one of the RCS categories.

Source: AIHW 2007e: Table 7.27.

Table 25.4: Projected number of people with dementia, by age and sex, 2006 to 2031

	2006			2011			2031		
	Male	Female	Persons	Male	Female	Persons	Male	Female	Persons
0-64	5,900	2,900	8,800	6,700	3,300	10,000	8,000	4,000	12,000
65-74	13,900	12,600	26,500	16,700	14,900	31,600	28,400	26,000	54,500
75-84	30,500	50,300	80,700	33,000	51,500	84,500	71,800	104,100	175,900
85+	18,300	55,300	73,500	25,700	70,300	96,000	74,200	148,100	222,200
Total 65+	62,600	118,200	180,800	75,300	136,700	212,000	174,400	278,200	452,600
Total	68,500	121,100	189,600	82,000	140,000	222,000	182,400	282,200	464,600

Source: Reproduced from AIHW 2007e: Table 4.5 based on data from Lobo et al. 2000 and Harvey et al. 2003.

Visual impairment can affect physical, functional, emotional and social wellbeing and markedly reduce quality of life. The ability to perform basic activities of daily living can be affected, leading to less independence. Driving ability and access to a licence can be affected, which is a key aspect of independence for many older people (Keeffe et al. 2002; RTA 2007) (see Topic 5: *Transport*). Impaired vision is often accompanied by isolation, depression, and poorer social relationships, and is strongly associated with falls and hip fractures. Preventing and treating visual impairment increases the prospect of enjoying life as a healthy, productive older person. In 2005, a national framework for action was released that aims at promoting eye health and preventing avoidable blindness and vision loss in Australia (DoHA 2005b, 2005c).

Prevalence of eye diseases, visual impairment and blindness

Based on studies that have included an eye examination, cataract is the most common eye disease among Australians aged 65 and over, affecting over 1.2 million people (almost half of that population). This is followed by age-related macular degeneration (AMD), diabetic retinopathy and glaucoma (Table 26.1).

About 170,000 Australians aged 65 years and over have visual impairment caused by eye disease. Of

these, 51,000 people are classified as blind and almost 119,000 other people have low vision. There is a strong association between visual impairment and advancing age (Figure 26.1).

Cataract is the primary cause of 42% of cases of visual impairment in older Australians and AMD the primary cause of 30%. The leading causes of blindness among Australians aged 65 years and over are AMD (55%), glaucoma (16%) and cataract (13%). Uncorrected refractive error, which can be corrected by eyewear, is the cause of visual impairment in a further 204,600 Australians aged 65 years and over.

Cataract

A cataract is a clouding of the eye's naturally clear lens. When the lens becomes opaque, the amount of light that passes through it is reduced and scattered, and the image cannot be correctly focused on the retina at the back of the eye. Vision becomes poor, as if looking through a frosty window, and eyes may be more sensitive to glare and light, and colours may seem faded or yellowed.

Age-specific rates for cataract increase with age and are well over 70% for people aged 80 years and over (Figure 26.1). Generally, prevalence rates are higher among women than among men.

Table 26.1: Most prevalent eye diseases and associated visual impairment and blindness among older people, 2004

	Eye disease		Visual impairment		Blindness	
	Number	Per cent	Number	Per cent	Number	Per cent
Cataract	1,215,400	46.7	71,800	42	6,600	13
Age-related macular degeneration	^(a) 138,800	5.3	50,600	30	28,300	55
Glaucoma	87,100	3.3	13,300	8	8,100	16
Diabetic retinopathy	97,100	3.7	5,400	3	^(b) 8,000	16
Other	..	..	28,500	17		
Total	..	..	169,600	100	51,000	100

(a) A further 398,400 older Australians were estimated to have early age-related maculopathy, which usually carries no symptoms, and were therefore at risk of developing age-related macular degeneration.

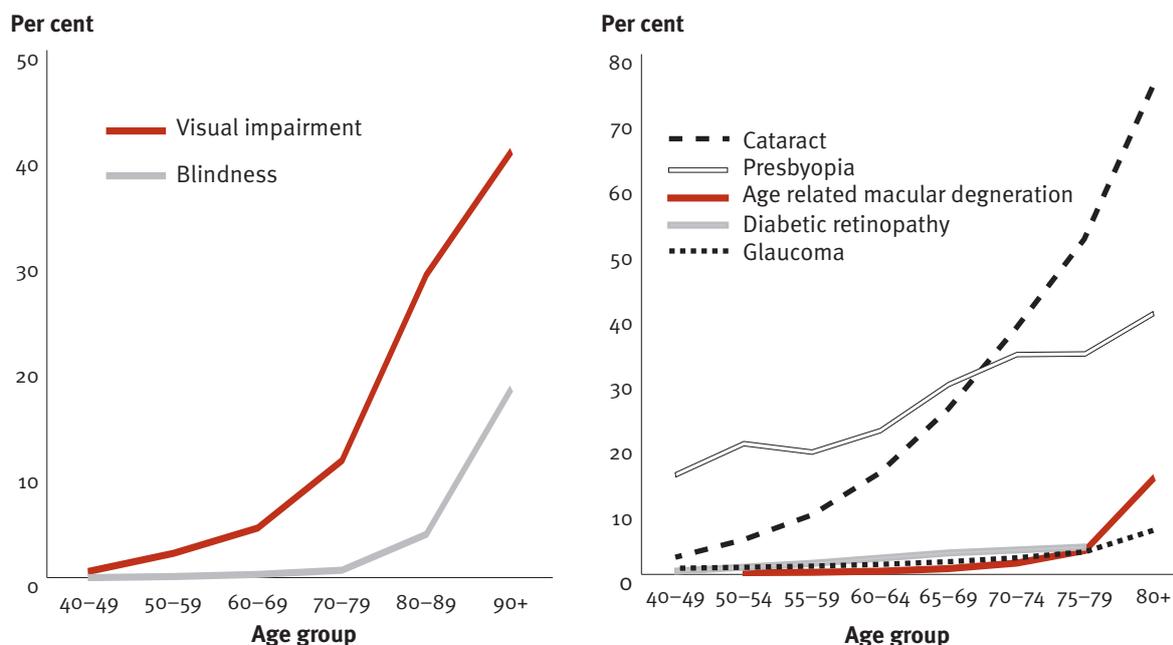
(b) Figures are for diabetic retinopathy and 'other' combined.

Notes

1. Visual impairment was defined as visual acuity < 6/12 and blindness as visual acuity < 6/60. Visual acuity of 6/12 is the ability to see only at 6 metres what the normal eye can see at 12 metres. Visual impairment includes blindness.
2. Refractive error is not included.

Source: AIHW 2005f.

Figure 26.1: Prevalence rates of visual impairment and its causes, by age, 2004



Source: AIHW 2005f, see also Table A26.1.

Age-related macular degeneration (AMD)

Age-related macular degeneration (AMD) is a progressive condition affecting the central part (macula) of the retina that provides fine vision for daily tasks such as reading and recognising faces. In the early stage, sometimes referred to as age-related maculopathy (ARM), vision is unaffected and people may be unaware that they have the condition. People with ARM are at higher risk of AMD but do not necessarily progress to AMD.

Age-specific rates increase markedly for people over 80 years (Figure 26.1). Rates are similar between men and women.

Glaucoma

Glaucoma is a disease involving damage to the optic nerve and subsequent vision loss or blindness. The condition is often associated with increased intraocular pressure resulting from either malfunction or malformation of the eye's drainage system. Most cases of glaucoma usually begin with a loss of peripheral

vision, which is often unnoticeable. As permanent nerve damage occurs, symptoms become obvious. Tunnel vision may develop, and only objects that are straight ahead can be seen. Signs include headache, blurred vision, light sensitivity or haloes around lights.

There was no statistically significant difference in prevalence rates between men and women, and rates increased with age (Figure 26.1).

Diabetic retinopathy

Diabetes impairs the body's ability to use glucose for energy and results in high blood glucose levels. Over a period of years, this will damage small blood vessels in the body, among other effects, and often cause complications. Diabetic retinopathy (DR) is a common diabetes complication that affects the small blood vessels of the retina.

In the early stages the blood vessels of the retina can develop small swellings in the walls, bleed, and leak fluid. This stage is not usually associated with visual impairment and there are no symptoms. However, if this process affects the macula, fluid can accumulate and,

unless treated, loss of central vision occurs. In people who have had diabetes for many years, abnormal blood vessels can grow on the surface of the retina, and without treatment these can bleed, causing cloudy vision or blindness.

Abnormal fibrous tissue may also develop, leading to retinal detachment and severe vision loss.

Some 97,100 people aged 65 years and over have DR (Table 26.1). For this age group this represents 3.7% of people and 18.3% of people with diabetes. The prevalence of DR was greater in the older age groups (Figure 26.1).

Presbyopia

Presbyopia is a condition in which the natural lens of the eye loses its flexibility so that focusing on close objects becomes difficult. It develops over a number of years and usually becomes noticeable during middle age, beginning in the 40s. The signs of presbyopia include tendency to hold reading materials at arm's length, blurred vision at normal reading distance, and fatigue, eyestrain or headache when performing close work. Presbyopia is generally believed to be part of the natural process of ageing, unlike eye diseases such as cataract, age-related macular degeneration, glaucoma and diabetic retinopathy.

Estimation of the prevalence of presbyopia is problematic. Based on self-reported data from the 2004–05 NHS, presbyopia affects 333,700 older Australians (aged 65 years and over), which represents 14% of that age group (ABS 2006r). However, these estimates are in marked contrast to those from the 2001 NHS (761,800 and 34%). This large fall is more likely to be an unforeseen effect of a change in methodology than a true reflection of a change in population health (ABS 2006r). Both surveys found that there was a clear increase in the prevalence rate with age, with men and women having similar patterns.

Aboriginal and Torres Strait Islander peoples

There are limited data available on the eye health of Aboriginal and Torres Strait Islander peoples. There are no estimates of cataract prevalence based on ophthalmic examination and the data based on self-report is inconclusive. Reliable prevalence estimates are also lacking for AMD and glaucoma. Diabetic retinopathy is likely to be an important vision-threatening condition among Indigenous Australians because of the high rate of Type 2 diabetes in some

communities. The prevalence of trachoma is very high among the children of some Indigenous communities and its sequel, trichiasis, is relatively high among older Indigenous Australians in some areas. There are few recent data on the prevalence of trachoma, or of trichiasis among older Indigenous Australians. There are no eye examination data on the eye health on Indigenous people living in urban and rural settings.

The ageing factor

Ageing is the major contributing factor to visual impairment and blindness. Prevalence rates are greater among successive age groups and rates of major vision-threatening conditions are also strongly age-related (Figure 26.1). Unless these rates fall markedly, the number of older people with vision problems will increase over future decades as the population ages.

Some vision problems among older Australians are acquired early in life (e.g. congenital eye disorders, retinitis pigmentosa and eye trauma), but at a population level their prevalence is small compared with vision problems associated with ageing towards the end of life.

Treatment for eye diseases

The availability of successful treatments differs according to the eye disease. There is a simple and effective surgical procedure that restores vision for cataract. There is no cure for AMD but treatment may delay or halt its progress. Medical treatment, laser treatment or surgery can slow the progress of glaucoma but any vision loss cannot be restored. Diabetic retinopathy can be successfully treated by laser surgery if identified early, and laser treatment can be used to prevent severe vision loss and blindness even in advanced cases.

Older adults are a priority group for oral health policies, including Australia’s National Oral Health Plan (NACOH 2004). This has come about because of two significant trends that will continue to have a profound effect on oral disease and requirements for dental care through the first half of the 21st century. The first is the demographic trend of population ageing, in which the number and proportion of older adults is increasing (see Topic 2: *The changing demographic profile*). The consequence is that a broad range of diseases associated with older age are becoming more common in the Australian population, including oral conditions such as dental decay and gum disease. The second trend is an equally dramatic reduction in rates of tooth loss which has increased the number and proportion of Australians who are retaining their own natural teeth. Because those retained teeth remain at risk of developing oral disease, and because of the multiplier effect of population ageing, the number of older people with conditions such as dental decay is projected to increase (AHMAC Steering Committee for National Planning for Oral Health 2001).

The most recent information about oral health status of older Australians comes from the National Survey of Adult Oral Health 2004–06 in which 14,123 people in the age group 15–97 years were interviewed and 5,505 people were dentally examined (AIHW Dental Statistics

and Research Unit 2007). It represented Australia’s second national oral examination survey, occurring some 17 years after the National Oral Health Survey of Australia 1987–88 (Barnard 1993). This section summarises key findings from the survey, including a comparison of selected trends in oral health and patterns of dental care. The focus is on people in the age groups 55–74 years and 75 years and over.

Prevalence of oral diseases and disorders

Oral conditions measured in the 2004–06 survey included tooth loss, presence and experience of dental decay, gum disease and tooth wear. All measures of tooth loss were more frequent in successively older age groups. However, some of the largest absolute differences were observed among those aged 75 years and over compared with people aged 55–74 years (Table 27.1). For example, one in three people aged 75 years and over (36%) had lost all of their natural teeth, but the figure was more than 20 percentage points lower for those aged 55–74 years. Other measures of oral disease that accumulate with age followed a similar pattern of increasing frequency in progressively older age groups: filled teeth, gum recession and attachment loss, and dental wear.

Table 27.1: Frequency of clinical oral conditions in four age groups, 2004–06

Oral condition	Age group (years)			
	15–34	35–54	55–74	75+
Tooth loss and replacement				
Loss of all teeth (% of people)	0.0	1.7	13.9	35.7
Fewer than 21 natural teeth (% of dentate people ^(a))	0.4	6.8	28.6	55.1
Denture(s) worn (% of dentate people)	1.5	10.3	36.0	61.2
Number of extracted teeth ^(b) (average per dentate person)	0.8	3.9	10.2	14.1
Experience of dental decay				
Untreated decay of tooth crown (% of dentate people)	25.8	27.1	22.6	22.0
Untreated decayed tooth root (% of dentate people)	1.6	7.1	12.6	17.3
Filled teeth (% of dentate people)	65.4	94.8	96.2	89.5
DMFT: number of decayed, missing or filled teeth (average per person)	4.5	14.4	22.2	24.3
Gum disease				
Moderate or severe gum disease ^(c) (% of dentate people)	7.4	24.5	43.6	60.8
Gum pockets of 4mm or more (% of dentate people)	13.1	23.9	23.7	26.0
Gum attachment loss of 4mm or more (% of dentate people)	17.4	48.8	73.0	80.5
Gum inflammation (% of dentate people)	19.1	19.3	21.0	23.7
Tooth wear				
Severe wear of lower incisors (% of dentate people)	0.5	2.3	7.8	12.0

(a) People who have one or more natural teeth.

(b) Teeth extracted because of decay or gum disease.

(c) Either two or more sites between adjacent teeth where the gum has lost its attachment to the tooth for 4 mm or more or at least two such sites that have pockets of 5 mm or more.

Source: National Survey of Adult Oral Health 2004–06 (AIHW Dental Statistics and Research Unit 2007).

In contrast, approximately one in four people had untreated dental decay in all four age groups, a similar proportion in each age group had gum inflammation, and the percentage of people with deep gum pockets was similar for all but the youngest age group. Those three measures are indicators of untreated or active oral disease. The overall pattern in Table 27.1, therefore, demonstrates that although cumulative measures of oral disease (e.g. tooth loss) increase for successively older groups of Australians, the levels of untreated, active disease were similar among age groups.

Trends in complete tooth loss

In the 17 year interval between surveys, the percentage of Australians who were edentulous (had no remaining natural teeth) more than halved, from 14% to 6% (AIHW Dental Statistics and Research Unit 2007:Figure 8.1). The reduction was pronounced even among people aged 75 years and over, where the percentage reduced from 63% to 36%. Almost all of the reduction occurred because of the passing of older generations who had experienced an 'epidemic' of dental extractions during the first half of the 20th century. Within generations, levels of complete tooth loss did not change meaningfully as members of each generation aged 17 years between surveys. For example, among people born between 1916 and 1932, 33% were edentulous in

the 1987–88 survey, when members of that generation were aged 56–72 years. Seventeen years later, members of that same generation were aged 73–89 years, yet their prevalence of edentulism remained at 33%. This analysis of two national surveys confirms findings based on analysis of other surveys dating back to 1979 (Sanders et al. 2004). The results illustrate that prevalence of complete tooth loss in the Australian population is unrelated to the ageing process. Instead, it is dictated by the historical period in which people were born, specifically the patterns of dental treatment in those periods.

Trends in dental decay experience

In the 17 year interval between national oral health surveys, there were divergent trends in dental decay experience among seven age groups (Table 27.2). Among older age groups, there were marked reductions of approximately 4 teeth per person in the average number of missing teeth, whereas among those aged 15–24 years, there was only a negligible reduction of 0.2 of a tooth per person. The number of filled teeth per person increased for the oldest age groups and decreased for age groups below age 45. Meanwhile, the number of untreated decayed teeth per person declined fairly uniformly among all age groups.

These divergent patterns among age groups produced starkly different trends in overall dental decay

Table 27.2: Average number of teeth with experience of dental decay among dentate^(a) Australians, by age, 1987–88 and 2004–06

Component of decay experience	Age group (years)							
	Survey	15–24	25–34	35–44	45–54	55–64	65–74	75+
Missing teeth per person	1987–88	0.4	2.3	4.9	9.9	13.6	16.4	18.3
	2004–06	0.6	1.0	2.1	6.1	9.2	12.0	14.1
	<i>Change</i>	0.2	-1.3	-2.8	-3.8	-4.4	-4.4	-4.2
Filled teeth per person	1987–88	4.1	9.1	10.6	9.2	7.5	6.1	5.4
	2004–06	2.0	4.2	7.8	12.0	12.1	10.9	9.8
	<i>Change</i>	-2.1	-4.9	-2.8	2.8	4.6	4.7	4.3
Untreated decayed teeth per person	1987–88	1.4	1.8	1.4	1.3	1.3	1.4	1.4
	2004–06	0.6	0.8	0.7	0.6	0.4	0.4	0.4
	<i>Change</i>	-0.8	-1.0	-0.7	-0.8	-0.8	-1.0	-0.9
DMFT ^(b) per person	1987–88	5.9	13.1	16.9	20.4	22.4	24.0	25.1
	2004–06	3.2	5.9	10.7	18.7	21.8	23.3	24.3
	<i>Change</i>	-2.7	-7.2	-6.2	-1.7	-0.6	-0.6	-0.7

(a) People who have one or more natural teeth.

(b) Number of decayed, missing or filled teeth.

Source: AIHW Dental Statistics and Research Unit 2007.

experience, as indexed using the DMFT index (total number of decayed, missing or filled teeth per person). That is, there were only negligible reductions in the DMFT index for the three oldest age groups, whereas average levels of the index halved for the two youngest age groups (Table 27.2).

Patterns of dental care

Older adults were once characterised as a group that made infrequent dental visits. However, that generalisation is true only for edentulous people: in the 2004–06 survey, only 20% of edentulous people reported having made a dental visit in the preceding year, compared with 62% of dentate people. Among the 64% of people aged 75 years and over who were dentate, two-thirds reported a dental visit within the preceding year, a proportion that did not differ meaningfully from the 86% of those aged 55–74 years who were dentate, and notably higher than the 100% of those aged 15–34 years who were dentate. In other words, within the increasing majority of Australians who are dentate, older age groups were more likely to attend the dentist than younger age groups. Furthermore, during the 17-year interval between surveys, the rate of dental attendance increased most markedly for older adults, for example increasing from 53% to 62% for dentate Australians aged 75 and over (AIHW Dental Statistics and Research Unit 2007).

Interpretation

Most oral diseases accumulate with age, and therefore conditions such as tooth loss are more extensive and severe in older age. Yet, analysis of trends within generations demonstrates that the reasons for complete tooth loss lie in historical patterns of dental treatment, and are not related to ageing. The 'success' of improved tooth retention that has accompanied improvements in dental treatment has created a 'failure' of oral disease prevention: older adults remain at risk of dental decay and gum disease, and they have levels of untreated and active disease that are equivalent to younger age groups. The trend of increasing rates of dental attendance during a recent 17-year period among older age groups reflects an increased demand for dental care that has been made necessary to treat that 'failure of success' (see Topic 32: *Dental services*). Taken together, the findings illustrate that oral health needs of older Australians will continue to increase into the 21st century.

