



3.3 Chronic disease and comorbidities

Chronic diseases are the leading cause of ill health, disability and death, and have a significant impact on the health sector. The term 'chronic disease' refers to a wide group of conditions, illnesses and diseases. Chronic diseases are generally characterised by their long-lasting and persistent effects, which distinguish them from 'acute' conditions—that is, conditions that first manifest over a short period, and often with potentially intense and severe effects.

Chronic diseases can range from mild conditions such as short- and long-sightedness, mild dental decay and minor hearing loss, to debilitating arthritis and low back pain, to life-threatening heart disease and cancers. They can result from the complex interaction of external factors and biological causes, usually over a long period, and can lead to functional limitations and disability. If the biological and metabolic changes that occur during these long latency periods were identified, early intervention strategies, including prevention, treatment and management plans, may be implemented. Once present, chronic diseases often persist throughout a person's life, so there is generally a need for long-term management by individuals and health professionals.

Data on some of the most common and important chronic diseases are featured in individual snapshots in this chapter. This article focuses on a specific group of chronic diseases, using a single data source to enable comorbidity analyses (see Box 3.3.1 for more detail). The prevalence estimates presented here may differ from elsewhere in this report because estimates for each chronic disease can vary between data sources. For example, self-reported data for chronic kidney disease substantially underestimate its prevalence compared with biomedical testing: 1% versus 10% respectively (AIHW 2014).

Who suffers from chronic disease?

In 2014–15, more than 11 million Australians (50%) reported having at least one of the eight selected chronic diseases. This rate was higher for:



People aged **65 and over (87%)** compared with people aged 0–44 (35%).



Females (52%) compared with males (48%).



People in the **lowest socioeconomic areas (55%)** compared with those in the highest socioeconomic areas (47%).



People living in **Regional and Remote areas (54%)** compared with those in *Major cities* (48%).



Box 3.3.1: Classifying chronic diseases

Although chronic diseases cover a diverse group of conditions, the analyses presented in this feature article focuses on self-reported data from the Australian Bureau of Statistics (ABS) 2014–15 National Health Survey (NHS) (ABS 2015), unless otherwise specified, for the following eight chronic diseases:

- arthritis
- asthma
- back pain and problems
- cancer (such as lung and colorectal cancer)
- cardiovascular disease (such as coronary heart disease and stroke)
- chronic obstructive pulmonary disease (COPD)
- diabetes
- mental health conditions (such as depression).

These diseases were selected because they are common, pose significant health problems, have been the focus of ongoing national surveillance efforts, and action can be taken to prevent them. Chronic kidney disease is not included because of the low numbers identified using self-reported data.

Using the self-reported data from the 2014–15 NHS enables us to look at the co-occurrence of chronic diseases across the Australian population (comorbidity), which is not possible using separate data sources.

What are the most common chronic diseases?

Based on self-reported data, cardiovascular disease (18%) and mental health conditions (18%) were the most commonly reported of the selected chronic diseases in Australia, followed by back pain and problems (16%) (Figure 3.3.1). Among males, cardiovascular disease (18%) was followed by back pain and problems (16%) and among females, mental health conditions (19%) and cardiovascular disease (19%) were most common.

The most common chronic diseases reported varied by age group. Of the eight selected chronic diseases, mental health conditions (16%) and asthma (11%) were the most common among people aged under 45. Cardiovascular disease (27%) and arthritis (26%) were the most common among people aged 45–64 and also for people aged 65 and over (59% and 51%, respectively).

Measuring disease prevalence alone does not provide a complete picture of the impact of chronic disease. For example, based on self-reported survey data, just 2.6% of the population said that they had COPD but it was the fifth leading cause of death in 2013 (4.4% of all deaths). (For more information, see chapters '1.3 How healthy are Australians?' and '3.10 Chronic respiratory conditions'.) This under-reporting may be because some chronic diseases have fewer treatment options, higher mortality rates, or remain undiagnosed until the disease has progressed to a life-threatening stage.



Figure 3.3.1: Most common selected chronic diseases, by age and sex, 2014–15

	Age group			Sex		
	0–44	45–64	64+	Males	Females	People
1	Mental health conditions	Cardiovascular disease	Cardiovascular disease	Cardiovascular disease	Mental health conditions	Cardiovascular disease
2	Asthma	Arthritis	Arthritis	Back pain and problems	Cardiovascular disease	Mental health conditions
3	Back pain and problems	Back pain and problems	Back pain and problems	Mental health conditions	Arthritis	Back pain and problems
4	Cardiovascular disease	Mental health conditions	Mental health conditions	Arthritis	Back pain and problems	Arthritis
5	Arthritis	Asthma	Diabetes	Asthma	Asthma	Asthma


Note: The selected chronic diseases are: arthritis, asthma, back pain and problems, cancer, cardiovascular disease, chronic obstructive pulmonary disease, diabetes, and mental health conditions.
Sources: ABS 2015 (Table 19.1); Table S3.3.1.

Of the eight selected chronic diseases, cancer (1.6%) was the least prevalent, based on self-reported data. Some people diagnosed with cancer may consider it to be a one-off event rather than a 'long-term condition'. However, cancers can recur multiple times in a person and over an extended time. As treatments and survival rates improve, cancer is increasingly viewed as a chronic disease that may not be cured, but can often be managed for months or even years (American Cancer Society 2015).

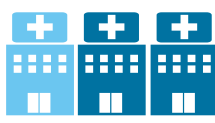
What are the impacts?

Changes to our lifestyles and reduction in other diseases in the last hundred years have meant that chronic diseases are increasingly common and now cause most of the burden of ill health. They can have large impacts on quality of life and have social and economic effects.

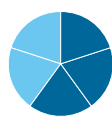
The eight selected chronic diseases were associated with:



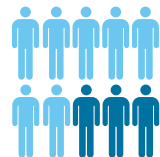
Around **1 in 3** (30%) problems managed in general practice in 2014–15
 (Britt et al. 2015).



More than **1 in 3** (39%) potentially preventable hospitalisations in 2013–14 (AIHW 2015).



More than **three-fifths** (61%) of the total burden of disease in 2011 (AIHW 2016a).



Over **7 in 10** (73%) deaths in 2013 (AIHW 2016b).

Many chronic diseases are amenable to preventive measures such as changes in behaviour. These changes, together with timely and effective medical treatments, are important in improving chronic disease health outcomes.



What are the risk factors?

Many factors influence how healthy we are. Some of these have an impact at an individual level (for example, health behaviours or genetic make-up), while others have an impact at a broader societal level, such as the availability of health services, vaccination programs or a clean and healthy environment. As already noted, the occurrence of chronic diseases increases with age. Many chronic diseases share common risk factors which are largely preventable. Modifying these risk factors can reduce the risk of developing a chronic disease and result in large population health gains by reducing illness and rates of death.

The onset of chronic disease is linked to a number of different behavioural and biomedical risk factors that can affect disease management and progression. Behavioural risk factors include physical inactivity and poor nutrition, smoking, risky alcohol consumption and illicit drug use. Biomedical characteristics that contribute to the development of chronic disease include overweight and obesity, high blood pressure, dyslipidaemia (for example, high blood cholesterol) and impaired fasting glucose. Biomedical risk factors are often influenced by behavioural risk factors. For more information, see 'Chapter 4 Determinants of health'.

About comorbidity

Comorbidity refers to the occurrence of two or more diseases in a person at one time. While the existence of these multiple health conditions may be unrelated, in many instances—and particularly in relation to chronic diseases—there is some association between them. Further, a range of chronic diseases share common risk factors. Understanding more about comorbidities can provide vital information for prevention, management and treatment of chronic diseases.

Who experiences comorbidity?

Overall, 1 in 4 (23%) Australians—5.3 million people—had two or more of the eight selected chronic diseases in 2014–15. The rate was higher for:



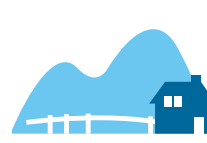
People aged **65 and over (60%)** compared with people aged 0–44 (9.7%).



Females (25%) compared with males (21%).



People living in the **lowest socioeconomic areas (30%)** compared with the highest socioeconomic areas (19%).

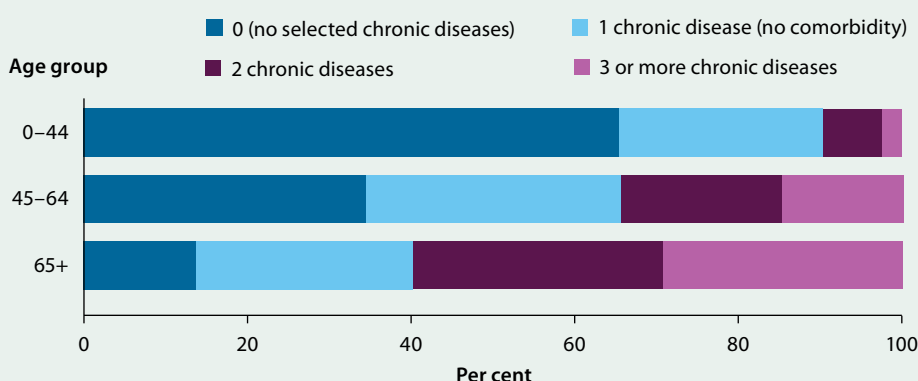


People living in **Regional and Remote areas (28%)** compared with *Major cities* (21%).



The rate of comorbidity and the number of chronic diseases experienced (based on self-reported data) increases with age. Almost 1 in 3 (29%) people aged 65 and over reported having three or more chronic diseases, compared with just 2.4% of those under 45 (Figure 3.3.2).

Figure 3.3.2: Comorbidity of selected chronic diseases, by age, 2014–15



Note: The selected chronic diseases are: arthritis, asthma, back pain and problems, cancer, cardiovascular disease, chronic obstructive pulmonary disease, diabetes, and mental health conditions.

Sources: ABS 2015 (Table 18.3); Table S3.3.2.

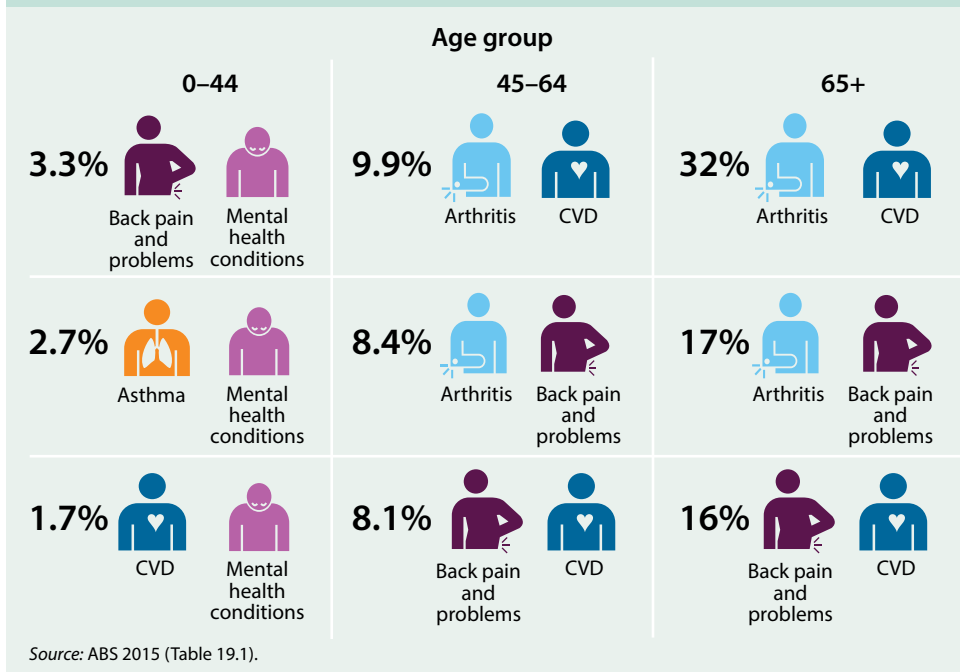
What are the most common chronic disease comorbidities?

The most common comorbidity combination was arthritis with cardiovascular disease (7.4%), followed by arthritis with back pain and problems (5.1%), and back pain and problems with cardiovascular disease (5.0%). Arthritis with cardiovascular disease was the most frequently occurring comorbidity combination in both males (6.3%) and females (8.5%), and reflected the pattern in the overall population. Back pain featured in the second and third most common comorbidities among both males and females; among males it most frequently occurred with cardiovascular disease (5.1%) and mental health conditions (4.5%), and among females it featured with arthritis (5.8%) and mental health conditions (5.2%).

The top three chronic disease combinations for people aged 45–64, and for those aged 65 and over, reflected the pattern in the overall population but with higher rates, particularly for the 65-and-over age group: arthritis occurring with cardiovascular disease (32%), followed by arthritis with back pain and problems (17%), and back pain and problems with cardiovascular disease (16%). Among the 0–44 age group, combinations with mental health conditions were more common, co-occurring with back pain and problems for 3.3% and asthma for 2.7% (Figure 3.3.3).



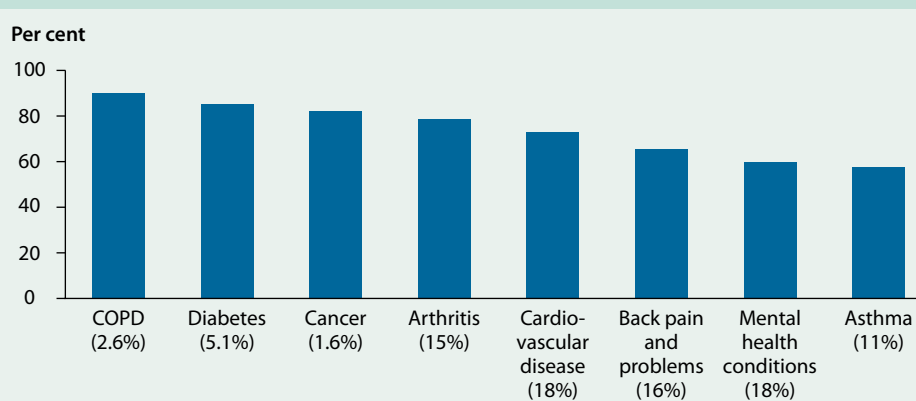
Figure 3.3.3: Most common comorbidities of selected chronic diseases, by age, 2014–15



Comorbidity among selected chronic diseases

Although cancer (1.6%), COPD (2.6%) and diabetes (5.1%) were the least reported of the eight selected chronic diseases in the 2014–15 NHS, people with these conditions were more likely than people with other conditions to have a comorbidity (90% of people with COPD, 85% of people with diabetes, and 82% of people with cancer had two or more chronic diseases; Figure 3.3.4). This is because people with COPD, diabetes or cancer tend to be older, and the likelihood of having multiple chronic diseases increases with age.

Figure 3.3.4: Comorbidity of selected chronic diseases, by chronic disease, 2014–15



COPD= chronic obstructive pulmonary disease.

Notes

1. Y-axis % refers to the percentage of people with each chronic disease who had at least one other chronic disease (comorbidity).
2. X-axis label % refers to the percentage of the population with each chronic disease (prevalence).

Sources: ABS 2015 (tables 3.3 and 19.3); Table S3.3.4.



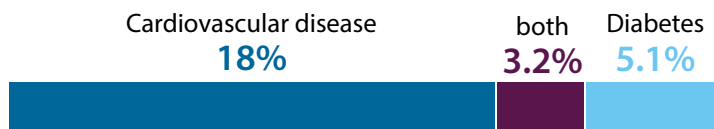
Some chronic diseases may act as a precursor or as a risk factor for other chronic diseases. For example, having diabetes is known to be a risk factor for developing cardiovascular disease (AIHW 2014), and people with asthma are at greater risk of developing COPD later in life (ACAM 2011).

Other chronic diseases affect similar parts of the body and may manifest as comorbidity. For example, both arthritis and back pain and problems cause pain in muscles, bones and joints.

Common comorbidities of the eight selected chronic diseases by broader body system groupings include:

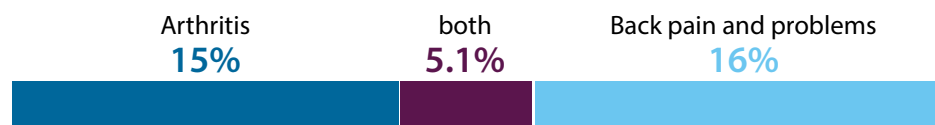
Vascular diseases

742,000 people (3.2%) reported having both cardiovascular disease and diabetes.



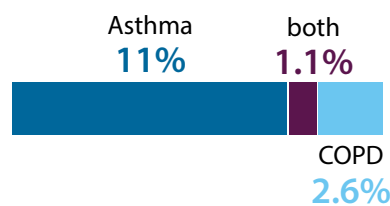
Musculoskeletal conditions

1.2 million people (5.1%) reported having both arthritis and back pain and problems.



Chronic respiratory conditions

250,000 people (1.1%) reported having both asthma and COPD.





Among people with any of the eight selected chronic diseases, the most commonly reported comorbid chronic diseases were cardiovascular disease, arthritis, back pain and problems, and mental health conditions. These four conditions featured prominently as comorbidities because they are strongly age related and the most commonly reported chronic diseases. For example:

Cardiovascular disease



was reported as a comorbidity among



63% of people with diabetes



51% of people with cancer



49% of people with COPD

Arthritis



was reported as a comorbidity among



52% of people with COPD



41% of people with diabetes



41% of people with cardiovascular disease

Back pain and problems



was reported as a comorbidity among



38% of people with COPD



33% of people with arthritis



29% of people with diabetes

Mental health conditions



were reported as a comorbidity among



38% of people with COPD



30% of people with back pain and problems



29% of people with asthma



What is the future of chronic disease and its comorbidities?

If left unchecked, trends in chronic disease risk factors (especially physical inactivity and poor nutrition leading to overweight and obesity), combined with a growing and ageing population and better treatment and management, will lead to increasing numbers of people living with chronic diseases. Helping people to make good lifestyle choices and having an accessible and integrated health care system can help to keep people in good health and prevent illness.

The growing burden of chronic disease will place more importance on the effective treatment of multiple chronic conditions and complex health care needs. Developing and implementing new and innovative methods for early detection of disease and treatment—including coordinated care, self-management and chronic disease management plans—holds promise for future disease management.

What is the AIHW doing?

The AIHW develops and maintains national data to support monitoring and reporting on specific chronic diseases, such as cardiovascular disease, diabetes, kidney disease, cancer, musculoskeletal conditions and respiratory conditions. This includes reports on individual chronic diseases, comorbidities and common risk factors.

The Australian Burden of Disease Study complements the work of the chronic disease monitoring centres and combines multiple data sources to count and compare the total fatal and non-fatal health loss due to a range of diseases and injuries. For more information, see 'Chapter 3.1 Burden of disease and injury in Australia'.

The AIHW also reports on the use of health services among people with chronic disease (for example, hospital admissions and mental health services); disparities in specific population groups (for example, prisoners and Indigenous Australians); and disease expenditure.

In addition, the Department of Health is developing the National Strategic Framework for Chronic Conditions. This will be the foundation chronic conditions policy document that sets the direction and outcomes required to achieve the vision that *all Australians live healthier lives: with reduced risk, or delayed onset, of developing a chronic condition; and/or with their chronic condition/s well managed.*

What is missing from the picture?

Better statistical information on the incidence and prevalence of chronic diseases could benefit future health services planning. Some chronic diseases such as dementia are not readily identifiable in health surveys.

Additional data on comorbidity and treatment—including on primary care; health service use; medications and whether these are being taken correctly; quality of life; and people's ability to carry out their daily lives—will also help to develop a picture of how chronic diseases affect people in Australia and the effectiveness of current strategies.

Data and information on chronic disease would greatly benefit from data linkage to monitor disease progression; comorbidities; service use and costs; patient journeys and care pathways; outcomes; and interactions between disease and risk factors.



Where do I go for more information?

More information on chronic disease and its comorbidities is available on the AIHW website at www.aihw.gov.au/chronic-diseases. For specific chronic diseases, refer elsewhere in this chapter.

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