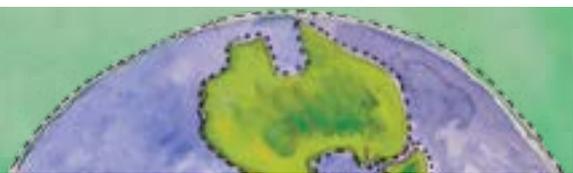


4.2 Chronic disease—Australia's biggest health challenge



Chronic diseases are the leading cause of illness, disability and death in Australia, accounting for 90% of all deaths in 2011 (AIHW 2011b). The advent of chronic diseases follows successes in limiting infection and infant deaths during the late 19th and early 20th century. With changing lifestyles and ageing population, chronic diseases have become increasingly common and now cause most of the burden of ill health.

Many different illnesses and health conditions can be classified under the broad heading of chronic disease. They often coexist, share common risk factors and are increasingly being seen as acting together to determine the health status of individuals. There is great potential for integrating prevention and care, and treating selected chronic diseases together, to keep people healthy for as long as possible.

To simplify, chronic disease is often discussed in terms of 4 major disease groups—cardiovascular diseases, cancers, chronic obstructive pulmonary disease (COPD) and diabetes, with 4 common behavioural risk factors—smoking, physical inactivity, poor nutrition and harmful use of alcohol. Between them, these 4 disease groups account for three-quarters of all chronic disease deaths. Deaths alone, however, do not fully capture the impact of chronic disease. Notably, mental health-related issues are not a major cause of death, but they do cause significant ill health and disability in the Australian population (see Chapter 4 'Mental health in Australia').

Long common in Australia and other developed countries, illness and death from chronic disease is now becoming widespread in developing countries, as rising incomes, falling food prices and increasing urbanisation lead to global changes in diet, overweight and physical inactivity (AIHW 2012d; WHO 2011). The worldwide chronic disease 'pandemic' was the subject of a high-level United Nations meeting in 2011, which called for a 25% reduction by 2025 in mortality from chronic diseases among people aged between 30 and 70, adopting the slogan '25 by 25' (Beaglehole et al. 2011; Hunter & Reddy 2013).

Because of its personal, social and economic impact, tackling chronic disease and its causes is the biggest health challenge that Australia faces. A growing understanding that many of these diseases arise from similar underlying causes, have similar features, and share a number of prevention, management and treatment strategies, as well as significant and increasing costs, is challenging us to transform the way in which we respond to chronic disease.

Describing chronic disease

Typically, chronic diseases are long-lasting, and have persistent effects. They can result from complex causes, which can include a number of different health risk factors. They are a leading cause of disability, and have major impacts on health and welfare services (AIHW 2010). Many people have more than 1 chronic illness or condition at the same time.



Chronic diseases can range from mild conditions such as short- or long-sightedness, dental decay and minor hearing loss, to debilitating arthritis and low back pain, and to life-threatening heart disease and cancers. These conditions may never be cured completely, so there is generally a need for long-term management. Once present, chronic diseases often persist throughout life, although they are not always the cause of death. Examples of chronic diseases include:

- cardiovascular conditions (such as coronary heart disease and stroke)
- cancers (such as lung and colorectal cancer)
- many mental disorders (such as depression)
- diabetes
- many respiratory diseases (including asthma and COPD)
- musculoskeletal diseases (arthritis and osteoporosis)
- chronic kidney disease
- oral diseases.

These chronic diseases have each been the focus of recent surveillance efforts, because of their significant health effects and costs, and because actions can be taken to prevent them (AIHW 2011b).

Disease burden in Australia

From any perspective, the size of the chronic disease problem in Australia is large. Analysis of the 2007–08 National Health Survey indicates that one-third of the population (35%, or 7 million people) reported having at least 1 of the following chronic conditions: asthma, type 2 diabetes, coronary heart disease, cerebrovascular disease (largely stroke), arthritis, osteoporosis, COPD, depression or high blood pressure. The proportion increased with age (AIHW 2012a).

Table 4.1 gives a further indication as to how widespread these diseases are, with their consequent toll on health, their demands on primary health care and their cost.

Leaving aside more common chronic conditions such as short- or long-sightedness and hearing problems, Australian Health Survey data for 2011–12 indicate that almost 15% of the population had arthritis, 13% had back problems, 10% hypertensive disease, 10% asthma and 10% depression. In addition, the data show that about 360,000 people (1.6% of the population) were living with cancer, 999,000 (4.6%) were living with diabetes, and more than 1 million (5.0%) had heart or vascular disease, or had suffered a stroke (ABS 2013a, 2013b).

GPs report that the most common chronic diseases or conditions they see are hypertension, diabetes and depression, followed by arthritis and lipid disorders, including high blood cholesterol.

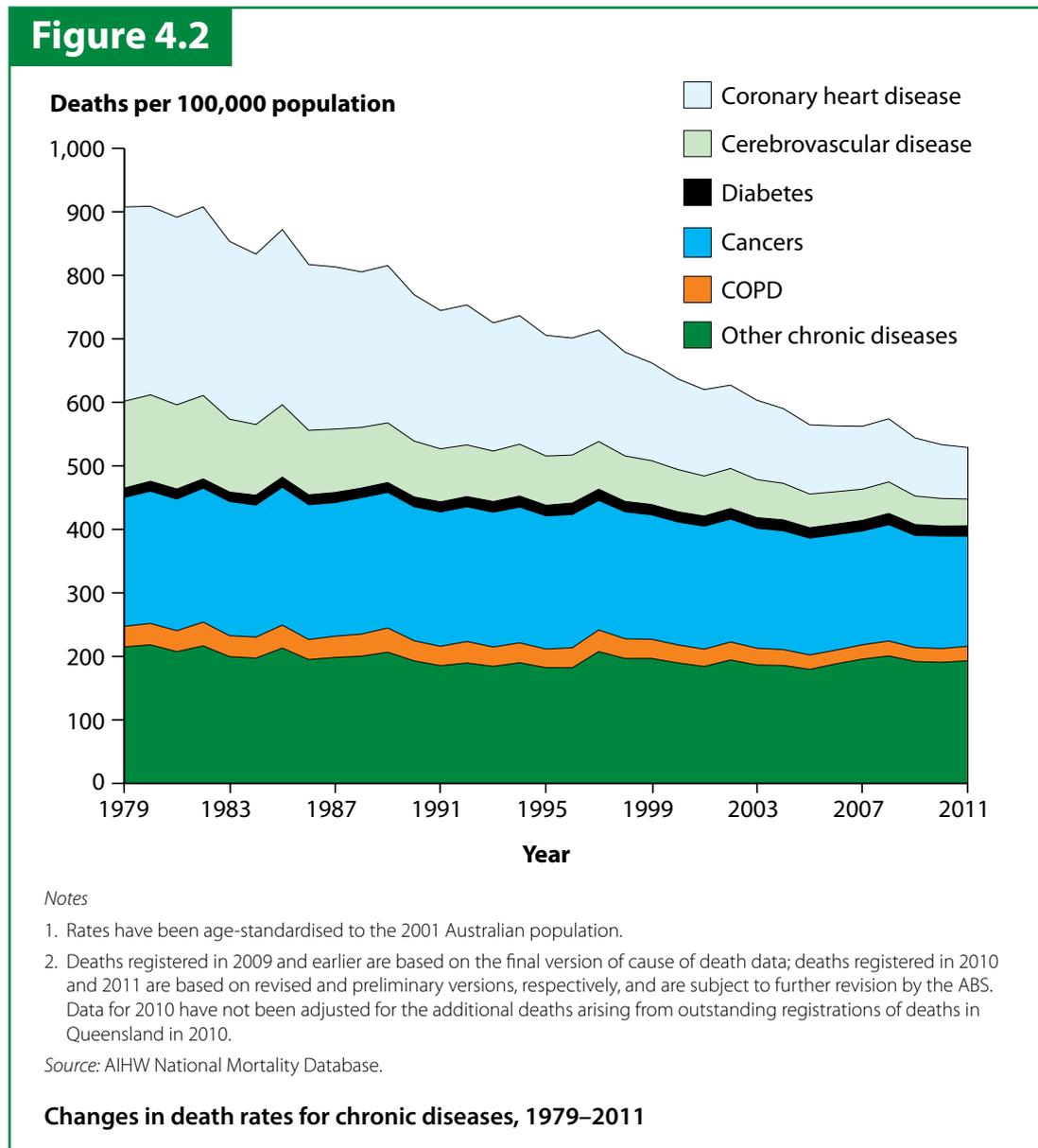
Table 4.1: Common chronic diseases in Australia

Common long-term conditions in 2011–12	Persons	% of population
Arthritis	3,265,400	14.8
Back pain/problems/disc disorders	2,805,500	12.7
Hypertension	2,262,000	10.2
Asthma	2,254,600	10.2
Depression	2,143,100	9.7
Most common chronic conditions managed by GPs in 2012–13	% of chronic conditions	% of all GP visits
Hypertension (non-gestational)	15.4	8.6
Diabetes (non-gestational)	7.6	4.2
Depression	7.3	4.1
Arthritis	6.8	3.8
Lipid disorders	6.0	3.3
Most common causes of death in 2011	Persons	% of all deaths
Coronary heart disease (I20–I25)	21,513	14.6
Cerebrovascular disease (I60–I69)	11,251	7.7
Dementia and Alzheimer disease (F01, F03, G30)	9,864	6.7
Lung cancer (C33, C34)	8,114	5.5
Chronic lower respiratory diseases (J40–J47)	6,570	4.5
Greatest burden of disease in 2010^(a)	Disability-adjusted life years (DALYs)	% of all DALYs
Coronary heart disease	471,550	7.8
Low back pain	420,734	7.0
COPD	208,819	3.5
Depression	191,566	3.2
Cerebrovascular disease	183,477	3.1
Most costly disease groups in 2008–09	Amount (\$ billion)	% of total allocated health expenditure
Cardiovascular diseases	7.74	10.4
Oral health	7.18	9.7
Mental disorders	6.38	8.6
Musculoskeletal	5.67	7.6

(a) Data are for Australasia, i.e. Australia and New Zealand.

Sources: ABS 2013a, 2013c; AIHW 2013; Britt et al. 2013; IHME 2013.

However, death rates for some chronic diseases appear to have peaked in Australia (Figure 4.2), particularly for cardiovascular disease and some cancers such as lung cancer. Since 1980, coronary heart disease (CHD) mortality has declined by 73%, cerebrovascular disease by 69% and all cancers by 17%. The relative contribution of these causes to total deaths has also changed—for CHD the relative contribution fell from 33% in 1980 to 15% in 2011, and for cerebrovascular disease from 15% to 8%. However, the relative contribution rose for all cancers, from 23% to 33%. Despite the falls in death rates and relative contributions to total deaths, the number of people dying from chronic diseases is still large because of Australia’s growing and ageing population (see Chapter 6 ‘Ageing and the health system’).





Currently, 9 in 10 deaths have chronic disease as an underlying cause. Cardiovascular diseases (coronary heart disease and stroke), dementia and Alzheimer disease, lung cancer and chronic lower respiratory disease including COPD are the most common underlying causes, together being responsible for 40% of all deaths.

Often more than 1 disease is associated with a death—3 diseases is the average. About 20% of deaths have 5 or more associated diseases (AIHW 2012c). When a chronic disease is the underlying cause of death, other chronic diseases, such as cancers of unknown primary site, hypertensive diseases, and coronary heart disease, are common associated causes of death. (see Glossary for ‘cause of death’ definitions and Chapter 3 ‘Multiple causes of death in Australia’).

Since chronic diseases are responsible for the greatest amount of illness and death, it is not surprising that they also cause the greatest burden of disease (Table 4.1). The overall burden is measured by the disability-adjusted life year (DALY), which is expressed as the number of years lost due to ill health, disability or early death (see Chapter 4 ‘Burden of disease’). A recent international study found that in Australia and New Zealand, chronic diseases together caused 85% of the total burden of disease, a similar figure to chronic diseases accounting for 90% of the burden due to deaths alone (IHME 2013).

The largest disease groups contributing to the Australasian burden of disease in 2010 were cancer, musculoskeletal disorders, cardiovascular diseases, and mental and behavioural disorders. The 5 leading individual causes of disease burden—heart attack, low back pain, COPD, depression and cerebrovascular disease—accounted for one-quarter of the disease burden.

The cost is large

In addition to the personal and community costs, chronic diseases result in a significant economic burden because of the combined effects of health-care costs and lost productivity from illness and death. Estimates based on allocated health-care expenditure indicate that the 4 most expensive disease groups are chronic—cardiovascular diseases, oral health, mental disorders, and musculoskeletal—incurring direct health-care costs of \$27 billion in 2008–09. This equates to 36% of all allocated health expenditure (Table 4.1).

This amount is conservative because not all health-care expenditure can be allocated by disease, particularly diseases predominantly managed in primary health care. Chronic disease costs would also be far greater if non-health sector costs, such as residential care, were included.

Although patterns of spending vary by disease group, most health dollars that can be allocated to diseases are spent on admitted patient hospital services, out-of-hospital services, medications, and dental services (see Chapter 2 ‘How much does Australian spend on health care?’ and Figure 2.6). The large cost, in the order of several billions of dollars, is 1 of the key drivers for more efficient and effective ways to prevent, manage and treat chronic disease.

Chronic disease is not uniformly distributed

Chronic diseases affect some population groups more than others. They occur more often among Indigenous Australians, for example, and at a much younger age (AIHW 2010). Two-thirds of the gap in death rates between Aboriginal and Torres Strait Islander and non-Indigenous people is contributed by chronic disease (AHMAC 2012). Indigenous people report diabetes at more than 3 times the rate of other Australians, and rates of treatment for end-stage kidney disease are more than 7 times as great. Indigenous people were almost twice as likely as non-Indigenous people to report having asthma. Accordingly, rates of hospitalisation and death are higher among Indigenous people (see Chapter 7 'How healthy are Indigenous Australians?').

Chronic diseases, also occur more often and with greater effect among socioeconomically disadvantaged people, for example:

- Coronary heart disease has a 40% higher death rate and has demonstrated a lesser rate of decline over time among people living in areas of lowest socioeconomic status compared with those in the highest (AIHW, forthcoming 2014b).
- The rate of new cases of lung cancer for people living in areas of lowest socioeconomic status was 1.6 times that of people in the highest, which is linked to their higher rates of smoking. Survival of people diagnosed with cancer living in the lowest status areas is also lower (AIHW & AACR 2012).

People who live in areas of lowest socioeconomic status are also more likely to take part in risky health behaviour, or combinations of behaviours, which can lead to poorer chronic disease outcomes. In 2011–12, people living in areas of lowest socioeconomic status were 2.3 times as likely to smoke as those living in the highest (ABS 2013a). People living in these same areas of disadvantage were 1.7 times as likely to report having 4 or more risk factors (AIHW 2012b).

Many people live with more than 1 chronic disease. In 2007–08, 350,000 people (2% of the total population) reported having 4 or more concurrent chronic health conditions out of a list comprising asthma, type 2 diabetes, coronary heart disease, cerebrovascular disease, arthritis, osteoporosis, COPD, depression and high blood pressure. This proportion increases with age, so that among people aged 65 or older, 8% had 4 or more of these chronic diseases. Arthritis and high blood pressure are 2 conditions that commonly occur together among adults. Among younger age groups, asthma and depression is the most common comorbidity. Having multiple chronic conditions is associated with worse health outcomes, more complex disease management and increased health costs (AIHW 2012b).

Chronic disease through the life course

As already noted, the occurrence of chronic disease increases with age. Some diseases, such as asthma and type 1 diabetes, usually begin in childhood or adolescence. Others, such as coronary heart disease or cerebrovascular disease, are uncommon before adulthood, although the processes leading to their occurrence begin earlier in life. Still other diseases, such as arthritis and dementia, most commonly occur later in life.

It is useful to examine how chronic disease occurs across different stages of the life course, because of the strong links between earlier exposures and later health outcomes. Often, adult chronic diseases reflect the cumulative influence of prior physical growth, of reproduction, infection, social mobility and changes in behaviour. Some of these influences can begin before birth. Today's children, who are subject to increased behavioural risks at earlier ages through the consumption of energy-dense foods and poor diet, increased screen time and reduced physical activity, will live longer with risk factors such as obesity (Amschler 2002; Swinburn et al. 2004). Based on current knowledge, the future impact of these behavioural risks on individuals, populations and the health system will be significant.

Social determinants of health, experienced at different life stages, can also influence the development of chronic diseases, through their effect on biological processes (Lynch & Davey Smith 2005). Low birthweight babies, for example, are more likely to come from less affluent backgrounds, and low birthweight is associated with increased rates of cardiovascular disease and diabetes later in life. Adult risk factors for chronic disease also have their own histories; what people do or do not eat in adulthood, for example, is often established much earlier in life. Observing risk factors and chronic disease development in populations from an early age can provide valuable lessons for future disease management.

Coronary heart disease and COPD are leading examples of strong links between several life course risk factors and processes and the later development of chronic disease (see Table 4.2). Many of these risk factors can interact with each other as well as with chronic disease development. For example, in-utero biological effects, combined with poor nutrition early in life, may affect how particular forms of fat are tolerated later in life. Early social disadvantage may interact with affluence in later life to increase coronary heart disease risk. Cholesterol, blood pressure and overweight measures at young ages often persist into adulthood, and can predict the later occurrence of coronary heart disease. Smoking habits acquired in adolescence or early adulthood greatly increase the risk for cardiovascular diseases and COPD in adulthood and old age—along with cancers and many other chronic diseases. The age of quitting smoking is also important and a major influence in reducing later COPD, coronary heart disease, and other chronic disease risk.

Table 4.2: Some life course risk factors for coronary heart disease and COPD

Life course stage	Coronary heart disease	COPD
In-utero	Maternal health, behaviour, stress and diet during pregnancy. Poor growth. Low birthweight.	Low birthweight.
Infancy	Infant feeding. Maternal attachment. Poor growth. Low socioeconomic status.	Infections. Overcrowded dwellings. Second-hand smoke. Low socioeconomic status.
Childhood	Low socioeconomic status. Poor growth. Nutrition. Obesity. Some infections.	Low socioeconomic status. Poor growth. Crowding. Second-hand smoke. Obesity. Indoor/outdoor air quality,
Adolescence	Low socioeconomic status. Nutrition. Physical activity. Obesity. Blood pressure. Cholesterol. Number of children (women).	Low socioeconomic status. Poor growth. Smoking. Obesity.
Adulthood	Low socioeconomic status. Short height. Smoking. Diet. Physical activity. Obesity. Cholesterol. Blood pressure. Binge drinking. Insulin resistance. Work. Psychosocial factors.	Low socioeconomic status. Poor growth. Smoking. Diet. Obesity. Physical activity. Occupational exposure. Indoor/outdoor air quality.
Across generations	Parental history. Maternal health, behaviour, stress and diet before pregnancy. Low socioeconomic status.	Parental history.

Source: Lynch & Davey Smith 2005.

Older Australians are most affected by chronic disease. Around 15% of people in the 0–24 age group reported having either asthma, type 2 diabetes, coronary heart disease, cerebrovascular disease, arthritis, osteoporosis, COPD, depression or high blood pressure, in 2007–08. Among people aged 65 or over, the figure is 78%. Similarly, around half of people aged 65–74 had to cope with 5 or more chronic diseases, increasing to 70% of those aged 85 and over (AIHW 2012a).

The most common chronic diseases or conditions among older Australians are some degree of vision or hearing loss, arthritis or other musculoskeletal problems, and elevated blood pressure or cholesterol levels. Yet despite the frequency of chronic disease in later life, two-thirds of older Australians aged 75 and over rate their health as good, very good or excellent.

Common risks, common prevention and integrated care

Many chronic diseases share common risk factors that are preventable. Modifying these can reduce the risk of developing a chronic condition, leading to large health gains in the population through the reduction of illness and rates of death (see Chapter 8 'Prevention for a healthier future').

Chronic diseases are closely associated with modifiable risk factors such as smoking, physical inactivity, poor nutrition and the harmful use of alcohol. These behaviours contribute to the development of biomedical risk factors, including overweight and obesity, high blood pressure, and high cholesterol levels, which in turn lead to chronic disease (see Chapter 5 'Biomedical risk factors' and 'Behavioural risk factors' for further details). Seventy per cent of all cardiovascular disease mortality in Australia has been attributed to the combined effects of high blood pressure, high cholesterol and physical inactivity (Begg et al. 2007).

People often have combinations of risk factors, and as their number of risk factors increase, so does the likelihood of developing certain chronic diseases. For example, males with 5 or more risk factors are 3 times as likely to have COPD as males with 2 or fewer risk factors. Females with 5 or more risk factors are 3 times as likely to have had a stroke, and two and a half times as likely to have depression as females with 2 or fewer risk factors (AIHW 2012b).

Two risk factors that commonly occur together are risky alcohol drinking and smoking. In 2010, 38% of current smokers also consumed alcohol at risky levels, compared with only 12% of people who had never smoked (AIHW, forthcoming 2014a). Daily smoking is also more commonly reported by people with low levels of physical activity. People who are obese often also have high blood pressure (AIHW 2012b).

A group of risk factors, known collectively as the 'metabolic syndrome', greatly increases the risk of type 2 diabetes. This risk factor group comprises obesity, impaired fasting blood glucose, raised blood pressure, raised blood triglycerides and reduced HDL cholesterol.

The cumulative effect of risk factors magnifies the risk, with earlier and more rapid development of a condition, more complications and recurrence, a greater disease burden, and a greater need for management of the condition (AIHW 2012b).

A key focus of the Australian health system therefore is the prevention and better management of chronic disease to improve health outcomes. Many common chronic diseases are amenable to preventive measures such as changes in behaviour. These changes, together with timely and better medical treatments, are important in improving chronic disease health outcomes. Identifying populations most at risk and monitoring and evaluating preventive interventions are also important (AIHW 2011b).

There would seem to be great potential in an integrated and coordinated approach to chronic disease care using shared prevention, management and treatment strategies. Reducing obesity, for example, may prevent diabetes, hypertension, heart disease, and certain types of cancers.



Assessing the risk of cardiovascular disease on the basis of the combined effect of multiple risk factors (absolute cardiovascular disease risk) can lead to better management of modifiable risk factors through lifestyle changes and pharmacological therapy (National Vascular Disease Prevention Alliance 2012). These strategies all involve better delivery and coordination across the health-care continuum, from health promotion and prevention, to early detection where appropriate, and to primary, secondary and tertiary care. GPs and their teams can perform a key role in screening and prevention, and coordinating services (RACGP 2012). Such an approach can strengthen and transform health-care systems, resulting in more effective, efficient, and timely care (Standing Council on Health 2013).

The future for chronic disease

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 will lead to increasing numbers of people living with chronic diseases. Helping people to make good lifestyle choices at all stages of the life course can help to keep them in good health and prevent illness for as long as possible.

The growing chronic disease burden will require effective treatment of multiple chronic conditions and catering to complex health-care needs. Developing and implementing new and innovative treatment methods—including coordinated care and chronic disease management plans—holds great promise for future disease management (see Chapter 8 ‘Primary health care in Australia’).

What is missing from the picture?

The availability of 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 data 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 in developing a picture of how chronic diseases affect people in Australia and the effectiveness of strategies.

Where do I go for more information?

More information on chronic diseases in Australia is available on the AIHW website at www.aihw.gov.au/chronic-diseases.

For specific chronic diseases, refer elsewhere in this chapter.

References

- ABS (Australian Bureau of Statistics) 2013a. Australian Health Survey: first results, 2011–12. ABS cat. no. 4364.0.55.001. Canberra: ABS.
- ABS 2013b. Australian Health Survey: updated results, 2011–12. ABS cat. no. 4364.0.55.003. Canberra: ABS.
- ABS 2013c. Causes of death, Australia, 2011. ABS Cat. no. 3303.0. Canberra: ABS.
- AIHW (Australian Institute of Health and Welfare) 2010. Contribution of chronic disease to the gap in adult mortality between Aboriginal and Torres Strait Islander and other Australians. Cat. no. IHW 48. Canberra: AIHW.
- AIHW 2011a. Australia's welfare. Cat. no. AUS 142. Canberra: AIHW.
- AIHW 2011b. Key indicators of progress for chronic disease and associated determinants: data report. Cat. no. PHE 142. Canberra: AIHW.
- AIHW 2012a. Australia's health 2012. Australia's health series no. 13. Cat. no. AUS 156. Canberra: AIHW.
- AIHW 2012b. Risk factors contributing to chronic disease. Cat. no. PHE 157. Canberra: AIHW.
- AIHW 2012c. Multiple causes of death. Bulletin no. 105. Cat. no. AUS 159. Canberra: AIHW.
- AIHW 2012d. Australia's food and nutrition 2012. Cat. no. PHE 163. Canberra: AIHW.
- AIHW 2013. Health expenditure Australia 2011–12. Health and welfare expenditure series 50. Cat. no. HWE 59. Canberra: AIHW.
- AIHW, forthcoming 2014a. Head and neck cancers in Australia. Canberra: AIHW.
- AIHW, forthcoming 2014b. Trends in coronary heart disease mortality. Canberra: AIHW.
- AIHW & AACR (Australasian Association of Cancer Registries) 2012. Cancer in Australia: an overview, 2012. Cancer series no. 74. Cat. no. CAN 70. Canberra: AIHW.
- Amschler D H 2002. The alarming increase of type 2 diabetes in children. *Journal of School Health* 72:39–41.
- AHMAC (Australian Health Ministers' Advisory Council) 2012. Aboriginal and Torres Strait Islander Health Performance Framework 2012 report. Canberra: AHMAC.
- Beaglehole R et al. 2011. Priority actions for the non-communicable disease crisis. *Lancet* 377: 1438–47.
- Begg S, Vos T, Barker B, Stevenson C, Stanley L, Lopez AD 2007. The burden of disease and injury in Australia 2003. Cat. no. PHE 82. Canberra: AIHW.
- Britt H et al. 2013. General practice activity in Australia 2012–13. General practice series no. 33. Sydney: Sydney University Press.
- Hunter D J & Reddy K S 2013. Noncommunicable diseases. *New England Journal of Medicine* 369: 1336–43.
- IHME (Institute for Health Metrics and Evaluation) 2013. DALY estimates for Australasia. Viewed 1 November 2013, <www.healthmetricsandevaluation.org>.
- Lynch J & Davey Smith G 2005. A life course approach to chronic disease. *Annual Review of Public Health* 26: 1–35.
- National Vascular Disease Prevention Alliance 2012. Guidelines for the management of absolute cardiovascular disease risk. Canberra: NVDPA.
- RACGP (Royal Australian College of General Practitioners) 2012. Guidelines for preventive activities in general practice, 8th edn. East Melbourne: RACGP.
- Standing Council on Health 2013. National Primary Care Strategic Framework. Canberra: Commonwealth of Australia.
- Swinburn BA, Caterson I, Seidell JC & James WPT 2004. Diet, nutrition and the prevention of excess weight gain and obesity. *Public Health Nutrition* 7(1A):123–46.
- WHO (World Health Organization) 2011. Global status report on noncommunicable diseases 2010. Geneva: WHO.