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Coronary heart disease and chronic obstructive pulmonary disease in Indigenous Australians

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*Authoritative information and statistics
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Coronary heart disease and chronic obstructive pulmonary disease in Indigenous Australians

Australian Institute of Health and Welfare
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- Department of Health
- Australian Bureau of Statistics.

Abbreviations

AATSIHS	Australian Aboriginal and Torres Strait Islander Health Survey
ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AIHW	Australian Institute of Health and Welfare
CABG	coronary artery bypass graft
CHD	coronary heart disease
COAG	Council of Australian Governments
COPD	chronic obstructive pulmonary disease
CVD	cardiovascular disease
GPMP	General Practitioner Management Plan
HfL	Healthy for Life
HPF	Health Performance Framework
ICDP	Indigenous Chronic Disease Package
KPI	key performance indicator
MBS	Medicare Benefits Schedule
mmHg	millimetres of mercury
NACCHO	National Aboriginal Community Controlled Health Organisation
NAGATSIHID	National Advisory Group on Aboriginal and Torres Strait Islander Health Information and Data
NATSIHS	National Aboriginal and Torres Strait Islander Health Survey
NHMRC	National Health and Medical Research Council
nKPI	national Key Performance Indicator
NPA	National Partnership Agreement
NSW	New South Wales
NT	Northern Territory
PCI	percutaneous coronary intervention
PYLL	potential years of life lost
Qld	Queensland

SA	South Australia
TCA	Team Care Arrangement
Vic	Victoria
WA	Western Australia

Summary

Coronary heart disease (CHD) and chronic obstructive pulmonary disease (COPD) are leading causes of morbidity, disability and mortality among Aboriginal and Torres Strait Islander people. These diseases develop at younger ages and progress faster in Indigenous Australians than in non-Indigenous Australians. This paper explores the prevalence of these conditions and their risk factors in the Indigenous population, as well as rates of hospitalisation and mortality from these 2 diseases.

Prevalence of CHD and COPD is high in the Indigenous population

The self-reported prevalence of CHD is higher among Indigenous than non-Indigenous adults across all age groups. Overall, CHD was 1.7 times higher for Indigenous males and 2.7 times higher for Indigenous females than for their non-Indigenous counterparts in 2004–05.

In 2012–13, approximately 4% of Indigenous adults reported having COPD, which was 2.5 times the rate for non-Indigenous Australians.

Prevalence of several risk factors is high in both the Indigenous and non-Indigenous populations

In 2012–13, 44% of Indigenous adults smoked tobacco daily, 62% reported they were sedentary or engaged in low levels of exercise, and over two-thirds (69%) were overweight or obese. Indigenous adults were 2.6 times as likely to smoke tobacco daily as were non-Indigenous Australians.

However, rates of smoking among Indigenous adults are declining

The proportion of Indigenous adults who smoked daily fell from 51% in 2001 to 44% in 2012–13.

Hospitalisation rates for CHD and COPD are higher for Indigenous Australians

The hospitalisation rate for CHD for Indigenous Australians was 2.4 times as high as the rate for non-Indigenous Australians between July 2010 and June 2012. For COPD hospitalisations over the same period, the Indigenous rate was 5 times as high as the non-Indigenous rate.

Indigenous Australians are more likely to die from CHD and COPD than non-Indigenous Australians

Indigenous Australians were twice as likely to die from CHD and nearly 3 times as likely to die from COPD as were non-Indigenous Australians during the period 2007–2011.

However, CHD death rates are improving

The rate of Indigenous deaths due to CHD fell by 36% between 2001 and 2011.

And rates of chronic disease management are increasing

Government programs tackling Indigenous chronic disease have led to increased uptake of MBS health checks, General Practitioner Management Plans, Team Care Arrangements and Closing the Gap prescriptions.

1 Introduction

Chronic, non-communicable diseases (chronic diseases) are the largest contributor to the burden of disease experienced by Aboriginal and Torres Strait Islander Australians. Chronic diseases such as coronary heart disease (CHD), stroke, diabetes, chronic obstructive pulmonary disease (COPD), chronic kidney disease, cancers and arthritis are major causes of ill health, disability and mortality in the Indigenous population (AIHW 2011c; Thomas et al. 2006).

Chronic diseases tend to appear earlier, progress faster, present concurrently with other chronic diseases and cause more premature death in Indigenous Australians than in non-Indigenous Australians (AIHW 2011c; Panaretto et al. 2013). Underlying reasons for these differences include socioeconomic disadvantage among many Indigenous Australians in areas such as education, income and housing, and behavioural factors such as smoking, physical inactivity and poor nutrition. Cultural, historic and environmental factors also contribute to Indigenous Australians' greater burden of disease.

The Indigenous burden of disease, measured in terms of years of life lost due to premature death, as well as years of healthy life lost due to disability from disease, is greatly influenced by premature death. One measure of premature death is potential years of life lost (PYLL) due to disease or injury before a given age (for example, 75). The number of PYLL per 10,000 people is higher among Indigenous Australians than other Australians. In other words, more deaths occur before the age of 75 in the Indigenous population than in the non-Indigenous population. About 80% of the difference (or gap) in PYLL between the 2 population groups in 2006 was attributed to chronic diseases (AIHW 2011c).

While some chronic diseases may lead to sudden and unexpected death (for example, heart attacks associated with coronary heart disease), most of them have a gradual onset and persist throughout an individual's life (Box 1.1).

Box 1.1: Features and characteristics of chronic diseases

Chronic diseases are health conditions or illnesses that persist over time and are characterised by:

- a gradual onset during which there may be no symptoms
- a prolonged course of illness with persistent effects that progress over time
- complex causality, often associated with multiple risk factors
- functional impairment or disability.

Most chronic diseases are rarely cured completely and they do not usually resolve on their own. People can live for many years with chronic diseases; however, their quality of life can be significantly compromised through associated limitations to functioning and the need for assistance with daily activities.

1.1 Policy context

In recognition of the greater burden of disease experienced by Indigenous Australians, the Council of Australian Governments (COAG) in 2008 committed $1.6 billion over 4 years to close the health gap between Indigenous and non-Indigenous Australians within a generation. As part of this commitment, the Australian Government dedicated $805.5 million to tackle chronic disease through the Indigenous Chronic Disease Package. The Package has 3 main elements; tackling chronic disease risk factors, improving chronic disease management and follow-up care, and expanding and supporting the primary health-care workforce. The Indigenous Chronic Disease Package has since been consolidated into the Aboriginal and Torres Strait Islander Chronic Disease Fund.

In March 2014, the Better Cardiac Care for Aboriginal and Torres Strait Islander People Forum was held in Sydney and was attended by health professionals and representatives from all Australian governments. This forum, which was instigated by the Australian Health Ministers' Advisory Council, investigated why cardiac care outcomes differed for Indigenous people by focusing on primary care, acute care services, post-event care and coordination of care.

1.2 Purpose and structure of this paper

Epidemiology is the study of how much disease is present in a population and why. This paper explores the epidemiology of 2 chronic diseases in the Indigenous population: coronary heart disease and chronic obstructive pulmonary disease. See Box 1.2 for a discussion of why these health conditions were chosen, including the relative contribution these conditions make to Indigenous and non-Indigenous mortality.

While much is known about the epidemiology of these diseases in the total Australian population, this paper presents the latest available data on the risk factors and prevalence of CHD and COPD in the Indigenous population, while also describing the hospitalisations and mortality caused by these conditions. It concludes by exploring how progress in CHD and COPD management has been evaluated using indicator-based monitoring.

Box 1.2: Why is the epidemiology of CHD and COPD in the Indigenous population important?

CHD and COPD were the 2 chronic diseases chosen for this paper because they contribute significantly to the burden of disease among Indigenous Australians, featuring in the top 3 causes of burden of disease in 2003 along with mental disorders (Vos et al. 2007).

Between July 2010 and June 2012, Indigenous Australians were hospitalised for CHD at a rate 2.4 times that for non-Indigenous Australians, and were hospitalised for COPD at a rate 5 times that for non-Indigenous Australians.

Coronary heart disease was the leading cause of Indigenous mortality in 2007–2011, responsible for 14% of all Indigenous deaths. Chronic obstructive pulmonary disease was the third leading cause of Indigenous mortality (after diabetes which was the second leading cause), responsible for 4% of all Indigenous deaths. However, this is likely to be an underestimation of its contributory role to death, as around 3 in 5 deaths involving COPD list it as an 'associated' cause of death, rather than the underlying or primary cause. If its total involvement in causing death is considered, the COPD death rate is 2.4 times as high as the underlying cause rate (AIHW 2012a).

Data sources

The data sources used for this paper include the Australian Institute of Health and Welfare (AIHW) National Hospital Morbidity Database, the AIHW National Mortality Database, the Australian Bureau of Statistics (ABS) Australian Aboriginal and Torres Strait Islander Health Survey, the AIHW Healthy for Life program data collection and the AIHW national Key Performance Indicator data collection. See Appendix A for information on these data sources.

The hospitalisation statistics presented in this paper are for all of Australia, except when time trend analyses are presented. In these instances, only the 6 jurisdictions with adequate Indigenous identification in their hospital reporting systems from 2004–05 are included in analyses: New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory.

The mortality data presented in this paper are analysed using the underlying (or primary) cause of death only and are from New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined. These jurisdictions are considered to have adequate levels of Indigenous identification in their mortality datasets from 2001 onwards. However, even in these jurisdictions, Indigenous status is not consistently reported on death registrations. This problem, combined with the relatively small size of the Indigenous population, means that the mortality estimates presented in this paper are associated with a degree of uncertainty.

Neither mortality rates nor hospitalisation rates presented in this paper were adjusted for Indigenous under-identification.

An additional issue to consider for interpreting trends in mortality is changes over time in Indigenous identification in death registrations data, as well as in the Census (which is used for the population denominator in the calculation of mortality rates). Trends presented in this paper should therefore be interpreted with caution.

To account for differences in the age structure of the Indigenous and non-Indigenous populations, this paper presents age-specific rates and age-standardised rates throughout when comparing between these two populations. Appendix B provides information on how these statistics were calculated, and other technical points.

2 Coronary heart disease

Coronary heart disease, also known as ischaemic heart disease, is the most common form of cardiovascular disease (CVD), followed by stroke. CHD is responsible for approximately half (49%) of all CVD deaths in Australia and stroke is responsible for 18% (AIHW 2011b).

CHD can cause chest pain (angina) or a heart attack (Box 2.1). It develops over a long period, causes significant morbidity and is the largest single cause of mortality in Australia. The Indigenous burden of disease from CHD is high. It is the leading cause of mortality in the Indigenous population, responsible for 17% of years of life lost in males and 13% in females (Vos et al. 2007). It is also responsible for 4% of years of life lived with disability in both sexes.

Box 2.1: Clinical presentation of coronary heart disease

The 2 major clinical presentations of CHD are heart attack and angina, and they typically occur for the first time in middle age. Both involve inadequate blood flow (ischaemia) to the heart muscle, resulting from blockages in the coronary arteries, which supply blood to the heart. The blockages occur when fatty material called plaque is deposited on the coronary artery walls, in a process known as atherosclerosis. The plaque can restrict or block blood flow to the heart, posing serious cardiovascular complications.

A heart attack (acute myocardial infarction) occurs when a coronary artery is suddenly blocked, partially or completely, by a blood clot. The blood clot forms when there is a rupture of the plaque deposited on the artery walls. If adequate flow is not restored quickly, the heart muscle begins to die, thereby increasing the chance of death.

Angina is a chronic condition in which short episodes of chest pain can occur periodically when the heart has a temporary deficiency in its blood supply. Angina is generally not life-threatening on its own, although unstable angina is the more dangerous and less predictable form and is medically treated in a similar manner to heart attack.

Health-care expenditure for cardiovascular disease is higher than for any other disease group in Australia, accounting for 12% of all allocated health-care expenditure. In 2008–09, estimated expenditure for cardiovascular disease based primarily on hospital admitted patient services, out-of-hospital medical expenses and prescription pharmaceuticals was $7,605 million. More than one quarter of this amount (27%) was spent on CHD treatment and expenses (AIHW 2014b).

2.1 Risk factors

A variety of factors contribute to the development, progression and acute presentation of CHD, mostly through the process of atherosclerosis. The established risk factors for CHD are listed in Table 2.1 and include non-modifiable risk factors such as age and family history of CHD, as well as modifiable risk factors such as poor diet, physical inactivity and tobacco smoking. Other factors such as social determinants and environmental factors can also influence the development of CHD by affecting the conditions in which people live and work or the health-related decisions that they make (Kreatsoulas & Anand 2010). For example, some people live in passive-smoking households, and some people on low incomes may not be able to afford healthier foods.

Table 2.1: Known risk factors for CHD incidence, severity and mortality

	Modifiable		May or may not be modifiable
Non-modifiable	**Biomedical**	**Behavioural**	**Social determinants and environmental**
age	excess body weight	tobacco smoking	low socioeconomic status
sex	high blood pressure	physical inactivity	psychosocial (including mental health issues)
family history of CHD	high blood cholesterol	poor diet	early life factors
genetic factors	high blood glucose	excessive alcohol	environmental
	low birthweight		

Sources: AIHW 2012b; Lichtman et al. 2008; Yusuf et al. 2001.

The prevalence of several risk factors for chronic diseases is high in both the Indigenous and non-Indigenous populations. In 2012–13, 44% of Indigenous Australians aged 18 and over smoked tobacco daily, 3 in 5 (62%) were sedentary or engaged in low levels of exercise, and 1 in 5 (20%) reported drinking at lifetime risky levels (Table 2.2). Furthermore, over two-thirds (69%) of the Aboriginal and Torres Strait Islander population were overweight or obese, which is associated with poor diet and physical inactivity.

Table 2.2: Prevalence of selected CHD risk factors in Indigenous people aged 18 and over, 2012–13

Risk factor	Indigenous rate (%)(a)	Rate ratio (Indigenous: non-Indigenous people)(b)
Behavioural risk factors		
Sedentary/low level of exercise(c)	62	1.1
Current daily smoker	44	2.6
Inadequate daily fruit intake(d)	58	0.9(e)
Inadequate daily vegetable intake(f)	95	0.9(e)
Alcohol consumption exceeding:		
– single-occasion risk guidelines(g)	57	1.1
– lifetime risk guidelines(h)	20	1.0
Biomedical risk factors		
High blood pressure(i)	20	1.2
Overweight/obese(j)	69	1.1
High/very high levels of psychological distress	30	2.4

(a) Not adjusted for age.

(b) Rate ratio calculated using proportions age-standardised to the 2001 Australian Estimated Resident Population. Data for non-Indigenous people are for 2011–12, from the Australian Health Survey 2011–13.

(c) In non-remote areas, in the week prior to the survey.

(d) Defined as fewer than 2 serves of fruit per day.

(e) Based on age-standardised rates for people aged 15 and over.

(f) Defined as fewer than 5 serves of vegetables per day.

(g) Defined as more than 4 standard drinks on a single occasion (2009 NHMRC guidelines).

(h) Defined as more than 2 standard drinks per day on average (2009 NHMRC guidelines).

(i) Defined as blood pressure of 140/90 mmHg or higher.

(j) Defined as a Body Mass Index of 25 or over.

Source: ABS 2013a.

After adjusting for differences in age structure, smoking rates in 2012–13 were 2.6 times as high among Indigenous as among non-Indigenous Australians, and rates of high/very high psychological distress were 2.4 times as high among Indigenous Australians (Table 2.2). Prevalence of other behavioural and biomedical risk factors—such as alcohol consumption, overweight/obesity, inadequate daily fruit and vegetable intake, and sedentary/low level of exercise—were fairly similar among the 2 populations. However, rates of obesity alone (that is, excluding those who were overweight) are higher in the Indigenous population, as are rates of sedentary levels of exercise (as opposed to low levels of exercise as well) (ABS 2013a).

Blood test results from the 2012–13 Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS) were unavailable at the time of publication. Data from the previous National Aboriginal and Torres Strait Islander Health Survey (NATSIHS), conducted in 2004–05, show that the rates of elevated blood glucose reported by Indigenous adults were 3 times as high as for non-Indigenous adults. However, the self-reported rates of high blood cholesterol were 60% lower among the Indigenous population, which may be due to lower rates of diagnosis (AIHW analysis of 2004–05 NATSIHS).

Indigenous people are more disadvantaged than non-Indigenous people across a number of socioeconomic factors, including lower levels of household income, lower rates of year 12 completion and higher rates of unemployment (AIHW 2013a). Analyses undertaken by the AIHW using the 2004–05 NATSIHS indicated that social determinants alone (including school and non-school education, employment status, overcrowding and household income) explained around one-third (31%) of the health gap between Indigenous and non-Indigenous Australians (AIHW 2014a forthcoming).

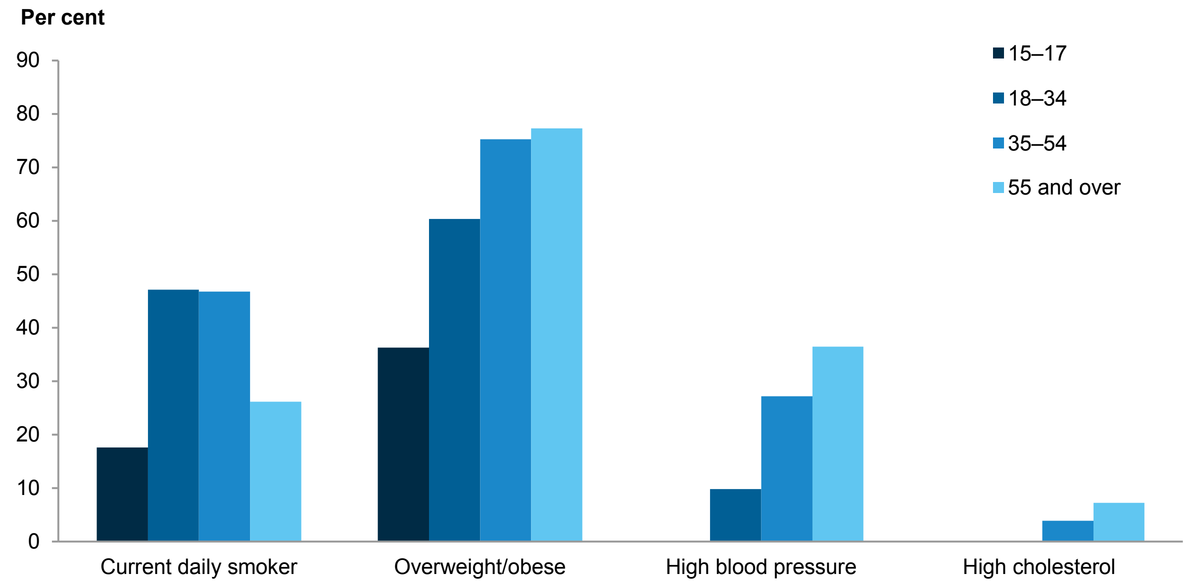
A number of the risk factors for CHD mentioned above can be addressed by a mix of programs targeting individuals (for example, smoking cessation programs targeting Indigenous individuals within the primary health-care context), as well as by programs targeting the whole population (for example, mass advertising programs about alcohol consumption, diet and obesity). The relative effectiveness of these different approaches (that is, population-wide public health initiatives versus initiatives targeting individuals who seek health care) in reducing risk factors in the Indigenous population requires further exploration and more program evaluations to assess their impact.

CHD risk factors over the life course

Risk factors for developing coronary heart disease can present early in life, even in the foetal and infancy stages. For example, low birthweight, exposure to tobacco smoke and poor diet during childhood can make people more susceptible to developing CHD (AIHW 2012b). These risk factors have a relatively high prevalence in the Indigenous population. In 2011, 13% of babies born to Indigenous mothers were of low birthweight (< 2,500 grams) compared with 6% of babies born to non-Indigenous mothers (Li et al. 2013). In addition, after adjusting for age differences, Indigenous women were 4 times as likely to smoke while pregnant as were non-Indigenous women in 2011 (Li et al. 2013). According to the 2012–13 AATSIHS, about 93% of Indigenous children aged 5–17 consumed inadequate amounts of fruit and vegetables (ABS 2013a). However, this was similar to the proportion (95%) for all Australian children.

Tobacco use, poor diet and physical inactivity—3 major behavioural risk factors for CHD—can establish themselves in childhood and adolescence, and continue throughout adulthood.

Figure 2.1 shows the prevalence of several behavioural and biomedical risk factors in the Indigenous population at different ages, according to AATSIHS data.



Notes

1. Data for smoking and high cholesterol were self-reported. Data for overweight/obese and high blood pressure were based on physical measurements.
2. Data for this figure are shown in Appendix Table C2.1.

Source: ABS 2013a.

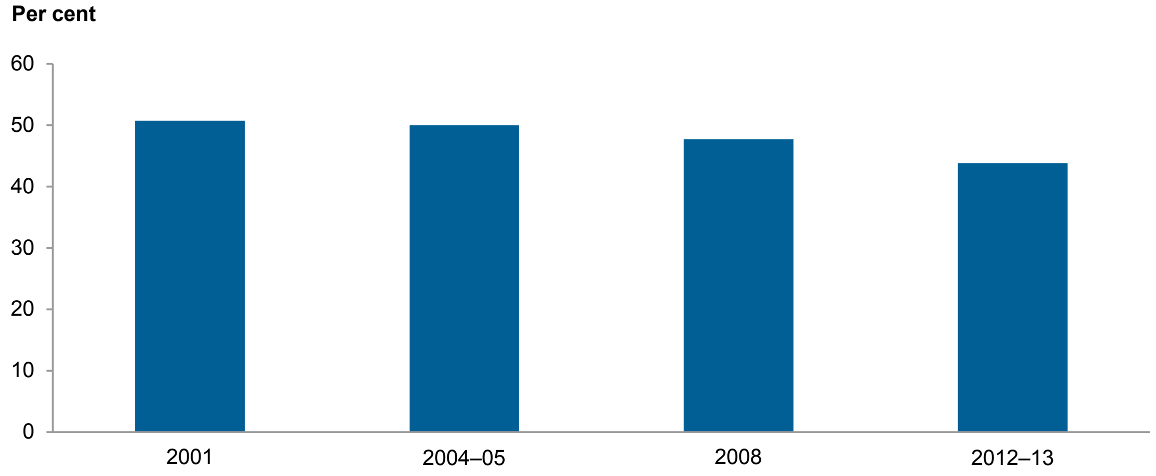
Figure 2.1: Prevalence of selected behavioural and biomedical risk factors among Indigenous Australians aged 15 and over, by age, 2012–13

Unresolved risk factors throughout the life cycle increase the risk of Indigenous Australians developing CHD. The problem is further exacerbated if there is limited change in risky health behaviours after clinical diagnosis (AIHW 2011a).

Trends in CHD risk factors

Trends in CHD risk factors among the Indigenous population can be tracked using the 2001 National Health Survey (Indigenous), NATSIHS data from 2004–05 and AATSIHS data from 2012–13. Some additional data are available from the 2008 National Aboriginal and Torres Strait Islander Social Survey. Smoking, alcohol consumption exceeding lifetime risk guidelines, fruit and vegetable consumption, and diabetes are among the risk factors that can be monitored over time using data from two or more of these surveys. However, due to changes in the way questions were asked or variables were measured in subsequent surveys, not all CHD risk factors can be compared across each of the 4 time points.

While rates of tobacco smoking have declined over time, the prevalence of other risk factors has increased or not changed. Figure 2.2 shows that the proportion of Indigenous people aged 18 and over who were current daily smokers fell significantly from 51% in 2001 to 44% in 2012–13 (ABS 2013a). This decline is encouraging, as research has shown that smoking cessation reduces the risk of experiencing a heart attack by 36%, and is potentially the most effective preventive measure for CHD (Godtfredsen & Prescott 2011).



Notes

1. Data for 2008 are from the ABS National Aboriginal and Torres Strait Islander Social Survey.
2. Data for this figure are shown in Appendix Table C2.2.

Source: ABS 2013a.

Figure 2.2: Prevalence of Indigenous current daily smokers aged 18 and over, 2001 to 2012–13 (selected years)

In contrast, the proportion who reported having diabetes or high sugar levels rose from 6% in 2001 to 8% in 2012–13, and the proportion in non-remote areas who consumed inadequate amounts of vegetables also rose from 92% in 2004–05 to 95% in 2012–13 (ABS 2013a). The ABS found that these increases were statistically significant.

There was little change in the proportion of Indigenous Australians who consumed inadequate amounts of fruit between 2004–05 and 2012–13 (59% in both surveys), and in the proportion who exceeded the 2009 National Health and Medical Research Council (NHMRC) alcohol consumption guidelines for lifetime risk between 2001 and 2012–13 (19% and 20% respectively) (ABS 2013a).

2.2 Prevalence

While analysis specific to coronary heart disease was not available at the time of publication, preliminary data from the 2012–13 AATSIHS provide an indication of the proportion of Indigenous Australians who reported that they had a circulatory disease. In 2012–13, about 4% of Indigenous adults surveyed reported that they had a circulatory disease such as coronary heart disease, stroke or other vascular disease (ABS 2013a). After adjusting for age differences in the populations, Indigenous Australians were 1.6 times as likely to report having one of these conditions as were non-Indigenous Australians.

Another indicator of CHD prevalence is the rate of heart attacks. In 2011, after adjusting for differences in age structure, heart attack rates among Indigenous adults were twice as high as among other Australians (1,077 and 421 per 100,000 population, respectively) (AIHW 2014a forthcoming).

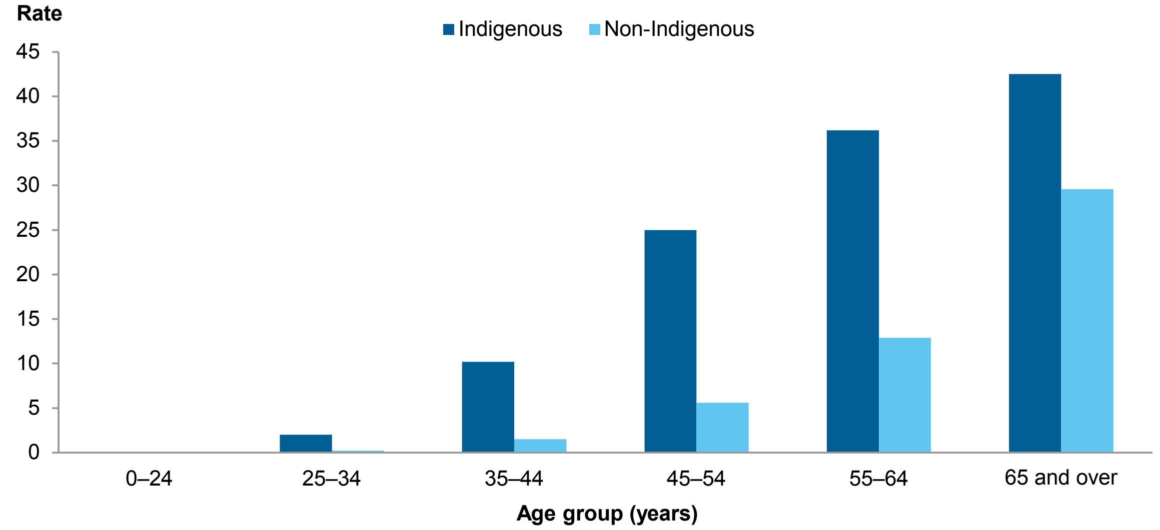
In the 2004–05 NATSIHS, 1.2% of Indigenous adults reported having CHD (AIHW 2008). Nearly two-thirds reported having angina while the remaining one-third had experienced a heart attack. The prevalence of CHD was associated with age, rising from 5% among those aged 45–64 to 11% among those 65 and over (AIHW 2008). The self-reported prevalence of CHD was 2 to 3 times higher for Indigenous than for non-Indigenous adults across all age groups, except for those aged 65 and over. The gap was particularly large in middle-aged people, pointing to an earlier onset of CHD in the Indigenous population (AIHW 2008). After adjusting for differences in age structure, CHD was 1.7 times more common for Indigenous males and 2.7 times more common for Indigenous females than for their non-Indigenous counterparts.

2.3 Hospitalisations

CHD hospitalisations are commonly for suspected angina or for a heart attack. Between July 2010 and June 2012, nearly 8,500 hospitalisations with a primary diagnosis of CHD were recorded for Indigenous people, which equated to 8 hospitalisations per 1,000 population. After adjusting for differences in age-structure, Indigenous Australians were hospitalised for CHD at 2.4 times the rate of non-Indigenous Australians.

Hospitalisations for CHD occurred at a relatively young age in the Indigenous population, with 10 hospitalisations per 1,000 population among those aged 35–44 compared with 2 per 1,000 population among the non-Indigenous population (Figure 2.3). For Indigenous people, the hospitalisation rate for CHD more than doubled between the ages of 35–44 and 45–54, and continued to rise with increasing age.

At all ages, Indigenous CHD hospitalisation rates were considerably higher than for non-Indigenous Australians. In the 35–44 and 45–54 age groups, Indigenous CHD hospitalisation rates were between 4 and 7 times higher than non-Indigenous CHD hospitalisation rates. In absolute terms, the greatest difference in rates was observed in the 55–64 age group (a rate difference of 23 hospitalisations per 1,000 population). For those aged 65 and over, Indigenous CHD hospitalisation rates were 1.4 times higher than for non-Indigenous Australians.



Note: Data for this figure are shown in Appendix Table C2.3.

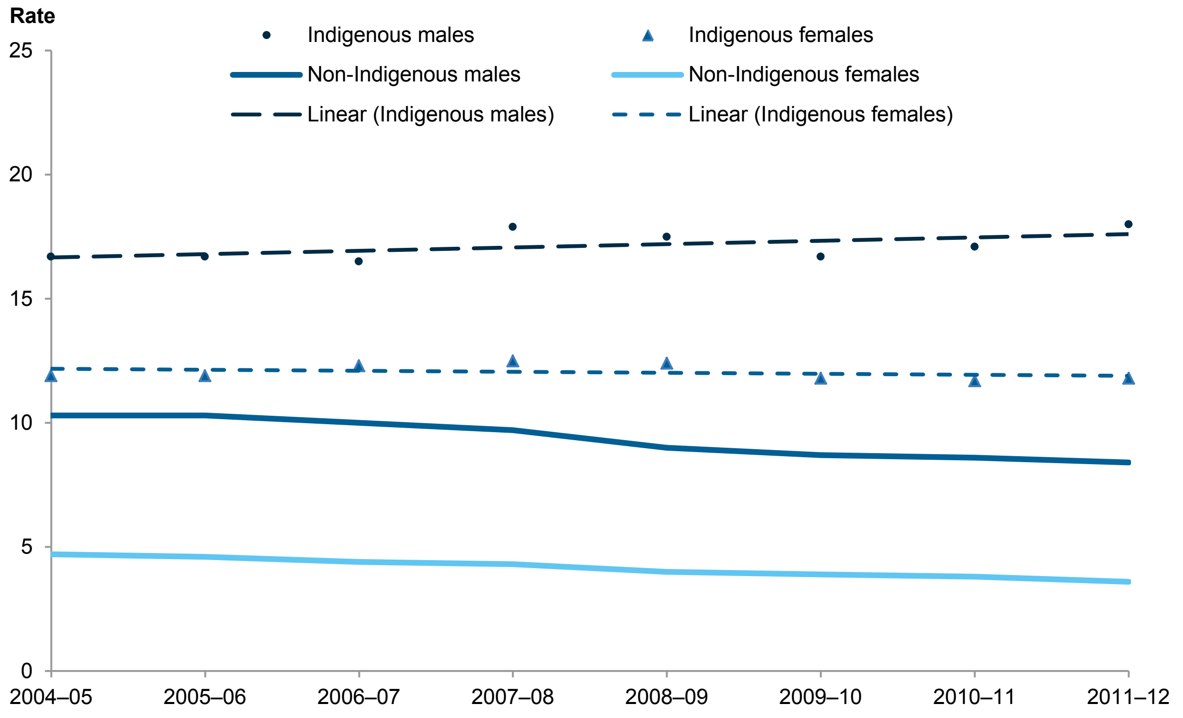
Source: AIHW National Hospital Morbidity Database.

Figure 2.3: Age-specific hospitalisation rates for a principal diagnosis of coronary heart disease, by Indigenous status, July 2010 to June 2012 (hospitalisations per 1,000 population)

Indigenous males were hospitalised for CHD at 1.5 times the rate of Indigenous females between July 2010 and June 2012. Hospitalisation rates for CHD were also higher for males than females in the non-Indigenous population (a rate ratio of 2.3).

There was a small increase between 2004–05 and 2011–12 in the age-standardised CHD hospitalisation rates for Indigenous males (from 16.7 to 18.0 hospitalisations per 1,000 population) and little change for Indigenous females (11.9 to 11.8 per 1,000) (Figure 2.4). However, there was a decrease for both non-Indigenous males (from 10.3 to 8.4 per 1,000) and non-Indigenous females (4.7 to 3.6 per 1,000).

Between 2004–05 and 2011–12, overall age-standardised CHD hospitalisation rates fell by 22% for the non-Indigenous population, and increased by 1.8% for the Indigenous population. As a result, the difference in CHD hospitalisation rates for Indigenous and non-Indigenous Australians widened, from 6.8 per 1,000 population in 2004–05 to 8.8 in 2011–12.



Notes

1. Rates have been directly age-standardised to the 2001 Australian Estimated Resident Population.
2. Data for this figure are shown in Appendix Table C2.4.

Source: AIHW National Hospital Morbidity Database.

Figure 2.4: Age-standardised CHD hospitalisation rates, by Indigenous status and sex, NSW, Vic, Qld, WA, SA and NT combined, 2004–05 to 2011–12 (hospitalisations per 1,000 population)

Coronary procedures while hospitalised

Several coronary procedures can be performed on hospitalised CHD patients to improve blood flow to the heart (see Box 2.2 for descriptions of these procedures).

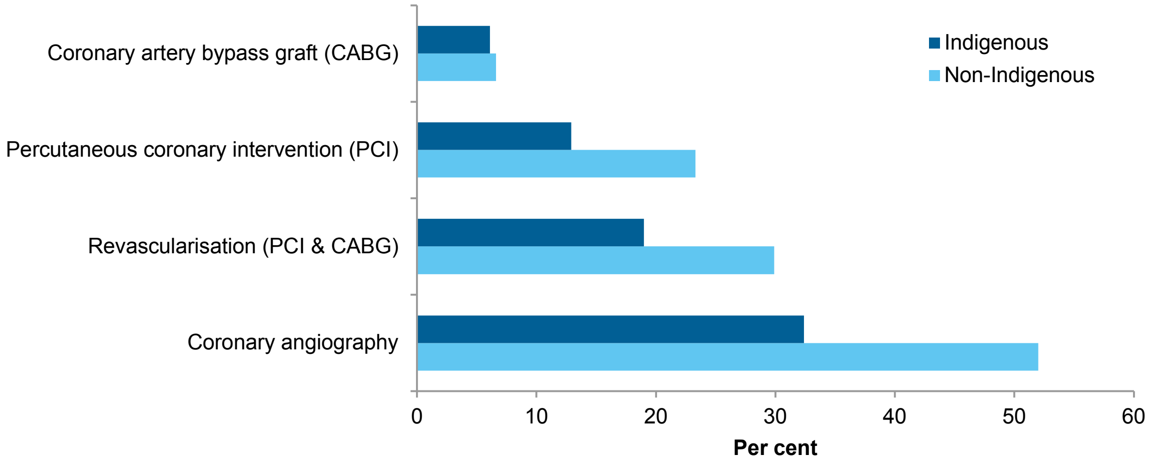
Box 2.2: Coronary procedures

Coronary angiography involves taking an X-ray of the heart using an injected contrast dye. As the dye moves through the coronary arteries, an X-ray is taken to see if the arteries are narrowed or blocked.

Percutaneous coronary intervention (PCI) is a procedure that increases blood flow to the heart by inserting a thin tube into the coronary arteries. A small balloon attached to the end of the tube is inflated inside one or more narrowed coronary arteries. Stents (small mesh tubes) may be inserted to support the inner wall of the affected artery and to keep it open. PCI is also known as coronary angioplasty.

Coronary artery bypass graft (CABG) is a surgical procedure that grafts a blood vessel from the leg or forearm to bypass a coronary artery blockage.

While in hospital for CHD, Indigenous Australians were less likely than non-Indigenous Australians to undergo a coronary procedure (Figure 2.5). Between July 2010 and June 2012, less than one third (32%) of Indigenous hospitalisations for CHD involved coronary angiography compared with one half (52%) of non-Indigenous hospitalisations after adjusting for age. Similarly, about half as many Indigenous as non-Indigenous CHD hospitalisations involved PCI (13% compared with 24%). However, rates of coronary artery bypass grafts were similar between CHD hospitalisations of Indigenous and non-Indigenous Australians (a rate ratio of 0.93).



Notes

1. Indigenous rates were age-standardised using the age-specific rates of non-Indigenous Australians.
2. Data for this figure are shown in Appendix Table C2.5.

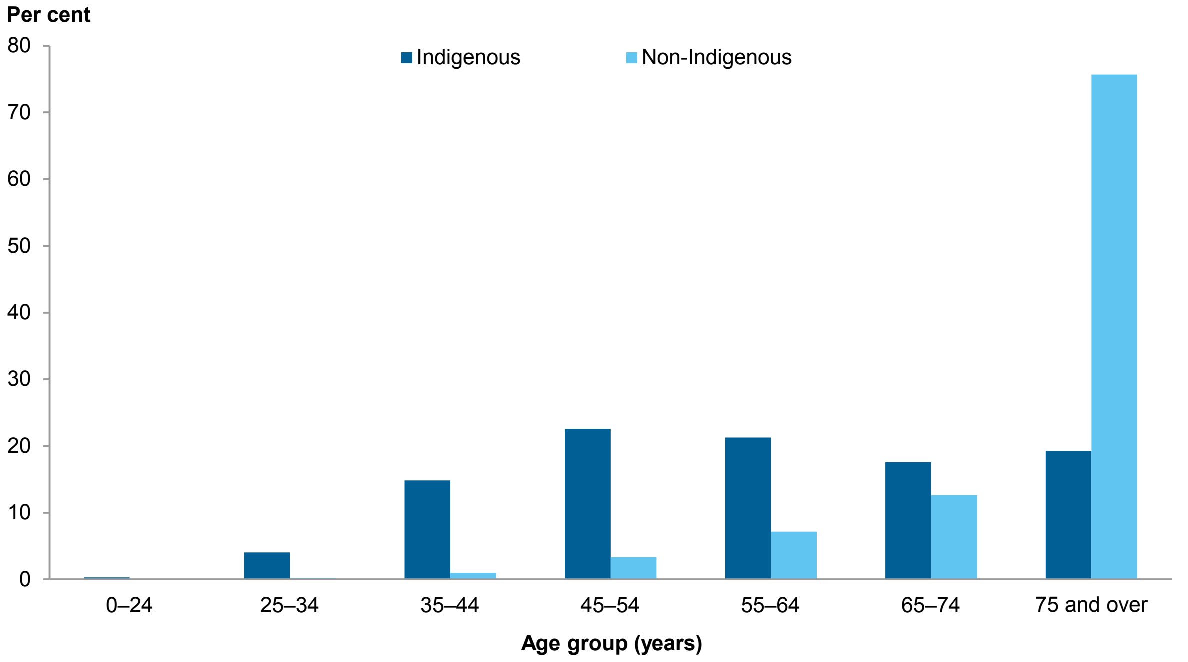
Source: AIHW National Hospital Morbidity Database.

Figure 2.5: Use of coronary procedures during hospitalisations for CHD, by Indigenous status, July 2010 to June 2012

Reasons for lower rates of coronary procedures during Indigenous hospitalisations for CHD may include: lower rates of private health insurance coverage, lower level of access to private hospitals (where many of these procedures are performed), later presentation to hospital (which can affect treatment options), clinical judgements regarding patient compliance post-procedure, communication issues, and patient knowledge and attitudes (AHMAC 2012).

2.4 Mortality

CHD was responsible for 1,598 Aboriginal and Torres Strait Islander deaths between 2007 and 2011, representing 14% of all deaths for this population group. This was similar to the proportion of deaths represented by CHD in the non-Indigenous population (16%). However, there are clear differences in the age profile of CHD deaths in the 2 population groups. Mortality from CHD is high in the Aboriginal and Torres Strait Islander population from a relatively young age. A large proportion (81%) of Indigenous CHD deaths in 2007–2011 occurred among those aged under 75. This is in contrast to the non-Indigenous population, where only 24% of CHD deaths occurred under the age of 75. Three-quarters of Indigenous CHD deaths were among people aged 35–74 (see Figure 2.6).



Notes

1. Cause-of-death data for 2010 and 2011 are revised and preliminary, respectively, and subject to revision by the ABS.
2. Data for this figure are shown in Appendix Table C2.6.

Source: AIHW National Mortality Database.

Figure 2.6: Indigenous and non-Indigenous deaths from CHD, by age, NSW, Qld, WA, SA and NT combined, 2007–2011

Indigenous males were more likely to die from CHD as a primary cause than were Indigenous females, which is the same pattern seen in non-Indigenous Australians (Table 2.3).

Table 2.3: Deaths from coronary heart disease, by Indigenous status and sex, NSW, Qld, WA, SA and NT combined, 2007–2011

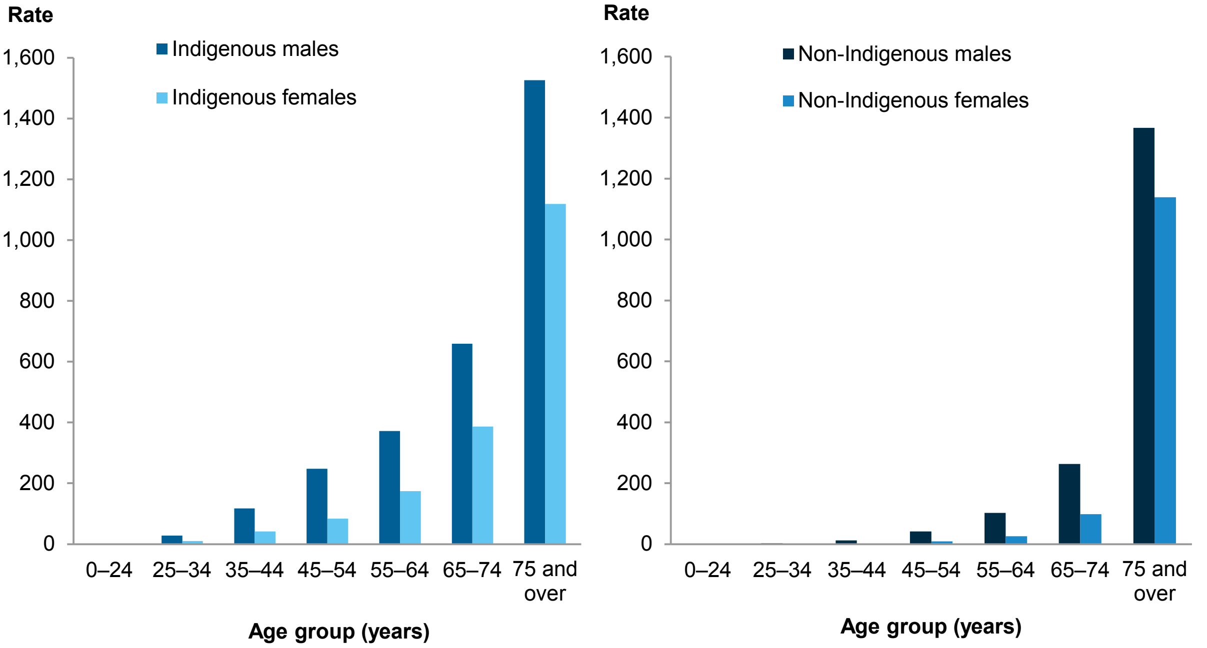
	Males		Females		Persons		% of all deaths
	Number	Rate(a)	Number	Rate(a)	Number	Rate(a)	
Indigenous	1,014	226.2	584	128.1	1,598	172.2	14%
Non-Indigenous	41,972	114.4	36,266	76.2	78,238	94.1	16%

(a) Per 100,000 population. Rates have been directly age standardised to the 2001 Australian Estimated Resident Population.

Note: Cause-of-death data for 2010 and 2011 are revised and preliminary, respectively, and subject to revision by the ABS.

Source: AIHW National Mortality Database.

Similar to the non-Indigenous population, Indigenous males were more likely to die from CHD than Indigenous females across all ages (see Figure 2.7). In 2007–2011, the age-standardised death rate for Indigenous males was twice that for Indigenous females (226 compared with 128 per 100,000), whereas in the non-Indigenous population, the male death rate was 1.5 times as high as the female death rate.



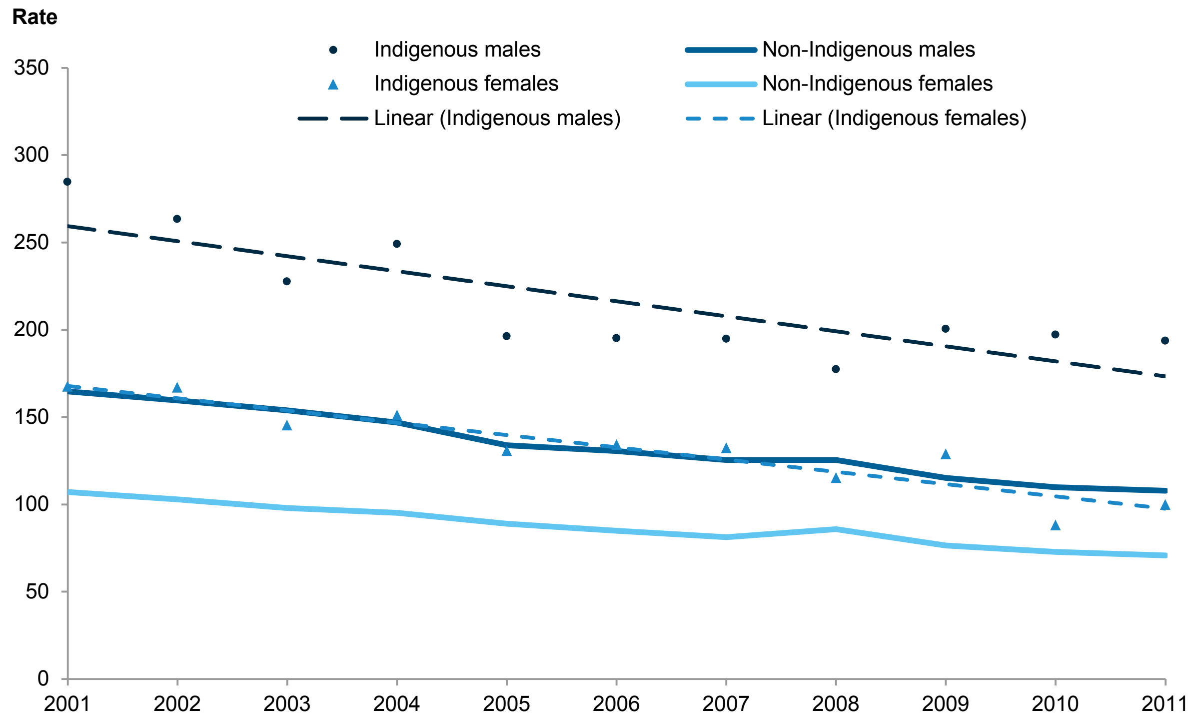
Notes

1. Cause-of-death data for 2010 and 2011 are revised and preliminary, respectively, and subject to revision by the ABS.
2. Data for this figure are shown in Appendix Table C2.7.

Source: AIHW National Mortality Database.

Figure 2.7: Age-specific CHD death rates, by Indigenous status and sex, NSW, QLD, WA, SA and NT combined, 2007–2011 (deaths per 100,000 population)

There was a statistically significant decline in CHD mortality over time in the Indigenous population, for both males and females. Between 2001 and 2011, the age-standardised CHD death rate fell by 36% in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined (Figure 2.8). Non-Indigenous CHD mortality also fell significantly, by 35%, over this period. The gap in CHD mortality between the 2 population groups fell from 89 deaths per 100,000 population in 2001 to 54 deaths per 100,000 in 2011.



Notes

1. Cause-of-death data for 2010 and 2011 are revised and preliminary, respectively, and subject to revision by the ABS.
2. Rates have been directly age-standardised to the 2001 Australian Estimated Resident Population.
3. Data for this figure are shown in Appendix Table C2.8.

Source: AIHW National Mortality Database.

Figure 2.8: Age-standardised CHD death rates, by Indigenous status and sex, NSW, QLD, WA, SA and NT combined, 2001 to 2011 (deaths per 100,000 population)

3 Chronic obstructive pulmonary disease

Chronic obstructive pulmonary disease is a serious long-term lung condition that is progressive and not fully reversible. It is characterised by shortness of breath (airflow limitation) with fits of coughing, and it mainly affects older people. Breathlessness from COPD progresses over time until it becomes severe upon minimal exertion (Box 3.1). The slow development of COPD may mean that its presence is not detected until there is severe damage to the lungs. The damaged lung tissue is unable to repair itself, and there is no cure for COPD. Medication can improve the symptoms and slow progression of the disease. Other forms of treatment, such as pulmonary rehabilitation and oxygen therapy, may also be effective but there is currently no national data on the effectiveness of these interventions (AIHW: Marks et al. 2013).

Box 3.1: Clinical presentation of COPD

COPD encompasses several long-term, progressive lung conditions. The 2 most common conditions are chronic bronchitis and emphysema. In chronic bronchitis, the lungs constantly overproduce mucus that can lead to a chronic, productive cough. Emphysema occurs when the air passages (bronchi and bronchioles) and air sacs (alveoli) of the lung are damaged, causing breathlessness. Each form of COPD can present on its own, or together in the same person.

The development and progression of COPD is characterised by an ongoing reduction in lung capacity and increasing shortness of breath, which can become so severe that assistance is required with everyday tasks. Based on the reduction in lung capacity (measured using a breathing test called spirometry) and other signs and symptoms, the progression of COPD can be divided into 4 stages: mild, moderate, severe and restrictive. Other signs and symptoms include cough, shortness of breath, increased sputum production, wheezing and chest tightness.

COPD is a large source of morbidity, disability and mortality in Australia and internationally (Devereux 2006). The financial costs of COPD are also high. In 2008–09, estimated expenditure for COPD in Australia (based primarily on hospital admitted patient services, out-of-hospital medical expenses and prescription pharmaceuticals) was $929 million, which accounted for 1.3% of total direct expenditure on all diseases (AIHW 2013c). The major costs were hospital costs for admitted patients (58%) and prescription medicines (23%).

According to the Global Burden of Disease Study 2010, COPD ranked third for burden of disease in Australasia after CHD and low back pain (AIHW 2013f). COPD is a large contributor to the burden of disease in the Indigenous population as well. In 2003, COPD was responsible for 4% of the total burden of disease among Aboriginal and Torres Strait Islander peoples, and chronic respiratory diseases overall were the third leading contributor to burden of disease in the Indigenous population (Vos et al. 2007).

3.1 Risk factors

Many factors can contribute to the development and progression of COPD. The major risk factor for COPD is tobacco smoking; however, there are a range of other risk factors, such as environmental and biological factors (Table 3.1).

Table 3.1: Known risk factors for COPD incidence, severity and mortality

Non-modifiable	Modifiable	May or may not be modifiable
age	tobacco smoking	low socioeconomic status
genetic factors (e.g. alpha-1 antitrypsin deficiency)		occupational dust, vapours, and fumes
		indoor air pollutants (from biomass fuels such as straw, coal)
		outdoor air pollutants
		recurrent childhood infections

Source: Mannino & Buist 2007.

Long-term tobacco smoking and environmental exposure to pollutants can trigger chronic inflammation of the airways through noxious chemicals. Exposure to various bacterial and viral infections in childhood and polluted air are other common risk factors. Childhood lower respiratory tract infections can impair lung growth and make these children more vulnerable to developing COPD in later life if exposed to smoking or other pollutants (Sethi 2000). Rare genetic conditions such as alpha-1 antitrypsin deficiency can cause COPD in people who have never smoked or been exposed to irritants. While rates of COPD are higher in men than in women, this is likely to be related to patterns in smoking and occupational exposure (Mannino & Buist 2007).

Data on COPD risk factors in the Indigenous population, other than tobacco smoking, are limited. Several reports have described the high prevalence of bacterial and viral infections leading to respiratory illness in Indigenous children (Maguire 2004). Adult respiratory infections have also been reported to contribute to acute exacerbations of COPD in the Indigenous population (Thomas et al. 2006).

Tobacco smoking

Tobacco smoking, as well as exposure to environmental tobacco smoke, is relatively common in the Indigenous population. According to the 2012–13 AATSIHS and as noted in Section 2.1, 44% of Indigenous Australians aged 18 and over smoked tobacco daily. Another 2% were intermittent smokers, 22% were ex-smokers and 32% had never smoked tobacco (ABS 2013a). After adjusting for age, Indigenous adults were 2.6 times as likely to report that they were current daily smokers as were non-Indigenous adults (Table 3.2). In both populations, men aged 18 and over were more likely than women aged 18 and over to be current or ex-smokers. However, the difference between men and women was greater among the non-Indigenous population.

Table 3.2: Smoker status of Australians adults, by Indigenous status and sex, 2012–13

	Indigenous (%)			Non-Indigenous[(a)] (%)			Rate ratio[(b)] (persons)
	Males	Females	Persons	Males	Females	Persons	
Current daily smoker	45.4	42.2	43.8	17.8	13.6	15.7	2.6
Current intermittent smoker[(c)]	2.1	2.1	2.1	2.0	1.6	1.8	1.0
Ex-smoker	22.0	22.8	22.4	35.4	26.9	31.1	0.9
Never smoked	30.6	33.0	31.8	44.8	57.8	51.4	0.6
Total[(d)]	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	. .

. . not applicable

(a) Data for non-Indigenous people are for 2011–12, from the Australian Health Survey 2011–13.

(b) Rate ratio is calculated by dividing the age-standardised Indigenous rate by the age-standardised non-Indigenous rate.

(c) Includes smokers who smoked weekly (at least once a week, but not daily) and those who smoked less than weekly.

(d) Totals may not sum to 100 due to rounding.

Source: ABS 2013a.

Cessation of tobacco smoking is the most effective way to improve COPD outcomes (Srivastava et al. 2006). However, only a small proportion of patients with respiratory illnesses give up smoking (Manning & Kin 2006). In 2004–05, regular tobacco smoking was reported at the same levels among Australians with or without self-reported long-term respiratory illnesses (asthma, COPD and other long-term respiratory problems) in both the Indigenous and non-Indigenous populations (Table 3.3) (AIHW 2013a).

Table 3.3: Long-term respiratory problems in Australian adults, by Indigenous status and smoker status, 2004–05 (age-standardised rates)

	Indigenous (%)				Non-Indigenous (%)			
Respiratory problems	Current smoker	Ex-smoker	Never smoked	Total	Current smoker	Ex-smoker	Never smoked	Total
Present	47.5	24.3	28.1	100.0	22.6	31.0	46.4	100.0
Absent	48.7	23.2	28.2	100.0	23.3	29.3	47.3	100.0

Notes

1. Rates have been directly age standardised to the 2001 Australian Estimated Resident Population.
2. Totals may not sum to 100 due to rounding.

Source: AIHW analysis of ABS 2004–05 National Aboriginal and Torres Strait Islander Health Survey.

Trends in tobacco smoking in the Indigenous population

High exposure to tobacco smoke may start early in life for some Indigenous Australians, with about 1 in 5 children (21%) exposed to passive smoking inside the house in 2008, compared with 7% of non-Indigenous children (ABS 2012). The initiation to tobacco smoking can also begin early with 18% of Indigenous adolescents aged 15–17 smoking daily in 2012–13, compared with 4% of non-Indigenous adolescents (ABS 2013a).

The proportion of Indigenous daily smokers declined with increasing age. More than half Indigenous Australians aged 25–34 (52%) smoked daily in 2012–13, compared with 26% of those aged 55 and over. The prevalence of smoking in the Indigenous population is almost equal in both sexes, but slightly lower among women across all age groups (ABS 2013a).

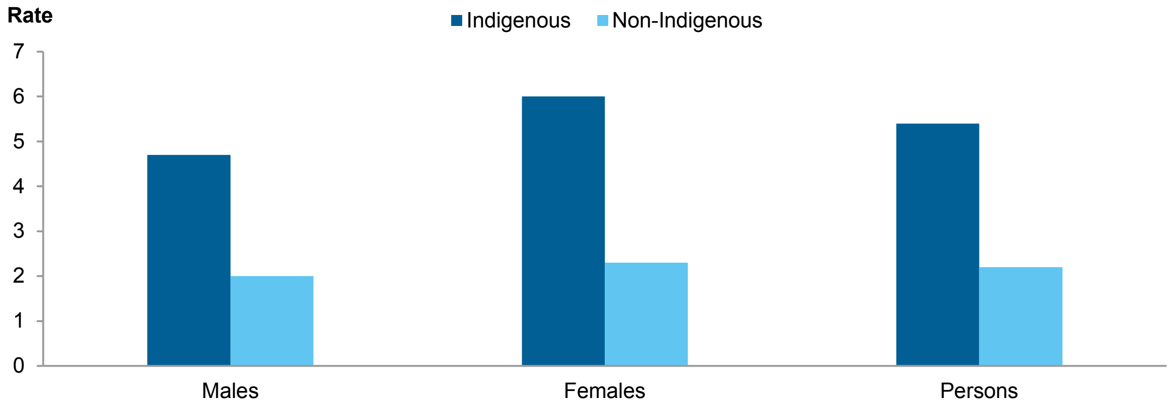
Tobacco smoking is on the decline in the Indigenous population overall. Between 2002 and 2012–13, the proportion of Indigenous males aged 15 and over that smoked daily fell from 51% to 43%. The decrease in females was from 47% to 39% over the same period (ABS 2013a). The proportion of non-Indigenous daily smokers also fell from 22% in 2001 to 16% in 2011–12.

Children's exposure to environmental tobacco smoke in the home is also on the decline. Almost 3 in 10 children aged 0–14 (29%) lived in a household where members usually smoked indoors in 2004–05; the figure was 21% in 2008 (ABS 2012).

3.2 Prevalence

The prevalence of COPD is difficult to determine as some cases are not diagnosed until late in the disease's progress, and the disease often goes undiagnosed in its mild form. Further, self–reported prevalence estimates of COPD are considered to be lower than the actual prevalence by almost 50% in the absence of diagnosis with a lung function test such as spirometry (Halbert et al. 2006).

An assessment of various COPD prevalence studies suggests that about 1 in 5 Indigenous Australians may have moderate to severe COPD (TSANZ 2010). However, in the 2012–13 AATSIHS, only 4% of Indigenous people reported having COPD. This substantially lower proportion may be due to the condition not yet being diagnosed by a doctor, and therefore not reported by survey respondents. The prevalence of self-reported COPD was similar in females (4.3%) and males (4.0%). After adjusting for differences in the age structure of the populations, Indigenous Australians were 2.5 times as likely to report having COPD as were non-Indigenous Australians (Figure 3.1). Indigenous Australians living in remote areas have been reported to have a higher prevalence of COPD than Indigenous people living in metropolitan or regional areas (TSANZ 2010).



Notes

1. Rates have been directly age standardised to the 2001 Australian Estimated Resident Population.
2. Data for non-Indigenous people are for 2011–12, from the Australian Health Survey 2011–13.
3. Data for this figure are shown in Appendix Table C3.1.

Source: ABS 2013a.

Figure 3.1: Age-standardised rates of Australians reporting COPD, by Indigenous status and sex, 2012–13 (per cent)

3.3 Hospitalisations

People with COPD may require hospitalisation to treat acute exacerbations of the disease. Between July 2010 and June 2012, there were 6,231 hospitalisations of Indigenous people for which the principal diagnosis was COPD. After adjusting for age, Indigenous hospitalisations for COPD were 5 times as high as for non-Indigenous Australians (Table 3.4). There were 6 times as many COPD hospitalisations for Indigenous females as for non-Indigenous females.

Table 3.4: Hospitalisations for a principal diagnosis of COPD, by Indigenous status and sex, July 2010 to June 2012

	Indigenous		Non-Indigenous		Total[(a)]			
Sex	**Number**	**Rate[(b)]**	**Number**	**Rate[(b)]**	**Number**	**Rate[(b)]**	**Rate ratio[(c)]**	**Rate difference[(d)]**
Males	2,612	12.7	64,929	2.9	68,077	3.0	4.4	9.8
Females	3,619	12.9	55,476	2.1	59,769	2.3	6.2	10.8
Persons	6,231	12.7	120,405	2.4	128,115	2.6	5.2	10.3

(a) Includes hospitalisations for which Indigenous status was not stated.

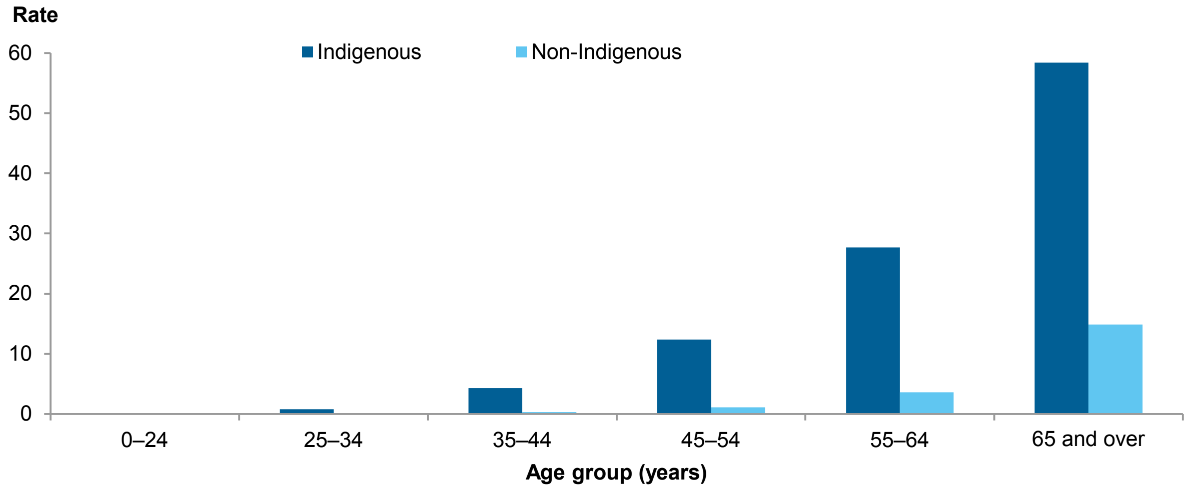
(b) Per 1,000 population. Rates have been directly age-standardised to the 2001 Australian Estimated Resident Population.

(c) Rate ratio is calculated by dividing the Indigenous rate by the non-Indigenous rate.

(d) Rate difference is calculated by subtracting the non-Indigenous rate from the Indigenous rate.

Source: AIHW National Hospital Morbidity Database.

The high rate-ratios seen in Table 3.4 may reflect the greater prevalence or severity of COPD in the Indigenous population requiring hospitalisation. Indigenous Australians are hospitalised for COPD at higher rates than non-Indigenous Australians across all age groups (Figure 3.2). Between July 2010 and June 2012, the Indigenous COPD hospitalisation rate exceeded 12 per 1,000 population among those aged 45–54, and was almost 28 per 1,000 in the 55–64 age group. The respective non-Indigenous rates were 1 and 4 per 1,000.

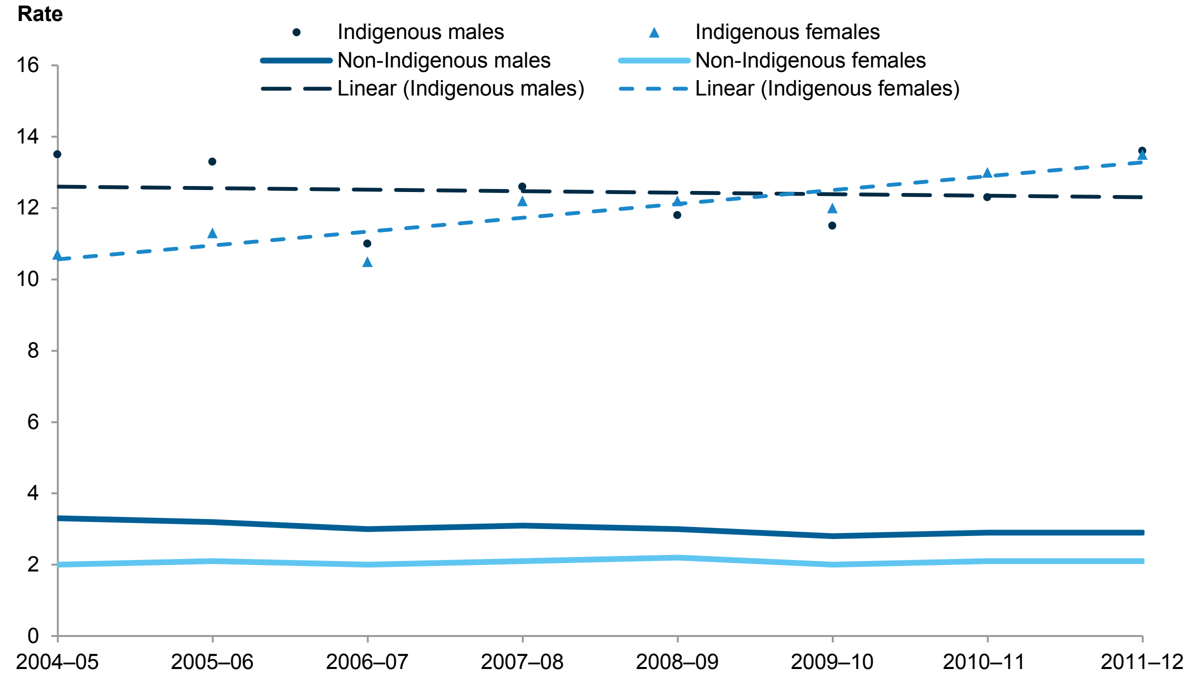


Note: Data for this figure are shown in Appendix Table C3.2.

Source: AIHW National Hospital Morbidity Database.

Figure 3.2: Age-specific hospitalisation rates for a principal diagnosis of COPD, by Indigenous status, July 2010 to June 2012 (hospitalisations per 1,000 population)

Hospitalisations for COPD have increased over time in the Indigenous population. The number of hospitalisations increased from 2,103 in 2004–05 to 3,258 in 2011–12. There was also an increase in the COPD hospitalisation rate from 2004–05 to 2011–12 for Indigenous females (Figure 3.3). That rate increased by more than 25% in the 7-year period. The COPD hospitalisation rate fluctuated for Indigenous males over this period.



Notes

1. Rates have been directly age-standardised to the 2001 Australian Estimated Resident Population.
2. Data for this figure are shown in Appendix Table C3.3.

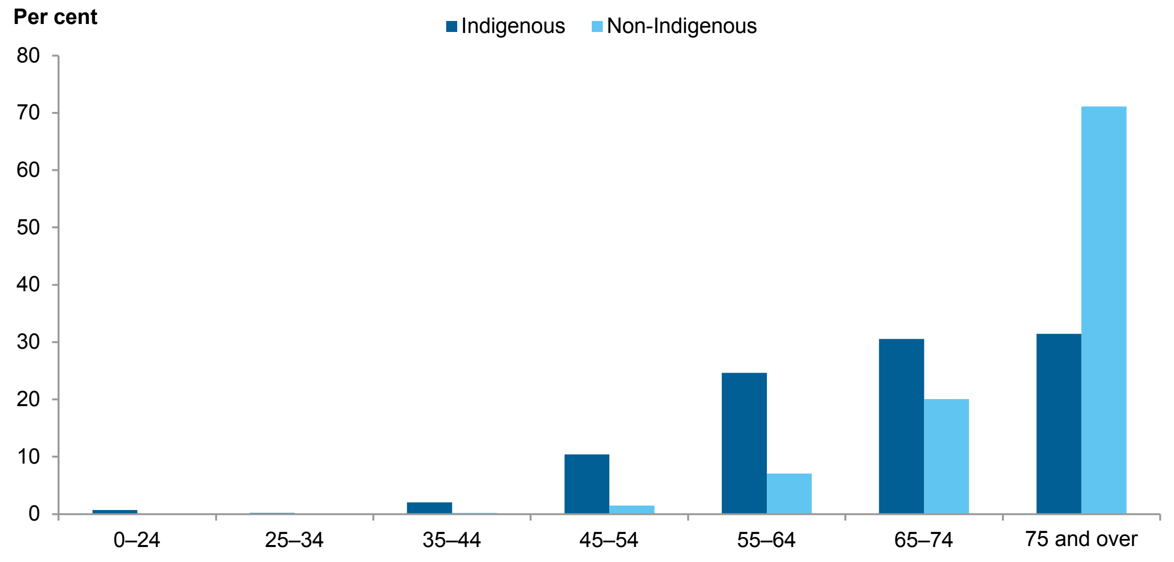
Source: AIHW National Hospital Morbidity Database.

Figure 3.3: Age-standardised hospitalisation rates for COPD, by Indigenous status and sex, NSW, Vic, Qld, WA, SA and NT combined, 2004–05 to 2011–12 (hospitalisations per 1,000 population)

Non-Indigenous hospitalisation rates for COPD remained relatively stable over the period 2004–05 to 2011–12, however there was a fall in the rates for males from 3.3 per 1,000 population in 2004–05 to 2.9 per 1,000 in 2011–12. The difference between Indigenous and non-Indigenous COPD hospitalisations significantly increased by 17% between 2004–05 and 2010–11.

3.4 Mortality

In 2007–2011, COPD was responsible for 442 Indigenous deaths in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined. Deaths from COPD occurred at an earlier age in the Indigenous population than in the non-Indigenous population and became more common with increasing age (Figure 3.4). Similar to the pattern seen in CHD, deaths from COPD among Indigenous people were more likely to occur before the age of 75 than deaths among non-Indigenous people (69% compared with 29%).



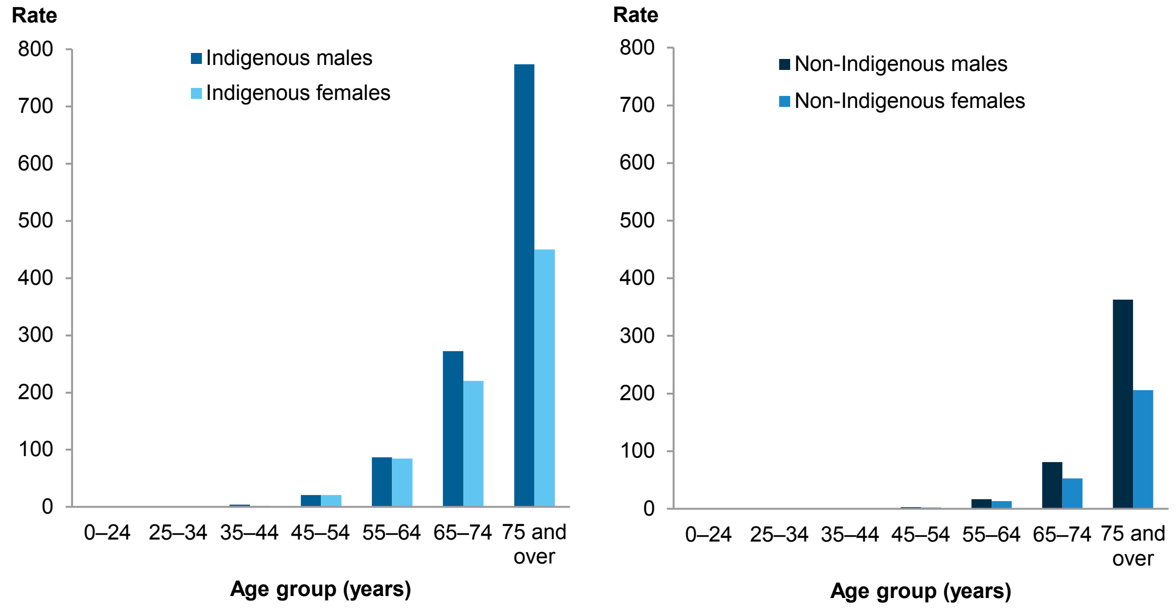
Notes

1. Cause-of-death data for 2010 and 2011 are revised and preliminary, respectively, and subject to revision by the ABS.
2. Data for this figure are shown in Appendix Table C3.4.

Source: AIHW National Mortality Database.

Figure 3.4: Indigenous and non-Indigenous deaths from COPD, by age, NSW, Qld, WA, SA and NT combined, 2007–2011

The age-standardised Indigenous death rate of 61 per 100,000 population in 2007–2011 was almost 3 times as high as the rate for the non-Indigenous population (22 per 100,000). COPD death rates in 2007–2011 were higher in Indigenous males than females across all age groups, which was a pattern also seen in the non-Indigenous population (Figure 3.5).



Notes

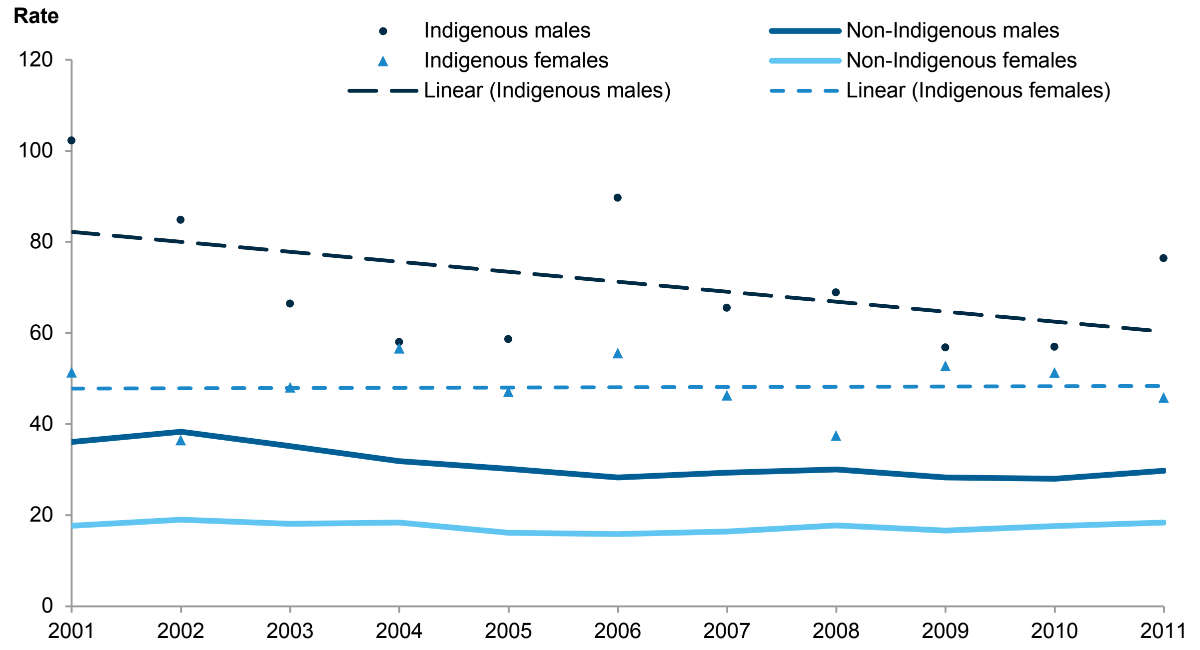
1. Cause-of-death data for 2010 and 2011 are revised and preliminary, respectively, and subject to revision by the ABS.
2. Data for this figure are shown in Appendix Table C3.5.

Source: AIHW National Mortality Database.

Figure 3.5: Age-specific deaths rates from COPD, by Indigenous status and sex, NSW, Qld, WA, SA and NT combined, 2007–2011 (deaths per 100,000 population)

While there was a statistically significant decline in the COPD death rate for non-Indigenous males over the period 2001 to 2011, there was no statistically significant trend for Indigenous males and females, as well as non-Indigenous females (Figure 3.6).

No differences in tobacco smoking patterns and trends based on gender have been seen in the Indigenous and non-Indigenous population to explain the significant death rate decrease in non-Indigenous men but not in the other groups. As noted earlier, rates of smoking have fallen for both Indigenous and non-Indigenous men and women. There is some evidence to suggest that females have heightened susceptibility to cigarette smoke or other forms of air pollution compared with males (Sørheim et al. 2010), and this may explain some of the difference in COPD mortality trends between men and women. Contrasting sex-specific trends in COPD mortality have been noted in populations around the world (López-Campos et al. 2014; O’Farrell et al. 2011), and have been attributed to converging patterns in tobacco smoking, which until recently were on the decline for males in Australia, but rising in females (Harris 2013).



Notes

1. Rates have been directly age-standardised to the 2001 Australian Estimated Resident Population.
2. Cause-of-death data for 2010 and 2011 are revised and preliminary, respectively, and subject to revision by the ABS.
3. Data for this figure are shown in Appendix Table C3.6.

Source: AIHW National Mortality Database.

Figure 3.6: Age-standardised COPD death rates, by Indigenous status and sex, NSW, QLD, WA, SA and NT combined, 2001 to 2011 (deaths per 100,000 population)

Declines in COPD mortality in the Indigenous population have been reported previously from the Northern Territory by Thomas and others (2006). In the absence of any decrease in tobacco smoking in the preceding decade in the Northern Territory, they attributed these declines to improved foetal growth in the womb, fewer childhood infections, better nutrition, less overcrowding and advances in the management of acute exacerbations of COPD.

The contribution of COPD to overall mortality is said to be underestimated (Manning & Kin 2006). In the United Kingdom, about 60% of deaths in people with COPD listed COPD as the primary cause of death but, in Finland, this figure was 37%. In Australia, between 1997 and 2007, COPD was listed as the ‘underlying’ or primary cause for 42% of deaths involving COPD; thus, for over half of these deaths (58%), COPD was listed as an ‘associated’ cause (AIHW 2012a).

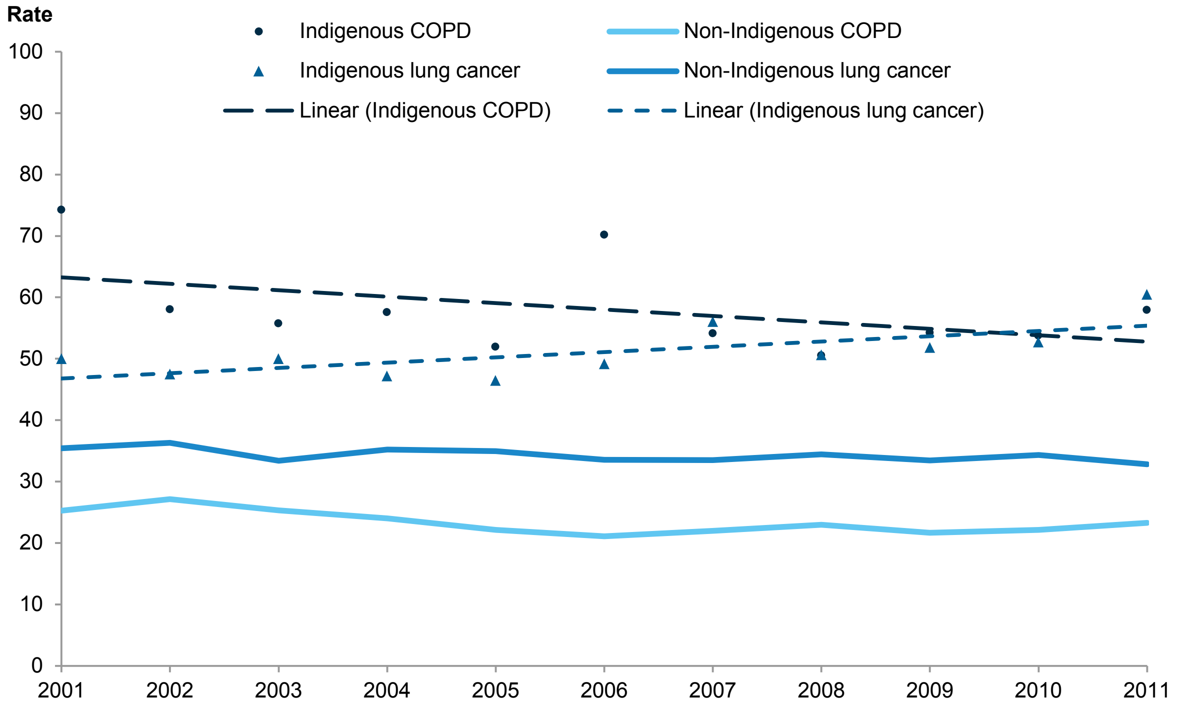
3.5 COPD, lung cancer and tobacco smoking

There is evidence of a relationship between COPD and lung cancer, since a dominant cause of both diseases is tobacco smoking, and the impaired lung function of people with COPD increases their lung cancer risk (Harris 2013). The risk is much higher in COPD patients with severe disease (Purdue et al. 2007).

A close parallel was noted between cigarette use and mortality from both COPD and lung cancer with COPD deaths occurring about 15 to 20 years earlier than lung cancer. Declines in smoking rates are seen to affect COPD death rates earlier than lung cancer rates because

COPD generally develops earlier than lung cancer in the life of a continuous smoker, and the beneficial effects of smoking cessation are more immediate for COPD than for lung cancer (AIHW 2010).

Death rates for both COPD and lung cancer are in decline in Australia, with deaths from lung cancer greater than those from COPD since the 1990s (AIHW 2010). In contrast, for the Indigenous population, there has been a significant increase in lung cancer death rates but there has not been a significant change in rates for COPD. In 2011, deaths rates from lung cancer were at similar levels to death rates from COPD among Indigenous people (Figure 3.7).



Notes

1. Rates have been directly age-standardised to the 2001 Australian Estimated Resident Population.
2. Cause-of-death data for 2010 and 2011 are revised and preliminary, respectively, and subject to revision by the ABS.
3. Data for this figure are shown in Appendix Table C3.7.

Source: AIHW National Mortality Database.

Figure 3.7: COPD and lung cancer mortality, by Indigenous status, 2001 to 2011 (deaths per 100,000 population)

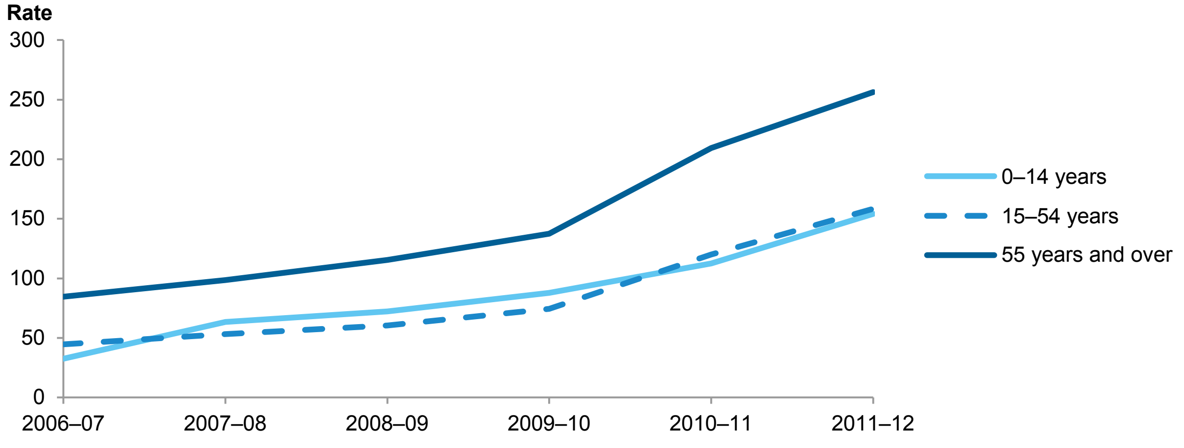
4 Using indicators to monitor CHD and COPD management

The surveillance and monitoring of chronic diseases involves more than just looking at trends in disease occurrence, hospitalisations and mortality. It also needs to take into consideration: relevant risk factors (including behavioural, biomedical, occupational, environmental, psychosocial and socioeconomic); comorbidities; medical interventions; disabilities; and the mix of underlying causes of death. A life course approach to the development and progression of chronic diseases is integral to any surveillance and monitoring strategy.

A considered approach to chronic disease monitoring is to develop indicators of progress across various aspects of disease processes and outcomes, and to report against them regularly. Australian governments are making a concerted effort to monitor the health of Indigenous Australians using a set of indicators guided by the Aboriginal and Torres Strait Islander Health Performance Framework (HPF). Many of these indicators cover various important aspects of chronic diseases such as risk factors, prevalence, interventions, hospitalisations and mortality (AHMAC 2012). Detailed information on these indicators is being generated by the AIHW on a regular basis (AIHW 2011a, 2013a).

For example, analysis of Medicare data conducted for HPF reporting has shown that the rates of Medicare Benefits Schedule (MBS) health checks for Indigenous people have increased significantly between 2006–07 and 2011–12 (AIHW forthcoming). These health checks aim to improve the early detection and treatment of health conditions. Over this period, the rate of MBS health checks for Indigenous Australians:

- aged 0–14 increased from 33 per 1,000 to 154 per 1,000 population
- aged 15–54 increased from 45 to 158 per 1,000 population
- aged 55 and over increased from 85 to 256 per 1,000 population (Figure 4.1).



Note: Data for this figure are shown in Appendix Table C4.1.

Source: AIHW forthcoming.

Figure 4.1: MBS health checks for Indigenous Australians, by age, 2006–07 to 2011–12 (number per 1,000 population)

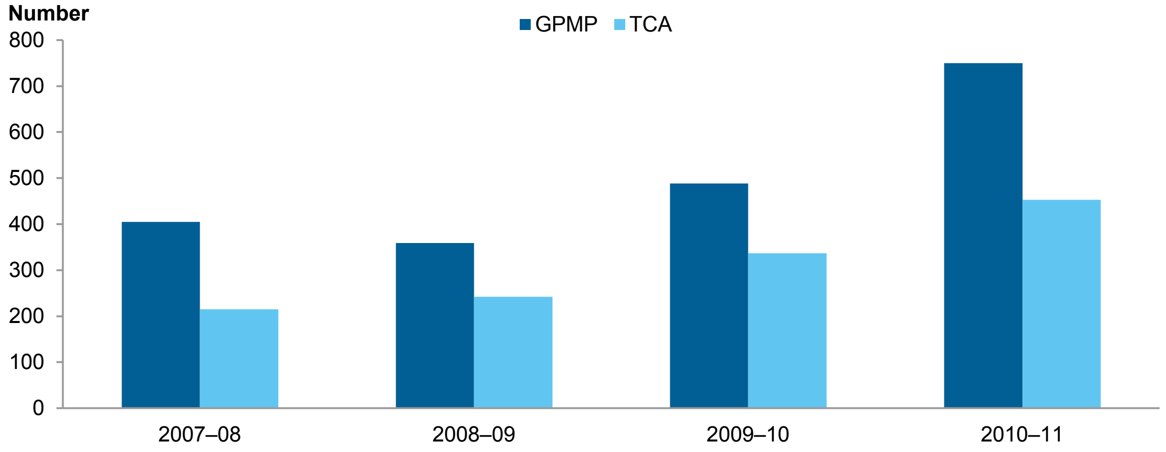
Ideally, an indicator framework that is specifically concerned with assessing the progression of CHD and COPD in the Indigenous population will be developed to assist in the understanding of disease progression and management in Indigenous people. However, until then, indicators in other frameworks can provide some insight into these areas. For example, government programs targeting Indigenous chronic diseases have been evaluated and the results relating to CHD and COPD are outlined below.

4.1 Healthy for Life

Healthy for Life (HfL) is an Australian Government-funded program aimed at improving Indigenous health. One of its objectives is to improve the prevention, early detection and management of chronic disease. The program collects and reports on service activities and health outcome data. It is available to: primary health-care providers in Aboriginal Community Controlled Health Services (ACCHS), state and territory health services, and Divisions of General Practice (which were superseded by Medicare Locals). ACCHSs comprise about 65% of the services participating in the program.

The AIHW published a national report on the HfL program in 2013 (AIHW 2013b). Findings in regard to CHD were:

- The number of Indigenous clients with CHD with a General Practitioner Management Plan (GPMP) almost doubled, from 405 in 2007–08 to 750 in 2010–11 (Figure 4.2). The proportion of Indigenous clients with CHD with a General Practitioner Management Plan increased from 23% to 34% in this period.
- The number of Indigenous clients with CHD who had a Team Care Arrangement (TCA) (allowing GPs to coordinate patient care with other health-care providers) increased by over 100% from 215 in 2007–08 to 453 in 2010–11 (Figure 4.2). Over this period the proportion of Indigenous clients with CHD who had a Team Care Arrangement increased from 13% to 22%.



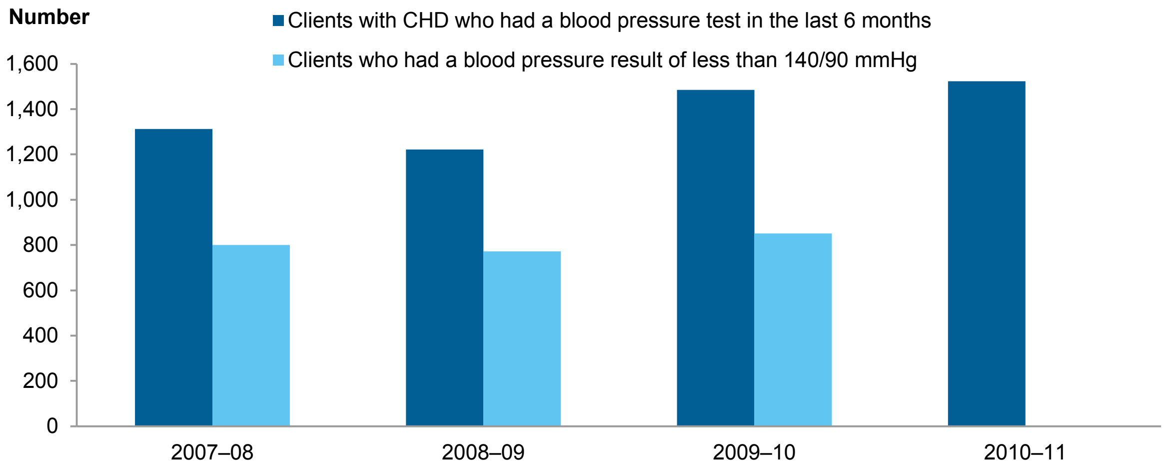
Note: Data for this figure are shown in Appendix Table C4.2.

Source: AIHW 2013b.

Figure 4.2: Indigenous clients with CHD with a General Practitioner Management Plan and a Team Care Arrangement, 2007–08 to 2010–11

In addition, the number of Indigenous clients with CHD who had a blood pressure test in the last 6 months increased from 1,156 in 2007–08 to 1,523 in 2010–2011, which equated to 62%

and 63% of these clients, respectively (Figure 4.3). The proportion whose blood pressure result was favourable (less than 140/90mmHg) ranged from 61% in July–December 2007 and January–30 June 2010 to 66% in July–December 2010. Note that comparisons cannot be made with results recorded after 2010 because the data specified for this indicator changed in January–June 2011 to blood pressure less than or equal to 130/80 mmHg.



Notes

1. Blood pressure results data are not available for 2010–11 because the data specified for this indicator changed in January–June 2011.
2. Data for this figure are shown in Appendix Table C4.3.

Source: AIHW 2013b.

Figure 4.3: Indigenous clients with CHD who had a blood pressure test in the last 6 months and whose blood pressure was less than 140/90 mmHg, 2007–08 to 2010–11

4.2 National Key Performance Indicators for Indigenous-specific primary health-care services

From June 2012, reporting on the Healthy for Life program was replaced with the Indigenous primary health-care national Key Performance Indicators (nKPI) data collection. As with the HfL program, the nKPIs focus on chronic disease prevention and management, and on maternal and child health.

The purpose of the nKPIs is to improve the delivery of primary health-care services by supporting continuous quality improvement activity among service providers. The nKPIs also support policy and planning at the national and jurisdictional level by allowing monitoring of progress and highlighting areas for improvement.

In 2012–13, data pertaining to 19 indicators were collected from 206 primary health-care organisations that receive funding from the Australian Government Department of Health to provide services primarily to Aboriginal and Torres Strait Islander people. A number of these indicators relate to chronic disease detection, prevention and management; however the indicators mainly relate to clients with Type II diabetes or cardiovascular diseases more broadly, and not to coronary heart disease specifically. Examples of such indicators are as follows: proportion of clients who had a cardiovascular risk assessment; proportion of regular clients with diabetes who had a General Practitioner Management Plan or Team Care

Arrangement; and proportion of clients with diabetes who had their blood pressure measured and recorded. From December 2014, the outcome of clients' cardiovascular risk assessments will also be collected.

The only indicator of the 19 nKPIs currently collected on COPD is the proportion of regular clients with COPD who were immunised against influenza. Regular clients are people who have an active medical record—that is, people who attended the primary health-care organisation at least 3 times in the last 2 years. Data at June 2013 indicate that, nationally, 34% of Indigenous regular clients with COPD aged 15–49 were immunised against influenza (AIHW 2014c).

4.3 Evaluation of the Indigenous Chronic Disease Package

The AIHW undertook a review of the effectiveness, efficiency and appropriateness of the National Partnership Agreement (NPA) on Closing the Gap in Indigenous Health Outcomes, based on information from the first 3 years' of its implementation (2009–10 to 2011–12). Part of the NPA included the Indigenous Chronic Disease Package (ICDP). The first and second years of the ICDP's implementation were also evaluated by KPMG (KPMG 2013a, 2013b). Their evaluation of the first year was used as a baseline for monitoring progress in subsequent years. An evaluation of the Sentinel Sites, which were locations chosen for monitoring the ICDP implementation, was also undertaken by the Menzies School of Health Research over the period 2010 to 2013 (Bailie et al. 2013). Key findings of these evaluations are summarised below.

Progress in reducing chronic disease risk factors

Progress to reduce smoking rates among Indigenous people has been made. Implemented measures included:

- a new workforce aimed at tackling Indigenous smoking, made up of a National Coordinator for Tackling Indigenous Smoking and a national network of 37 Regional Tobacco Coordinators and 59 Tobacco Action Workers (at 31 July 2012)
- the 'Break the Chain' advertising campaign—Australia's first national anti-smoking advertising campaign with a focus on Indigenous people—was launched in March 2011.

In addition, there was also increased uptake of smoking-cessation medicines over 2010–11 by the Indigenous population (which was likely to also have been influenced by non-ICDP initiatives).

Management of chronic disease and follow-up care

At 31 July 2012, the following achievements were noted:

- greater than expected uptake of the Practice Incentives Program (PIP) Indigenous Health Incentive in terms of expenditure and patient registration payments. More than 3,100 general practices and around 150 Indigenous health services had signed on to the program, which supports general practices and Indigenous health services to improve the care they provide to Indigenous patients. However, incentive payments for practices to provide chronic disease management were less than expected—only 4% of registered practices triggered the Tier 1 payment, which requires the development and review of a GPMP or TCA (AIHW 2013e).

- greater than expected uptake of Closing the Gap Pharmaceutical Benefits Scheme (PBS) prescriptions in the 12 months to 31 May 2011. This program allows more Indigenous people living in remote areas to access more affordable—and in some instances free—PBS medicines. At 30 June 2012, approximately 150,000 Indigenous people with, or at risk of, chronic disease had accessed the initiative, with 96% (5,127) of pharmacies participating and over 2.7 million prescriptions dispensed.
- multidisciplinary health outreach teams provided 541 services nationally in regional and remote Indigenous communities in 2010–11, compared with 148 across New South Wales, Queensland and Western Australia in 2009–10.

Workforce expansion and support

At 31 July 2012, the following achievements were noted:

- 95 new Indigenous Health Project Officers were introduced
- Divisions of General Practice and Indigenous health services were funded to employ 128 Aboriginal and Torres Strait Islander Outreach Workers
- an additional 20 practice managers and 13 health professionals were funded to increase the capacity of Indigenous health services
- 46 new general practitioner registrar training posts were created in Indigenous health services
- 87 new Care Coordinators (who coordinate patients' access to health services consistent with their General Practitioner Management Plans) were funded (KPMG 2013a, 2013b).

5 Conclusion

Age-specific prevalence, hospitalisation and mortality data for CHD and COPD point to a pattern of chronic disease in the Indigenous population which is different from that experienced by the non-Indigenous population. Not only are these diseases prevalent at younger ages and at higher rates across all age groups in the Indigenous population (particularly in the middle aged), but their progression to advanced disease, related complications and death also appears to occur at younger ages. Reasons for these differences include a higher prevalence of risk factors, such as smoking, and poorer access to health services among the Indigenous population, which can delay the diagnosis and treatment of these conditions (Gracey & King 2009).

Declines in Indigenous CHD mortality between 2001 and 2011 are highly encouraging, as is the fall in Indigenous smoking rates from 2001 to 2012–13. However, increases in other CHD risk factors in the Indigenous population, such as diabetes and poor diet, may affect this downward trend into the future.

A combination of various factors could be contributing to the downward trend in CHD mortality including declining smoking rates, improved chronic disease treatment and management, and changes to individuals' socioeconomic and environmental conditions. Further research is required to fully understand all of the factors and to separate and quantify these effects.

Primary prevention can play a much larger role in improving the cardiovascular and pulmonary health of Indigenous Australians. Behavioural risk factors for CHD, including those contributing to overweight and obesity, need to be addressed, along with biomedical factors such as the high prevalence of diabetes. Smoking-cessation programs and early management of acute respiratory illnesses in Indigenous Australians are also important strategies for alleviating the burden of COPD on the Indigenous community.

Progress towards reducing the burden of CHD and COPD in the Indigenous community can be monitored using indicators that track chronic disease risk factors and medical interventions more broadly. Monitoring of recent government programs has found that progress has been made in smoking cessation and blood pressure management, and in the uptake of GP Management Plans, Team Care Arrangements and Closing the Gap PBS prescriptions. The development of an indicator framework that is specific to assessing the progression of CHD and COPD among Indigenous people can further improve the understanding of these diseases' progression and management in this population.

Appendix A: Data sources

National Mortality Database

Mortality data have been extracted from the AIHW's National Mortality Database. Data are sourced from the Registrars of Births, Deaths and Marriages in each state and territory and from the National Coronial Information System, and compiled and coded by the ABS. The ABS codes the cause of death using the International Statistical Classification of Diseases and Related Health Problems and passes the data to the AIHW for inclusion in the National Mortality Database. Although the database includes multiple causes of death, only the underlying (or primary) cause is used in the analyses presented in this paper.

Mortality data are presented for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined as these jurisdictions are considered to have adequate levels of identification of Indigenous people in their death registration systems for analyses from 2001 onwards.

In order to accommodate small numbers and year-to-year variability in some cause-of-death data for Indigenous Australians, most of the analyses were conducted on combined deaths for the 5-year period 2007 to 2011 rather than on 2011 data alone.

Deaths registered in 2010 for individuals with a usual residence of Queensland have been adjusted to exclude deaths registered in 2010 that occurred prior to 2007. This is to minimise the impact of late registration of deaths due to recent changes in the timeliness of death registrations in Queensland.

For more information about deaths in Australia and data quality, refer to ABS *Deaths, Australia* (ABS cat. no. 3302.0) and ABS *Causes of death, Australia* (ABS cat. no. 3303.0), which are available from <http://www.abs.gov.au.>.

National Hospital Morbidity Database

Hospitalisation data have been extracted from the AIHW's National Hospital Morbidity Database, which is a compilation of episode-level records from admitted patient morbidity data collection systems in Australian hospitals in each state and territory. Information on the characteristics, diagnoses and care of admitted patients in public and private hospitals is provided annually to the AIHW by state and territory health departments.

Hospitalisation data are presented for the 2-year period from July 2010 to June 2012. An aggregate of 2 years of data has been used because the number of hospitalisations for some conditions for Indigenous Australians is likely to be small for a single year.

Statistics on admitted patients are compiled when an admitted patient (that is, a patient who undergoes a hospital's formal admission process) completes an episode of admitted patient care and 'separates' from the hospital. This is because most of the data on the use of hospitals by admitted patients are based on information provided at the end of the patient's episode of care, rather than at the beginning. The length of stay and the procedures carried out are then known and the diagnostic information is more accurate. The principal diagnosis is the diagnosis established, after study, to be chiefly responsible for occasioning the patient's episode of admitted patient care.

Hospital records are for ‘separations’ and not individuals; since there can be multiple separations for the same individual, hospital separation rates do not usually reflect the number of people who were hospitalised. For example, it is not possible to identify whether 1 patient was admitted 5 times or 5 patients were admitted once.

In 2011–12, diagnoses and external causes of injury were recorded using the 7th edition of the *International statistical classification of diseases and related health problems, 10th revision, Australian modification* (ICD-10-AM) (NCCH 2010). It comprises classifications of diseases and external causes of injuries and poisoning based on the World Health Organization’s version of ICD-10. The ICD-10-AM classification is hierarchical, with 20 summary disease chapters that are divided into a large number of more specific disease groupings.

Separations with a care type of ‘newborn’ (without qualified days) and records for ‘hospital boarders’ and ‘posthumous organ procurement’ have been excluded from the analyses presented in this paper.

Hospital separation rates are presented for Indigenous and non-Indigenous Australians; separations for which Indigenous status was ‘not stated’ have been excluded from analyses presented in this paper.

From 2010–11 onwards, Indigenous status information within hospital separations data from all jurisdictions were of sufficient quality for statistical reporting purposes (AIHW 2013d). An AIHW study found an estimated 88% of Indigenous patients were correctly identified in Australian public hospital admission records in 2011–12. Analyses in this paper therefore include data for all jurisdictions, except for time trend analyses, which present data for the 6 jurisdictions that the AIHW has assessed as having adequate identification of Indigenous hospitalisations prior to 2010–11: New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory (public hospitals only). Indigenous people in these 6 jurisdictions comprise approximately 96% of the Indigenous population of Australia.

The complete data quality statement for the NHMD is available online at <www.aihw.gov.au/hospitals/>.

Australian Aboriginal and Torres Strait Islander Health Survey

Data on the prevalence of CHD, COPD and associated risk factors among Indigenous people were taken from the ABS 2012–13 AATSIHS. The AATSIHS surveyed about 9,300 Indigenous Australians living in remote and non-remote areas, including discrete communities. The first results from the AATSIHS were published in November 2013. Updated results based on a larger sample were released in June 2014.

Compared with previous ABS health surveys about Indigenous people, two new components—the National Aboriginal and Torres Strait Islander Nutrition and Physical Activity Survey and the National Aboriginal and Torres Strait Islander Health Measures Survey—were added to the 2012–13 AATSIHS. These additions will provide biomedical results (such as cholesterol levels for Indigenous people aged 18 and over) which will be comparable with results for non-Indigenous people. The results from these two new components are expected to be released in late 2014.

Data from the AATSIHS on the prevalence of chronic diseases are limited because they are self-reported. Self-reporting may depend on whether a survey respondent’s doctor has diagnosed the condition, which means that some chronic diseases that have yet to be detected (for example, those in the early stages) may not be captured in the data.

It is also difficult to monitor trends in some risk factors using the AATSIHS and earlier ABS Indigenous health surveys because the relevant questions changed over time.

Healthy for Life

The Healthy for Life (HfL) program was an Australian Government-funded program which aimed to improve the capacity and performance of primary health-care services to deliver high-quality maternal, children's and chronic disease care to Aboriginal and Torres Strait Islander people. This was carried out through population-health approaches using best-practice and quality-improvement principles.

Primary health-care services participating in the HfL program were required to submit de-identified, aggregate service data to the AIHW for 11 essential indicators on a 6- or 12-monthly basis. These indicators covered maternal health, child health and chronic disease care, as well as information about the characteristics of their service and organisational infrastructure.

The Australian Government and the AIHW have worked with the states and territories to develop a national Key Performance Indicator framework for Indigenous primary health-care services. The new national KPIs, which replaced the HfL program from June 2012, cover maternal and child health, and chronic disease management.

National Key Performance Indicators data

The national Key Performance Indicators (nKPIs) data collection collects data from primary health-care organisations (Aboriginal Community Controlled as well as those with other governance arrangements) that receive funding from the Australian Government Department of Health to provide services primarily to Aboriginal and Torres Strait Islander people. These data are collected and reported to health organisations to help improve the delivery of primary health care for Aboriginal and Torres Strait Islander people, to improve health outcomes and to support progress towards the Council of Australian Governments' Closing the Gap targets.

The 19 indicators focus on chronic disease prevention and management and on maternal and child health. (Additional indicators are to be added progressively in the future.) These are the two key focus areas to achieve the objective of closing the gap in life expectancy between Indigenous and non-Indigenous Australians.

The population of interest in the nKPIs is the regular client population of those primary health-care organisations that are required to report against the nKPIs. A regular client is defined as a person who has an active medical record—that is, a client who attended the primary health-care organisation at least 3 times in the last 2 years. This definition, while nationally consistent and in line with the Royal Australian College of General Practitioners' definition of a patient with an active medical record, has limitations, including clients who attend multiple health organisations.

Population data

Measuring the size of the Indigenous population is not straightforward. The Census count of the number of Aboriginal and Torres Strait Islander Australians has varied considerably over recent decades. Analysis of the size of the increases between censuses demonstrates that these changes are not entirely due to demographic factors such as births, deaths and migration. Instead, they are also in part due to changes in propensity to identify as Aboriginal or Torres Strait Islander and improved enumeration (ABS 2013b).

To calculate the Indigenous and non-Indigenous rates presented in this paper, Estimated Resident Population data, as sourced from the ABS, have been used. The Indigenous population estimates and projections used in this paper are based on the 2006 Census (Series B) (ABS 2009), with the exception of mortality trends over time which have used the recently released Indigenous population estimates and projections based on the 2011 Census (Series B) (ABS 2014).

The Census count of the Indigenous population is based on responses to a question on a person's Indigenous status. The Indigenous Estimated Resident Population is computed using this count, adjusted for undercount (based on results from the Post Enumeration Survey as well as for non-response to the Indigenous status question). Population numbers for years other than Census years are projected based on assumed future levels of fertility, mortality and migration (ABS 2009).

Appendix B: Technical information

Appendix B presents information on how the statistics in this paper were calculated, and other technical points.

Age-specific rates

An 'age-specific rate' is defined as the number of events for a specified age group over a specified period (for example, a year) divided by the total population at risk of the event in that age group. Age-specific rates in this paper were calculated by dividing, for example, the number of deaths in each specified age group by the corresponding population in the same age group.

Age-standardised rates

Age-standardised rates enable comparisons to be made between populations that have different age structures, such as the Indigenous and non-Indigenous populations.

In this paper, age-standardised rates have been directly age-standardised using the 30 June 2001 estimated resident population in Australia as the standard population, using 5-year age groups from 0–4 to 75 and over. This effectively removes the influence of the age structure on the summary rate.

Crude rates

A 'crude rate' is defined as the number of events (for example, deaths of Indigenous people) over a specified period (for example, a year) divided by the total population at risk of the event (for example, number of Indigenous people).

Rate difference

For this paper, rate differences were calculated by subtracting the age-standardised rate for non-Indigenous Australians from the age-standardised rate for Indigenous Australians for the characteristic of interest.

Rate ratio

For this paper, rate ratios were calculated by dividing the age-standardised rate for Indigenous Australians by the age-standardised rate for non-Indigenous Australians for the characteristic of interest.

A rate ratio of 1 indicates that the prevalence of the characteristic is the same in the Indigenous and non-Indigenous populations. Rate ratios that are greater than 1 indicate higher prevalence in the Indigenous population and rate ratios less than 1 indicate higher prevalence in the non-Indigenous population.

Appendix C: Additional tables

Table C2.1: Prevalence of selected behavioural and biomedical risk factors among Indigenous Australians aged 15 and over, by age, 2012–13 (per cent)

	Age group (years)			
Risk factor	**15–17**	**18–34**	**35–54**	**55 and over**
Current daily smoker	17.6	47.1	46.8	26.2
Overweight/obese	36.3	60.4	75.3	77.3
High blood pressure	n.a.	9.8	27.2	36.5
High cholesterol (self-reported)	n.p.	n.p.	3.9	7.3

n.a. not available

n.p. not publishable because of small numbers, confidentiality or other concerns about the quality of the data

Source: ABS 2013a.

Table C2.2: Prevalence of Indigenous current daily smokers aged 18 and over, (selected years)

	2001	**2004–05**	**2008**	**2012–13**
Per cent	50.7	50.0	47.7	43.8

Note: Data for 2008 are from the ABS National Aboriginal and Torres Strait Islander Social Survey.

Source: ABS 2013a.

Table C2.3: Age-specific hospitalisation rates for a principal diagnosis of coronary heart disease, by Indigenous status, July 2010 to June 2012 (hospitalisations per 1,000 population)

Age group (years)	**Indigenous**	**Non-Indigenous**
0–24	0.0	0.0
25–34	2.0	0.2
35–44	10.2	1.5
45–54	25.0	5.6
55–64	36.2	12.9
65 and over	42.5	29.6

Note: Age-specific rates for Indigenous hospitalisations are calculated using population projections based on the 2006 Census (series B).

Source: AIHW National Hospital Morbidity Database.

Table C2.4: Age-standardised CHD hospitalisation rates, by Indigenous status and sex, NSW, Vic, Qld, WA, SA and NT combined, 2004–05 to 2011–12 (hospitalisations per 1,000 population)

	Males		Females	
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous
2004–05	16.7	10.3	11.9	4.7
2005–06	16.7	10.3	11.9	4.6
2006–07	16.5	10.0	12.3	4.4
2007–08	17.9	9.7	12.5	4.3
2008–09	17.5	9.0	12.4	4.0
2009–10	16.7	8.7	11.8	3.9
2010–11	17.1	8.6	11.7	3.8
2011–12	18.0	8.4	11.8	3.6

Note: Rates have been directly age standardised to the 2001 Australian Estimated Resident Population.

Source: AIHW National Hospital Morbidity Database.

Table C2.5: Use of coronary procedures during hospitalisations for CHD, by Indigenous status, July 2010 to June 2012 (per cent)

Procedure	Indigenous	Non-Indigenous
Coronary angiography	32.4	52.0
Revascularisation (PCI & CABG)	19.0	29.9
Percutaneous coronary intervention (PCI)	12.9	23.3
Coronary artery bypass graft (CABG)	6.1	6.6

Note: Indigenous rates were age-standardised using the age-specific rates of non-Indigenous Australians.

Source: AIHW National Hospital Morbidity Database.

Table C2.6: Indigenous and non-Indigenous deaths from CHD, by age, NSW, Qld, WA, SA and NT combined, 2007–2011 (per cent)

Age group (years)	Indigenous	Non-Indigenous
0–24	0.3	0.0
25–34	4.1	0.2
35–44	14.8	1.0
45–54	22.6	3.3
55–64	21.3	7.2
65–74	17.6	12.6
75 and over	19.3	75.7
Total	**100.0**	**100.0**

Note: Cause-of-death data for 2010 and 2011 are revised and preliminary, respectively, and subject to revision by the ABS.

Source: AIHW National Mortality Database.

Table C2.7: Age-specific CHD death rates, by Indigenous status and sex, NSW, QLD, WA, SA and NT combined, 2007–2011 (number per 100,000 population)

	Males		Females	
Age group (years)	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous
0–24	0.4	0.1	0.3	0.1
25–34	27.5	2.7	10.5	0.4
35–44	116.97	12.0	41.5	2.0
45–54	248.1	41.5	83.4	8.6
55–64	371.6	103.0	174.7	25.6
65–74	658.9	263.0	386.2	98.1
75 and over	1,526.2	1,366.0	1,118.5	1,138.3

Note: Cause-of-death data for 2010 and 2011 are revised and preliminary, respectively, and subject to revision by the ABS.

Source: AIHW National Mortality Database.

Table C2.8: Age-standardised CHD death rates, by Indigenous status and sex, NSW, QLD, WA, SA and NT combined, 2001 to 2011 (deaths per 100,000 population)

	Males		Females	
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous
2001	284.5	164.7	167.6	107.1
2002	263.3	159.5	167.1	102.9
2003	227.6	153.9	145.4	98.0
2004	249.0	146.9	151.0	95.3
2005	196.2	133.8	130.7	88.9
2006	195.0	130.7	134.1	85.0
2007	194.8	125.4	132.3	81.2
2008	177.3	125.5	115.3	85.8
2009	200.3	115.2	128.8	76.5
2010	197.1	109.9	88.2	72.9
2011	193.6	107.9	100.0	70.7
Average annual change[(a)]	–8.6*	–5.9*	–7.0*	–3.6*
Per cent change over period[(b)]	–30.2*	–35.8*	–41.9*	–33.4*

* Represents results with statistically significant increases or decreases at the p<.05 level over the period 2001 to 2011.

(a) Average annual change in rates determined using linear regression analyses.

(b) Percent change between 2001 and 2011 based on the average annual change over the period.

Notes

1. Rates have been age-standardised to the 2001 Australian Estimated Resident population.
2. Cause-of-death data for 2010 and 2011 are revised and preliminary, respectively, and subject to revision by the ABS.

Source: AIHW National Mortality Database.

Table C3.1: Age-standardised rates of Australians reporting COPD, by Indigenous status and sex, 2012–13 (per cent)

	Males	Females	Persons
Indigenous	4.7	6.0	5.4
Non-Indigenous	2.0	2.3	2.2

Notes

1. Rates have been age-standardised to the 2001 Australian Estimated Resident population.
2. Data for non-Indigenous people are for 2011–12, from the Australian Health Survey 2011–13.

Source: ABS 2013a.

Table C3.2: Age-specific hospitalisation rates for a principal diagnosis of COPD, by Indigenous status, July 2010 to June 2012 (number per 1,000 population)

Age group (years)	Indigenous	Non-Indigenous
0–24	0.1	0.0
25–34	0.8	0.1
35–44	4.3	0.3
45–54	12.4	1.1
55–64	27.7	3.6
65 and over	58.4	14.9

Note: Age-specific rates for Indigenous hospitalisations are calculated using population projections based on the 2006 Census (series B).

Source: AIHW National Hospital Morbidity Database.

Table C3.3: Age-standardised hospitalisation rates for COPD, by Indigenous status and sex, NSW, Vic, Qld, WA, SA and NT combined, 2004–05 to 2011–12 (hospitalisations per 1,000 population)

	Males		**Females**	
	Indigenous	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
2004–05	13.5	3.3	10.7	2.0
2005–06	13.3	3.2	11.3	2.1
2006–07	11.0	3.0	10.5	2.0
2007–08	12.6	3.1	12.2	2.1
2008–09	11.8	3.0	12.2	2.2
2009–10	11.5	2.8	12.0	2.0
2010–11	12.3	2.9	13.0	2.1
2011–12	13.6	2.9	13.5	2.1
Average annual change[(a)]	–0.4	–0.1*	0.4*	0.0
Per cent change over period[(b)]	–2.2	–12.6*	25.4*	3.3

* Represents results with statistically significant increases or decreases at the p<.05 level over the period 2004–05 to 2011–12.

(a) Average annual change in rates determined using linear regression analyses.

(b) Percent change between 2001 and 2011 based on the average annual change over the period.

Note: Rates have been age-standardised to the 2001 Australian Estimated Resident population.

Source: AIHW National Hospital Morbidity Database.

Table C3.4: Indigenous and non-Indigenous deaths from COPD, by age, NSW, Qld, WA, SA and NT combined, 2007–2011 (per cent)

Age group (years)	**Indigenous**	**Non-Indigenous**
0–24	0.7	0.1
25–34	0.2	0.0
35–44	2.0	0.2
45–54	10.4	1.5
55–64	24.7	7.1
65–74	30.5	20.1
75 and over	31.4	71.1
Total	**100.0**	**100.0**

Note: Cause-of-death data for 2010 and 2011 are revised and preliminary, respectively, and subject to revision by the ABS.

Source: AIHW National Mortality Database.

Table C3.5: Age-specific death rates of COPD, by Indigenous status and sex, NSW, Qld, WA, SA and NT combined, 2007–2011 (deaths per 100,000 population)

	Males		Females	
Age group (years)	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous
0–24	0.3	0.1	0.2	0.0
25–34	0.6	0.1	0.0	0.0
35–44	4.1	0.4	1.9	0.2
45–54	20.7	2.6	20.6	2.5
55–64	87.1	16.4	84.4	13.3
65–74	272.5	81.0	220.7	52.9
75 and over	773.7	363.1	450.1	205.8

Note: Cause-of-death data for 2010 and 2011 are revised and preliminary, respectively, and subject to revision by the ABS.

Source: AIHW National Mortality Database.

Table C3.6: Age-standardised COPD death rates, by Indigenous status and sex, NSW, QLD, WA, SA and NT combined, 2001 to 2011 (deaths per 100,000 population)

	Males		Females	
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous
2001	102.2	36.1	51.4	17.7
2002	84.8	38.3	36.5	19.0
2003	66.4	35.2	48.0	18.1
2004	57.9	31.9	56.6	18.4
2005	58.6	30.2	47.1	16.1
2006	89.6	28.3	55.6	15.9
2007	65.4	29.3	46.3	16.4
2008	68.9	30.0	37.4	17.7
2009	56.8	28.3	52.8	16.6
2010	56.9	28.0	51.3	17.6
2011	76.3	29.7	45.8	18.4
Average annual change[(a)]	–2.1	–0.9*	0.1	–0.1
Per cent change over period[(b)]	–21.4	–24.7*	1.1	–4.0

* Represents results with statistically significant increases or decreases at the p<.05 level over the period 2001 to 2011.

(a) Average annual change in rates determined using linear regression analyses.

(b) Percent change between 2001 and 2011 based on the average annual change over the period.

Notes

1. Rates have been age-standardised to the 2001 Australian Estimated Resident population.
2. Cause-of-death data for 2010 and 2011 are revised and preliminary, respectively, and subject to revision by the ABS.

Source: AIHW National Mortality Database.

Table C3.7: COPD and lung cancer mortality, by Indigenous status, 2001 to 2011 (deaths per 100,000 population)

	COPD		Lung cancer	
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous
2001	74.2	25.3	50.0	35.4
2002	58.0	27.1	47.5	36.3
2003	55.7	25.3	50.0	33.4
2004	57.5	24.0	47.2	35.2
2005	51.9	22.1	46.4	35.0
2006	70.2	21.1	49.1	33.5
2007	54.1	22.0	56.1	33.5
2008	50.5	23.0	50.6	34.5
2009	54.2	21.6	51.8	33.4
2010	53.8	22.1	52.7	34.3
2011	57.9	23.3	60.4	32.8
Average annual change[(a)]	–1.0	–0.4*	0.9*	–0.2*
Per cent change over period[(b)]	–14.1	–15.5*	17.2*	–6.1*

* Represents results with statistically significant increases or decreases at the $p<.05$ level over the period 2001 to 2011.

(a) Average annual change in rates determined using linear regression analyses.

(b) Percent change between 2001 and 2011 based on the average annual change over the period.

Notes

1. Rates have been age-standardised to the 2001 Australian Estimated Resident population.
2. Cause-of-death data for 2010 and 2011 are revised and preliminary, respectively, and subject to revision by the ABS.

Source: AIHW National Mortality Database.

Table C4.1: MBS health checks for Indigenous Australians, by age, 2006–07 to 2011–12 (number per 1,000 population)

	0–14 years	15–54 years	55 years and over
2006–07	32.5	44.5	84.6
2007–08	63.5	53.1	98.6
2008–09	72.2	60.6	115.4
2009–10	87.9	74.5	137.5
2010–11	112.5	120.0	209.4
2011–12	154.2	158.4	256.3

Source: AIHW forthcoming.

Table C4.2: Indigenous clients with CHD with a General Practitioner Management Plan and a Team Care Arrangement, 2007–08 to 2010–11 (number)

	General Practitioner Management Plan	Team Care Arrangement
2007–08	405	215
2008–09	359	242
2009–10	488	337
2010–11	750	453

Source: AIHW 2013b.

Table C4.3: Indigenous clients with CHD who had a blood pressure test in the last 6 months and whose blood pressure was less than 140/90 mmHg, 2007–08 to 2010–11 (number)

	2007–08	2008–09	2009–10	2010–11
Clients with CHD who had a blood pressure test in the last 6 months	1,312	1,222	1,485	1,523
Clients who had a blood pressure result of less than 140/90 mmHg	800	772	851	n.a.

n.a. not available.

Source: AIHW 2013b.

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The pattern of coronary heart disease and chronic obstructive pulmonary disease in Indigenous Australians differs to that in non-Indigenous Australians. This paper shows that Indigenous Australians have higher hospitalisation and death rates for these conditions than non-Indigenous Australians, and are more likely to die from these conditions at younger ages. However there are some encouraging trends seen in the Indigenous population, such as declining death rates from coronary heart disease, improved chronic disease management and declining smoking rates.