Australian Government
Australian Institute of Health and Welfare

Cardiovascular disease, diabetes and chronic kidney disease

Australian facts

Aboriginal and Torres Strait Islander people

risk factors
chronic kidney disease
cardiovascular disease
diabetes
stroke

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This publication is part of the Australian Institute of Health and Welfare's Cardiovascular, diabetes and chronic kidney disease series. A complete list of the Institute's publications is available from the Institute's website <www.aihw.gov.au>.

ISSN 2204-1400 (PDF)
ISSN 2204-1397 (Print)

ISBN 978-1-74249-847-8 (PDF)
ISBN 978-1-74249-848-5 (Print)

Suggested citation

Australian Institute of Health and Welfare 2015. Cardiovascular disease, diabetes and chronic kidney disease—Australian facts: Aboriginal and Torres Strait Islander people. Cardiovascular, diabetes and chronic kidney disease series no. 5. Cat. no. CDK 5. Canberra: AIHW.

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Published by the Australian Institute of Health and Welfare

Please note that there is the potential for minor revisions of data in this report. Please check the online version at <www.aihw.gov.au> for any amendments.

Contents

Preface

Cardiovascular disease, diabetes and chronic kidney disease—Australian facts, produced by the National Centre for Monitoring Vascular Diseases at the Australian Institute of Health and Welfare, is a series of reports examining cardiovascular disease (CVD, including conditions such as heart disease, stroke and heart failure), diabetes and chronic kidney disease (CKD), and their interrelationships. Each is a serious disease that contributes substantially to poor health, affecting millions of Australians, and often leading to further health complications, disability, loss of quality of life and premature death.

These diseases often arise from similar underlying causes, have similar features and share a number of management and treatment strategies. They are also largely preventable. Modifying and controlling risk factors for these diseases not only reduces the risk of onset of disease but also has a favourable impact on disease progression and the development of complications, with the potential for large health gains in the population.

The purpose of this series of five reports, of which this report is the fifth, is to provide a compendium of the most recent information to monitor CVD, diabetes and CKD and their associations. Reports in the series include:

- *Cardiovascular disease, diabetes and chronic kidney disease—Australian facts: mortality*
- *Cardiovascular disease, diabetes and chronic kidney disease—Australian facts: prevalence and incidence*
- *Cardiovascular disease, diabetes and chronic kidney disease—Australian facts: morbidity—hospital care*
- *Cardiovascular disease, diabetes and chronic kidney disease—Australian facts: risk factors*
- *Cardiovascular disease, diabetes and chronic kidney disease—Australian facts: Aboriginal and Torres Strait Islander people.*

These reports present up-to-date statistics as well as trends, and examine age and sex characteristics. The first four reports examined variations across population groups by geographical location and socioeconomic disadvantage, reflecting that these diseases and associated risk factors are not uniformly distributed across Australia and affect some more than others.

This is the first time that all three diseases and their comorbidities have been brought together in one 'Australian facts' publication series. This approach highlights the interrelated nature of CVD, diabetes and CKD and their determinants, as well as emphasising the burden of these three diseases individually and combined. Knowing more about the relationship between these diseases and common issues of concern can lead to shared prevention, management and treatment strategies, and improved health outcomes.

The *Cardiovascular disease, diabetes and chronic kidney disease—Australian facts* series is intended as a resource for policymakers, decision makers, health professionals, researchers and academics, and the wider community.

Acknowledgments

The authors of this report are Michael de Looper, Claire Lee-Koo, Graz Hamilton, Lany Trinh, Charlie Blumer and Sophie Guo of the Cardiovascular, Diabetes and Kidney Unit at the Australian Institute of Health and Welfare (AIHW).

Sushma Mathur, Lisa McGlynn, Fadwa Al-Yaman, Michelle Harvey, Adriana van den Heuvel and Thao Vu from the AIHW provided valuable assistance, guidance and advice.

The report was prepared under the guidance of the **National Vascular Diseases Monitoring Advisory Group**, whose members are Erin Lalor (Chair), Alan Cass, Derek Chew, Maria Craig, Wendy Davis, Wendy Hoy, Lisa McGlynn, Tim Mathew, David Parker, Jonathan Shaw, Andrew Tonkin and Bernie Towler.

The Cardiovascular, Diabetes and Chronic Kidney Disease Expert Advisory Groups also provided valuable input. Their members are:

Cardiovascular Disease Expert Advisory Group: Andrew Tonkin (Chair), Tom Briffa, Derek Chew, Annette Dobson, John Lynch and Mandy Thrift.

Diabetes Expert Advisory Group: Jonathan Shaw (Chair), Stephen Colagiuri, Maria Craig, Wendy Davis, Mark Harris, Greg Johnson, Glynis Ross and Sophia Zoungas.

Chronic Kidney Disease Expert Advisory Group: Tim Mathew (Chair), Alan Cass, Steven Chadban, Jeremy Chapman, Joan Cunningham, Bettina Douglas, Wendy Hoy, Stephen McDonald and David Parker.

The Department of Health funded this report. The authors acknowledge the valuable comments from individual staff members.

Abbreviations

AATSIHS	Australian Aboriginal and Torres Strait Islander Health Survey
ABS	Australian Bureau of Statistics
ACS	Acute coronary syndrome
ACR	albumin creatinine ratio
AHS	Australian Health Survey
AIHW	Australian Institute of Health and Welfare
ANZDATA	Australia and New Zealand Dialysis and Transplant Registry
ARF	acute rheumatic fever
BMI	body mass index
CABG	coronary artery bypass graft
CHD	coronary heart disease
CKD	chronic kidney disease
CVD	cardiovascular disease
eGFR	estimated glomerular filtration rate
ESKD	end-stage kidney disease
HDL	high-density lipoprotein
ICD–10	International statistical classification of diseases and related health problems, 10th revision
ICD–10–AM	International statistical classification of diseases and related health problems, 10th revision, Australian modification
IFG	impaired fasting glucose
LDL	low-density lipoprotein
NATSIHMS	National Aboriginal and Torres Strait Islander Health Measures Survey
NATSIHS	National Aboriginal and Torres Strait Islander Health Survey
NHMD	National Hospital Morbidity Database
NHMS	National Health Measures Survey
PCI	percutaneous coronary intervention
RHD	rheumatic heart disease

Symbols

kg	kilogram
'000	thousands
m	metre
mL	millilitre
mmol/L	millimole per litre
mmHg	millimetre of mercury
n.a.	not available
. .	not applicable
n.p.	not publishable because of small numbers, confidentiality or other concerns about the quality of the data
<	less than
≥	more than or equal to
%	per cent

Summary

This report describes the effects of three chronic diseases—cardiovascular disease (CVD) (including coronary heart disease and stroke), diabetes and chronic kidney disease (CKD)—on the Aboriginal and Torres Strait Islander population, and compares this population with the non-Indigenous population.

Higher levels of important health risk factors

- In 2011–13, Indigenous adults were 2.6 times as likely as non-Indigenous adults to smoke daily (42% and 16%, respectively), 1.2 times as likely to be overweight or obese (72% and 63%), and 1.2 times as likely to have high blood pressure (25% and 21%).

Disease rates are greater, and are higher at younger ages

- In 2011–13, Indigenous adults had a higher rate of CVD than non-Indigenous adults (27% and 21%, respectively). Rates increase with age, from 9% at age 18–34 to 60% at age 65 and over.
- Indigenous adults were 3.5 times as likely as non-Indigenous adults to have diabetes (18% compared with 5%). At age 35–44, the rate was 4 times as high (11% compared with 3%).
- Indigenous adults were twice as likely as non-Indigenous adults to have biomedical signs of CKD (22% compared with 10%). At age 45–54, the rate was 4 times as high (25% compared with 6%).

Hospitalisation rates are greater

- In 2013–14, Indigenous adults were almost twice as likely as non-Indigenous adults to be hospitalised with a principal diagnosis of CVD (3,149 and 1,771, respectively, per 100,000 population). More than half (52%) of Indigenous hospitalisations for CVD occurred for people aged under 55, compared with 17% for the non-Indigenous population.
- One (1) in 8 (13%) of all Indigenous hospitalisations had diabetes as a principal or additional diagnosis, compared with 9% of all non-Indigenous hospitalisations.
- CKD hospitalisations (excluding regular dialysis) were 5 times as high among Indigenous Australians as among non-Indigenous Australians (5,192 and 1,067, respectively, per 100,000 population).

Death rates are greater, and are higher at younger ages

- In 2010–12, the Indigenous CVD mortality rate was 1.5 times as high as the non-Indigenous rate (280 and 183 deaths, respectively, per 100,000 population).
- Indigenous people were 4 times as likely as non-Indigenous people to have diabetes—and 3 times as likely to have CKD—as an underlying or associated cause of death. At age 55–64, death rates for both diseases were 10 times as high for Indigenous people as those for non-Indigenous people.

Disease rates rise with increasing remoteness

- In 2012–13, CVD was 1.4 times as common—and diabetes and CKD twice as common—among Indigenous people living in Remote areas compared with those in Non-remote areas.
- In Remote areas, Indigenous people were 6 times as likely to have diabetes—and 5 times as likely to have CKD—as non-Indigenous people.

Comorbidity is more frequent

- In 2011–13, 38% of Indigenous adults with CVD, diabetes or CKD had 2 or more conditions, compared with 26% of non-Indigenous adults. Comorbidity increases with age for both populations, but is greater at each age in the Indigenous population.
- The proportion of hospitalisations with all three conditions was higher for Indigenous adults (18% compared with 7%). More than one in 10 (11%) Indigenous deaths had all three conditions listed as causes of death, compared with 3% of non-Indigenous deaths.

1 Introduction

This report on cardiovascular disease (CVD, including heart disease and stroke), diabetes and chronic kidney disease (CKD) among Aboriginal and Torres Strait Islander people is the fifth report in the series *Cardiovascular disease, diabetes and chronic kidney disease—Australian facts*, authored by the National Centre for Monitoring Vascular Diseases at the Australian Institute of Health and Welfare (AIHW).

A number of recent reports have focused broadly on the health of Aboriginal and Torres Strait Islander people (AHMAC 2015; AIHW 2015a). This report is a compendium of the most recent information on monitoring CVD, diabetes and CKD and their interrelationships, focused on Indigenous people. It builds on other work examining aspects of individual health conditions among Aboriginal and Torres Strait Islander Australians (AIHW 2014c, 2015f).

CVD, diabetes and CKD are chronic diseases—they have complex causes and multiple risk factors, are long lasting with persistent effects that may never be cured completely and often require long-term management. These individual diseases and their co-occurrence—known as comorbidities—contribute substantially to poor health and have major impacts on the health and wellbeing of individuals, families, communities and service use among both Indigenous and non-Indigenous Australians. Chronic diseases—including CVD, diabetes and CKD—have been described as 'Australia's biggest health challenge' (AIHW 2014a).

This report presents data and information on how these diseases affect the Aboriginal and Torres Strait Islander population. It also compares these effects with the impact on the non-Indigenous population.

The key questions that this report answers are:

- How many Indigenous people have CVD, diabetes or CKD, either alone or in combination?
- How large is the gap in rates of these diseases between Indigenous and non-Indigenous people?
- How do risk factors, disease rates, treatment and management vary among Indigenous people by remoteness?

The report begins by examining key risk factors for these diseases (Chapter 2) in the Indigenous and non-Indigenous populations. It then considers each disease: CVD (Chapter 3), diabetes (Chapter 4) and CKD (Chapter 5) in each population, with the final chapter discussing the comorbidity of these three diseases (Chapter 6).

Box 1.1: Aboriginal and Torres Strait Islander population

In June 2014, there were an estimated 713,000 Indigenous people in Australia, with slightly more females (357,000) than males (356,600) (AIHW 2015a). Indigenous people accounted for 3.0% of the total Australian population of 23.5 million.

The Indigenous population has a relatively young age structure—in 2011, the median age was 21.8 compared with 37.6 for the non-Indigenous population, while over one-third (36%) were aged under 15 compared with 18% of non-Indigenous people.

Most Indigenous people live in Non-remote areas (that is, in *Metropolitan, Inner Regional and Outer Regional areas* combined)—79% in 2011—rather than Remote areas (that is, *Remote* and *Very remote* areas combined) (21%). By comparison, 98% of non-Indigenous Australians lived in Non-remote areas and 2% in Remote areas.

Of all people living in Remote areas, the proportion who is Indigenous is relatively high—in 2011, 45% of people living in *Very remote* areas and 16% of people living in *Remote* areas were Indigenous.

Indigenous health gaps and determinants

On many measures, Aboriginal and Torres Strait Islander people have poorer health than non-Indigenous Australians. They are more likely to rate their health as poor or fair, experience disability and die at younger ages.

If current trends continue, an Indigenous boy born between 2010 and 2012 can expect to live 69.1 years, almost 11 years less than a non-Indigenous boy's life expectancy of 79.7 years. For Indigenous girls, the equivalent inequality is slightly less at 9 years—73.7 years compared with 83.1 years. Indigenous children aged 0–4 died at more than twice the rate of non-Indigenous children in 2012 (165 per 100,000 compared with 77 per 100,000 population).

In 2011–13, Indigenous people were at least twice as likely as non-Indigenous people to rate their health as fair or poor. Indigenous people aged under 65 were more than twice as likely as non-Indigenous people to require help with core activities of daily living (such as selfcare, mobility and communication) and to have severe or profound disability (AIHW 2014a, 2015a).

Poorer Indigenous health is also the result of chronic diseases such as CVD (including coronary heart disease [CHD] and stroke), diabetes and CKD. These diseases tend to appear earlier, progress faster, present alongside other chronic diseases and cause more premature death in Indigenous people than in non-Indigenous people (AIHW 2015a). Indigenous Australians also continue to have a high occurrence of certain diseases such as rheumatic heart disease (RHD) that are seldom reported in the non-Indigenous population (AIHW 2015a). Chronic diseases are largely responsible for the sizeable gap in Indigenous and non-Indigenous health (Close the Gap Campaign Steering Committee 2015). Selected chronic conditions—CVD, diabetes and CKD—are the subject of this report.

Because of their poorer health, Indigenous people could be expected to use health services at a much higher rate than non-Indigenous people. Medicare services claimed by Indigenous Australians have doubled over the last decade, including increases in health assessments, chronic disease management items and overall general practitioner care. These services do not include health consultations conducted at Aboriginal medical services, community clinics and other health service providers funded by state and territory governments. Episodes of care delivered by Indigenous primary care health organisations funded by the Australian Government increased by 1.2 million in 1999–2000 to 3.1 million in 2012–13, partly reflecting expansion in the sector (AHMAC 2015).

However, despite this increased provision of care, recent comparable data suggest that, overall, Indigenous health service use is only marginally higher than that for non-Indigenous people. Medicare Benefits Schedule claim rates for general practitioner visits were 5% higher for Indigenous than non-Indigenous people in 2013–14, but claim rates for specialist services were 39% lower. Total expenditure on pharmaceuticals per Aboriginal and Torres Strait Islander person was around 44% of the amount spent per non-Indigenous person ($369 compared with $832). Mainstream arrangements through the Pharmaceutical Benefits Scheme accounted for 66% of payments to Aboriginal and Torres Strait Islander people, with the remainder through Section 100 and other special supply Pharmaceutical Benefits Scheme drugs (AHMAC 2015). Although hospitalisation rates, excluding dialysis, for Indigenous people in 2012–13 were 1.2 times the rate for non-Indigenous people, Indigenous people had lower rates of elective surgery and of hospitalisation with a procedure recorded (AHMAC 2015; AIHW 2015a).

Many factors contribute to the gap in Indigenous and non-Indigenous health. Underlying societal inequalities are longstanding and adversely affect the conditions in which Indigenous people are born, grow, live, work and age (Carson et al. 2007; Marmot 2011). Indigenous people experience social disadvantage throughout their lives—in early childhood development, in education, employment, income, housing and community development (AIHW 2014a). These factors may have even a greater impact on health than more commonly considered factors such as access and use of health services (WHO 2015).

Social determinants affect the environment and conditions in which Indigenous people live. They can also affect health by influencing behaviour and decision making and shape how people interact with the health system (AHMAC 2015). Communities without safe drinking water, for example, are at increased risk of diarrhoeal diseases. People on low incomes may not eat fresh fruit and vegetables regularly if they cannot afford them (AIHW 2014a). Overcrowded housing places children at increased risk of middle ear infection, which can have ongoing effects on education, work and wellbeing. In turn, health status also impacts on its determinants—improvements in educational outcomes can be expected with improvements in health.

Inequality and social disadvantage provide the context for understanding higher levels of key health risk factors among Aboriginal and Torres Strait Islander people, including behavioural factors (such as smoking, physical inactivity, poor nutrition) and biomedical factors (overweight and obesity, high blood pressure, and high blood cholesterol levels). These factors increase the risk of developing a chronic disease or health condition such as CVD, diabetes or CKD. Reduced access to health services through their unavailability, cultural inappropriateness, affordability or long waiting and travel times—particularly for Indigenous people living in geographically isolated areas—adds to the burden of chronic disease among Indigenous people (AIHW 2015e).

Growth of cardiovascular disease, diabetes and chronic kidney disease

An awareness of the growing problem of CVD in Indigenous Australians emerged among health professionals and the wider community in the late 1960s and early 1970s (Gracey 2007). A number of studies had observed increasing mortality and hospitalisation rates for CVDs of Indigenous people that exceeded those of non-Indigenous people, in both Western Australia and the Northern Territory.

The earliest detailed studies on diabetes in the Indigenous population were also conducted in the 1960s. These, and later studies, found an association between the adoption of a 'Western lifestyle' and the development of type 2 diabetes (Bastian 1979; O'Dea 1984). Type 2 diabetes has since become a major health problem among the Indigenous population, with national prevalence rates currently more than 3 times those of the non-Indigenous population.

Kidney disease was highlighted as an important health issue in the 1980s, as increasing numbers of Indigenous people in the Northern Territory presented with renal failure (Hoy 2014). Indigenous people are currently twice as likely as non-Indigenous people to have signs of CKD and more than 4 times as likely to be in the advanced stages of CKD (ABS 2014a).

Perspectives have evolved in understanding the rapid transition in Indigenous health from high rates of communicable disease to high rates of chronic disease. In the 1960s, the change from traditional to settlement-based lifestyles and the introduction of new communicable (but not chronic) diseases in the Indigenous population drew comparisons with rural 'third world' settings. Practitioner understandings shifted in the 1970s and 1980s to focus on possible genetic contributions to problems of Indigenous adaptation, and to the consequences of social disadvantage and marginalisation on health. Since then, theories of the developmental origins of health and disease have brought together genetic and environmental factors. The social context of disadvantage now reflects biomedical, behavioural and other health determinants which begin with fetal and infant development and continue throughout all stages of the life course (Cass et al. 2004; Hunter 2010).

Awareness and management of chronic diseases in Aboriginal and Torres Strait Islander people in remote areas have been positively transformed in recent decades (Hoy 2013). Recognising that all Indigenous communities and regions experience high rates of chronic disease, the current challenge is to anticipate chronic disease comorbidity, to detect it quickly and to manage it in order to reduce complications and extend both the quality and duration of Indigenous peoples' lives.

Current policy frameworks

A number of important policy frameworks guide how chronic disease is dealt with among Aboriginal and Torres Strait Islander people. In 2008, all governments in Australia committed to work towards closing the health and life expectancy gap between Indigenous and non-Indigenous Australians by 2030 (COAG 2012). Central to this is targeted and enhanced primary health services that are able to prevent, detect, treat and support the management of chronic disease and reduce health inequalities (Close the Gap Steering Committee 2015).

The Australian Government National Aboriginal and Torres Strait Islander Health Plan is an evidence-based policy framework designed to guide policies and programs to improve Aboriginal and Torres Strait Islander health over the decade 2012–2023 (Department of Health 2015a). As part of this, the Indigenous Australians' Health Programme funds activities to improve the access and quality of health services for people with chronic disease, deliver the most effective outcomes, and better support efforts to achieve health equality between Indigenous and non-Indigenous Australians.

Recognising that cardiovascular conditions contribute most to the gap in life expectancy between Indigenous and non-Indigenous Australians, the Australian Health Ministers' Advisory Council's *Better Cardiac Care for Aboriginal and Torres Strait Islander People* project aims to reduce mortality and morbidity from cardiac conditions among Indigenous people by increasing access to services, better managing risk factors and treatment and improving coordination of care (AIHW 2015f).

Monitoring cardiovascular disease, diabetes and chronic kidney disease

Statistical information on the incidence and prevalence of CVD, diabetes and CKD allows population health status to be assessed. Monitoring progress in lowering rates of chronic disease and death in Indigenous and non-Indigenous populations can indicate how effective prevention and treatment strategies are. There is wide endorsement of regular chronic disease surveillance in Indigenous populations (Close the Gap Steering Committee 2015).

The national effort to close the health and life expectancy gap between Indigenous and non-Indigenous people uses administrative data (such as information collected in hospitals, on death certificates and in disease registers) and data from surveys such as the ABS Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS) (Box 1.2).

This publication uses recent data from these sources to monitor how CVD, diabetes and CKD currently affect the Aboriginal and Torres Strait Islander population, and the size of the gap between Indigenous and non-Indigenous health for these three chronic diseases.

Box 1.2: Aboriginal and Torres Strait Islander identification and health data sources

The term 'Aboriginal and Torres Strait Islander people' is preferred in AIHW publications when referring to the separate Indigenous people of Australia. However, 'Indigenous' is used interchangeably with 'Aboriginal and Torres Strait Islander' to assist readability.

Much of what we know about Indigenous health and the gap between Indigenous and non-Indigenous people relies on statistics derived from health surveys and from administrative data collections.

The most recent national estimates on health risk factors and on the occurrence of CVD, diabetes and CKD come from surveys conducted by the Australian Bureau of Statistics (ABS) during 2011–13: the AATSIHS, part of the broader Australian Health Survey (AHS).

Indigenous hospitalisation and mortality data are derived from the AIHW National Hospital Morbidity Database (NHMD) and National Mortality Database.

The incidence and prevalence of treated end-stage kidney disease (ESKD) are based on the Australian and New Zealand Dialysis and Transplant (ANZDATA) Registry.

Data on acute rheumatic fever (ARF) and RHD are sourced from state and territory disease registers.

Burden of disease estimates combine multiple data sources to count and compare the total fatal and non-fatal health loss from diseases and injuries in the Indigenous population, and its attribution to specific risk factors (Vos et al. 2007). Estimates for 2011 are expected to be published by the AIHW in the first half of 2016.

Although each collection strives for accuracy, for various reasons not all Indigenous people are identified in the different data sets, resulting in an underestimate of the true rate of disease. To address this, the AIHW has produced national best practice guidelines for collecting Indigenous status in health data sets, and has undertaken a number of initiatives for data evaluation and improvement (AIHW 2010, 2013a, 2013b).

There are also statistical and practical challenges in surveying a population that is relatively small and less accessible—3.0% of the total population, one-fifth of whom live in *Remote* and *Very remote* areas.

For more information on Indigenous identification and on health data sources, refer to appendixes A and B.

2 Risk factors

The health and wellbeing of both Indigenous and non-Indigenous people are determined by a complex interaction of behavioural, biological, psychological, socioeconomic, cultural and environmental factors. Individually and in combination, these factors can affect individuals throughout every stage of the life course—*in utero* and early childhood, through adolescence and into adulthood and old age (AIHW 2014a). Together, these factors, known as health risk factors, influence the likelihood of a person's developing a disease or health condition. Many risk factors can be modified to some extent by preventative actions, health care and other interventions.

This chapter presents information on selected behavioural and biomedical health risk factors (see Box 2.1) among Aboriginal and Torres Strait Islander people, and compares these with those among the non-Indigenous population.

Box 2.1: What are health risk factors?

Health risk factors are attributes, characteristics or exposures that increase the likelihood of a person's developing a disease or health disorder (WHO 2014). As well as affecting the development of disease, health risk factors can also affect the progression and treatment outcomes of diseases and health conditions.

Behavioural risk factors are health-related behaviours. In this report, behavioural risk factors include:

- tobacco smoking
- insufficient physical activity
- excessive alcohol consumption
- inadequate fruit and vegetable consumption.

Behavioural risk factors are often the focus of health promotion activities. Individuals may have a degree of control over these behaviours, although they are also affected by other factors such as income, employment, geographic location or access to services.

Biomedical risk factors are those that are present in the body. In this report, biomedical risk factors include:

- overweight and obesity
- high blood pressure
- dyslipidaemia (abnormal levels of lipids, such as cholesterol, in the blood)
- impaired fasting glucose (IFG) (higher than normal levels of glucose in the blood when fasting, also known as pre-diabetes).

Biomedical risk factors can directly affect health; their effects can be amplified when combined with other behavioural or biomedical risk factors. The control or regulation of abnormal biomedical risk factor levels is often addressed through primary health care.

Some chronic conditions are themselves risk factors for other diseases—diabetes, for example, is a risk factor for CVD and CKD (AIHW 2015d).

For more information on the data sources used to report on risk factors in this chapter, refer to Appendix A.

Tobacco smoking

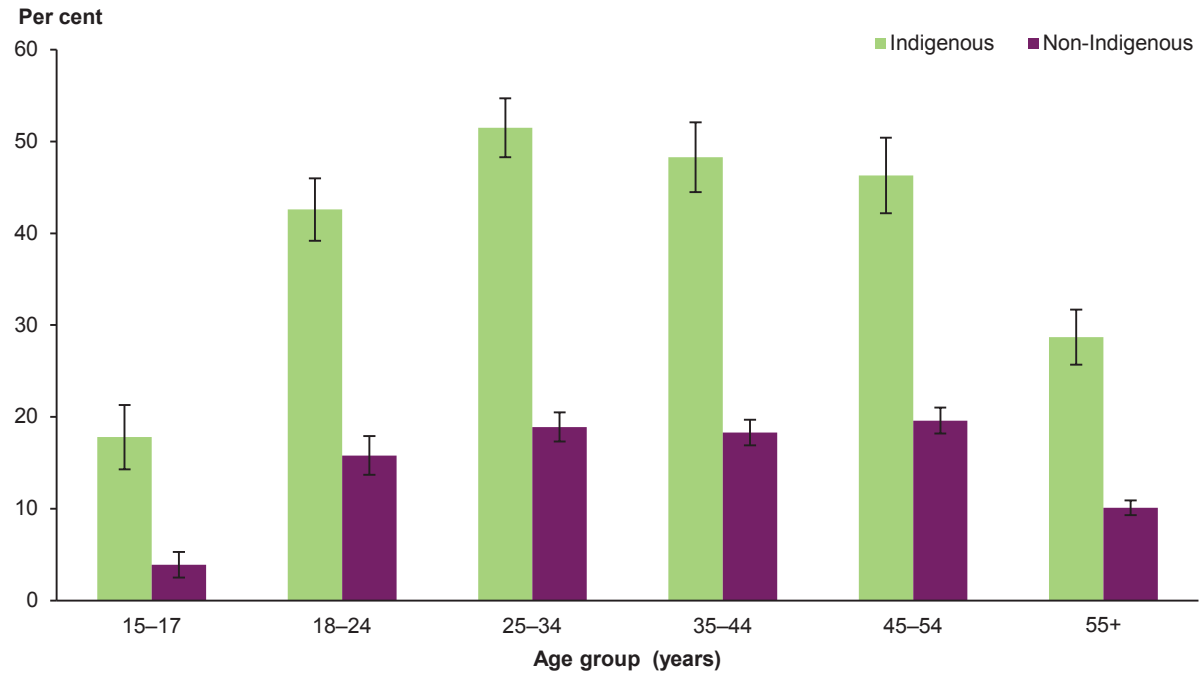
Tobacco smoking greatly increases the risk of developing a range of chronic health conditions. It damages blood vessels, increases the risk of plaques and clots, and reduces oxygen levels in the blood. Smoking is associated with an elevated risk of developing CHD and type 2 diabetes (Willi et al. 2007). It can also affect kidney function and accelerate the progression to renal failure.

Smoking is the leading risk factor contributing to the burden of disease for Indigenous people, being responsible for an estimated one-third of the CVD burden (Vos et al. 2007). There is strong evidence that smoking rates are highest for Indigenous people in the most socially disadvantaged circumstances (Thomas et al. 2008). Smoking while pregnant is a leading preventable risk factor for adverse birth outcomes (AIHW 2015a). Almost half (48%) of all Indigenous mothers who gave birth in 2012 reported smoking during pregnancy compared with 11% of non-Indigenous women who gave birth (Hilder et al. 2014).

Age

In 2011–13, Aboriginal and Torres Strait Islander adults were 2.6 times as likely to smoke daily as non-Indigenous adults (age-standardised rates of 42% and 16%, respectively).

Indigenous people had consistently higher rates of daily smoking across all age groups than non-Indigenous people (Figure 2.1). Young people aged 15–17 were almost 5 times as likely to smoke daily; rates ranged between 2 and 3 times as likely across other age groups.



Source: ABS 2014b. See Appendix Table C1.

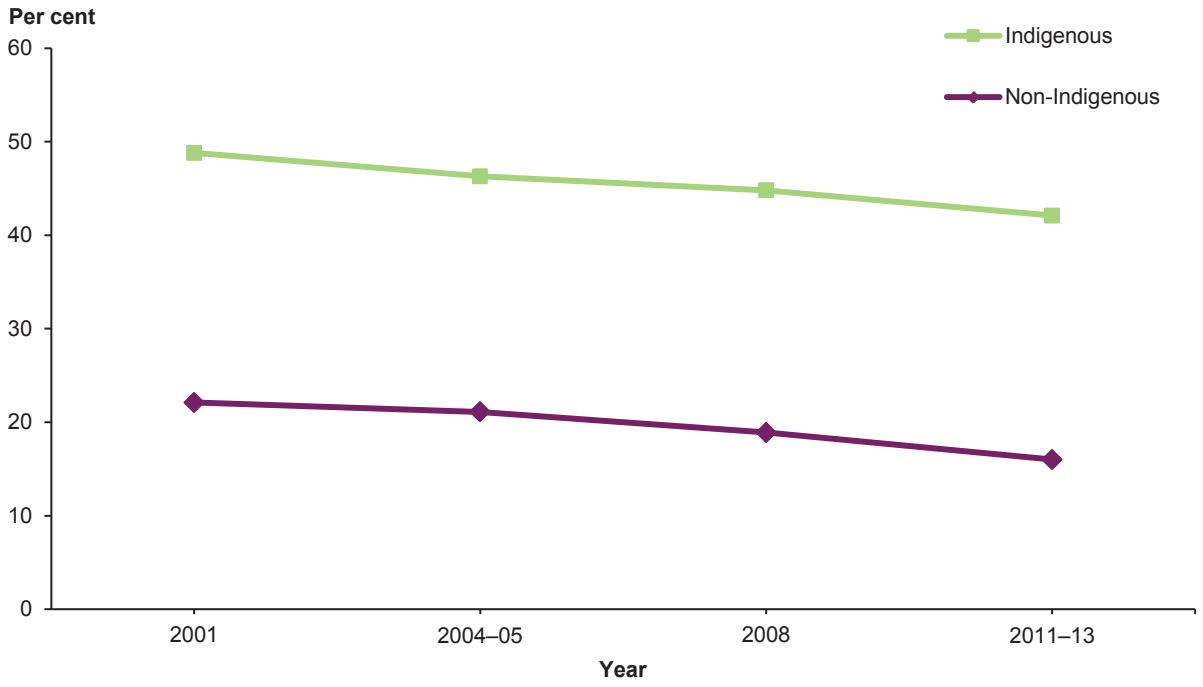
Figure 2.1: Current daily smokers, among persons aged 15 and over, by Indigenous status and age, 2011–13

Trend

Smoking rates for both Indigenous and non-Indigenous people aged 18 and over have decreased between 2001 and 2011–13 (Figure 2.2). The rate fell from 49% to 42% for Indigenous people and from 22% to 16% for non-Indigenous people.

Indigenous Australians were more likely to smoke than non-Indigenous people over the period, from 2.2 times as likely in 2001 to 2.6 times as likely in 2011–13.

The decline in the prevalence of smoking among Indigenous people, along with reductions in smoking intensity, will lead to fewer deaths and less illness, and will assist smoking cessation among Indigenous people (Thomas 2012).



Note: Rates have been age standardised to the 2001 Australian population.
Source: ABS 2014b.

Figure 2.2: Current daily smokers by Indigenous status, persons aged 18 and over, 2001, 2004–05, 2008 and 2011–13

Remoteness

Rates of daily smoking among Indigenous people increased with remoteness, ranging from 39% in *Major cities* to 50% in *Very remote* areas. Among Indigenous people, daily smoking rates in Remote areas (49%) were significantly higher than in Non-remote areas (40%) (see Appendix B for explanation of remoteness categories, and Appendix Table C1).

Indigenous adults living in Non-remote areas were 2.5 times as likely to smoke as non-Indigenous adults (40% and 16%, respectively), and 1.9 times as likely in Remote areas (49% and 25%, respectively).

Insufficient physical activity

Physical activity is an important modifiable risk factor associated with the prevention of chronic disease such as CVD, diabetes and CKD. Sufficient physical activity can also help to manage biomedical risk factors such as overweight and obesity, high blood pressure and high cholesterol.

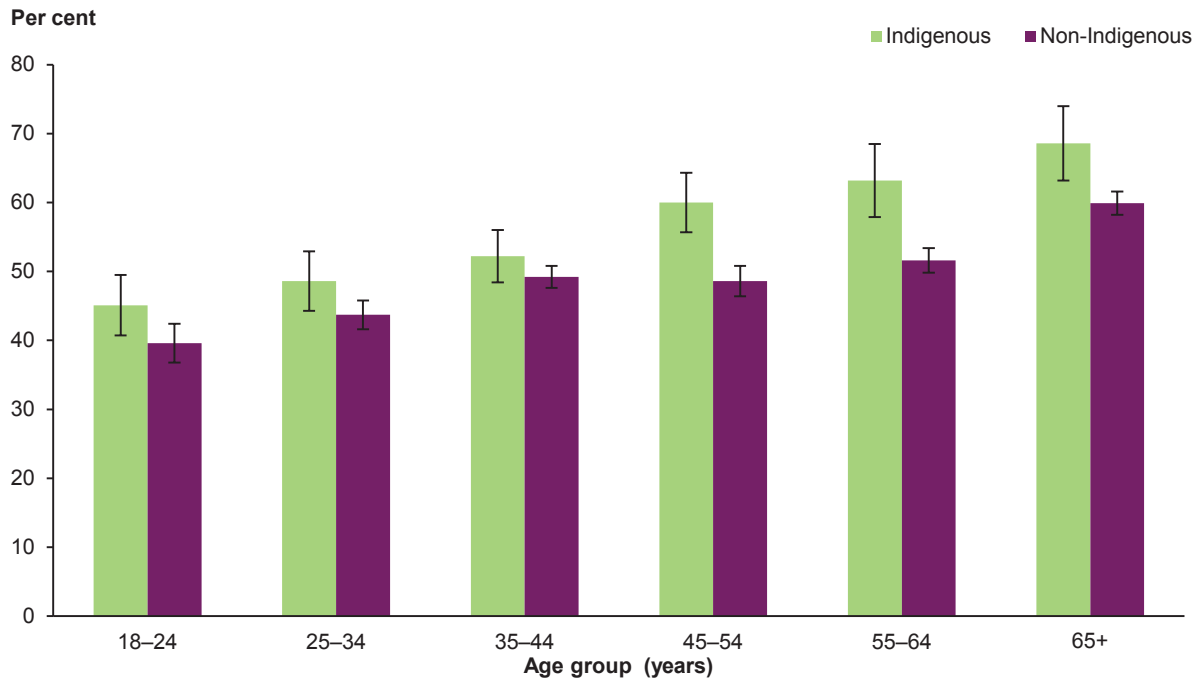
Insufficient physical activity is the third leading risk factor in the Indigenous population after tobacco use and overweight and obesity. Its effect is manifested through a range of diseases, most notably CHD (55% of the burden attributed to physical inactivity) and diabetes (33%) (AHMAC 2015).

Current guidelines recommend that adult Australians aged 18–64 accumulate at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity each week (Department of Health 2015b). The data presented in this section are based on adults who did not exercise for 150 minutes per week.

Age

Information on insufficient physical activity from the 2012–13 AATSIHS is available only for Non-remote areas. In 2011–13, an estimated 56% of the Indigenous adult population living in Non-remote areas was not sufficiently active for health benefits, a slightly higher proportion than the 49% of non-Indigenous adults.

The disparities in Indigenous and non-Indigenous rates of insufficient physical activity were most evident at ages 45–54 (60% Indigenous and 49% non-Indigenous), 55–64 (63% Indigenous and 52% non-Indigenous), and 65 and over (69% Indigenous and 60% non-Indigenous) (Figure 2.3).



Source: AIHW analysis of unpublished data from the AATSIHS 2012–13 (Core component) and the AHS 2011–13 (2011–12 Core component). See Appendix Table C2.

Figure 2.3: Insufficient physical activity among persons aged 18 and over, by Indigenous status and age, 2011–13

Excessive alcohol consumption

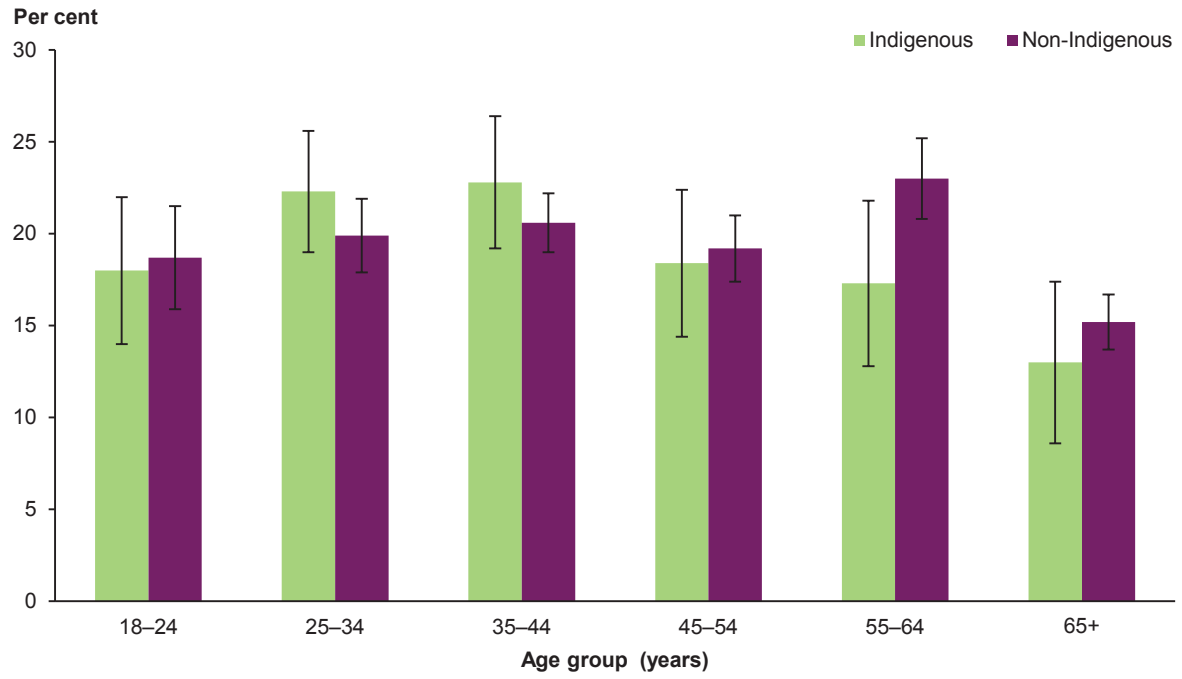
Although most Australians drink alcohol at levels that cause few adverse effects, regular consumption of alcohol at high levels increases the risk of alcohol-related harm and can contribute to the development of chronic conditions including CVD. Alcohol-related risk can be reduced over a lifetime by consuming no more than 2 standard drinks a day (NHMRC 2009).

Excessive alcohol consumption is a serious public health issue (Calabria et al. 2010). For young Indigenous males aged 15–34, alcohol was responsible for the greatest burden of disease and injury among 11 health risk factors considered (Vos et al. 2007).

The results presented in this section, based on the 2011–13 AHS, report lifetime risk from excessive alcohol consumption among the Indigenous and non-Indigenous populations. Excessive alcohol consumption is defined as more than 2 standard drinks per day. This section does not report single occasion risk or 'binge drinking', which has also been identified as a risk factor of concern among the Indigenous population (Close the Gap Steering Committee 2015).

Age

In 2012–13, an estimated 19.2% of Indigenous people aged 18 and over drank alcohol at levels that exceeded lifetime risk guidelines, a similar rate to that for non-Indigenous adults (19.5%). Rates of alcohol consumption exceeding lifetime risk guidelines were highest among Indigenous adults aged 25–34 (22.3%) and 35–44 (22.8%), declining at age 65 and over (13.0%) (Figure 2.4). There were no significant differences in age-specific rates of excessive alcohol consumption between Indigenous and non-Indigenous adults.



Source: AIHW analysis of unpublished data from the AATSIHS 2012–13 (National Aboriginal and Torres Strait Islander Health Survey [NATSIHS] component) and the AHS 2011–12 (NHS component). See Appendix Table C3.

Figure 2.4: Excessive alcohol consumption among persons aged 18 and over, by Indigenous status and age, 2011–13

Remoteness

Among Aboriginal and Torres Strait Islander people, rates of alcohol consumption exceeding lifetime risk guidelines were not significantly different across areas of remoteness—19.5% in Non-remote areas and 18.2% in Remote areas.

Non-Indigenous adults living in Remote areas were significantly more likely to exceed lifetime risk guidelines than Indigenous adults (30.9% and 18.2%, respectively) (Appendix Table C3).

Inadequate fruit and vegetable consumption

A healthy diet plays an important part in overall health and wellbeing. A poor diet, high in saturated fats and refined carbohydrates and with inadequate fruit and vegetable consumption, increases the risk of developing CVD, type 2 diabetes and CKD. Australian dietary guidelines recommend that adults consume a wide variety of nutritious foods, including at least 2 serves of fruit and 5 serves of vegetables per day (NHMRC 2013a).

A number of nutrition-related risk factors—including insulin resistance, glucose intolerance, overweight and obesity, hypertension and dyslipidaemia—are particularly relevant for health in Indigenous communities. Access to quality fresh fruit and vegetables for Indigenous people, whether through availability or affordability, is also an issue. Many Indigenous Australians live in remote areas and do not have the same opportunities as other groups to obtain healthy food (AIHW 2012b). Good maternal nutrition and healthy infant and child growth through a balanced diet that includes adequate fruit and vegetable consumption are fundamental determinants of health through life (AHMAC 2015).

Results presented in this section are based on adults who had inadequate fruit and vegetable consumption—less than 2 serves of fruit and 5 serves of vegetables per day—according to the 2013 NHMRC Guidelines.

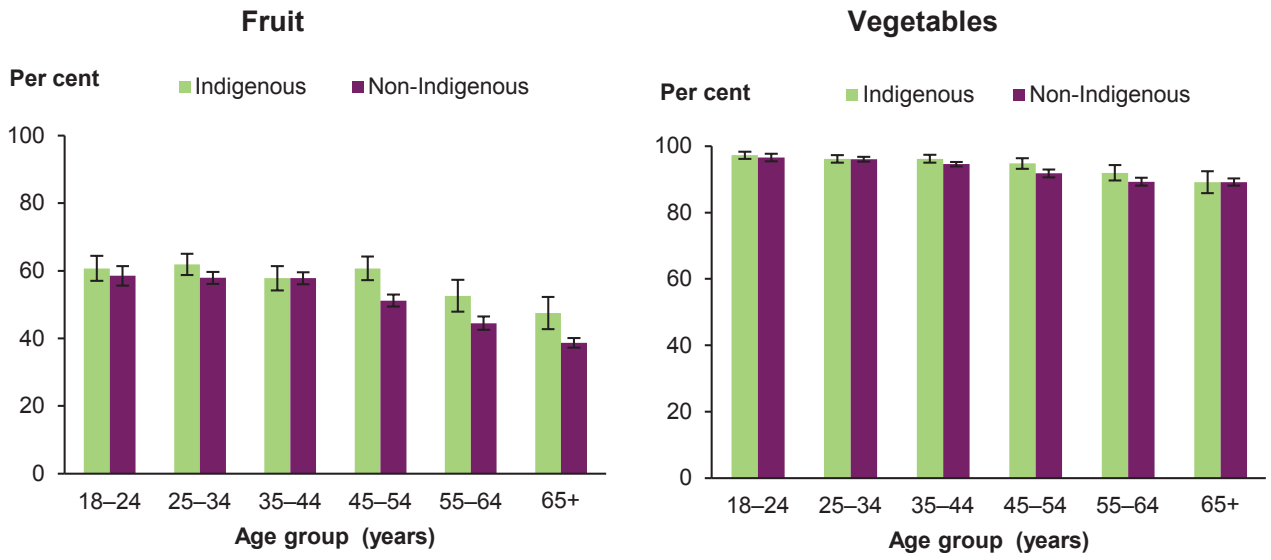
Age

In 2011–13, an estimated 57% of Indigenous adults aged 18 and over did not meet recommended dietary guidelines of 2 serves of fruit per day, a higher proportion than for non-Indigenous adults (52%).

Indigenous Australians aged 55–64 (53%) and 65 and over (48%) were more likely to meet guidelines for fruit consumption compared with other age groups. However, Indigenous persons in these age groups and in the 45–64 age group were less likely to meet guidelines for fruit consumption than non-Indigenous persons in the same age groups (Figure 2.5).

Almost all Indigenous adults (95%) did not meet recommended dietary guidelines of 5 serves of vegetables per day, a slightly higher proportion than the 93% of non-Indigenous adults.

There were no significant differences between Indigenous and non-Indigenous age groups in inadequate vegetable consumption (Figure 2.5).



Note: Inadequate consumption is less than 2 serves of fruit or 5 serves of vegetables per day.

Source: AIHW analysis of unpublished data from the AATSIHS 2012–13 (Core component) and the AHS 2011–12 (Core component). See Appendix Table C4.

Figure 2.5: Inadequate fruit and vegetable consumption among persons aged 18 and over, by Indigenous status and age, 2011–13

Remoteness

The estimated proportion of Indigenous adults with inadequate fruit consumption in Non-remote areas (58%) and Remote areas (54%) was not significantly different (Appendix Table C4).

In Non-remote areas, Indigenous adults had higher rates of inadequate fruit consumption than non-Indigenous adults (58% and 52%, respectively), while rates of inadequate vegetable consumption were similar (94% and 93%, respectively).

In Remote areas, Indigenous and non-Indigenous adults had similar rates for inadequate fruit consumption (54% and 53%, respectively), while Indigenous adults had a higher rate of inadequate vegetable consumption than non-Indigenous adults (97% and 92%, respectively).

Overweight and obesity

A healthy weight is important for overall health. Being overweight or obese is closely associated with several chronic diseases such as CVD—including CHD and stroke—type 2 diabetes and some cancers, along with mental health issues and eating disorders. It is also associated with other health risk factors including high blood pressure and dyslipidaemia. The effects of overweight and obesity are widely recognised as one of Australia's leading health concerns, involving all ages and socioeconomic groups among both Indigenous and non-Indigenous people (NHMRC 2013b).

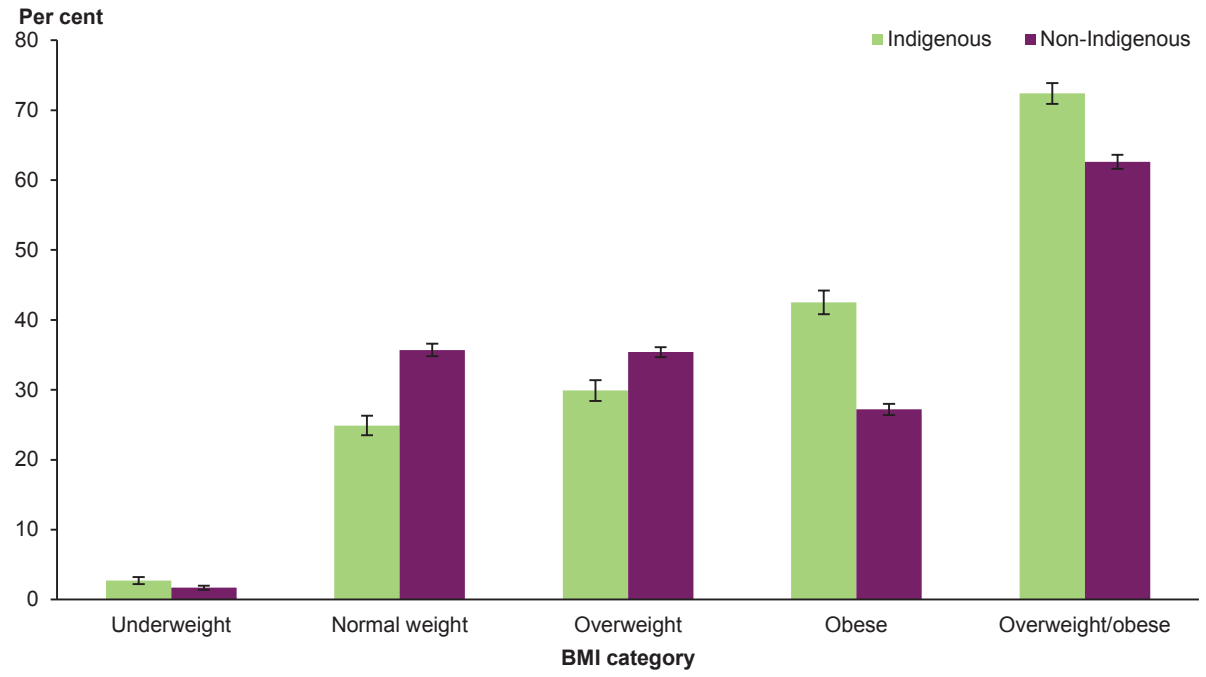
Overweight and obesity is the second leading risk to Indigenous health, estimated to be responsible for one-third of the CVD and two-thirds of the diabetes burden of disease (Vos et al. 2007). Biomedical risk factors for CVD, diabetes and CKD were more common in Indigenous people who were obese than in their non-Indigenous counterparts (ABS 2014a).

Overweight and obesity are commonly measured using the body mass index (BMI). BMI is calculated by dividing a person's weight in kilograms by the square of their height in metres (kg/m^2). The classification of overweight and obesity in this report is based on measured height and weight of respondents in the ABS 2012–13 National Aboriginal and Torres Strait Islander Health Measures Survey (NATSIHMS) and the 2011–12 National Health Measures Survey (NHMS).

BMI category

In 2012–13, an estimated 72% of Indigenous people aged 18 and over were overweight or obese, with 25% in the normal weight range and 3% underweight (Figure 2.6).

Overall, Indigenous people were more likely to be overweight or obese than non-Indigenous people, with rates 1.2 times as high among Indigenous adults (72% and 63%, respectively). This higher rate is driven by the higher proportion of Indigenous people who were obese—Indigenous people were 1.6 times as likely as non-Indigenous people to be obese, but were less likely to be overweight (0.8 times as likely) or normal weight (0.7 times as likely).



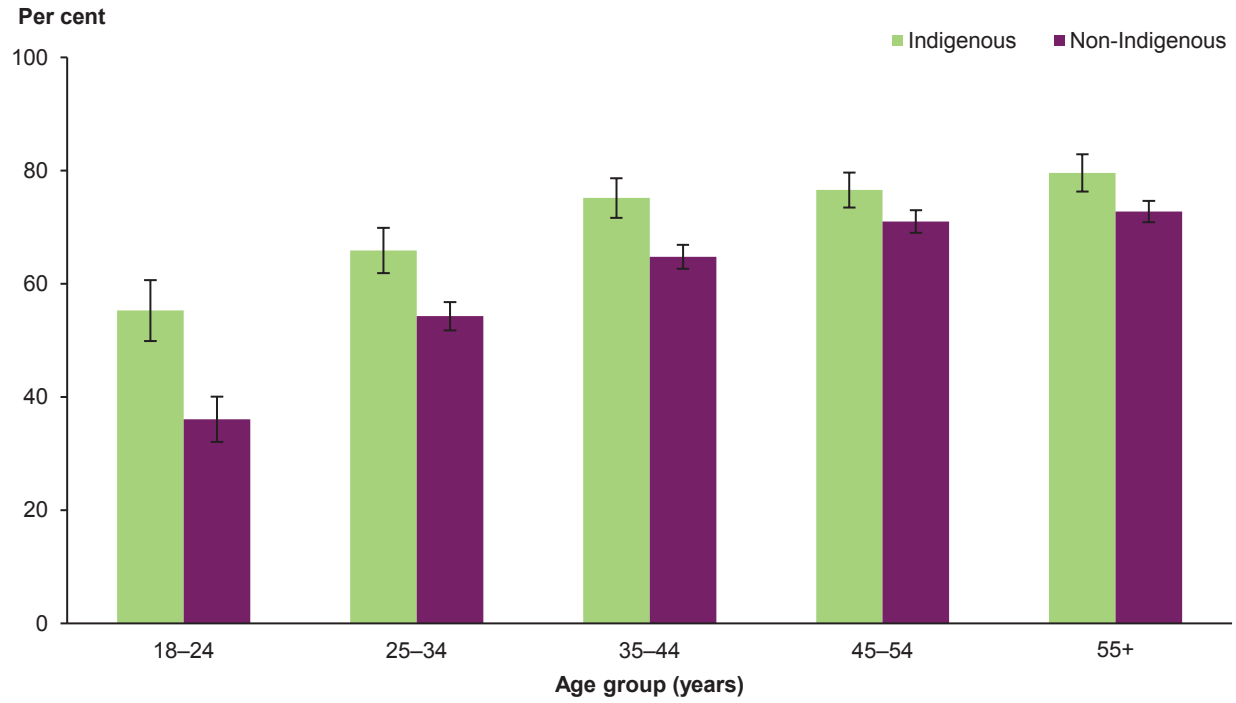
Note: Rates have been age standardised to the 2001 Australian population.
Source: ABS 2014b. See Appendix Table C5.

Figure 2.6: BMI among persons aged 18 and over, by Indigenous status, 2011–13

Age

In all age groups, Aboriginal and Torres Strait Islander people were more likely to be overweight or obese than non-Indigenous people (Figure 2.7).

The disparity between Indigenous and non-Indigenous people was greatest among those aged 18–24 (1.5 times as high; 55% compared with 36%, respectively), and then decreases with age to 1.2 times as high at age 35–44, and 1.1 times as high at age 55 and over.



Source: ABS 2014b. See Appendix Table C6.

Figure 2.7: Overweight or obesity among persons aged 18 and over, by Indigenous status and age, 2011–13

Remoteness

In 2012–13, the proportion of overweight or obese Indigenous adults was higher in Non-remote areas (74%) than in Remote areas (67%) (Appendix Table C5).

In Non-remote areas, Indigenous adults were more likely to be overweight or obese (74%) than non-Indigenous adults (63%). In Remote areas, there was no statistically significant difference in the proportion of Indigenous (67%) and non-Indigenous adults (70%) who were overweight or obese.

High blood pressure

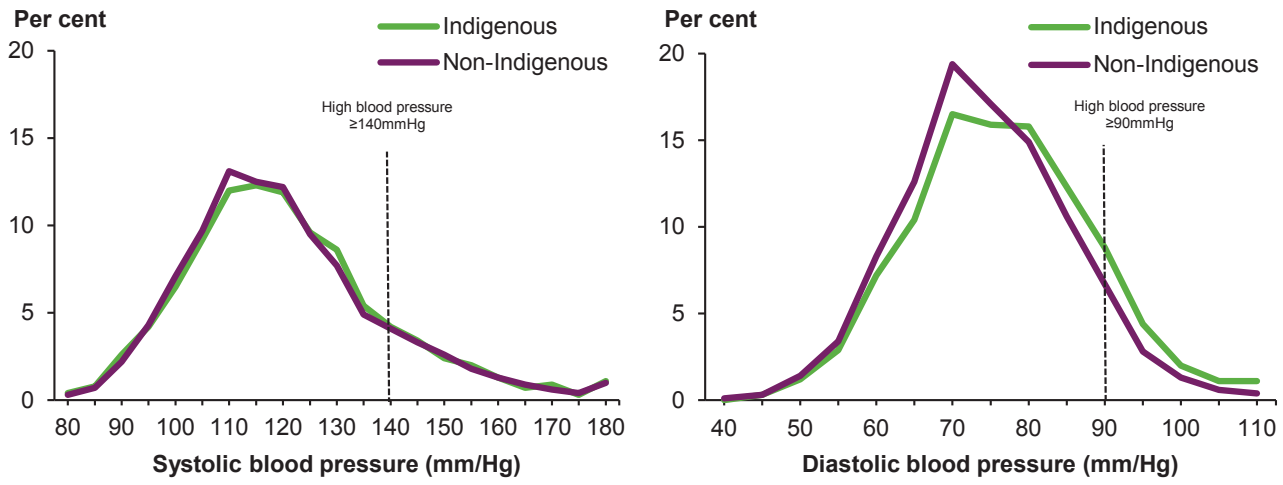
High blood pressure is a key risk factor for chronic diseases including stroke, CHD, heart failure and CKD. It is also a cardiovascular condition in its own right. The risk factors for high blood pressure are largely the same as those for other forms of CVD, and include age, family history, poor diet (particularly a high salt intake), obesity, excessive alcohol consumption and insufficient physical activity.

High blood pressure is estimated to be responsible for 10% of all deaths in Indigenous people, and accounts for 6% of the health gap between Indigenous and non-Indigenous people (Vos et al. 2007, 2009).

In this report, a person had high blood pressure if they had any of the following—a systolic blood pressure of 140 mmHg or more, a diastolic blood pressure of 90 mmHg or more, or receiving medication for high blood pressure (Whitworth 2003).

Distribution of blood pressure

In 2011–13, the distributions of systolic blood pressure in Indigenous and non-Indigenous adults were similar; however, diastolic blood pressure of 90 mmHg or more was more common among Indigenous adults (Figure 2.8).



Notes

1. Rates have been age standardised to the 2001 Australian population.
2. Excludes persons for whom blood pressure was not measured or for whom a valid reading was not obtained (13.8% of Aboriginal and Torres Strait Islander people aged 18 and over and 14.4% of non-Indigenous people aged 18 and over).

Source: AIHW analysis of unpublished data from the AATSIHS 2012–13 (Core component) and Non-Indigenous people: AHS 2011–12 (Core component).

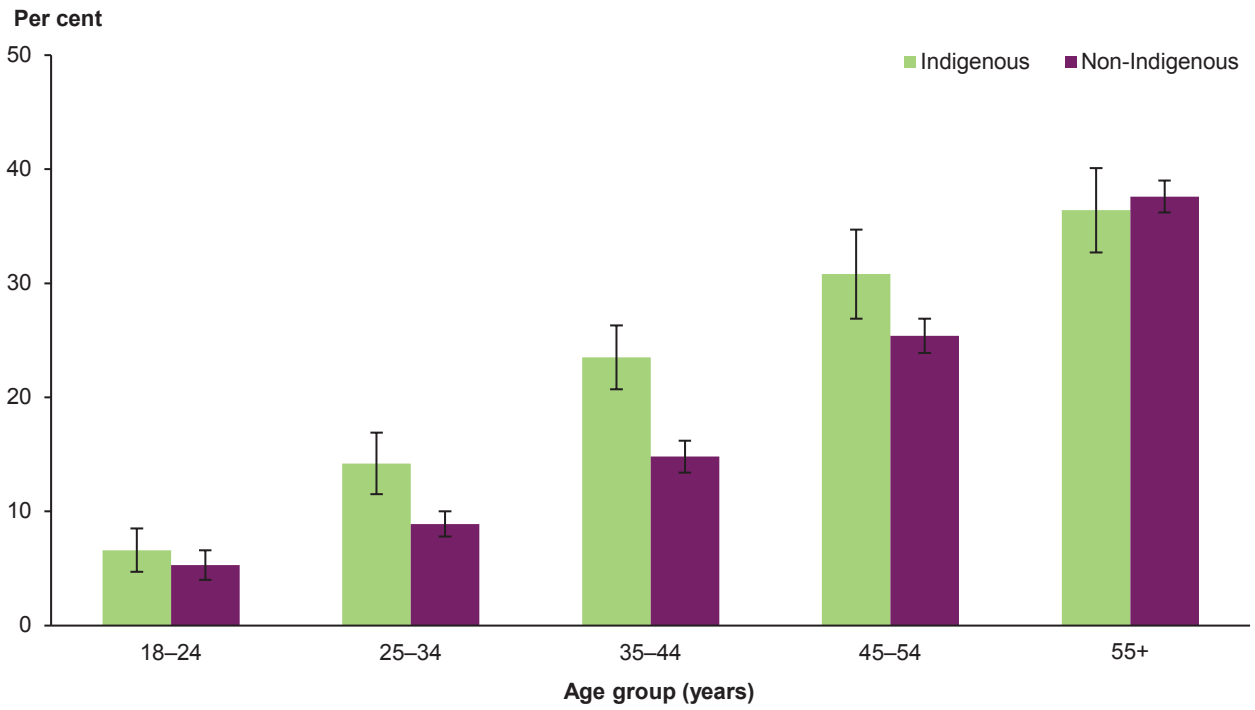
Figure 2.8: Systolic and diastolic blood pressure among persons aged 18 and over, by Indigenous status, 2011–13

Age

In 2011–13, an estimated one-quarter (25%) of Indigenous adults had high blood pressure, a higher rate than that for non-Indigenous adults (21%).

The proportion of Indigenous people with high blood pressure increases by age group (Figure 2.9). Less than 7% of Indigenous people aged 18–24 had high blood pressure, increasing to more than one-third (36%) of Indigenous people aged 55 and over.

The disparity in high blood pressure rates between Indigenous and non-Indigenous Australians was greatest in the 25–34 and 35–44 age groups (1.6 times as high for Indigenous people) compared with 1.2 times as high in the 18–24 and 45–54 age groups. Among older Australians (those aged 55 and over), rates were similar.



Source: ABS 2014b. See Appendix Table C7.

Figure 2.9: High blood pressure among persons aged 18 and over, by Indigenous status and age, 2011–13

Remoteness

In 2012–13, rates of high blood pressure were similar among Indigenous adults living in Non-remote (24%) and Remote areas (27%) (Appendix Table C7).

In Non-remote areas, high blood pressure was more prevalent among Indigenous adults (24%) than non-Indigenous adults (21%).

In Remote areas, there was no statistically significant difference in high blood pressure rates among Indigenous adults (27%) and non-Indigenous adults (20%).

Dyslipidaemia

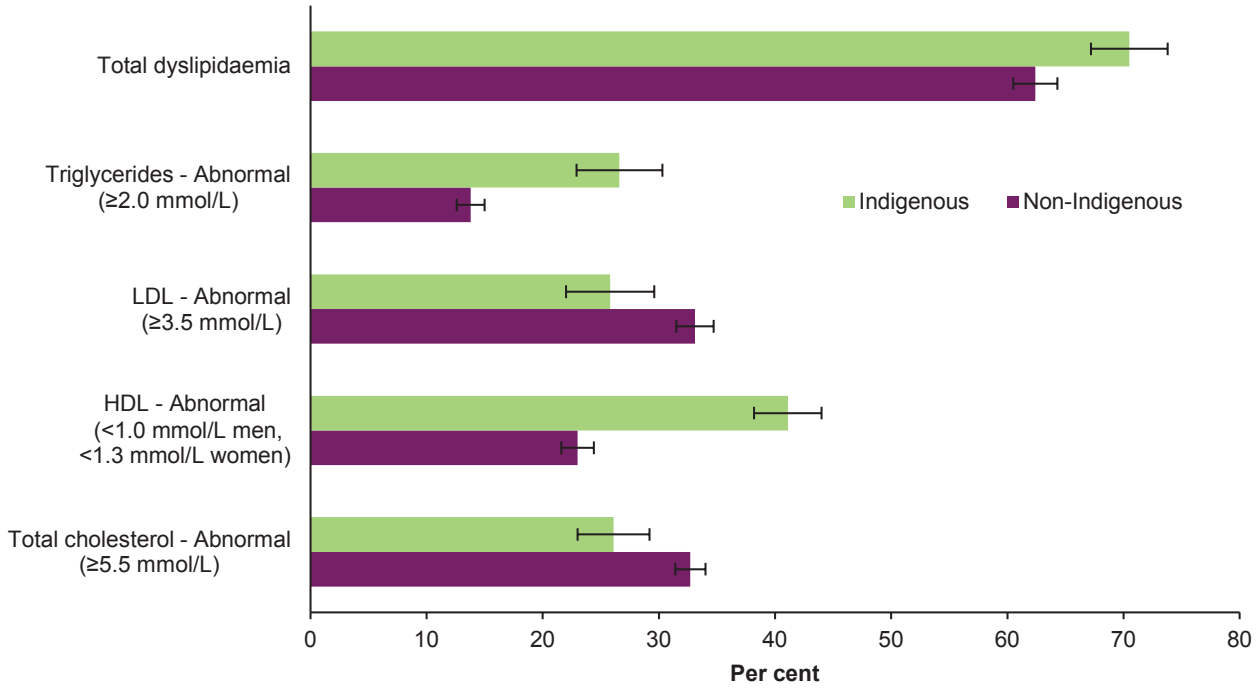
Dyslipidaemia—abnormal levels of fats in the blood—can contribute to the development of atherosclerosis, a build-up of fatty deposits in the blood vessels which may lead to the development of CVD. Dyslipidaemia is a risk factor for chronic diseases such as CHD, stroke and diabetes. There is also evidence that patients with CKD exhibit alterations in lipoprotein metabolism (Tsimihodimos et al. 2011), although it is less certain whether dyslipidaemia is a risk factor for the development or progression of CKD.

In this section, dyslipidaemia is defined as a condition of persons with one or more of the following: taking lipid-lowering medication, abnormal total cholesterol results, abnormal low-density lipoprotein (LDL) cholesterol results, abnormal high-density lipoprotein (HDL) cholesterol results or abnormal triglyceride results.

Lipid levels

In 2012–13, an estimated 71% of Indigenous adults had dyslipidaemia (Figure 2.10); Indigenous adults were more likely to have the condition than non-Indigenous adults (62%).

Among the lipid disorders, Indigenous adults had higher rates of abnormal triglycerides (27%, compared with 14% among non-Indigenous adults), as well as abnormal HDL cholesterol (41% compared with 23%). Indigenous adults had lower rates of abnormal LDL cholesterol (26% compared with 33%) and total cholesterol (26% compared with 33%).



Notes

1. Rates have been age standardised to the 2001 Australian population.
2. Includes only those persons who fasted for 8 hours or more before their blood test.
3. CVD and diabetes risk increases with increasing levels of lipids.

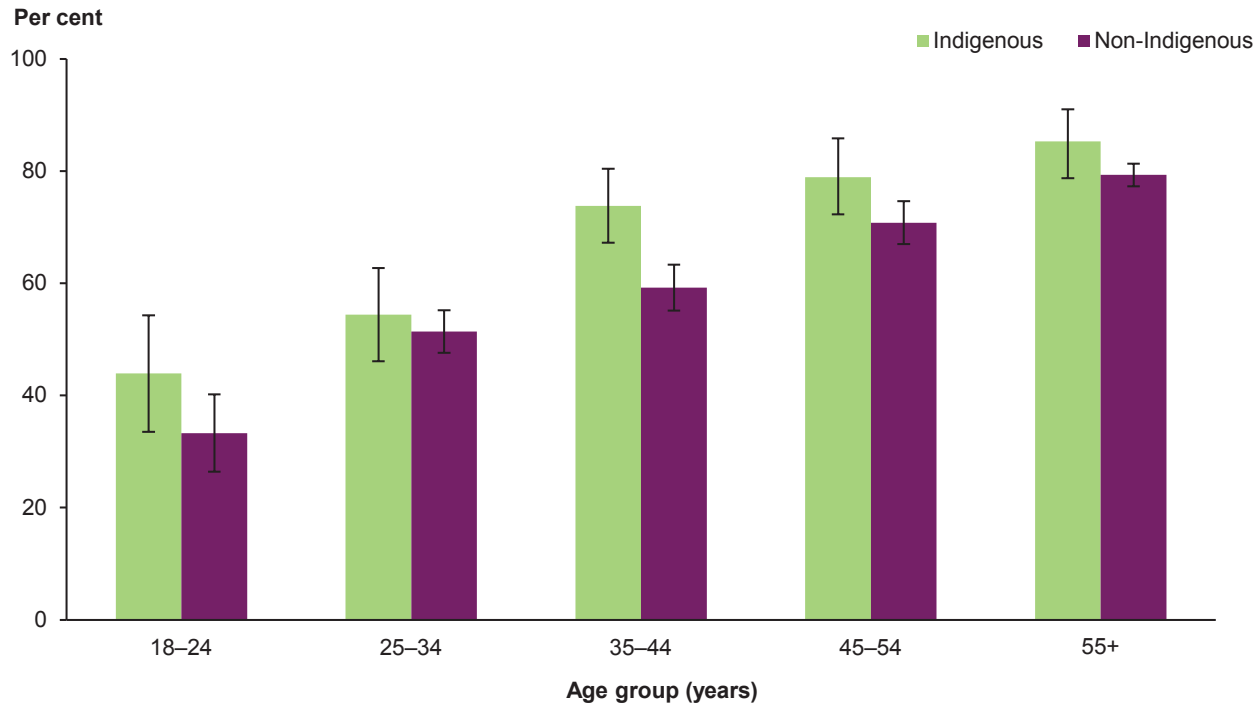
Source: ABS 2014a. See Appendix Table C8.

Figure 2.10: Dyslipidaemia among persons aged 18 and over, by Indigenous status, 2011–13

Age

Rates of dyslipidaemia increase with age—in 2012–13, 44% of the Indigenous population aged 18–24 had dyslipidaemia, increasing to 74% among those aged 35–44 and 85% among those aged 55 and over (Figure 2.11).

Rates of dyslipidaemia were significantly higher among those aged 35–44 in the Indigenous population than in the non-Indigenous population (74% and 59%, respectively). For all other age groups, there were no statistically significant differences between Indigenous and non-Indigenous adults.



Source: ABS 2014a. See Appendix Table C9.

Figure 2.11: Total dyslipidaemia among persons aged 18 and over, by Indigenous status and age, 2011–13

Remoteness

In 2012–13, dyslipidaemia was more prevalent among Indigenous adults living in Remote areas (82%) than Non-remote areas (69%) (Appendix Table C9).

In both Non-remote areas and Remote areas, Indigenous adults were more likely to have dyslipidaemia than non-Indigenous adults (69% compared with 62%, and 82% compared with 58%, respectively).

Impaired fasting glucose

The initial stages of type 2 diabetes, also known as pre-diabetes, are characterised by impaired glucose regulation where blood glucose levels are raised beyond normal levels, but not so high as to be considered diabetes. Research indicates that most people with these prediabetic states eventually develop diabetes (Nathan et al. 2007).

Impaired glucose regulation can be measured by a number of tests, including IFG. People who have higher than normal levels of blood glucose revealed by IFG are at risk of developing diabetes and CVD in the future.

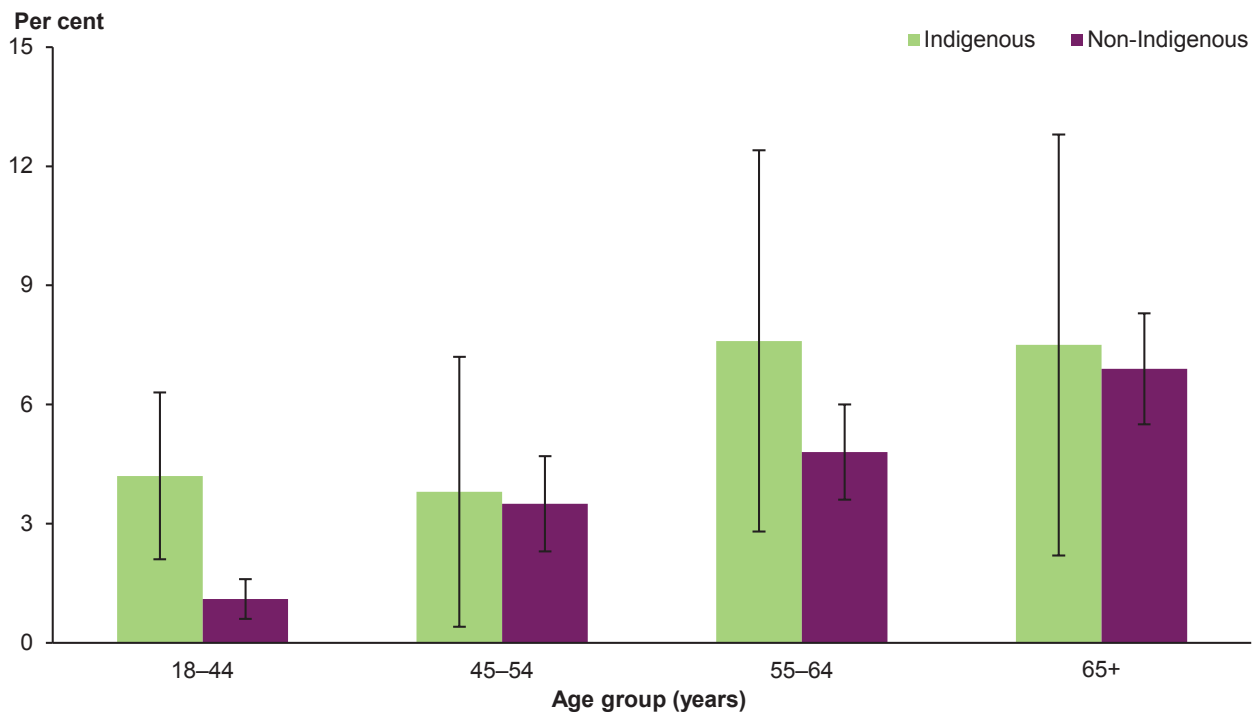
Early treatment and improved management of impaired glucose regulation may help to prevent the occurrence of type 2 diabetes among Indigenous Australians.

In this section, IFG was derived using a combination of fasting plasma glucose test results and self-reported information on diabetes diagnosis and medication use. A person who did not currently have diabetes but had higher than usual levels of glucose in the blood after fasting—in the range 6.1 to 6.9 mmol/L—was defined as having IFG. This placed them at risk of developing diabetes.

Age

In 2011–13, an estimated 5.3% of Indigenous adults had IFG, almost twice the rate for non-Indigenous adults (2.9%).

Indigenous adults aged 18–44 had a higher prevalence of IFG (4.2%) than non-Indigenous adults (1.1%) (Figure 2.12). There were no other significant differences between Indigenous and non-Indigenous age groups.



Source: AIHW analysis of unpublished data from the ABS 2011–12 NHMS and the 2012–13 NATSIHMS. See Appendix Table C10.

Figure 2.12: IFG among persons aged 18 and over, by Indigenous status and age, 2011–13

Remoteness

In 2012–13, there was no statistically significant difference in the proportion of Indigenous adults with IFG living in Remote areas (6.7%) and Non-remote areas (5.0%) (Appendix Table C10).

There were also no statistically significant differences in the proportions of Indigenous and non-Indigenous adults with IFG living in Remote areas (6.7% and 2.7%, respectively), or in Non-remote areas (5.0% and 2.9%, respectively).

3 Cardiovascular disease

CVD is the leading cause of mortality and one of the main contributors to disability and reduced quality of life among all Australians. CVD contributes substantially to poor health and reduced life expectancy among Aboriginal and Torres Strait Islander people. The levels and impacts of CHD, stroke, heart failure and other forms of CVD are much greater for Indigenous people, especially among young and middle-aged adults (Gray et al. 2012).

Indigenous people are more likely to die from CVD than non-Indigenous people. Premature and preventable CVD deaths contribute most to the mortality gap between Indigenous and non-Indigenous people, accounting for almost one-quarter (24%) of the gap (AIHW 2015a).

Several risk factors for CVD, including smoking, physical inactivity, overweight and obesity, diabetes and high blood pressure, occur at higher levels in the Indigenous population, as shown in Chapter 2.

Improving the prevention and management of CVD among Indigenous people through developing essential standards of care will assist in helping to close the gap in health outcomes and life expectancy between Indigenous and non-Indigenous people (Brown et al. 2015a, 2015b). The *Better Cardiac Care for Aboriginal and Torres Strait Islander people* project aims to reduce mortality and morbidity from cardiac conditions among Indigenous people by increasing access to services, better managing risk factors and treatment and improving coordination of care (AIHW 2015f).

Box 3.1: What is cardiovascular disease?

The term 'cardiovascular disease' (CVD, also known as circulatory disease) covers all diseases and conditions affecting the heart and blood vessels.

One of the main underlying causes of CVD is *atherosclerosis*. This is a process in which fatty and fibre-like deposits build up on the inner walls of arteries, often forming plaques that can then cause blockages. Atherosclerosis is most serious when it leads to reduced or blocked blood supply to the heart (causing angina or heart attack) or to the brain (causing stroke). The process leading to atherosclerosis is slow and complex, often starting in childhood and progressing with age.

Factors that are known to increase the risk of developing CVD include poor nutrition, insufficient physical activity, overweight and obesity, smoking, high blood pressure, high blood cholesterol and diabetes.

For more information on the data sources used to report on CVD in this chapter—in particular, how CVD was measured in the AHS and the AATSIHS—refer to Appendix B.

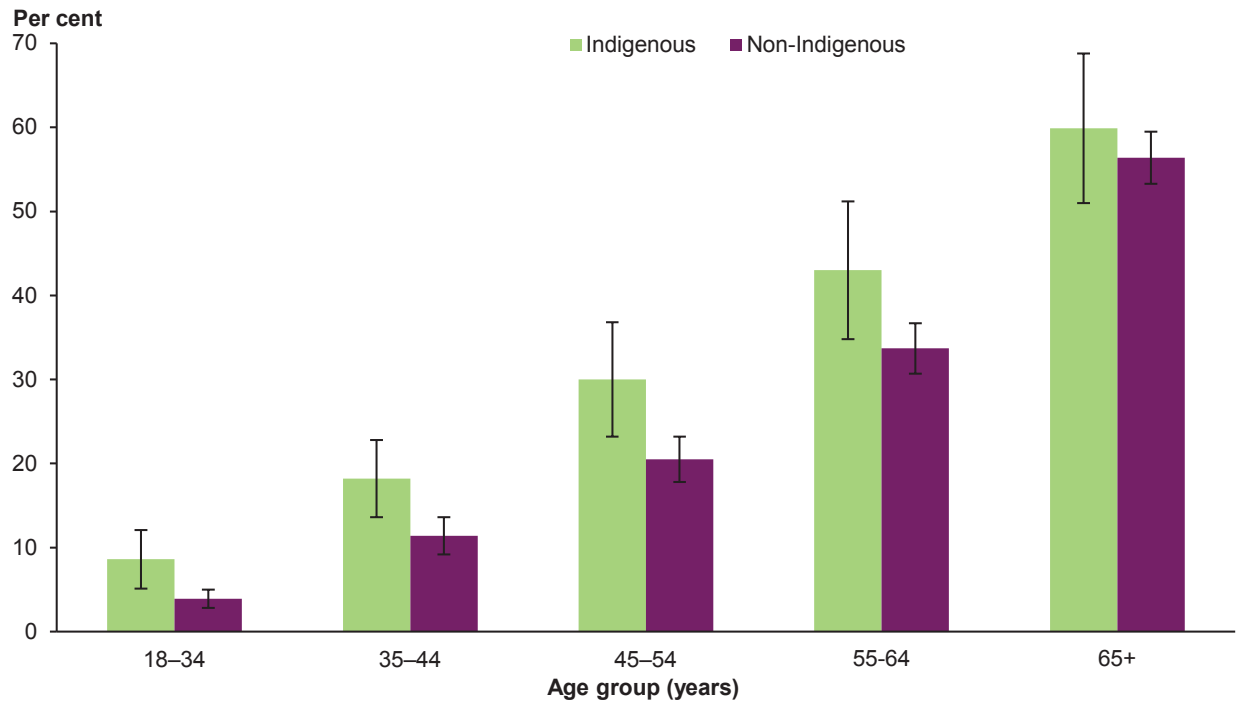
How many Indigenous people have cardiovascular disease?

Age

Based on survey results from the ABS 2012–13 AATSIHS, 1 in 4 Indigenous adults aged 18 and over (74,900 persons, or 27%) had some form of CVD in 2012–13. CVD was more common in females than males (59% and 41%, or 44,300 and 30,600, respectively).

Indigenous adults had a higher rate of CVD than non-Indigenous adults (27% and 21%, respectively, after taking into account differences in the age structure of the populations). Indigenous adults had a higher rate of CVD than non-Indigenous adults in the 18–34 age group, 9% compared with 4%. There were no other statistically significant differences between Indigenous and non-Indigenous Australians in other age groups.

Among Indigenous Australians, the reported prevalence of CVD increased with age, from 9% for those aged 18–34 to 60% for those aged 65 and over (Figure 3.1).



Note: CVD is based on self-reported diagnoses among those people who participated in the biomedical components of the surveys. Refer to Appendix B for further information.

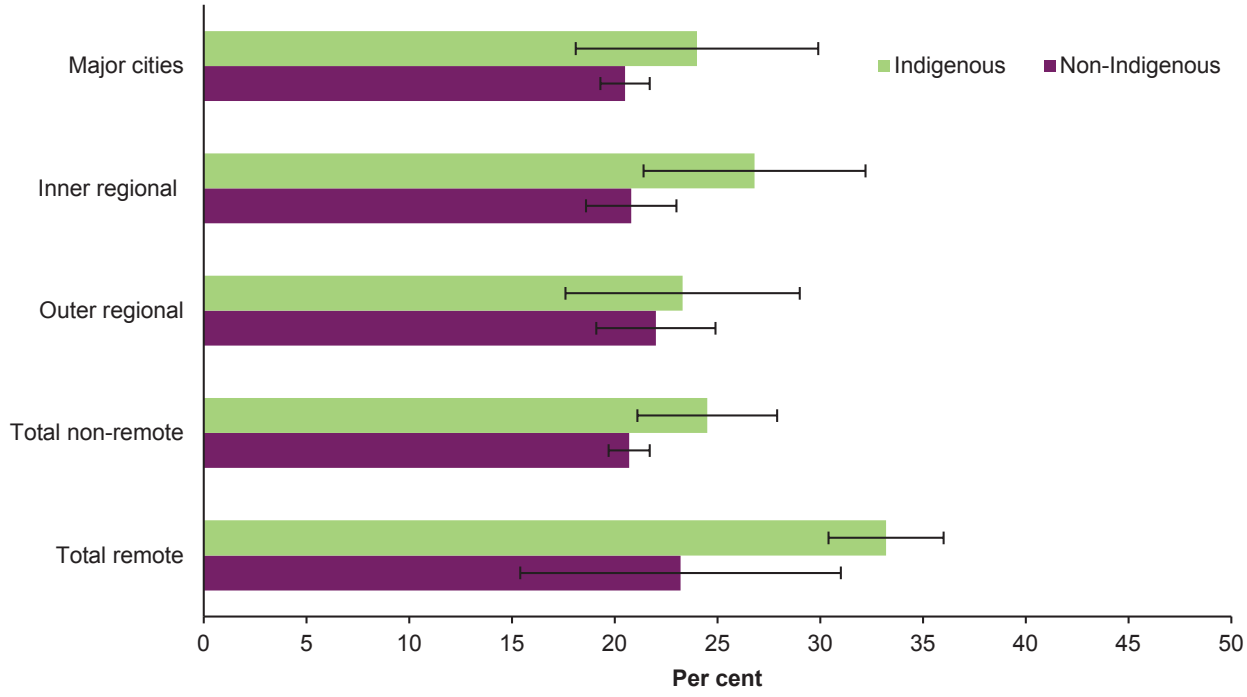
Source: AIHW analysis of unpublished data from the 2011–12 NHMS and the 2012–13 NATSIHMS. See Appendix Table C11.

Figure 3.1: Prevalence of CVD among persons aged 18 and over, by Indigenous status and age, 2011–13

Remoteness

In 2012–13, CVD was 1.4 times as high among Indigenous adults living in Remote areas (33%) as among those living in Non-remote areas (25%) (Figure 3.2).

In both Non-remote and Remote areas, there was no statistically significant difference in Indigenous and non-Indigenous rates of CVD.



Notes
1. Rates have been age standardised to the 2001 Australian population.
2. CVD is based on self-reported diagnoses among those people who participated in the biomedical components of the surveys. Refer to Appendix B for further information.
3. 'Total remote' comprises *Remote* and *Very remote*.

Source: AIHW analysis of unpublished data from the 2011–12 NHMS and the 2012–13 NATSIHMS. See Appendix Table C11.

Figure 3.2: Prevalence of CVD among persons aged 18 and over, by Indigenous status and remoteness, 2011–13

Coronary heart disease

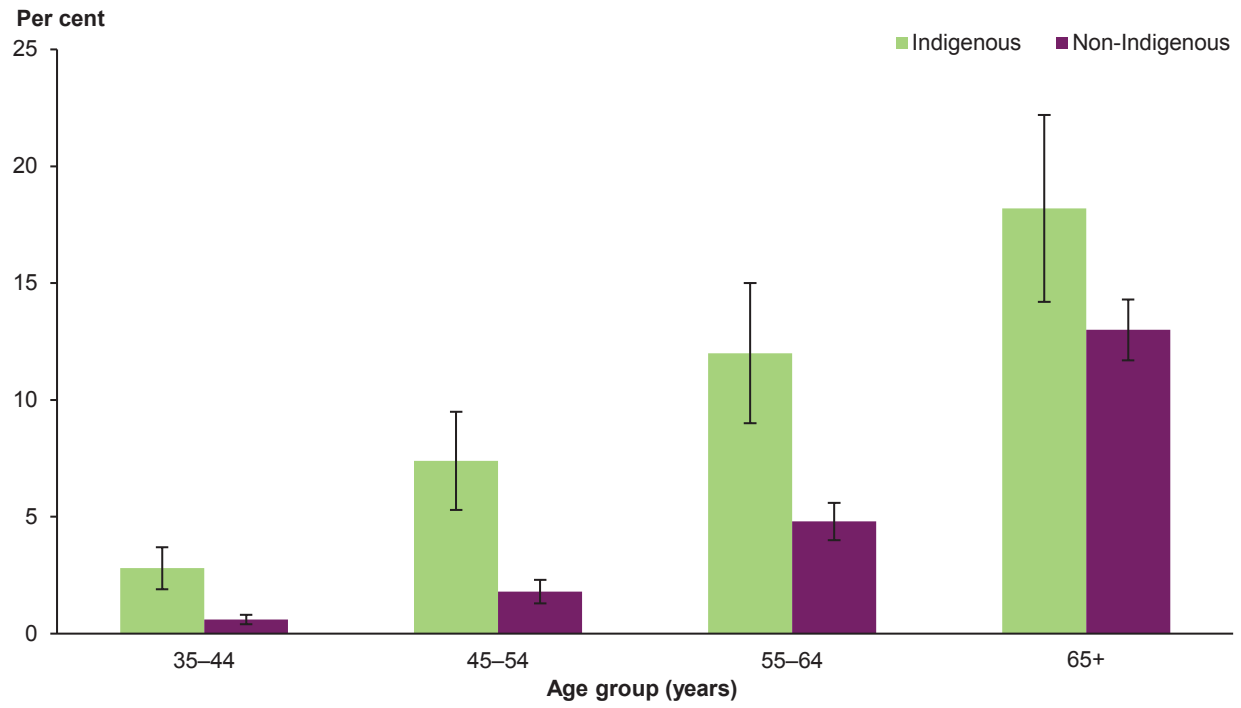
CHD, or ischaemic heart disease as it is often referred to, is the most common form of CVD. CHD occurs when there is a blockage in the blood vessels that supply blood to the heart muscle. There are two major clinical forms of CHD: *heart attack*—an acute life-threatening event where the blood vessel is completely blocked, requiring prompt treatment; and *angina*—a chronic condition where there is a temporary deficiency in the blood supply.

Based on the 2012–13 AATSIHS results, an estimated 15,600 Indigenous adults had CHD. After taking into account differences in the age structure of the populations, Indigenous adults were almost twice as likely to have CHD as non-Indigenous adults (6.3% and 3.2%, respectively).

The prevalence of CHD is greater in older age groups—2.8% of Indigenous adults aged 35–44 had CHD, compared with 18% aged 65 and over (Figure 3.3). A similar pattern occurred for non-Indigenous Australians—0.6% aged 35–44 compared with 13% aged 65 and over.

Indigenous adults had higher rates of CHD compared with non-Indigenous adults across all age groups—Indigenous adults aged 18–34 were 5 times as likely to have CHD as their non-Indigenous counterparts, which declined to 1.4 times as likely in those aged 65 and over.

Exploring rates of CHD by remoteness was not possible from these survey results; however, other studies have shown that rates of CHD in urban Indigenous people are greater than those for their non-Indigenous counterparts, and that CHD occurs at much younger ages in urban Indigenous people (Bradshaw et al. 2011).



Source: AIHW analysis of unpublished data from the AATSIHS 2012–13 (Core component) and the AHS 2011–12 (Core component). See Appendix Table C12.

Figure 3.3: Prevalence of CHD among persons aged 35 and over, by Indigenous status and age, 2011–13

Acute coronary syndrome

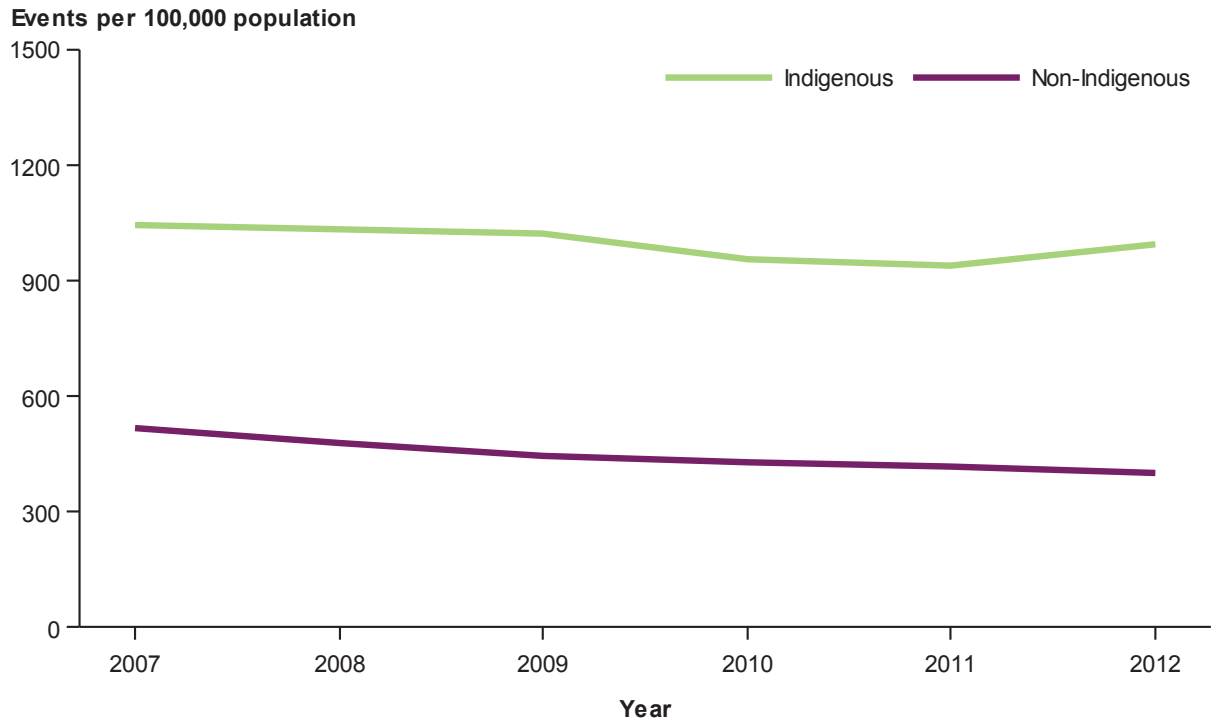
Heart attacks and unstable angina are considered to be part of a continuum of acute coronary heart diseases known as acute coronary syndrome (ACS). Estimates of acute coronary events are based on hospital and deaths data for the five jurisdictions with adequate identification of Indigenous deaths (see Appendix A).

In 2012, the rate of acute coronary events among Indigenous people was 995 cases per 100,000 population, 2.5 times as high as for non-Indigenous people (399 cases per 100,000 population.

In younger age groups, the rate of acute coronary events among Indigenous people was many times that of non-Indigenous people. It was 13 times as high at age 25–34 (104 and 8 cases per 100,000 population, respectively), 7 times as high at age 35–44 (552 and 75 cases per 100,000), 3 times as high at age 55–64 (1,519 and 474 cases per 100,000) and 1.2 times as high at age 75 and over (2,413 and 1,989 cases per 100,000).

Although the rate of acute coronary events has declined for Indigenous people since 2007— from 1,048 to 995 cases per 100,000 population—it has also declined for non-Indigenous people, from 515 to 399 cases per 100,000 population (Figure 3.4).

The higher incidence of heart attack and greater case fatality among Indigenous people are both contributors to excess CHD mortality (Katzenellenbogen et al. 2010).



Note: Rates have been directly age standardised to the 2001 Australian population.
Sources: AIHW NHMD; AIHW National Morbidity Database. See Appendix Table C13.

Figure 3.4: Incidence of acute coronary events among persons aged 25 and over, by Indigenous status, 2007–2012

Stroke

Stroke occurs when an artery supplying blood to the brain either suddenly becomes blocked (known as ischaemic stroke) or ruptures and begins to bleed (known as haemorrhagic stroke). Either may result in part of the brain dying, leading to sudden impairment that can affect a range of functions.

Limited information on the occurrence of stroke is available for the Indigenous population.

Using hospitalisations data from the Northern Territory, a first-ever stroke incidence rate was estimated to be 307 per 100,000 population for the period 1999–2011, which is over twice as high as that for the non-Indigenous population (138 per 100,000 population (You et al. 2015).

Another study from Western Australia linked hospital and death data to report non-fatal stroke incidence rates of 304 for Indigenous males and 267 for Indigenous females for the period 1997–2002— rates that were respectively 2.6 and 3.0 times as high as those for the non-Indigenous population (Katzenellenbogen et al. 2011).

Rheumatic heart disease

RHD is a cardiovascular disease characterised by damaged heart valves. It is caused by delayed complications of acute rheumatic fever (ARF), which is an infection by Group A *Streptococcus* bacteria. Inflammation caused by ARF can manifest as permanent damage to the heart muscle or heart valves and reduce the ability of the heart to pump blood effectively.

ARF and RHD are rare among non-Indigenous Australians; however, Indigenous ARF rates remain very high and RHD still causes a considerable number of Indigenous deaths (AIHW 2013c). Regular, long-term antibiotic treatment is recommended for people with ARF or RHD. Heart surgery may also be required to repair heart valve damage resulting from RHD.

Based on data from state and territory registers, during the 4-year period 2010–2013 in the Northern Territory, Western Australia and Queensland combined:

- there were 743 new or recurrent cases of ARF among Indigenous people
- children aged 5–14 accounted for about half (52%) of these cases
- Indigenous people accounted for 94% of all new or recurrent cases of ARF
- the incidence rate of ARF among Indigenous people was 53 per 100,000 population, compared with less than 1 case per 100,000 among other Australians (AIHW 2015a).

In these same three jurisdictions:

- there were 1,455 registered cases of RHD among Indigenous people in the Northern Territory and 305 registered cases in Western Australia as at 31 December 2013
- there were 921 registered cases of RHD among Indigenous people in Queensland as at 1 July 2014
- Indigenous people accounted for 89% of registered cases of RHD in Queensland, and 94% of cases in the Northern Territory (AIHW 2015a).

Recent reductions in ARF occurrence in the Northern Territory as a result of RHD control are expected to lead to a decline in RHD incidence (Lawrence et al. 2013).

Hospital care for cardiovascular disease

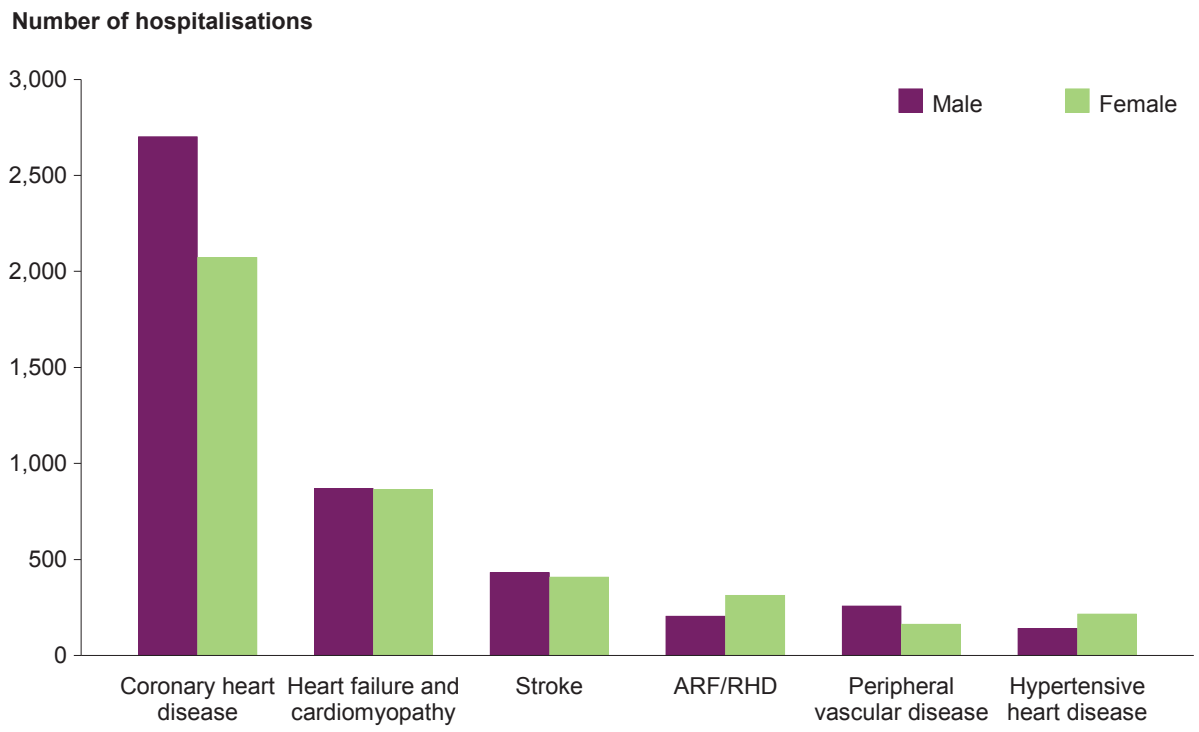
In 2013–14, there were almost 12,000 separations (or hospitalisations) of Indigenous persons where CVD was recorded as the principal diagnosis—the diagnosis chiefly responsible for occasioning the patient's hospitalisation (see Glossary). This represented 3% of all Indigenous hospitalisations.

The age-standardised hospitalisation rate where CVD was the principal diagnosis was almost twice as high (1.8 times as high) among Indigenous people as among non-Indigenous people (3,149 compared with 1,771 per 100,000 population).

Major causes of cardiovascular hospitalisations

In 2013–14, CHD accounted for 2 in 5 (40%) Indigenous hospitalisations where CVD was recorded as the principal diagnosis (4,771 hospitalisations). CHD was responsible for a greater proportion of Indigenous male than female CVD hospitalisations (43% compared with 37%) (Figure 3.5).

Other principal diagnoses of CVD hospitalisation of Indigenous people include heart failure and cardiomyopathy (1,730 or 15%), stroke (838 or 7%), peripheral vascular disease (420 or 4%), ARF and RHD (516 or 4%) and hypertensive heart disease (356 or 3%). As well, there were 231 hospitalisations of Indigenous people for congenital heart disease.



Source: AIHW NHMD. See Appendix Table C14.

Figure 3.5: Major causes of hospitalisation for CVD among Indigenous people, by sex, 2013–14

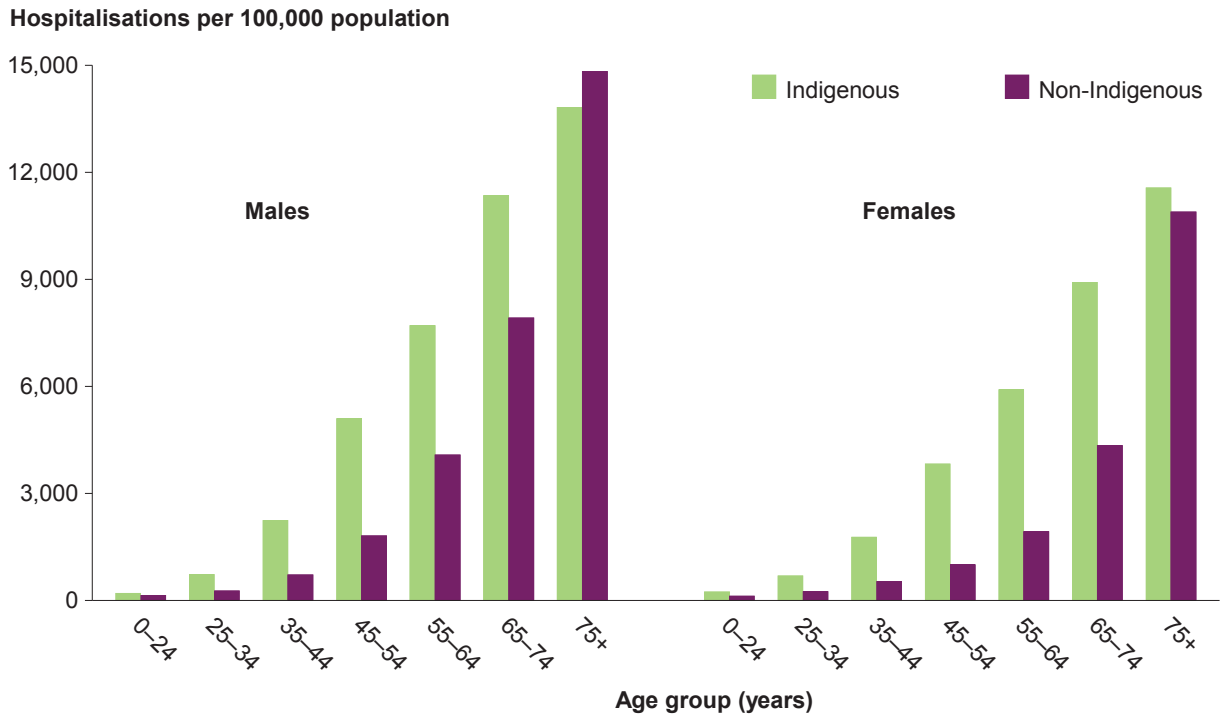
Age and sex

In 2013–14, there were 6,289 Indigenous male and 5,579 Indigenous female hospitalisations where CVD was recorded as the principal diagnosis. Indigenous males were hospitalised for CVD at a higher rate than Indigenous females (3,519 compared with 2,824 per 100,000 population).

Hospitalisation rates for CVD are greater for Indigenous than non-Indigenous people. Indigenous males were hospitalised at 1.6 times the rate of non-Indigenous males (3,519 and 2,215 hospitalisations, respectively, per 100,000 population), and Indigenous females at 2.1 times the rate of non-Indigenous females (2,824 and 1,368 hospitalisations, respectively, per 100,000 population).

Rates of hospitalisation of Indigenous people for CVD are higher in older age groups—1,997 per 100,000 population at age 35–44, increasing to 6,778 at age 55–64, and 12,493 at age 75 and over.

In all age groups, Indigenous people are hospitalised for CVD at higher rates than those for non-Indigenous people, except for males aged 75 and over (Figure 3.6). The gap is greatest at ages 35–44 and 45–54, where Indigenous hospitalisation rates were 3 times as high as non-Indigenous rates. This highlights that Indigenous people are hospitalised for CVD at younger ages than non-Indigenous people—more than half (52%) of Indigenous hospitalisations for CVD occurred for people aged under 55, compared with 17% for the non-Indigenous population.



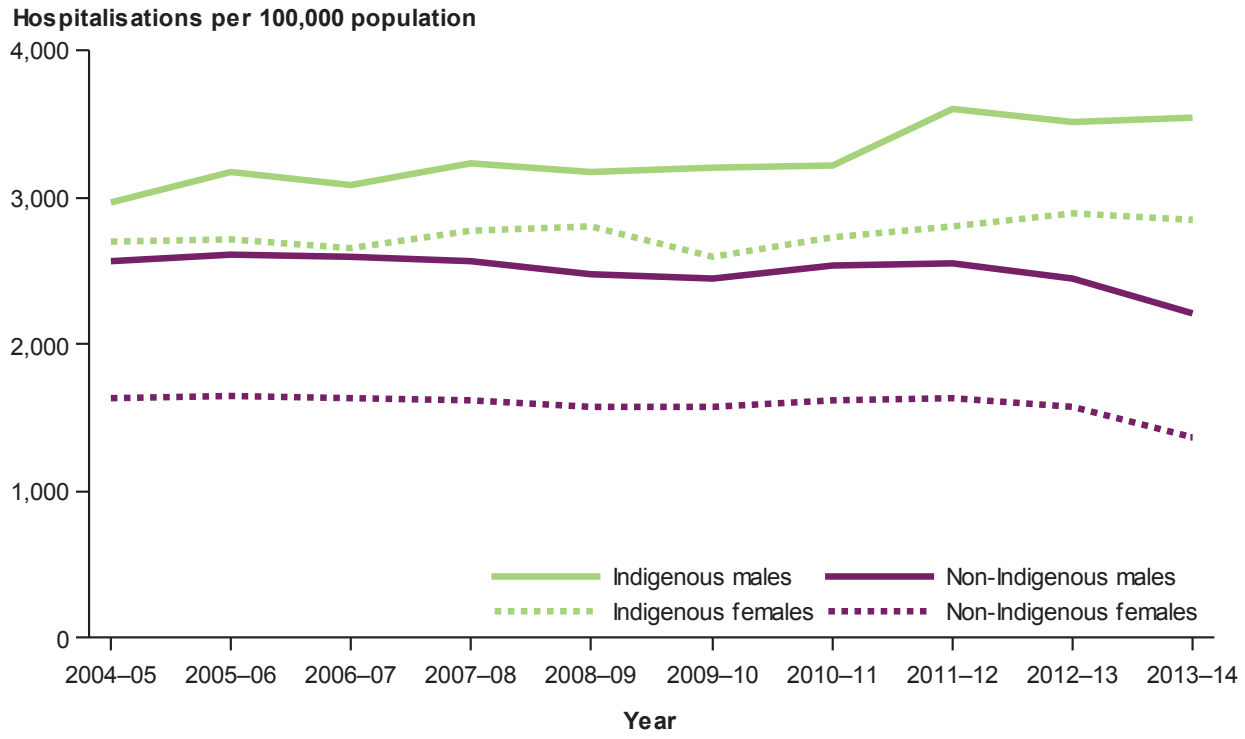
Source: AIHW NHMD. See Appendix Table C15.

Figure 3.6: CVD hospitalisation rates by Indigenous status, age and sex, 2013–14

Trend

The rate of hospitalisation for CVD as the principal diagnosis among Indigenous people increased by 12%, from 2,825 per 100,000 population in 2004–05 to 3,169 in 2013–14. In contrast, the hospitalisation rate for CVD among non-Indigenous people declined by 15% over the same period, from 2,072 to 1,768 per 100,000 population, thus widening the CVD hospitalisation gap.

In both populations, the rate of CVD hospitalisations was consistently higher for males than females. However, a higher proportion of Indigenous females than males have CVD; this difference was influenced by factors such as the larger proportion of women than men in older age groups, and higher rates of obesity among females (ABS 2014b). The gap between male and female hospitalisation rates is smaller in the Indigenous population (Figure 3.7).



Notes

1. Rates have been age standardised to the 2001 Australian population.
2. Includes New South Wales, Victoria, Queensland, Western Australia, South Australia and Northern Territory only, as Indigenous identification in admitted patient care data was not of sufficient quality in all states and territories before 2010–11.

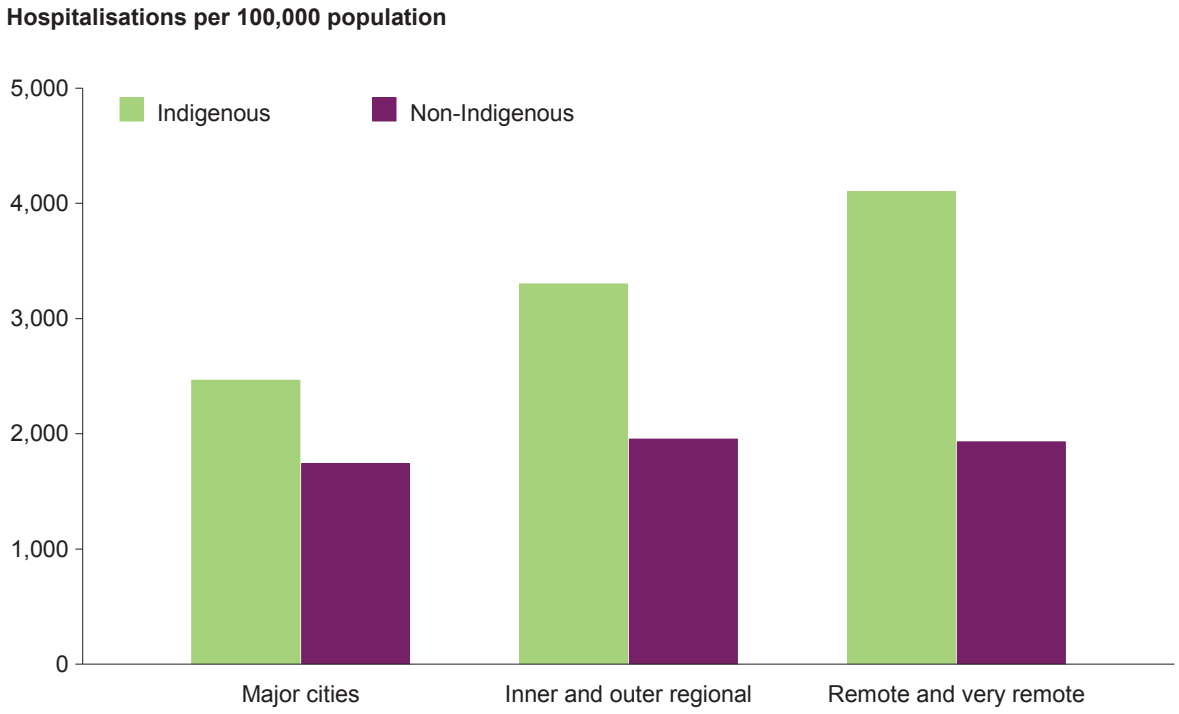
Source: AIHW NHMD.

Figure 3.7: Trends in CVD hospitalisation rates, by Indigenous status and sex, 2004–05 to 2013–14

Remoteness

In 2013–14, Indigenous hospitalisation rates for CVD increased with remoteness. They were highest in Remote and very remote areas (4,100 per 100,000 population), 1.7 times as high as in Major cities (2,463 per 100,000 population) (Figure 3.8).

In contrast, CVD hospitalisation rates for non-Indigenous Australians were similar across remoteness categories. This resulted in the gap between Indigenous and non-Indigenous CVD hospitalisation rates increasing with remoteness, being 1.4 times as high in Major cities, 1.7 times as high in Inner and outer regional areas and 2.1 times as high in Remote and very remote areas.



Note: Rates have been age standardised to the 2001 Australian population.
Source: AIHW NHMD. See Appendix Table C15.

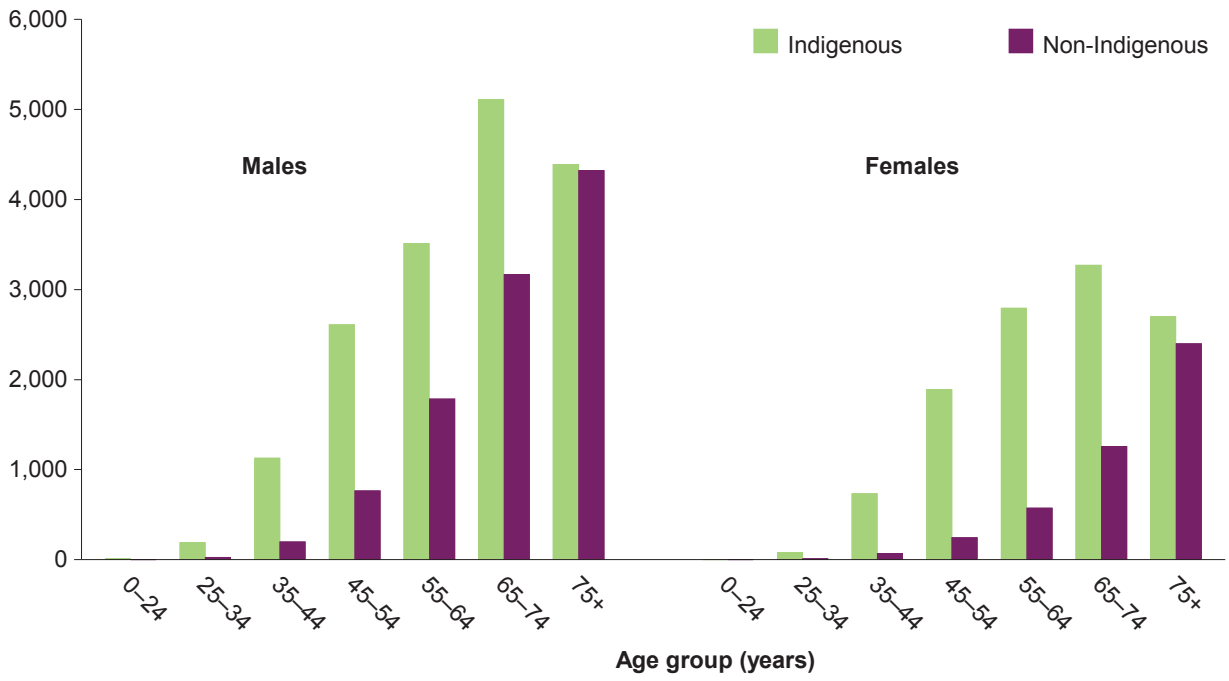
Figure 3.8: CVD hospitalisation rates, by Indigenous status and remoteness, 2013–14

Coronary heart disease

In 2013–14, there were 4,771 Indigenous hospitalisations recorded with a principal diagnosis of CHD, at a rate of 1,294 hospitalisations per 100,000 population.

CHD hospitalisation rates were higher for Indigenous males than females (1,554 and 1,068 per 100,000 population, respectively). Rates increased with age for both males and females to age 65–74, but declined for age 75 and over (Figure 3.9).

Aboriginal and Torres Strait Islander people were hospitalised for CHD at 2.4 times the rate of non-Indigenous people (1,294 compared with 550 hospitalisations per 100,000 population). Indigenous CHD hospitalisation rates were higher than non-Indigenous rates across all age groups, with the gap between Indigenous and non-Indigenous rates greatest at ages 25–34 (8 times as high, 133 and 17 hospitalisations per 100,000 population, respectively) and 35–44 (7 times as high, 923 and 131 hospitalisations per 100,000 population, respectively).



Source: AIHW NHMD. See Appendix Table C16.

Figure 3.9: CHD hospitalisation rates, by Indigenous status, age and sex, 2013–14

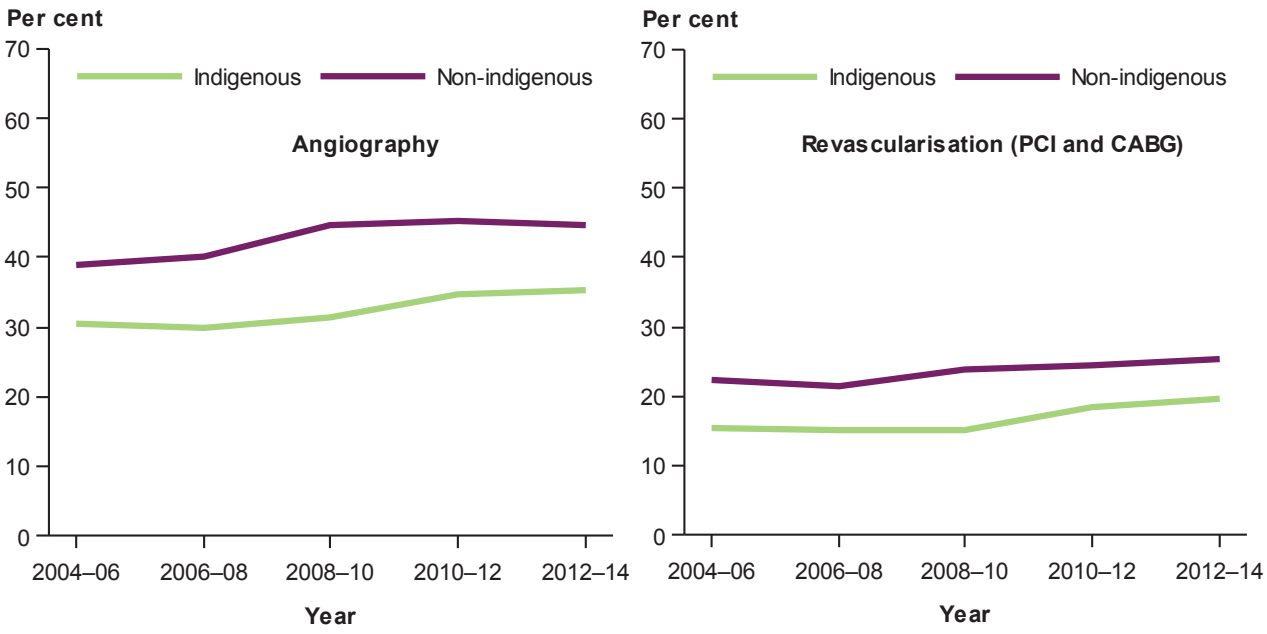
Selected hospital procedures for coronary heart disease

A number of clinical interventions—known as procedures—can be performed on hospitalised patients to diagnose or treat CHD. These include diagnostic procedures such as coronary angiography, and surgical procedures for revascularisation such as percutaneous coronary intervention (PCI) and coronary artery bypass grafting (CABG) (see Glossary).

While in hospital for CHD, Indigenous people were less likely than non-Indigenous people to undergo a coronary procedure. In 2012–14, coronary angiography was performed in 35% of Indigenous hospitalisations for CHD compared with 45% of non-Indigenous hospitalisations (Figure 3.10). Similarly, rates of PCI and CABG revascularisation were also lower among CHD hospitalisations for Indigenous people (20% compared with 25% for non-Indigenous CHD hospitalisations).

Rates of coronary procedures were lower for Indigenous people at all ages. At age 35–44, coronary angiography was performed in 37% of Indigenous hospitalisations and in 53% of non-Indigenous hospitalisations for CHD and, at age 65 and over, in 36% and 52%, respectively. Similarly, at age 35–44, revascularisation procedures were performed in 22% of Indigenous hospitalisations and in 34% of non-Indigenous hospitalisations and, at ages 65 and over, in 20% and 28%, respectively.

Rates of coronary angiography and revascularisation have increased since 2004–06 among both Indigenous and non-Indigenous people hospitalised for CHD. The gap in angiography between Indigenous and non-Indigenous people was similar in 2004–06 and 2012–14 (1.3 times as high among non-Indigenous people). The gap in revascularisation was 1.5 times as high among non-Indigenous people in 2004–06 and 1.3 times in 2012–14.



Notes

1. Rates have been age standardised to the 2001 Australian population.
2. Data are for New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory.

Source: AIHW NHMD. See Appendix Table C17.

Figure 3.10: Coronary procedures in hospitalisations for CHD, by Indigenous status, 2004–06 to 2012–14

Aboriginal and Torres Strait Australians also had lower procedure rates for ACS, which includes conditions such as heart attack and unstable angina. In 2010–13, Indigenous people with ACS were less likely to have received angiography (47% compared with 54% for non-Indigenous people) and PCI (21% compared with 33%). However, Indigenous people with ACS were more likely to have received CABG (3.1% compared with 2.6%) (AIHW 2015f).

Despite these lower procedure rates, the rate of increase in procedure rates has been greater for Indigenous people. Between 2004–05 and 2012–13, the proportion of Indigenous people with ACS who received angiography or a revascularisation procedure increased from 29% to 51%, compared with an increase from 48% to 57% among non-Indigenous people.

Cardiac surgery among Indigenous patients generally occurs at a younger age than for non-Indigenous patients, and Indigenous people often present with more advanced disease and other comorbidities (Wiemers et al. 2014).

Some reasons for lower rates of coronary procedures during CHD hospital admission for Indigenous people include the following: a lesser likelihood of transfer to metropolitan hospitals where many of these procedures take place, a greater burden of comorbid conditions such as diabetes, later presentation to hospital (which can affect treatment options), and lower rates of private health insurance coverage (AHMAC 2015; Lopez et al. 2014).

Other studies have indicated that differences in procedures rates cannot be explained by place of residence alone, and rates of thrombolysis (an appropriate second-line alternative to PCI) and revascularisation procedures among Indigenous people are still lower in some settings than for other Australians living in the same area or accessing the same services (AIHW 2015f).

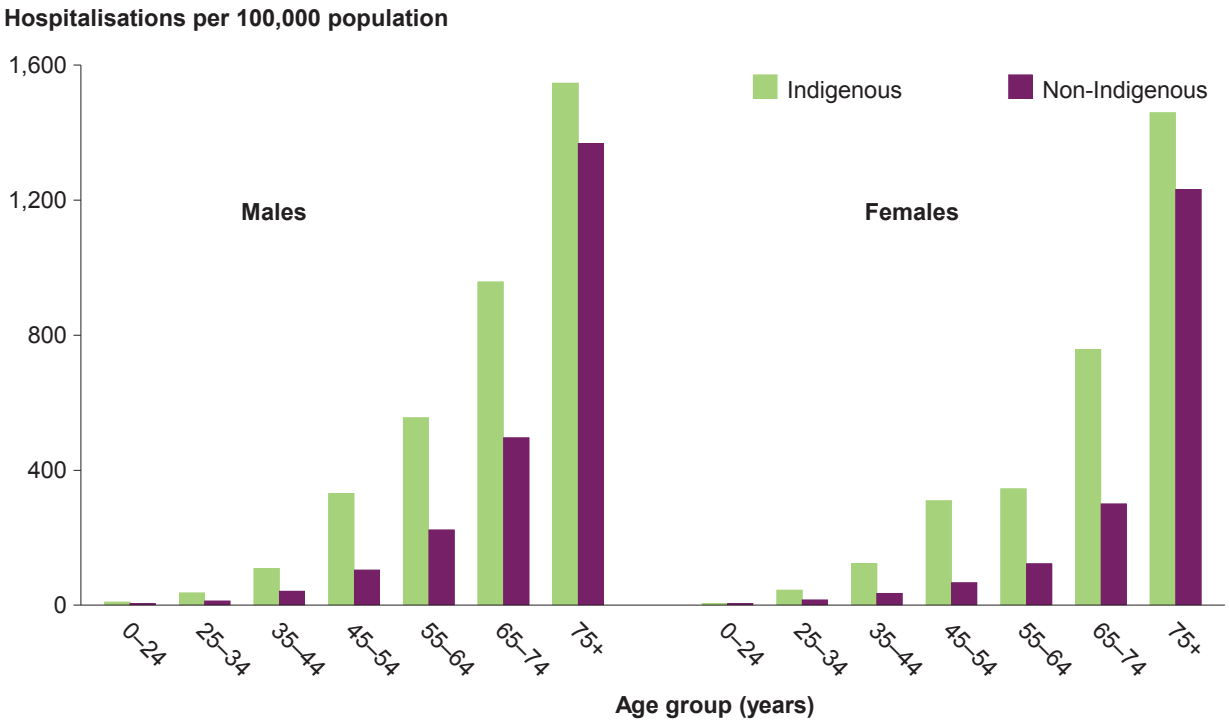
Stroke

In 2013–14, there were 838 Indigenous hospitalisations recorded with a principal diagnosis of stroke, at a rate of 271 hospitalisations per 100,000 population.

Stroke hospitalisation rates were higher for Indigenous males than females (296 and 250 per 100,000 population, respectively). Rates were considerably higher among older age groups for both males and females—for age 75 and over, the hospitalisation rate of stroke for Indigenous people was 1.8 times as high as that for age 65–74.

Indigenous people were hospitalised for stroke at overall twice the rate of non-Indigenous people (271 compared with 138 hospitalisations per 100,000 population), with rates higher across all age groups. The gap between Indigenous and non-Indigenous people was greatest at age 45–54, being almost 4 times as high (319 compared with 84 hospitalisations per 100,000 population); it reduced to 1.2 times as high in the 75 and over age group (1,495 compared with 1,290 hospitalisations per 100,000 population) (Figure 3.11).

Providing evidence-based stroke care for Indigenous patients will increase their opportunities for optimal health outcomes (Kilkenny et al. 2013).



Source: AIHW NHMD. See Appendix Table C18.

Figure 3.11: Stroke hospitalisation rates, by Indigenous status, age and sex, 2013–14

Cardiovascular deaths among Indigenous people

CVD is the leading cause of death in the Aboriginal and Torres Strait Islander population.

Deaths from CVD represented 25% of all deaths among Indigenous people in 2010–12, compared with 31% among non-Indigenous people.

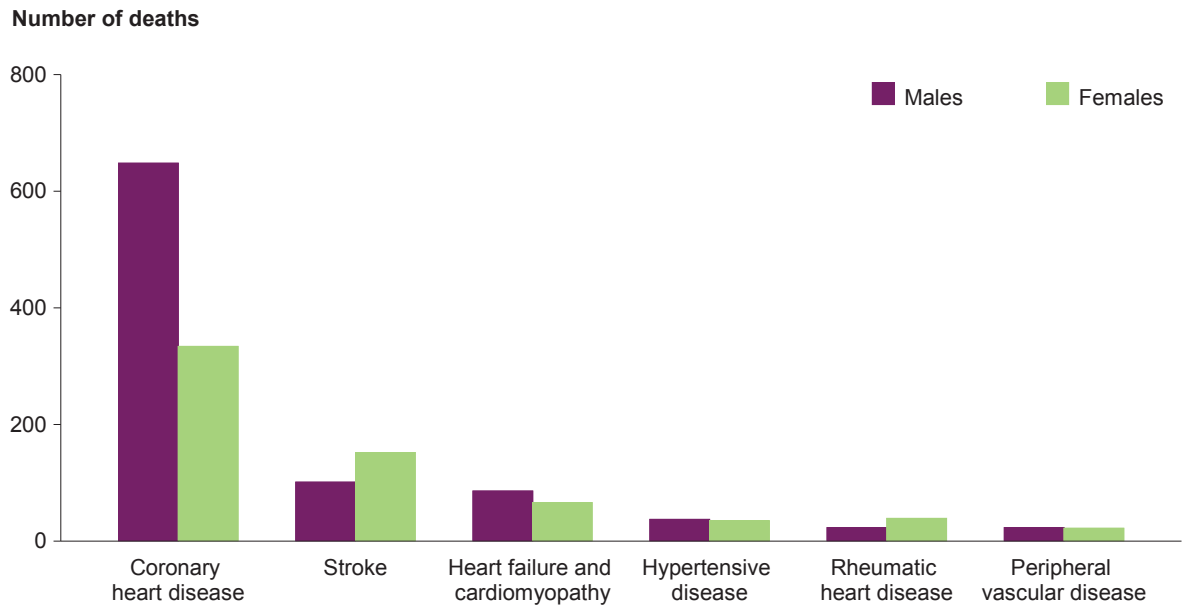
In 2010–12, 1,806 Indigenous deaths had CVD recorded as the underlying cause of death—the disease or injury that initiated the sequence of events leading directly to death—in the five jurisdictions with adequate Indigenous identification (New South Wales, Queensland, Western Australia, South Australia and the Northern Territory; see Appendix A). The age-standardised CVD mortality rate for Indigenous people was 1.5 times that for non-Indigenous people (280 and 183 deaths per 100,000 population, respectively).

Major causes

In 2010–12, CHD was the underlying cause of more than half of CVD deaths in Indigenous people (54%, 982 deaths) followed by stroke (14%, 253 deaths), heart failure and cardiomyopathy (8%, 152 deaths), hypertensive disease (4%, 72 deaths) and peripheral vascular disease (2%, 45 deaths) (Figure 3.12).

Indigenous Australians are much more likely to die from ARF and RHD than non-Indigenous Australians (Colquhoun et al. 2015). In 2010–12, ARF/RHD caused 3% of cardiovascular deaths (61 deaths) among Indigenous people, compared with less than 1% of non-Indigenous CVD deaths.

Deaths from CHD were more common among Indigenous males than females, while stroke and RHD were more common among Indigenous females.



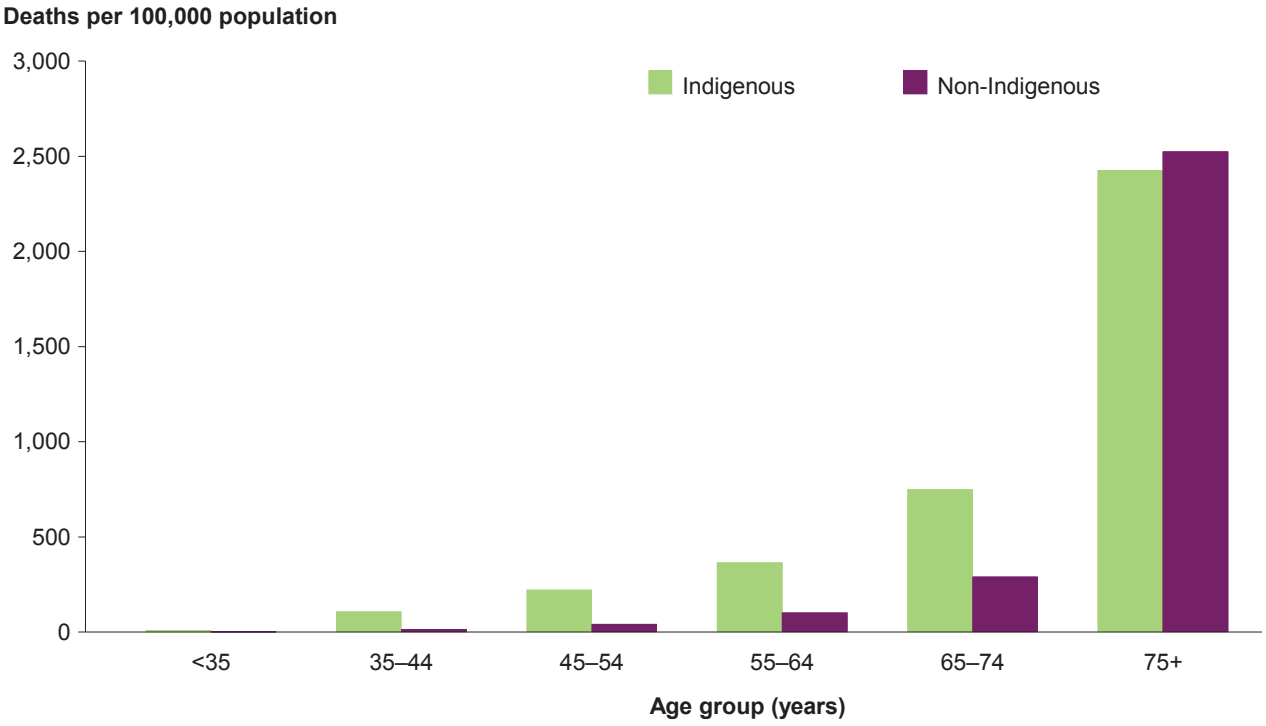
Note: Data are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.
Source: AIHW National Mortality Database. See Appendix Table C19.

Figure 3.12: Major causes of CVD deaths among Indigenous people, by sex, 2010–2012

Age

Gaps in CVD death rates between Indigenous and non-Indigenous people were widest for younger age groups. In 2010–12, the death rate in Indigenous people aged 35–44 was 8 times as high as that for non-Indigenous people (106 and 14, respectively, per 100,000 population), reducing to 4 times as high for the 55–64 age group (364 and 100, respectively, per 100,000 population). At age 75 and over, rates were similar (2,425 and 2,524, respectively, per 100,000 population).

CVD death rates increase substantially in older age groups for both the Indigenous and non-Indigenous populations (Figure 3.13). However, there are clear differences in the age profile, with a greater proportion of deaths occurring at younger ages in the Indigenous population. In 2010–12, almost 3 in 5 Indigenous deaths from CVD occurred under age 65 (1,054 deaths from a total of 1,806), compared with 10% of deaths in the non-Indigenous population (9,359 deaths from a total of 94,171).



Note: Data are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.
Source: AIHW National Mortality Database. See Appendix Table C20.

Figure 3.13: Cardiovascular death rates, by Indigenous status and age, 2010–2012

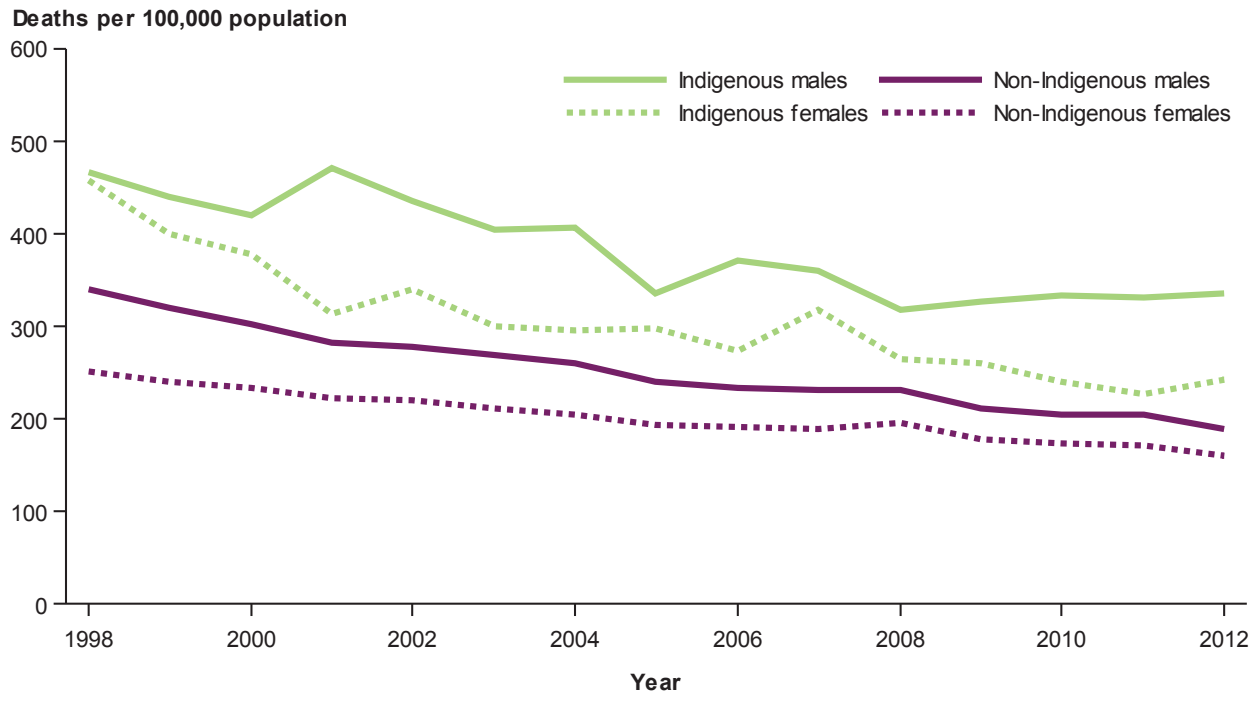
Trend

Between 1998 and 2012, CVD death rates declined substantially in both the Indigenous and non-Indigenous populations (a fall of 40% and 38%, respectively) (Figure 3.14).

The CVD mortality gap between Indigenous and non-Indigenous people reduced from an estimated 148 deaths per 100,000 in 1998 to 85 deaths per 100,000 in 2012. However, Indigenous CVD rates are still around 1.5 times as high as non-Indigenous rates.

Indigenous females experienced a larger decline in death rates than non-Indigenous females (46% and 34%, respectively). The decline for Indigenous males was smaller than for non-Indigenous males (33% and 43%, respectively).

Broadly, improvements in cardiovascular mortality in all populations in recent decades can be attributed in about equal measure to improved diagnosis and treatment, as well as to reductions in rates of smoking and high blood pressure (Ford & Capewell 2011; Taylor et al. 2006). However, levels of modifiable risk factors—such as overweight and obesity, along with diabetes—remain a threat to further improvements in both Indigenous and non-Indigenous populations.



Notes

1. Rates have been age standardised to the 2001 Australian population.
2. Data are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.

Source: AIHW National Mortality Database.

Figure 3.14: Trends in cardiovascular death rates, by Indigenous status and sex, 1998–2012

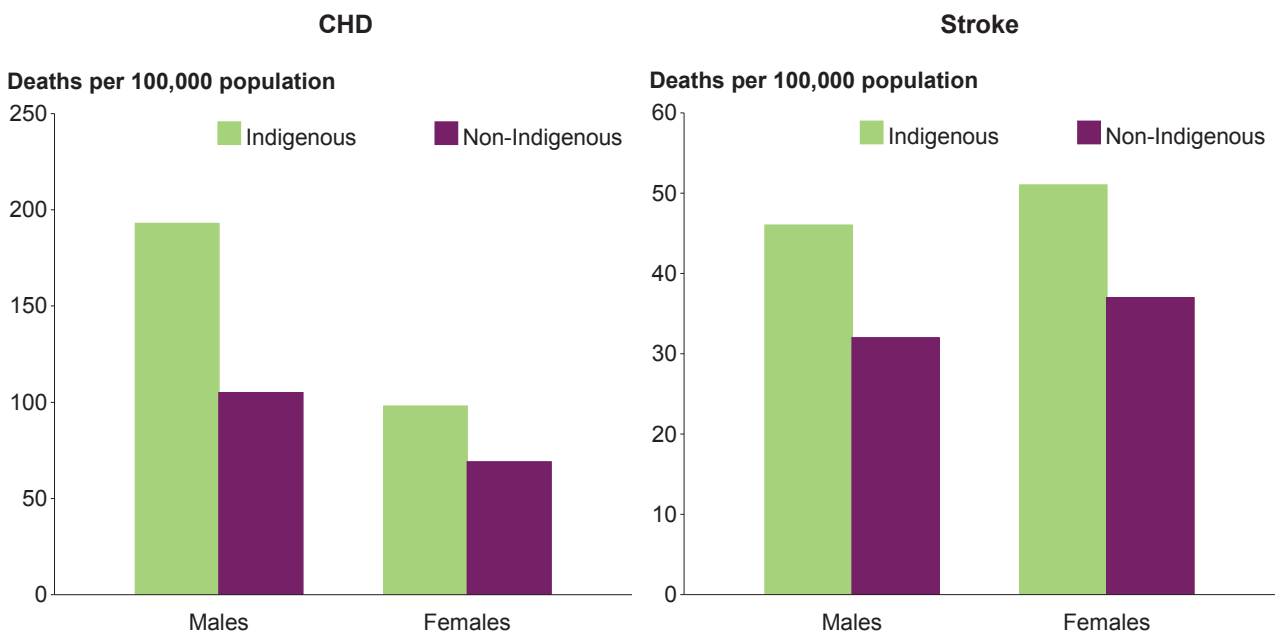
Coronary heart disease

CHD, including heart attack, is the most common cause of cardiovascular deaths. In 2010–12, CHD was the underlying cause of death for 982 Aboriginal and Torres Strait Islander people (648 male and 334 female) in the five jurisdictions with adequate identification of Indigenous status.

The CHD death rate for Indigenous people was 1.6 times as high as that for non-Indigenous people (141 and 86 deaths per 100,000 population, respectively). CHD death rates for Indigenous males and females were 1.8 and 1.4 times as high as those for their non-Indigenous counterparts (Figure 3.15).

The gap in CHD death rates was greater at younger ages. At age 35–44, the Indigenous rate was 10 times as high as the non-Indigenous rate (62 compared with 6 per 100,000 population); at age 55–64, the rate was 4 times as high (219 compared with 58 per 100,000 population); at age 75 and over, rates were similar (1,059 and 1,143 per 100,000 population).

Between 1998 and 2012, the CHD death rate in Indigenous people declined by 48%, similar to the 49% decline for non-Indigenous people. The decline for Indigenous females (59%) was greater than for Indigenous males (38%).



Notes

1. Rates have been age standardised to the 2001 Australian population.
2. Data are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.

Source: AIHW National Mortality Database. See Appendix tables C21 and 22.

Figure 3.15: CHD and stroke death rates, by Indigenous status and sex, 2010–2012

Stroke

In 2010–2012, 253 Aboriginal and Torres Strait Islander people died from stroke in the five jurisdictions with adequate identification of Indigenous status. The stroke death rate for Indigenous people was 1.4 times as high as that for non-Indigenous people (49 compared with 35 deaths per 100,000 population; Figure 3.15).

The gap was greater at younger ages. At age 55–64, the stroke death rate for Indigenous people was 3.6 times as high as that for non-Indigenous people (51 and 14 deaths per 100,000 population, respectively), and at age 65–74 it was 1.9 times as high (92 and 49 deaths per 100,000 population, respectively). At age 75 and over—the age at which most stroke deaths occur—rates were similar (565 and 504 deaths per 100,000 population, respectively) (Appendix Table C22).

Between 1998 and 2012, the decline in stroke death rates was larger for Indigenous than non-Indigenous people (41% and 34%, respectively). Further, the decline was larger for Indigenous females (45%) than for Indigenous males (29%).

4 Diabetes

Diabetes is recognised as one of the most important health problems currently facing Aboriginal and Torres Strait Islander people (Close the Gap Steering Committee 2015). The condition impacts on a range of health problems, disability, quality of life and premature death, particularly when it is not well managed. With prevalence rates for the Indigenous population being more than 3 times those of the non-Indigenous population, diabetes is responsible for more than one-tenth (12%) of the health gap between Indigenous and non-Indigenous people (Vos et al. 2007).

The most common form, type 2 diabetes, occurs at earlier ages in the Indigenous population, and often remains undetected and untreated. Indigenous people with type 2 diabetes tend to have higher levels of risk factors such as smoking and elevated blood glucose levels, and a greater likelihood of other conditions and complications, including diseases of the small blood vessels, peripheral artery disease, lower extremity amputation and CKD (Davis et al. 2012; Maple-Brown et al. 2008).

Box 4.1: What is diabetes?

Diabetes mellitus is a chronic disease marked by high levels of glucose in the blood. It is caused either by the inability to produce insulin (a hormone produced by the pancreas to control blood glucose levels), by the body not being able to use insulin effectively, or both.

The main types of diabetes are as follows: *type 1 diabetes*—an autoimmune disease that usually has its onset in childhood or early adulthood but can be diagnosed at any age; *type 2 diabetes*—largely preventable, usually associated with modifiable risk factors and with later onset; and *gestational diabetes*—when higher than normal blood glucose is diagnosed in pregnancy.

Diabetes may progress to a range of health complications, including heart disease, stroke, kidney disease, retinopathy (loss of vision), heart failure and limb amputation.

While the exact cause of type 1 diabetes is unknown, it is believed to be caused by an interaction of genetic predisposition and environmental factors. Type 2 diabetes is largely preventable by maintaining a healthy lifestyle—a number of factors are known to increase the risk of developing diabetes, including physical inactivity, poor diet, overweight and obesity, tobacco smoking, high blood pressure and dyslipidaemia.

For more information on the data sources used to report on diabetes in this chapter—in particular, how diabetes was measured in the AHS and the AATSIHS—refer to Appendix B.

How many Indigenous people have diabetes?

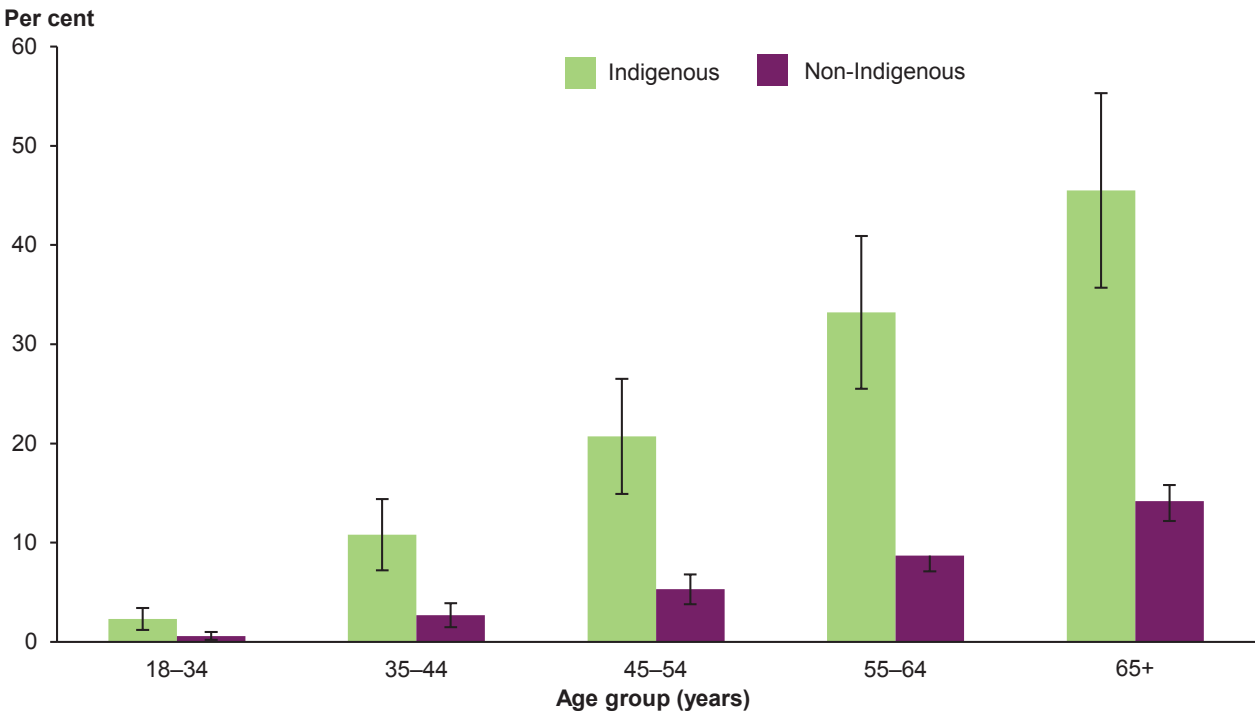
Age

Results from the 2012–13 NATSIHMS indicate that around 1 in 8 Indigenous adults (12.6%, or 46,200 people) had diabetes, based on self-report and measured results. Diabetes was more common in Indigenous females than males (56% and 44%, or 25,900 and 20,300, respectively).

Approximately 2% of the adult Indigenous population did not self-report that they had diabetes, which may indicate that they were unaware they had the condition, compared with 10.6% of the Indigenous population who were aware of and self-reported their diabetes.

Based on self-reported and measured results, Indigenous adults were 3.5 times as likely to have diabetes as non-Indigenous adults (18% compared with 5%, after adjusting for differences in the age structures between the populations). Across all age groups, the Indigenous rate was 3–4 times as high as the non-Indigenous rate.

The prevalence of diabetes among Indigenous adults increased with age, from 2% of adults aged 18–34 to 46% of adults aged 65 and over (Figure 4.1).



Notes

1. Includes pregnant women.
2. Diabetes prevalence is derived using a combination of HbA1c test results and self-reported information on diabetes diagnosis and medication use. See Appendix B for further information.

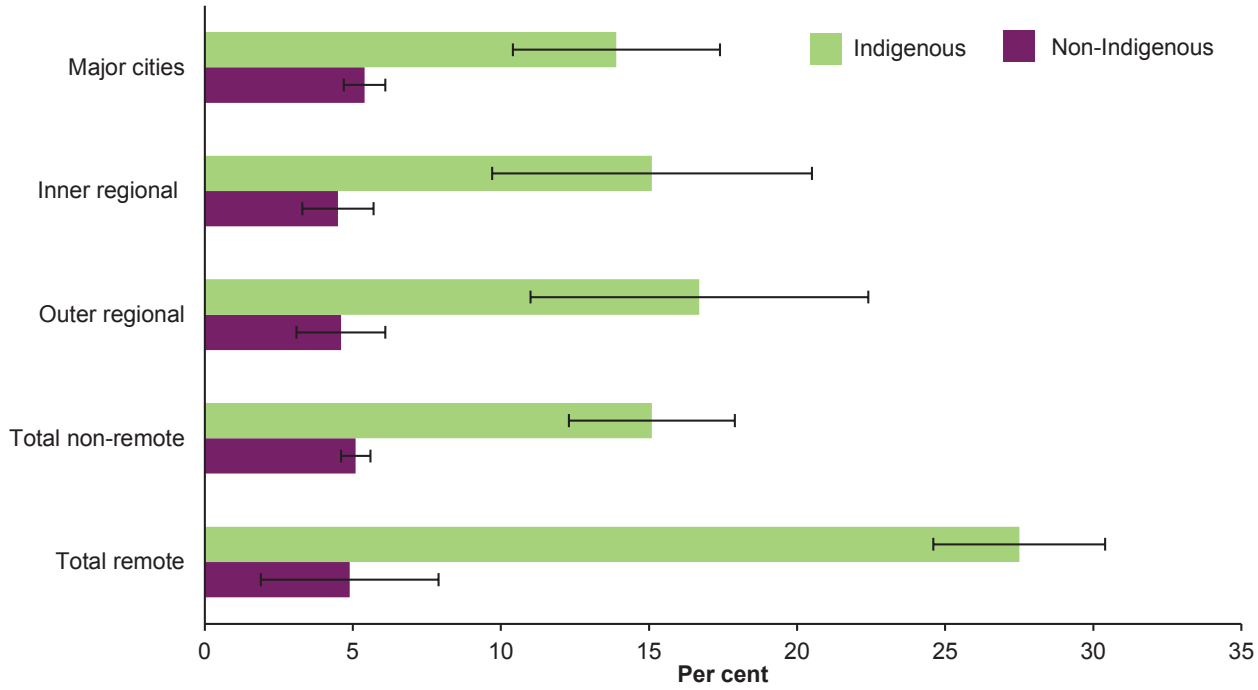
Source: AIHW analysis of unpublished data from the 2011–12 NHMS and the 2012–13 NATSIHMS. See Appendix Table C23.

Figure 4.1: Prevalence of diabetes based on self-reported and measured HbA1c results among persons aged 18 and over, by Indigenous status and age, 2011–13

Remoteness

In 2012–13, diabetes was almost twice as prevalent among Indigenous adults living in Remote areas (28%) as among those living in Non-remote areas (15%) (Figure 4.2).

The gap in diabetes prevalence rates between Indigenous and non-Indigenous people is far greater in Remote areas than in Non-remote areas— 6 times as high in Remote areas (28% and 4.9%, respectively) compared with 3 times as high in Non-remote areas (15% and 5.1%, respectively).



Notes

1. Rates are age standardised to the 2001 Australian population.
2. Diabetes prevalence is derived using a combination of HbA1c test results and self-reported information on diabetes diagnosis and medication use. See Appendix B for further information.
3. 'Total remote' comprises *Remote* and *Very remote*.

Source: AIHW analysis of unpublished data from the 2011–12 NHMS and the 2012–13 NATSIHMS. See Appendix Table C23.

Figure 4.2: Prevalence of diabetes based on self-reported and measured HbA1c results among persons aged 18 and over, by Indigenous status and remoteness, 2011–13

Box 4.2: Incidence of type 1 diabetes among Aboriginal and Torres Strait Islander people

Type 1 diabetes is an autoimmune disease requiring management with insulin to ensure blood glucose levels remain within a recommended range. It is the most common form of diabetes in children and young people, although it can occur at any age.

From 2005–2013, 489 Indigenous people diagnosed by a health professional with type 1 diabetes were registered on the National (insulin-treated) Diabetes Register, at a rate of 7 new cases per 100,000 population. This was lower than the non-Indigenous rate of 10 per 100,000 (AIHW 2015c).

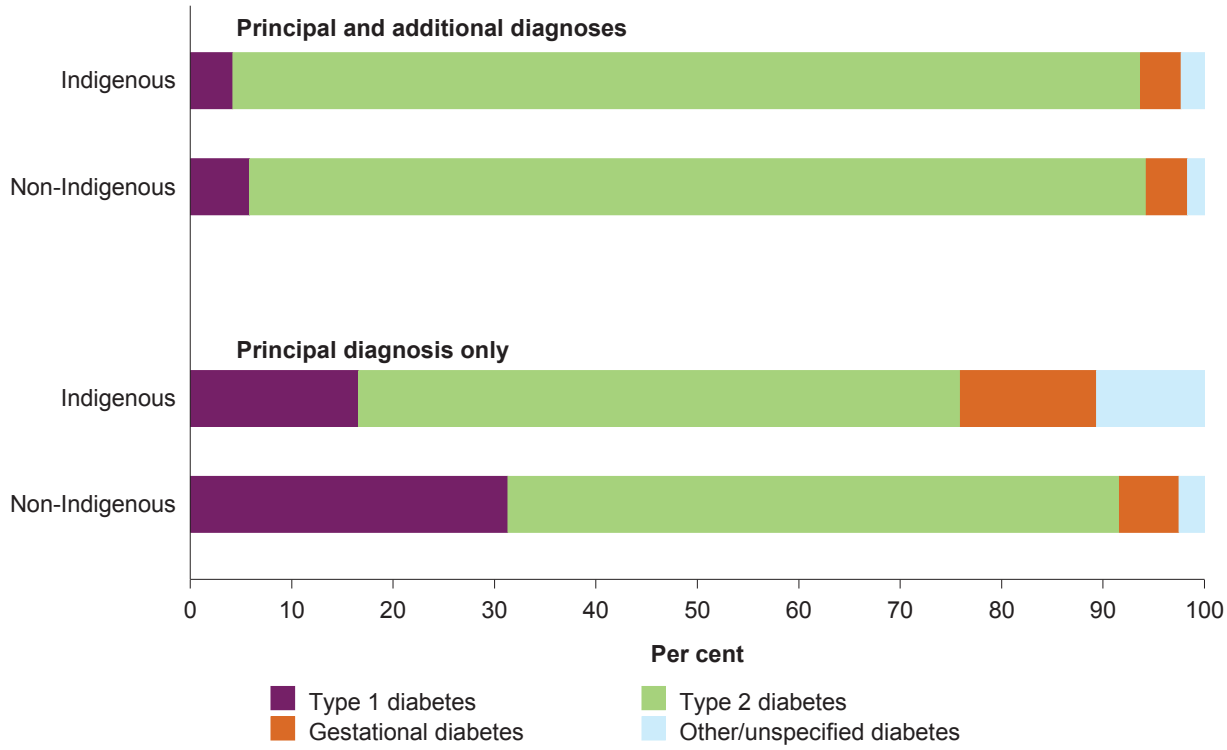
Hospital care for diabetes

Hospital services may be required to treat the advanced stages of diabetes complications, which can include heart disease, stroke and kidney disease as well as foot, eye and nerve problems. People with diabetes may also be hospitalised when their blood glucose levels are unstable.

However, diabetes is often not the principal diagnosis—the diagnosis chiefly responsible for occasioning the patient's hospitalisation. When diabetes is mentioned on a hospital record, it is generally recorded as an additional diagnosis, these being conditions or complaints either coexisting with the principal diagnosis or arising during the hospitalisation and requiring the provision of care. Since July 2012, Australian Coding Standards rules specify that diabetes always be coded when documented in the medical record, regardless of whether it impacts on the patient's management or care (NCCC 2012).

In 2013–14, there were 52,048 hospitalisations of Indigenous people where diabetes was either the principal diagnosis or an additional diagnosis. These represent 13% of total Indigenous hospitalisations, compared with 9% in the non-Indigenous population.

Of these, 90% were for type 2 diabetes, 4% for type 1 diabetes, 4% for gestational diabetes and 2% for other or unspecified diabetes. The distribution of diabetes type for Indigenous people was similar to that for non-Indigenous people (Figure 4.3).



Source: AIHW NHMD. See Appendix Table C24.

Figure 4.3: Proportion of diabetes hospitalisations, by Indigenous status and type of diabetes, 2013–14

In 2013–14, there were 3,766 hospitalisations of Indigenous people where diabetes was the principal diagnosis. Indigenous people were more likely than non-Indigenous people to have diabetes recorded as their principal cause of admission (7.2% of hospitalisations recording diabetes, compared with 4.7% among non-Indigenous people).

Of the 3,766 hospitalisations where diabetes was the principal diagnosis, type 2 diabetes accounted for 59% of hospitalisations, followed by type 1 diabetes (17%), gestational diabetes (13%) and other and unspecified diabetes (11%). The distribution of principal diagnosis by diabetes type for Indigenous people differs from that for non-Indigenous people—a smaller proportion of Indigenous hospitalisations are for type 1 diabetes, and a greater proportion for gestational and other and unspecified diabetes.

Type 1 diabetes

In 2013–14, there were 2,206 hospitalisations of Indigenous people where type 1 diabetes was recorded as a principal or additional diagnosis.

Indigenous hospitalisation rates for type 1 diabetes as a principal or additional diagnosis were twice as high as those for non-Indigenous people (400 compared with 218 per 100,000 population).

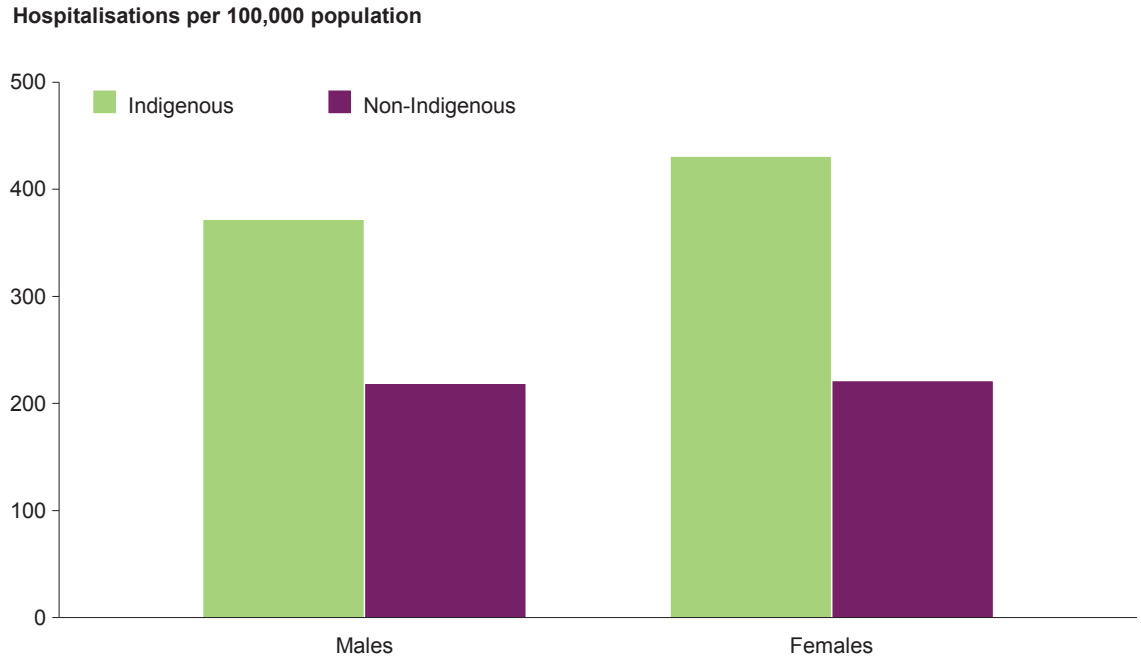
Sex and age

In 2013–14, there were 969 male and 1,237 female hospitalisations where type 1 diabetes was either a principal or additional diagnosis among Aboriginal and Torres Strait Islander people.

Indigenous females were almost twice as likely to be hospitalised for type 1 diabetes as non-Indigenous females (430 compared with 220 per 100,000 population); correspondingly, Indigenous males were 1.7 times as likely (371 compared with 218 per 100,000 population) (Figure 4.4).

Rates of hospitalisation of Indigenous people with type 1 diabetes increased from 139 per 100,000 population at age under 25 to 947 per 100,000 population at age 55–64. The rate of type 1 diabetes for Indigenous persons aged 75 and over was lower, at 312 per 100,000 population.

Indigenous people were hospitalised for type 1 diabetes at higher rates than those for non-Indigenous people at most ages, with the gap being 3 times as high at age 55–64 (947 compared with 302 per 100,000 population). However, rates were similar at age under 25 (139 compared with 140 per 100,000 population) and age 75 and over (364 compared with 374 per 100,000 population) (Appendix Table C25).



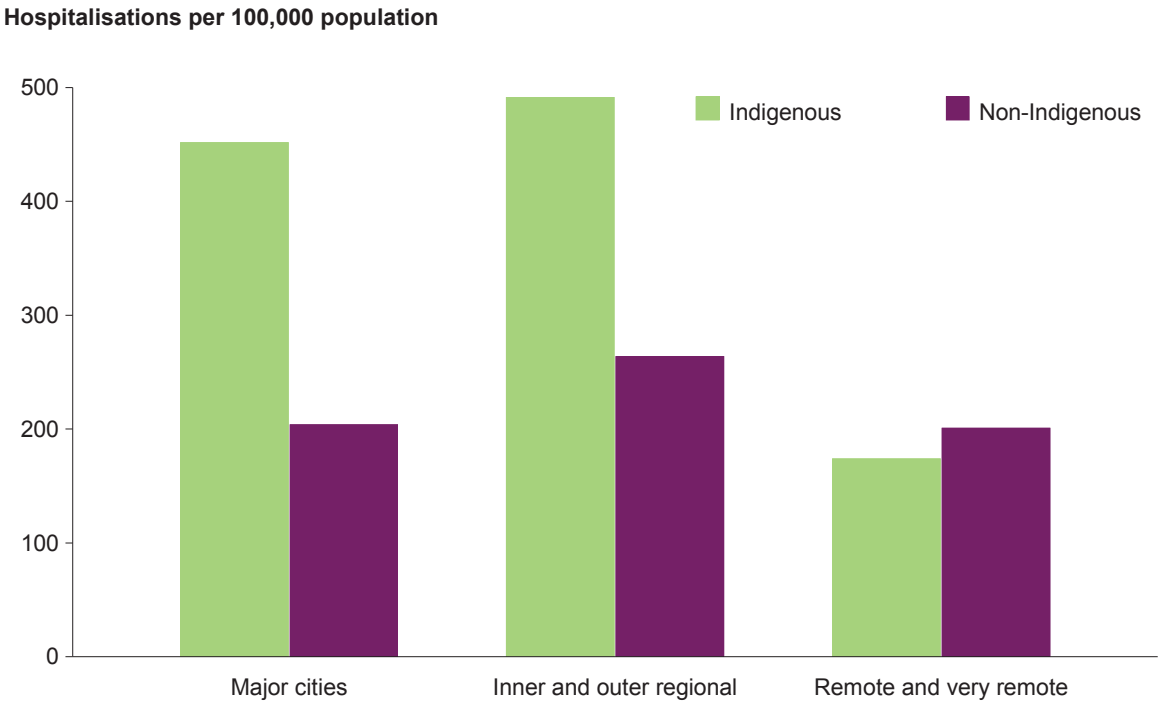
Note: Rates have been age standardised to the 2001 Australian population.
Source: AIHW NHMD. See Appendix Table C25.

Figure 4.4: Type 1 diabetes hospitalisation rates, as principal or additional diagnosis, by Indigenous status, sex, 2013–14

Remoteness

Type 1 diabetes hospitalisation rates were similar for Indigenous people living in Major cities and in Inner and outer regional areas (451 and 491 per 100,000 population, respectively). The type 1 diabetes hospitalisation rate in Remote and very remote areas (174 per 100,000 population) was less than half the rate in Major cities and Inner and outer regional areas (Figure 4.5).

There were considerable gaps between Indigenous and non-Indigenous hospitalisation rates for type 1 diabetes in Major cities (2.2 times as high among Indigenous people) and Inner and outer regional areas (1.9 times as high). The type 1 diabetes hospitalisation rates for Indigenous and non-Indigenous people living in Remote and very remote areas were similar.



Notes: Rates have been age standardised to the 2001 Australian population.
Source: AIHW NHMD. See Appendix Table C25.

Figure 4.5: Type 1 diabetes hospitalisation rates, as principal or additional diagnosis, by Indigenous status and remoteness, 2013–14

Type 2 diabetes

In 2013–14, there were 46,975 hospitalisations of Indigenous people where type 2 diabetes was recorded as a principal or additional diagnosis.

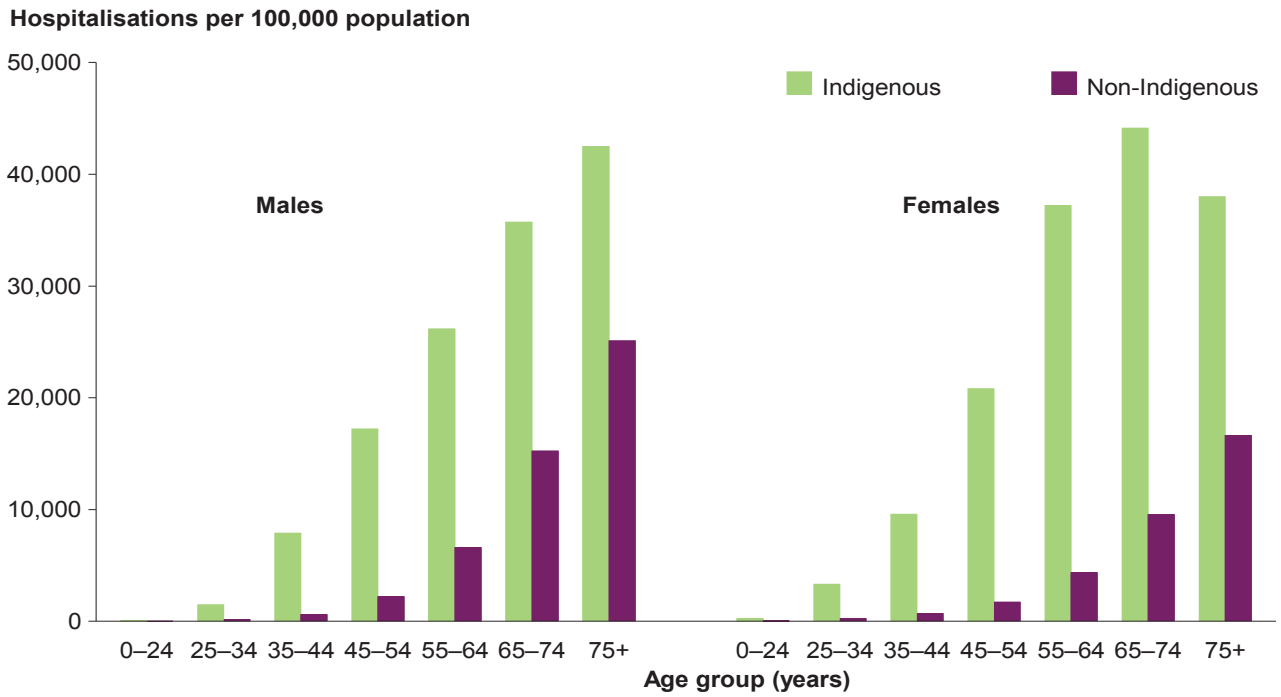
Indigenous hospitalisation rates for type 2 diabetes as a principal or additional diagnosis were 4 times as high as those of non-Indigenous people (12,426 compared with 2,915 per 100,000 population).

Sex and age

In 2013–14, there were 19,368 male and 27,607 female hospitalisations where type 2 diabetes was either a principal or additional diagnosis among Aboriginal and Torres Strait Islander people.

Indigenous females were almost 6 times as likely to be hospitalised for type 2 diabetes as non-Indigenous females (13,570 compared with 2,395 per 100,000 population), while Indigenous males were 3 times as likely (11,296 compared with 3,511 per 100,000 population).

Rates of hospitalisation of Indigenous people for type 2 diabetes increased with age (Figure 4.6). In all age groups, Indigenous people were hospitalised for diabetes at higher rates than those for non-Indigenous people. The gap between Indigenous and non-Indigenous hospitalisation rates is especially large at younger ages. Indigenous rates were around 14 times as high at ages 25–34 and 35–44 (2,385 compared with 167 per 100,000 population and 8,744 compared with 632 per 100,000 population), declining to twice as high at age 75 and over (39,818 compared with 20,220 per 100,000 population).



Source: AIHW NHMD. See Appendix Table C26.

Figure 4.6: Type 2 diabetes hospitalisation rates, as principal or additional diagnosis, by Indigenous status, age and sex, 2013–14

Remoteness

In 2013–14, Indigenous hospitalisation rates for type 2 diabetes, as the principal or additional diagnosis, were higher in Remote areas (Figure 4.7). The hospitalisation rate in Remote and very remote areas (22,000 per 100,000 population) was more than twice as high as that in Major cities and Inner and outer regional areas (both around 10,000 per 100,000 population).

Type 2 diabetes hospitalisation rates for Indigenous people living in Major cities and in Inner and outer regional areas were 3 times those for non-Indigenous people in the same areas. For Indigenous people living in Remote and very remote areas, rates were 8 times as high (22,000 compared with 2,595 per 100,000 population).

Notes: Rates have been age standardised to the 2001 Australian population.
Source: AIHW NHMD. See Appendix Table C26.

Figure 4.7: Type 2 diabetes hospitalisation rates as principal or additional diagnosis, by Indigenous status and remoteness, 2013–14

Diabetes deaths among Indigenous people

In 2010–12, diabetes was the underlying cause of death of 564 Indigenous persons in the five jurisdictions with adequate Indigenous identification, representing 8% of all Indigenous deaths. Among non-Indigenous deaths in 2010–12, 2.6% had diabetes as an underlying cause.

Of the 564 deaths of Indigenous persons in 2010–12, 28 had type 1 diabetes as the underlying cause of death, 260 had type 2 diabetes and 276 had type of diabetes unspecified.

Diabetes is rarely recorded as the main cause of death. Hence, the impact of diabetes mortality is better understood when considering deaths where diabetes was recorded as an underlying or associated cause of death. This means considering all causes listed on the death certificate (including the condition or disease initiating the sequence of event leading directly to death), the immediate cause, any intervening causes, and conditions that contributed to the death but were not related to the disease or condition causing the death (see Glossary).

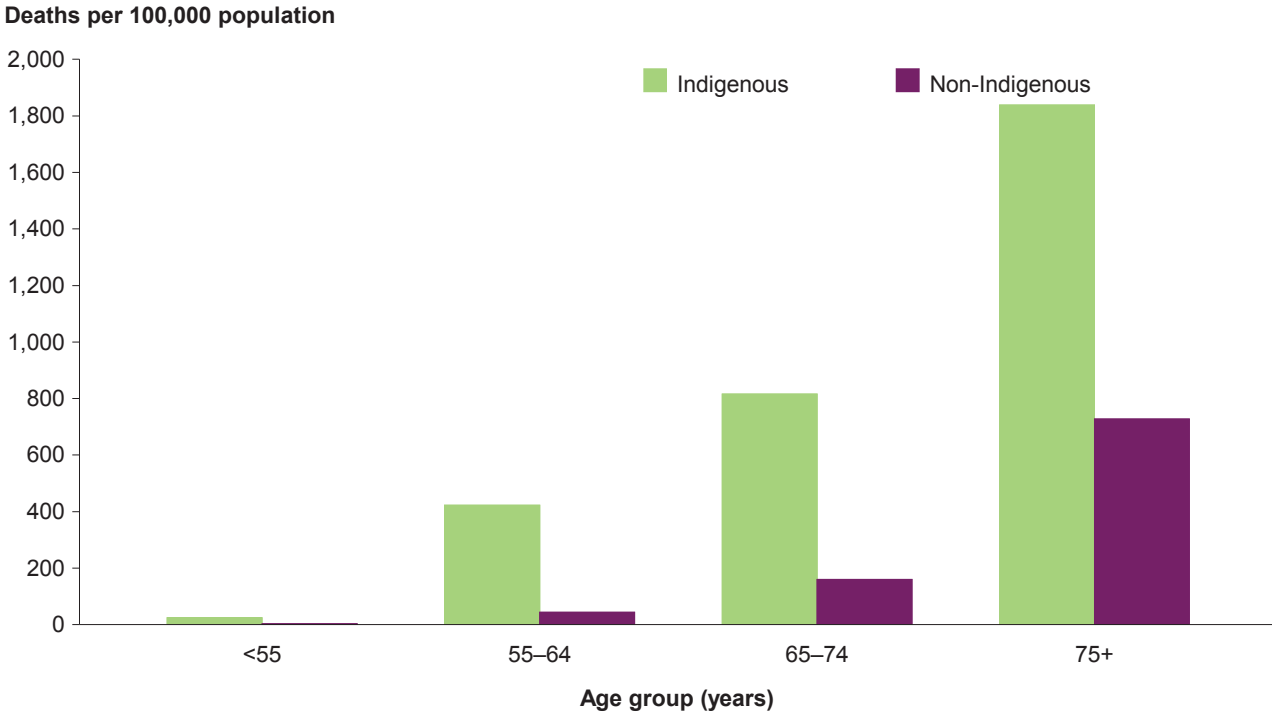
In 2010–12, 1 in 5 Indigenous deaths (1,474, or 21%) in the five jurisdictions with adequate Indigenous identification had diabetes listed as an underlying or associated cause of death, compared with 10% among non-Indigenous persons.

The death rate for Indigenous people was 4 times that of non-Indigenous people, when diabetes was the underlying or associated cause of death (235 compared with 59 deaths per 100,000 population).

Age

Death rates where diabetes was recorded as an underlying or associated cause are higher in older age groups in both the Indigenous and non-Indigenous populations (Figure 4.8).

The gap in death rates between Indigenous and non-Indigenous people was greatest in the younger age groups. Death rates at ages under 55 and 55–64 were 8 times and 10 times as high, respectively, as those of non-Indigenous age groups. At age 65–74, rates were 5 times as high, declining to 3 times as high in the 75 and over age group (1,838 and 728 deaths, respectively, per 100,000 population).



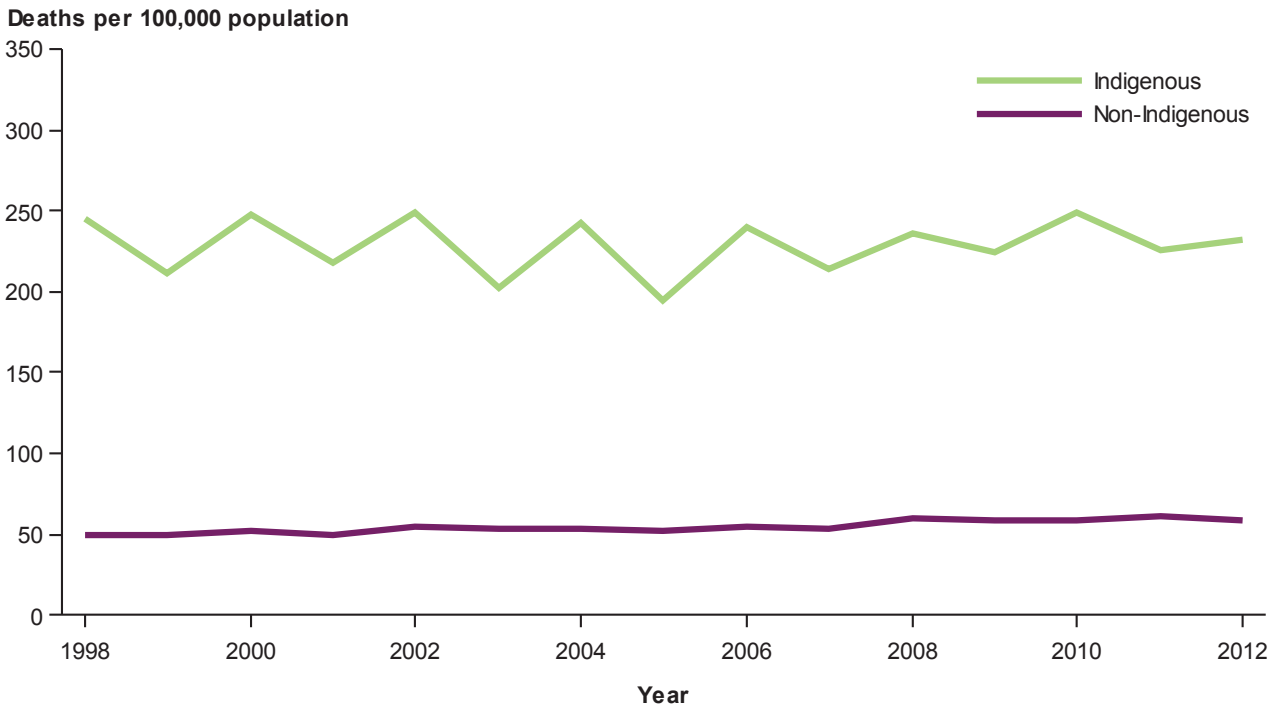
Note: Data are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.
Source: AIHW National Mortality Database. See Appendix Table C27.

Figure 4.8: Deaths with diabetes as underlying or associated cause, by Indigenous status and age, 2010–2012

Trend

Although exhibiting some annual variation, the Indigenous death rate where diabetes was recorded as an underlying or associated cause of death averaged around 230 deaths per 100,000 population between 1998 and 2012 (Figure 4.9). In the non-Indigenous population, rates remained at around 55 per 100,000 population.

The gap in death rates between Indigenous and non-Indigenous people was around 175 per 100,000 population, with little change over the 14-year period.



Notes

1. Rates have been age standardised to the 2001 Australian population.
2. Data are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.

Source: AIHW National Mortality Database.

Figure 4.9: Death rates with diabetes as underlying or associated cause, by Indigenous status and sex, 1998–2012

5 Chronic kidney disease

CKD is a serious and increasingly common health problem in Australia. People with CKD, particularly those with ESKD, often suffer poor health outcomes and reduced quality of life (see Box 5.1).

CKD among Indigenous people is multifactorial, and many of its risk factors are associated with social disadvantage and accelerated lifestyle change (Hoy et al. 1998). Indigenous people—particularly those living in remote communities—are at greater risk of developing CKD, and early kidney damage is common (AIHW 2011). CKD is often associated with low birthweight and reduced kidney functioning through inflammation and infection, and other morbidities such as diabetes and high blood pressure. Levels of CKD among Aboriginal and Torres Strait Islander people are high, with prevalence rates currently twice those of non-Indigenous people (ABS 2014a). The high disease burden among Indigenous people leads to high death rates.

Although ESKD—the most severe form of CKD—usually occurs in older age, in Indigenous people it occurs more often in middle-age. The need for dialysis, which involves strict treatment protocols and frequent treatment—normally 4-5 hour sessions three times per week for in-centre dialysis—has an extensive impact on health, lifestyle and social and emotional wellbeing, especially among Indigenous Australians living in rural and remote areas who often need to relocate to access treatment (AIHW 2011).

Box 5.1: What is chronic kidney disease?

Kidneys can be permanently damaged though acute illnesses (such as severe infection), or progressively damaged from chronic conditions such as high blood pressure or untreated diabetes. CKD refers to all kidney conditions where a person has evidence of kidney damage and/or reduced kidney function, lasting at least 3 months.

Many people do not know they have kidney disease as up to 90% of kidney function can be lost before symptoms are evident. However, simple tests of a person's urine and blood can identify most cases of CKD when the disease is in its early stages, enabling treatment to prevent or slow down its progression.

CKD is usually categorised into five stages according to the level of kidney function, or evidence of kidney damage. In stage 5, known as ESKD, patients usually need kidney replacement therapy in the form of dialysis or kidney transplant. Dialysis is an artificial way of removing waste products from the blood and is mostly provided in hospitals or satellite dialysis units, but can also be carried out at home. Some ESKD patients opt for other forms of management.

Although CKD is common, it is largely preventable as many of its risk factors—including type 2 diabetes, high blood pressure, tobacco smoking and overweight and obesity—are modifiable.

For more information on the data sources used to report on CKD in this chapter—in particular, how CKD was measured in the AHS and the AATSIHS—refer to Appendix B.

How many Indigenous people have chronic kidney disease?

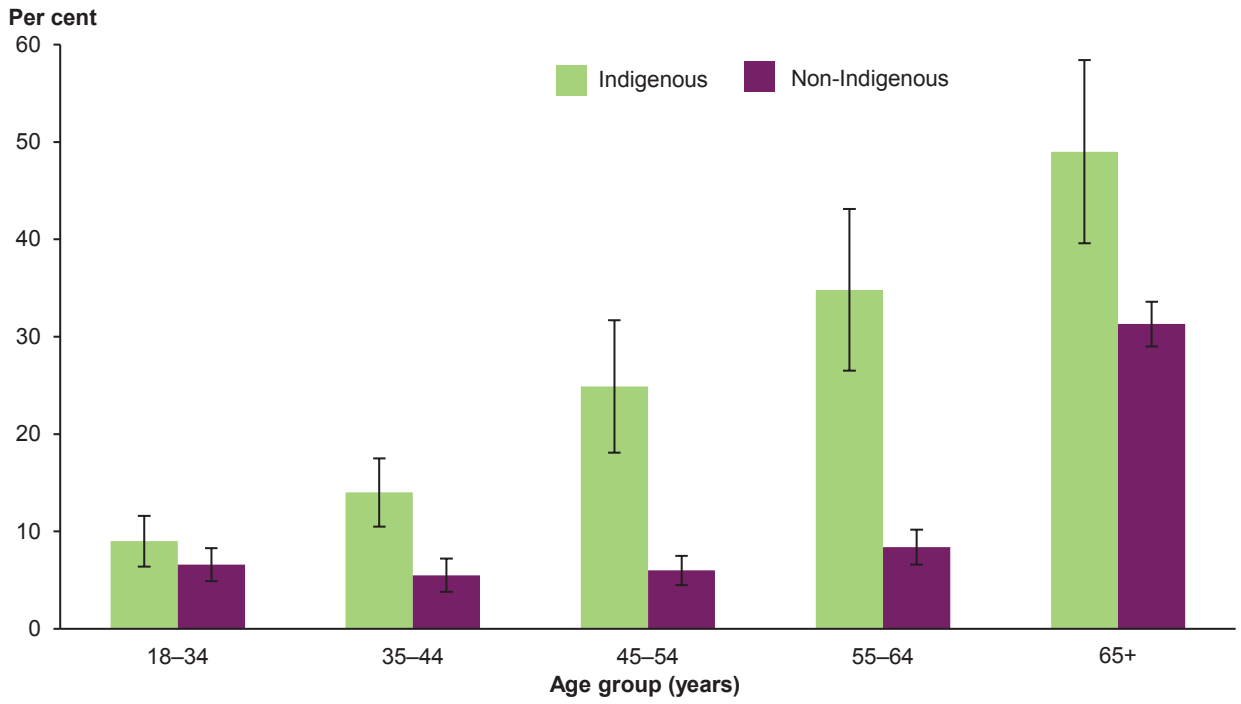
Measured results from the 2012–13 NATSIHMS indicate that an estimated 1 in 5 Indigenous adults (17.9%, or 59,600 persons) had biomedical signs of CKD (see Appendix B). Of these, 48% (28,500) were female and 52% (31,100) were male. After adjusting for age differences, Indigenous adults were twice as likely to have biomedical signs of CKD as non-Indigenous adults (22% and 10%, respectively).

Many Indigenous adults were unaware that they had CKD, reflecting that CKD remains a highly under-diagnosed condition. Of those with biomedical signs of CKD, only 11% self-reported having the condition, compared with 6% of non-Indigenous adults. These results suggest that although recognition rates are still low, Indigenous adults are more aware of their CKD than non-Indigenous adults.

Age

The prevalence of CKD increased with age from 9% of Indigenous adults aged 18–34 to 49% of adults aged 65 and over. The consistent rise in prevalence from age 18–34 in the Indigenous population is different from that for the non-Indigenous population, where CKD prevalence did not begin to increase until age 65 and over (Figure 5.1).

Indigenous adults were more likely to show biomedical signs of CKD across all age groups. The gap in prevalence rates between Indigenous and non-Indigenous Australians was 1.4 times as high in the 18–34 age group, increasing to 2–4 times as high between ages 35 and 64. This reduced to 1.6 times as high in those aged 65 and over, reflecting the considerable increase in the non-Indigenous CKD rate in this age group.



Note: CKD and its stages are derived using a combination of participants' estimated glomerular filtration rate (eGFR) results with their albumin creatinine ratio (ACR) results.

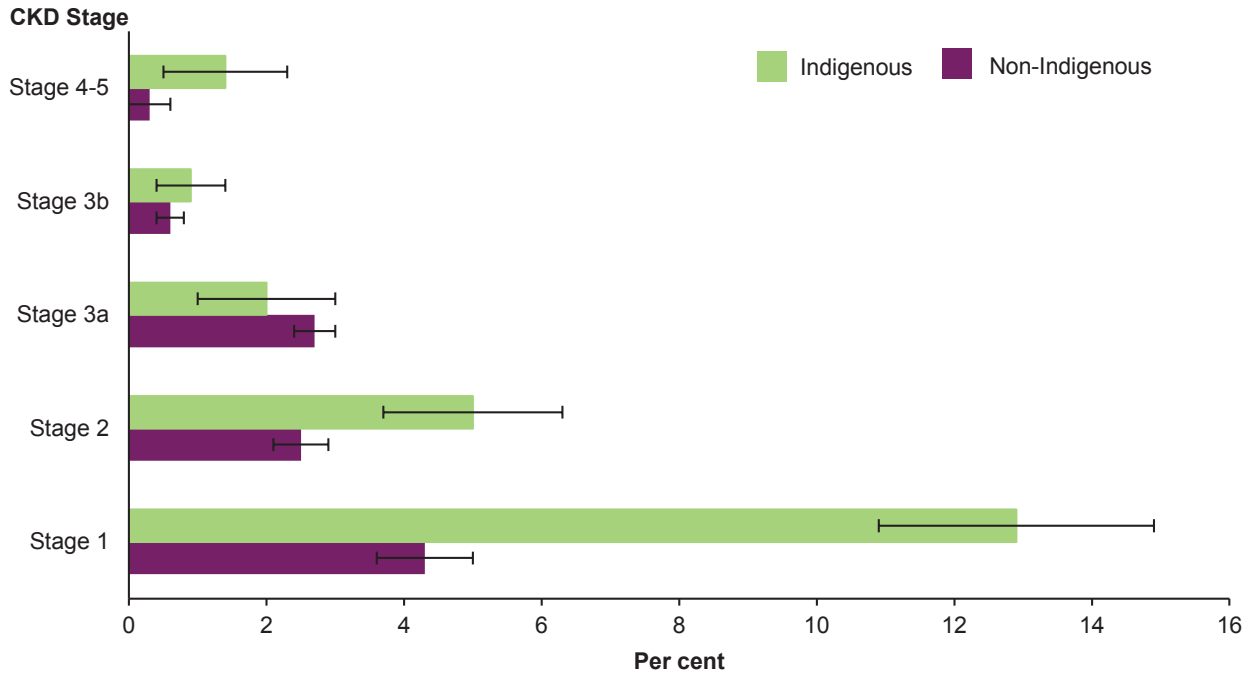
Source: AIHW analysis of unpublished data from the 2011–12 NHMS and the 2012–13 NATSIHMS. See Appendix Table C28.

Figure 5.1: Prevalence of biomedical signs of CKD among persons aged 18 and over, by Indigenous status and age, 2011–13

Stages of chronic kidney disease

CKD is categorised into five stages according to the level of reduced kidney function and evidence of kidney damage. Stages 1–3 involve kidney damage with mild–moderate or moderate–severe loss of kidney function, Stage 4 includes severe loss of kidney function and Stage 5 is ESKD (see Box B1 at Appendix B). Although an individual can move up and down through the first four stages of severity, once they have Stage 5, their kidney function generally does not improve.

Indigenous adults were 3 times as likely as non-Indigenous adults to have biomedical signs of Stage 1 CKD, and twice as likely to have biomedical signs of Stage 2 CKD (Figure 5.2). Differences in the prevalence of Stages 3, 4 and 5 CKD did not reach statistical significance.



Notes

1. Rates have been age standardised to the 2001 Australian population.
2. CKD and its stages are derived using a combination of participants' eGFR results with their ACR results. See Appendix B for more information.

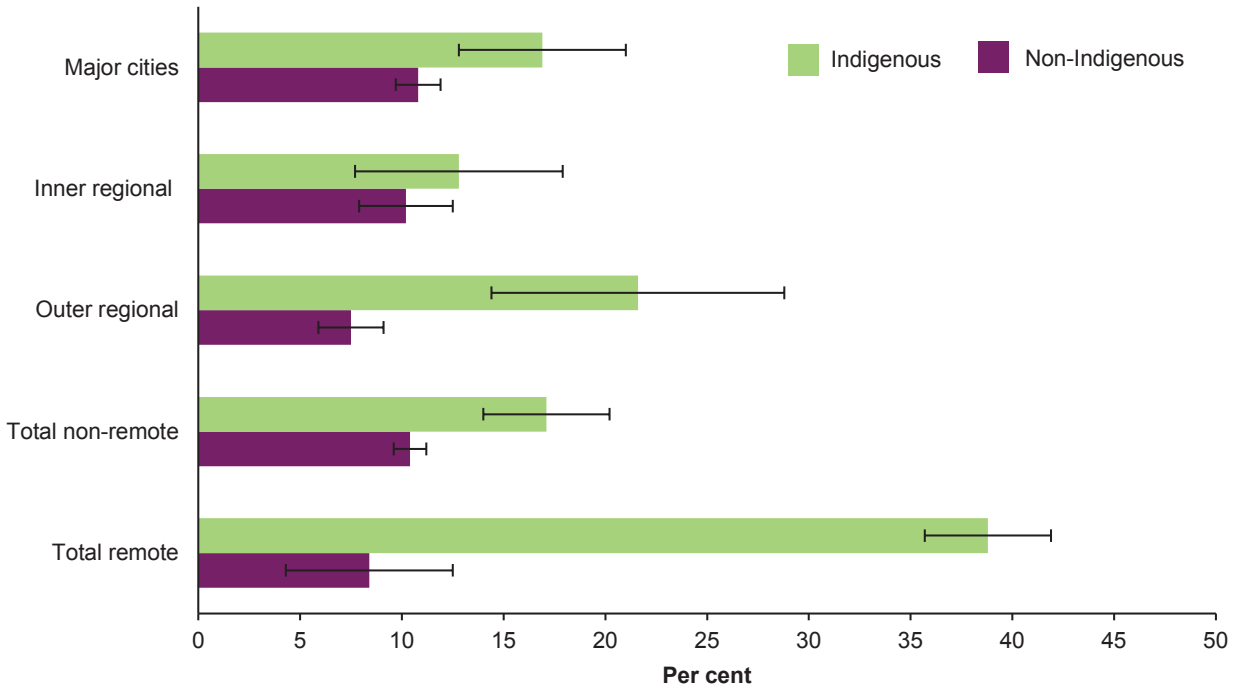
Source: ABS 2014a. See Appendix Table C29.

Figure 5.2: Prevalence of biomedical signs of CKD among persons aged 18 and over, by CKD stage and Indigenous status, 2011–13

Remoteness

Rates of CKD among Indigenous adults living in Remote areas (39%) were much higher than those for Indigenous adults living in Non-remote areas (17%) (Figure 5.3).

The rate of CKD for Indigenous Australians living in Remote areas was 4.6 times as high as that for non-Indigenous Australians (39% and 8%, respectively). The difference in Non-remote areas was considerably less (1.6 times, 17% and 10%, respectively).



Notes

1. Rates have been age standardised to the 2001 Australian population.
2. CKD and its stages are derived using a combination of participants' eGFR results with their ACR results. See Appendix B for more information.
3. 'Total remote' comprises *Remote* and *Very remote*.

Source: AIHW analysis of unpublished data from the 2011–12 NHMS and the 2012–13 NATSIHMS. See Appendix Table C28.

Figure 5.3 Prevalence of biomedical signs of CKD among persons aged 18 and over, by Indigenous status and remoteness, 2011–13

End-stage kidney disease

ESKD is the most serious form of CKD. Indigenous and non-Indigenous patients with ESKD usually require kidney replacement therapy in the form of regular dialysis or a kidney transplant in order to survive.

The number of persons with treated ESKD who were receiving dialysis or who had a kidney transplant is available through the ANZDATA Registry.

How many Indigenous people have ESKD?

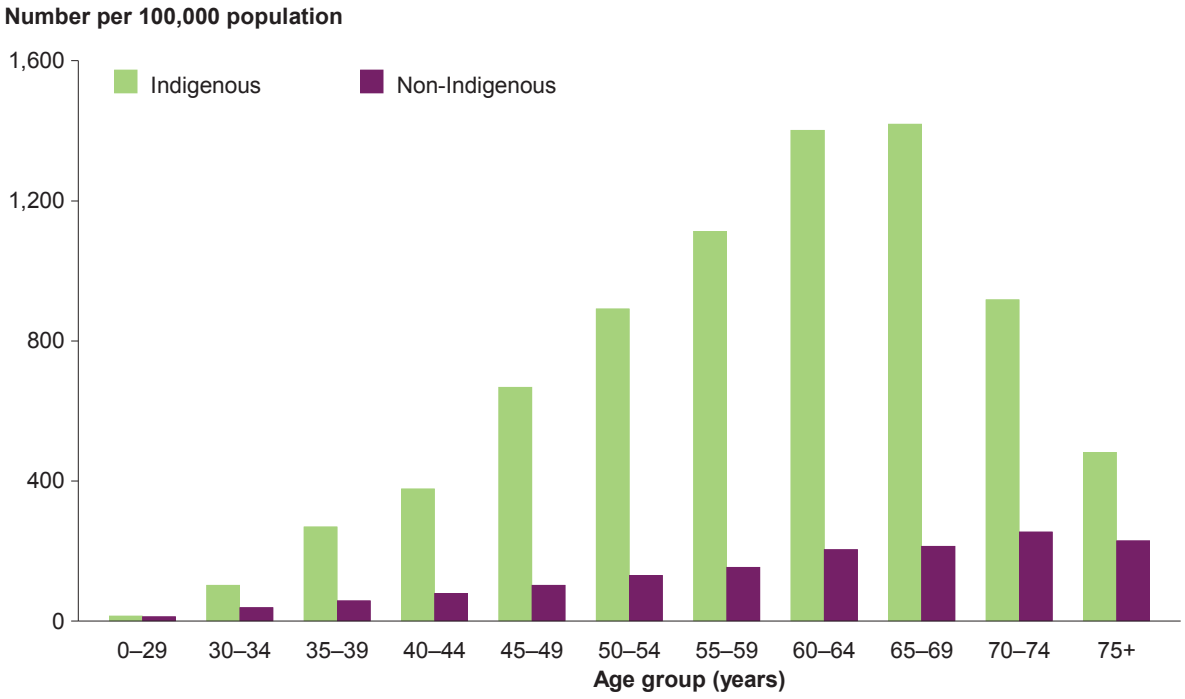
As at 31 December 2013, there were 21,319 Australians with treated ESKD on the ANZDATA Registry. Of these, 1,681 (8%) identified as Indigenous, with 919 female (55%) and 762 (45%) male. The ESKD prevalence rate for Indigenous people was 5 times that of non-Indigenous people—394 compared with 79 per 100,000 population, after taking into account differences in the age structure between the populations.

Indigenous people with treated ESKD were more likely to undergo regular dialysis than to receive a kidney transplant—88% were receiving some form of dialysis and 12% had a functioning kidney transplant. In comparison, 52% of non-Indigenous people with treated ESKD were receiving dialysis and 48% had a functioning kidney transplant (ANZDATA 2014).

Age

Prevalence rates for both Indigenous and non-Indigenous people increased steadily with age to age 65–69 (1,419 and 213, respectively, per 100,000 population). Although non-Indigenous rates of treated ESKD continued to increase to age 70–74 and then decline slightly for those aged 75 and over, Indigenous rates declined considerably after age 69, reflecting a higher rate of Indigenous mortality at these ages (Figure 5.4).

Indigenous people had consistently higher rates of treated ESKD than non-Indigenous people across all age groups. The gap in prevalence rates between Indigenous and non-Indigenous people was greatest at age 55–59, at 7 times as high.



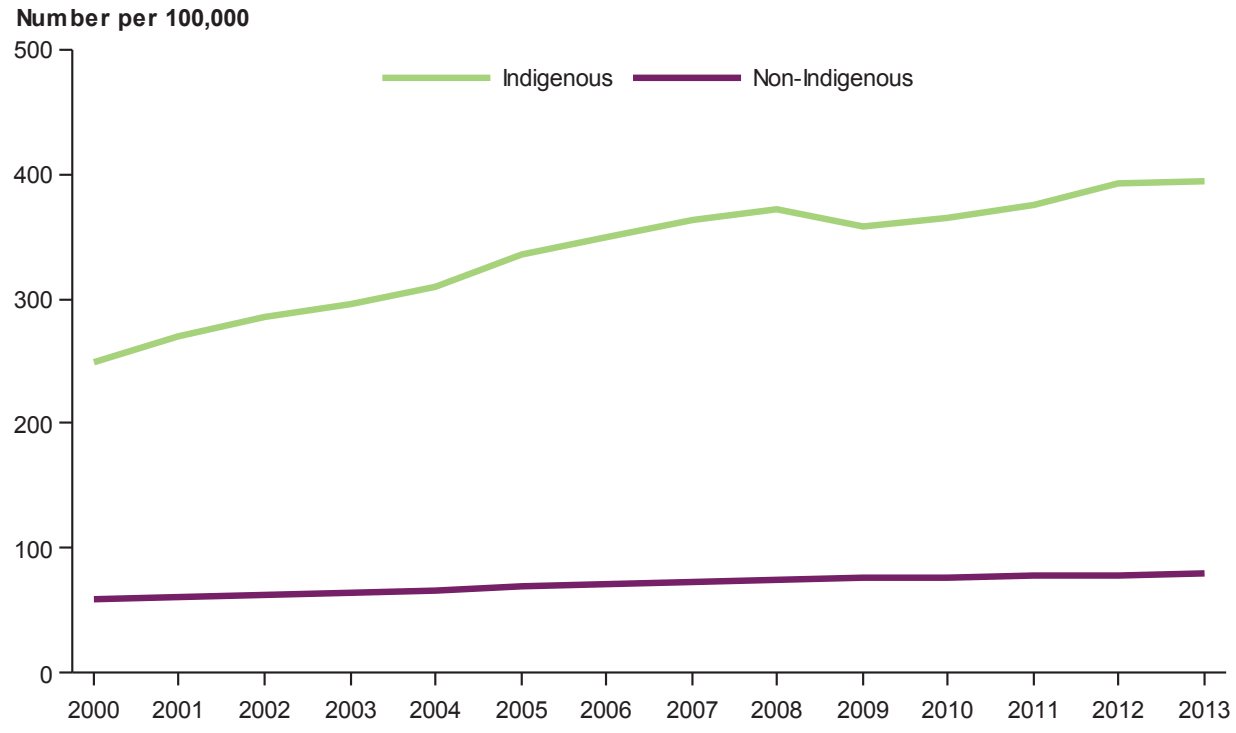
Source: AIHW analysis of ANZDATA Registry. See Appendix Table C30.

Figure 5.4: Prevalence of treated ESKD, by Indigenous status and age, 2013

Trend

The number of Indigenous people with treated ESKD has more than doubled in recent years, from 697 in 2000 to 1,681 in 2013. This compared with a 78% increase over the same period for non-Indigenous Australians.

The rate of treated ESKD has also been increasing more rapidly for the Indigenous population, from 250 to 394 per 100,000 population (a 58% increase) between 2000 and 2013. By comparison, the rate of increase for non-Indigenous Australians over the same period was 35% (Figure 5.5). The rapid increase in treated ESKD among the Indigenous population will have implications for the provision of dialysis and other treatment services, particularly among those living in remote locations.



Source: AIHW analysis of the ANZDATA Registry.

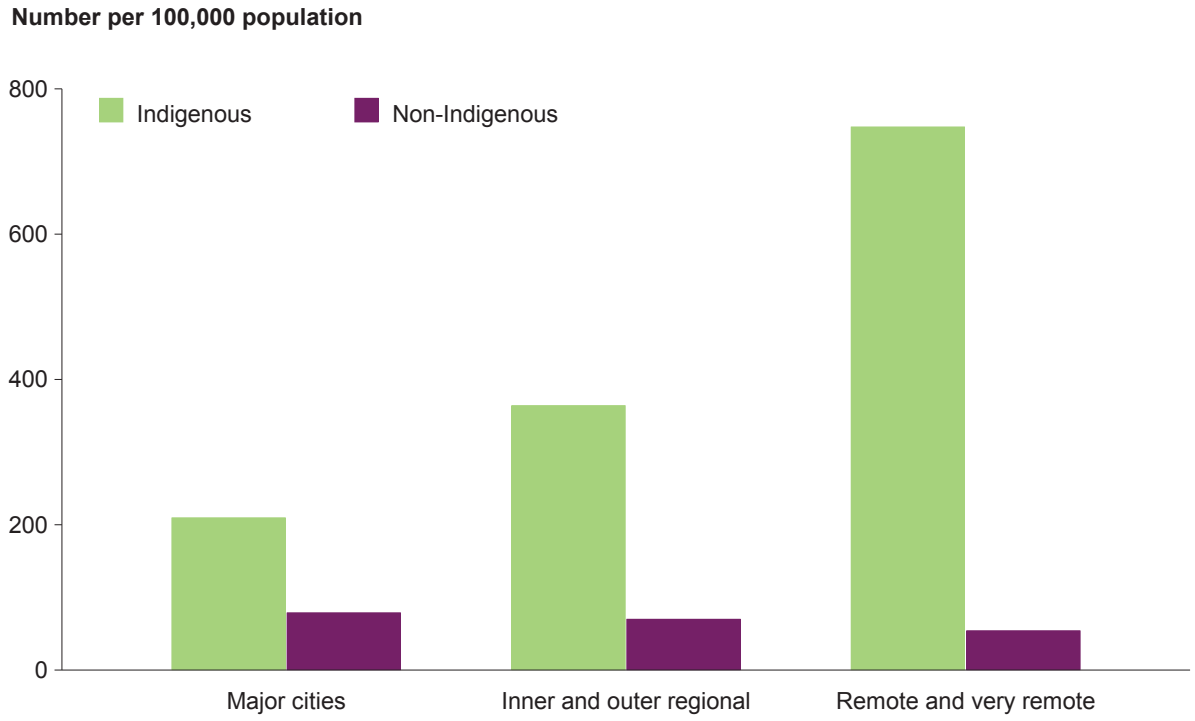
Figure 5.5: Prevalence of treated ESKD by Indigenous status, 2000–2013

Remoteness

Treated ESKD prevalence rates increased with increasing remoteness for Indigenous Australians. After taking into account differences in the age structure between the populations, rates were 1.8 times as high in Inner and outer regional areas (369 per 100,000 population) and 3.6 times as high in Remote and very remote areas (748 per 100,000 population) compared with those for Major cities (210 per 100,000 population) (Figure 5.6).

These rates measure location at time of the start of dialysis. The gradient from Major cities to Remote and very remote areas might be even more pronounced if rates were based on the community in which people lived before needing to relocate to access dialysis services.

Across all remoteness categories, the rate of ESKD among Indigenous Australians was higher than that for non-Indigenous Australians, and the gap between Indigenous and non-Indigenous Australians widens with increasing remoteness. Indigenous Australians in Major cities were 2.5 times as likely to have treated ESKD as non-Indigenous Australians; this rate increases to 5 times as likely for Inner and outer regional areas and 13 times as likely for Remote and very remote areas, respectively. This widening gap is largely due to prevalence rates for Indigenous Australians increasing with remoteness. For non-Indigenous Australians, rates decrease with remoteness—84 per 100,000 population for Major cities, 74 per 100,000 population for Inner and outer regional areas and 56 per 100,000 population for Remote and very remote areas.



Source: AIHW analysis of the ANZDATA Registry. See Appendix Table C30.

Figure 5.6: Prevalence of treated ESKD by Indigenous status and remoteness area, 2013

Hospital care for chronic kidney disease

People with CKD—and particularly those with ESKD—often require hospital services to manage and treat their condition.

In 2013–14, there were 206,000 hospitalisations of Indigenous people where CKD was recorded as the principal and/or an additional diagnosis. Dialysis accounted for the overwhelming majority—over 186,000—of hospitalisations, with most occurring on a sameday basis.

The method and location of dialysis treatment depends on a number of factors, including a person's specific clinical disease, where they live, advances in dialysis treatment, and the types of services offered in nearby hospitals or satellite kidney clinics (AIHW 2011).

Among Indigenous dialysis patients in 2013, 83% of treatment was through haemodialysis in hospital or in an associated satellite facility, with the remainder being home or community-based treatments. A smaller proportion of non-Indigenous dialysis patients (69%) received haemodialysis in hospital or in an associated satellite facility (ANZDATA 2015).

Dialysis treatment is the most common reason for hospitalisation in Australia, for both Aboriginal and Torres Strait Islander people and non-Indigenous people. On average, patients who attend a hospital or satellite centre for dialysis treatment do so 3–4 times per week.

When dialysis was excluded, around 20,000 other hospitalisations for CKD as the principal and/or an additional diagnosis were also recorded among Indigenous Australians. These hospitalisations usually record CKD as an additional diagnosis. In 2013–14, there were 2,700 hospitalisations of Indigenous people with CKD as a principal diagnosis, and 17,080 hospitalisations with CKD as an additional diagnosis.

Dialysis as the principal diagnosis

In 2013–14, there were 186,268 hospitalisations of Indigenous people where dialysis was the principal diagnosis, at a rate of 45,084 per 100,000 population. This was 10 times as high as the non-Indigenous rate of 4,389 per 100,000 population.

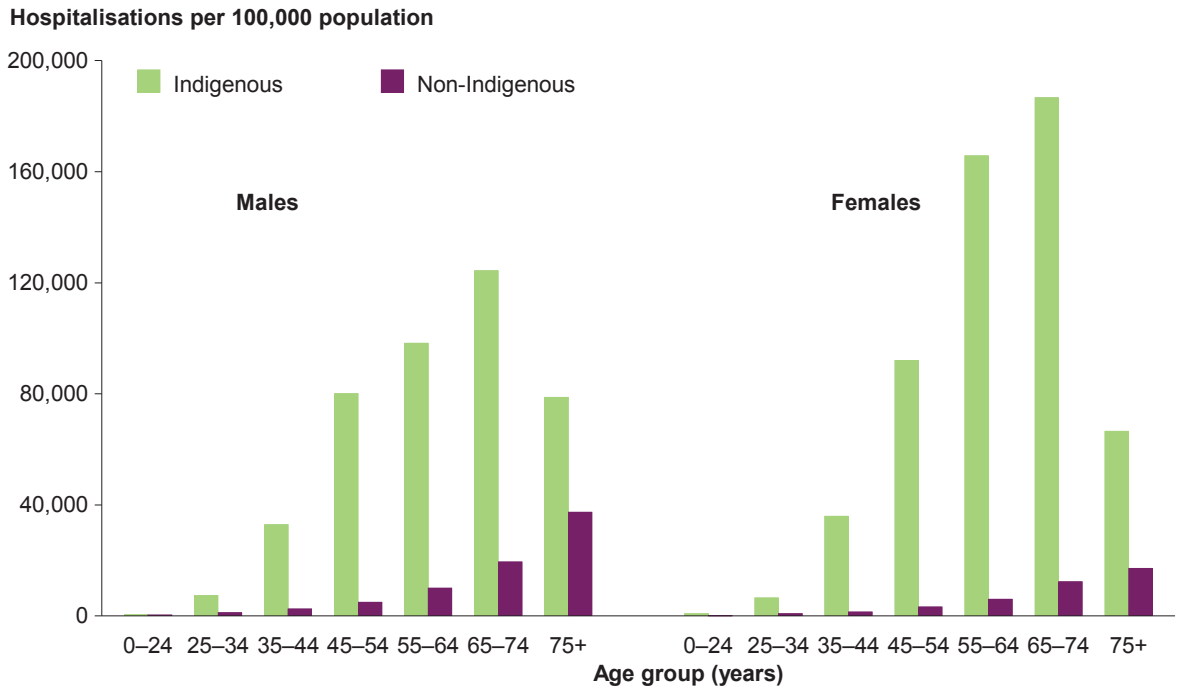
Sex and age

Indigenous females were hospitalised for dialysis at a greater rate than Indigenous males (50,854 and 39,049, respectively, per 100,000 population), reflecting the higher rate of CKD among Indigenous females and related key risk factors such as diabetes and obesity (AIHW 2011). In contrast, male hospitalisation rates were higher than female rates in the non-Indigenous population (5,682 and 3,259, respectively, per 100,000 population). The higher hospitalisation rate for Indigenous females reflects their higher rate of treated ESKD and may be influenced by higher rates of key CKD risk factors such as diabetes and obesity (Hoy et al. 2010, 2012).

Indigenous males were 7 times as likely as non-Indigenous males to undergo dialysis in hospital. The rate among Indigenous females was even greater, at 16 times the rate for non-Indigenous females.

Dialysis hospitalisation rates for Indigenous people are higher than non-Indigenous rates at all ages (Figure 5.7). At age 25–35, Indigenous rates were 8 times as high (6,829 compared with 881 per 100,000 population), increasing to 20 times as high at age 45–54 (86,251 and 3,993 per 100,000 population). At age 75 and over, rates were 3 times as high (71,498 compared with 25,730 per 100,000 population).

The lower dialysis hospitalisation rate for Indigenous people aged 75 and over may reflect higher rates of premature death, a lower reliance on hospital-based dialysis treatment, electing not to be treated or discontinuing treatment, and other social or cultural reasons. However, this assessment may benefit from future research to fully understand the factors that are driving this pattern.



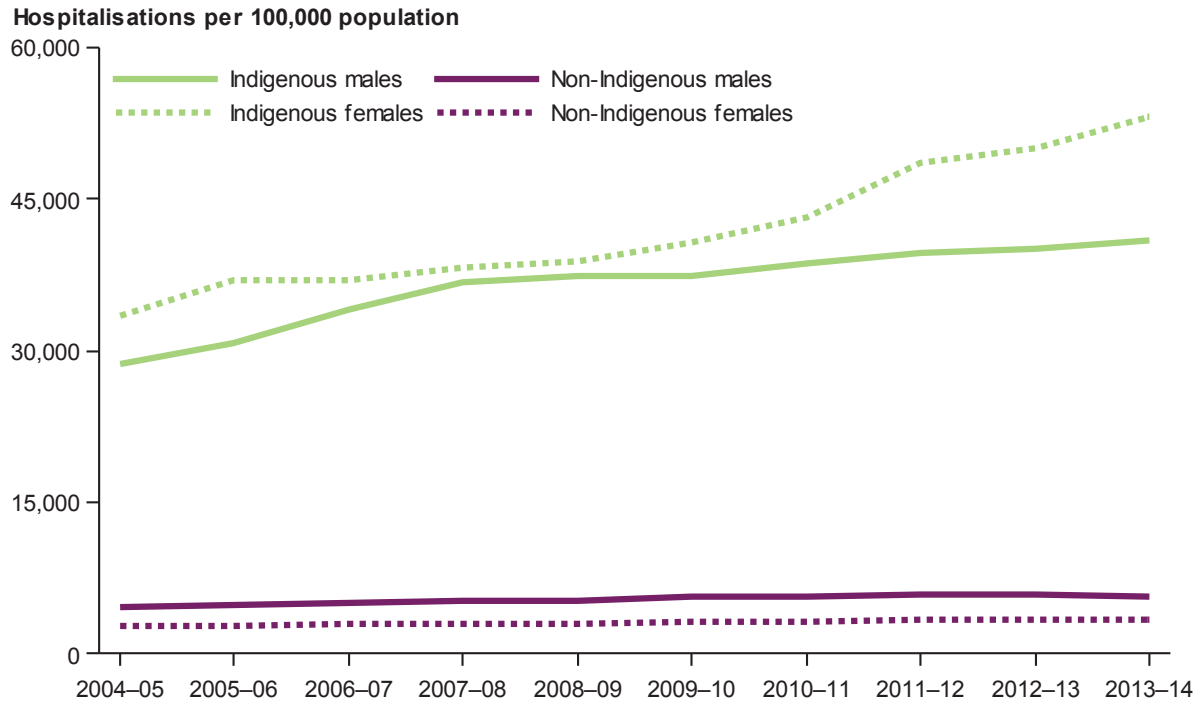
Source: AIHW NHMD. See Appendix Table C31.

Figure 5.7: Dialysis hospitalisation rates, as principal diagnosis, by Indigenous status, age and sex, 2013–14

Trends

Between 2004–05 and 2013–14, the hospitalisation rate for Indigenous people receiving dialysis increased by 51%, from 31,231 to 47,201 per 100,000 population. The increase among females over the 9-year period was greater than among males (59% and 42%, respectively) (Figure 5.8).

The increase among Indigenous people between 2004–05 and 2013–14 (51%) was twice that of the non-Indigenous population (26%).



Notes

1. Rates have been age standardised to the 2001 Australian population.
2. Includes New South Wales, Victoria, Queensland, Western Australia, South Australia and Northern Territory only.

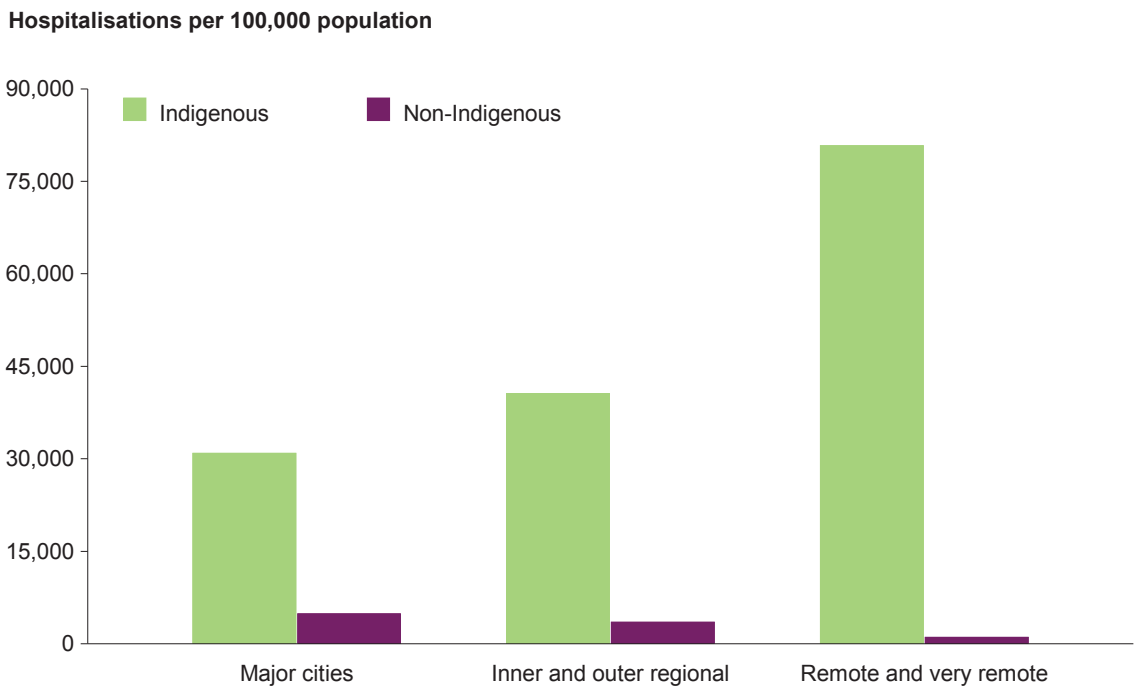
Source: AIHW NHMD.

Figure 5.8: Dialysis hospitalisation rates as principal diagnosis, by Indigenous status and sex, 2004–05 to 2013–14

Remoteness

In 2013–14, Indigenous hospitalisation rates for dialysis increased with remoteness (Figure 5.9). The hospitalisation rate in Remote and very remote areas (80,770 per 100,000 population) was 2.6 times as high as the rate in Major cities (30,875 per 100,000 population). In contrast, non-Indigenous rates for dialysis did not increase with increasing remoteness.

In Major cities, rates of dialysis for Indigenous people were 6 times as high as for non-Indigenous people, increasing to 12 times as high in Inner and outer regional areas and 75 times as high in Remote and very remote areas, indicating an extreme burden of hospitalisation for dialysis in remote areas.



Note: Rates have been age standardised to the 2001 Australian population.
Source: AIHW NHMD. See Appendix Table C31.

Figure 5.9: Dialysis hospitalisation rates, as principal diagnosis, by Indigenous status and remoteness, 2013–14

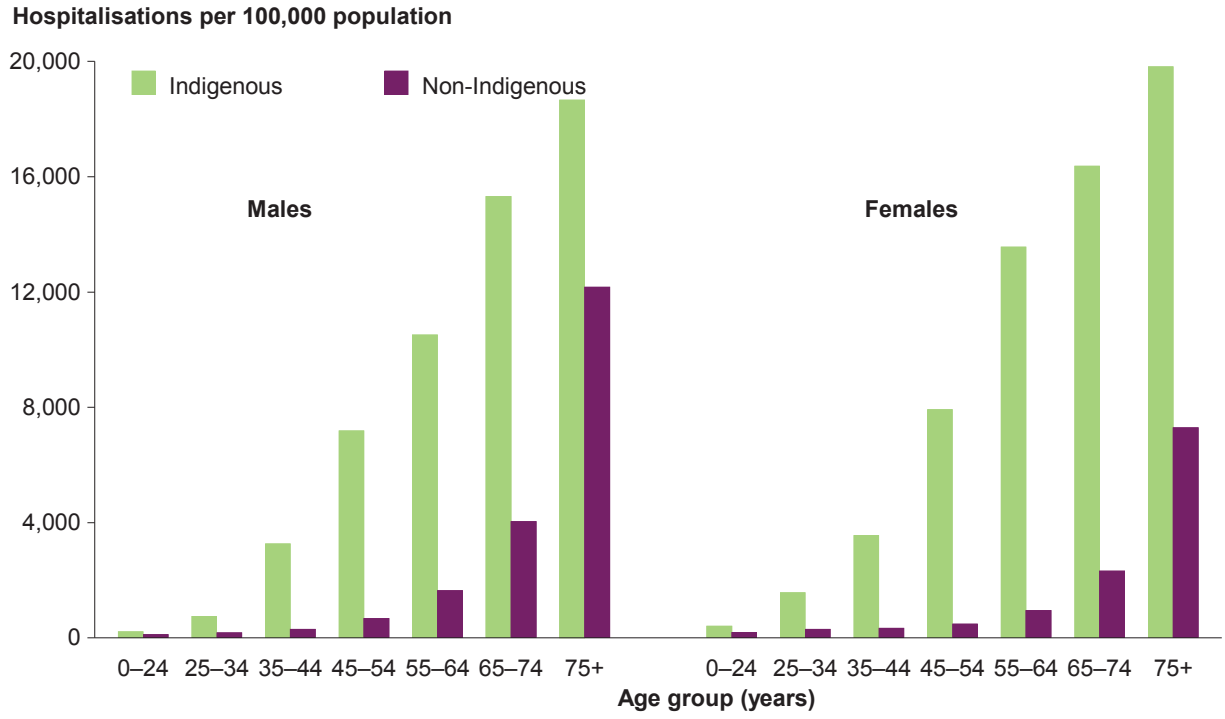
Chronic kidney disease as a principal or additional diagnosis (excluding regular dialysis)

In 2013–14, there were 19,781 hospitalisations of Indigenous people where CKD (excluding regular dialysis) was the principal and/or additional diagnosis, at a rate of 5,192 per 100,000 population. This was 5 times as high as the non-Indigenous rate of 1,067 per 100,000 population.

Sex and age

The disparity in CKD hospitalisation rates was greater for females—Indigenous females were 6 times as likely to be hospitalised for CKD as non-Indigenous females (5,568 and 862, respectively, per 100,000 population), compared with 4 times as likely for Indigenous males (4,770 and 1,325, respectively, per 100,000 population).

Hospitalisation rates for both Indigenous and non-Indigenous people increase with age. Whereas Indigenous rates increase consistently from age 35–44, non-Indigenous rates increase substantially from age 65–74 onwards (Figure 5.10). Indigenous rates of CKD hospitalisation are more than 10 times as high as non-Indigenous rates at ages 35–44 (3,410 and 310, respectively, per 100,000 population) and 45–54 (7,561 and 573, respectively, per 100,000 population).



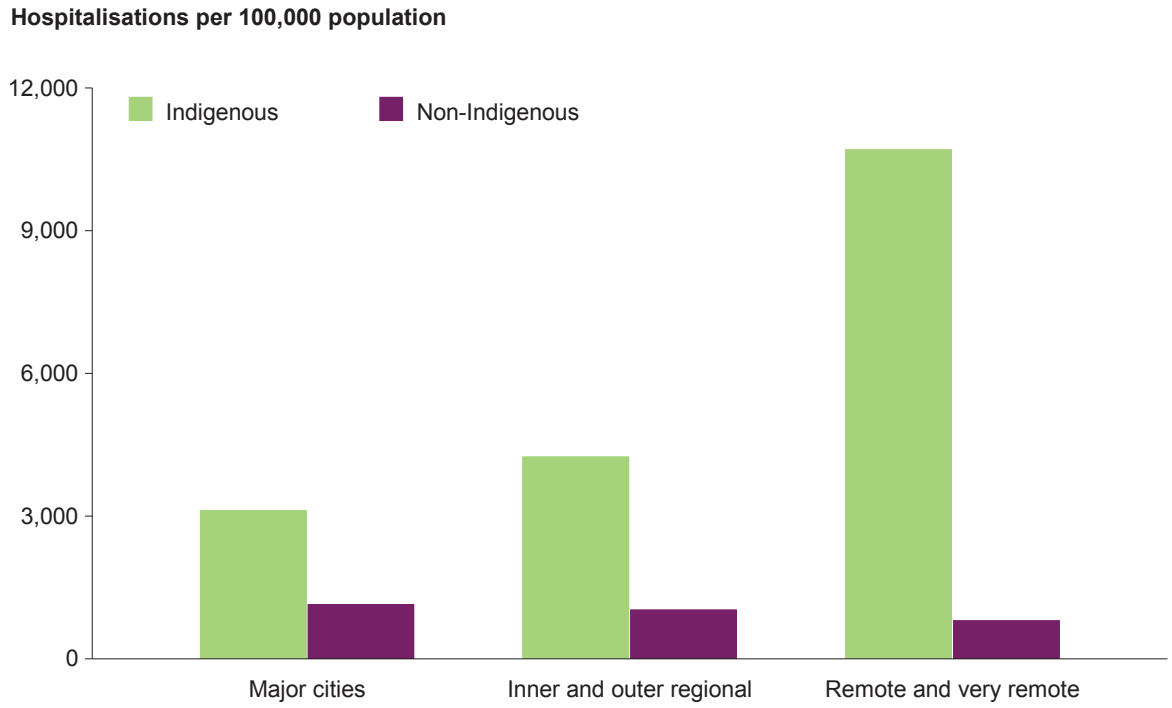
Source: AIHW NHMD. See Appendix Table C32.

Figure 5.10: CKD hospitalisation rates, as principal or additional diagnosis, by Indigenous status, age group and sex, 2013–14

Remoteness

In 2013–14, Indigenous hospitalisation rates for CKD increased with remoteness (Figure 5.11). The hospitalisation rate in Remote and very remote areas (10,694 per 100,000 population) was 3 times as high as that in Major cities (3,114 per 100,000 population). In contrast, non-Indigenous rates for CKD hospitalisation did not increase with increasing remoteness.

The gap in CKD hospitalisation rates between Indigenous and non-Indigenous Australians increases with remoteness. From being 3 times as high in Major cities (3,114 and 1,144, respectively, per 100,000 population) it increases to 4 times as high in Inner and outer regional areas (4,245 and 1,024, respectively, per 100,000 population) and to 13 times as high in Remote and very remote areas (10,694 and 799, respectively, per 100,000 population).



Note: Rates have been age standardised to the 2001 Australian population.
Source: AIHW NHMD. See Appendix Table C32.

Figure 5.11: CKD hospitalisation rates, as principal or additional diagnosis, by Indigenous status and remoteness, 2013–14

Chronic kidney disease deaths among Indigenous people

As for diabetes, CKD can be recorded as the underlying cause of death on a death certificate, although it is more often listed as an associated cause (see Glossary).

In 2010–12, CKD was the underlying cause of death of 260 Indigenous persons in the five jurisdictions with adequate identification of Indigenous status, and was the underlying or associated cause of 1,166 Indigenous deaths.

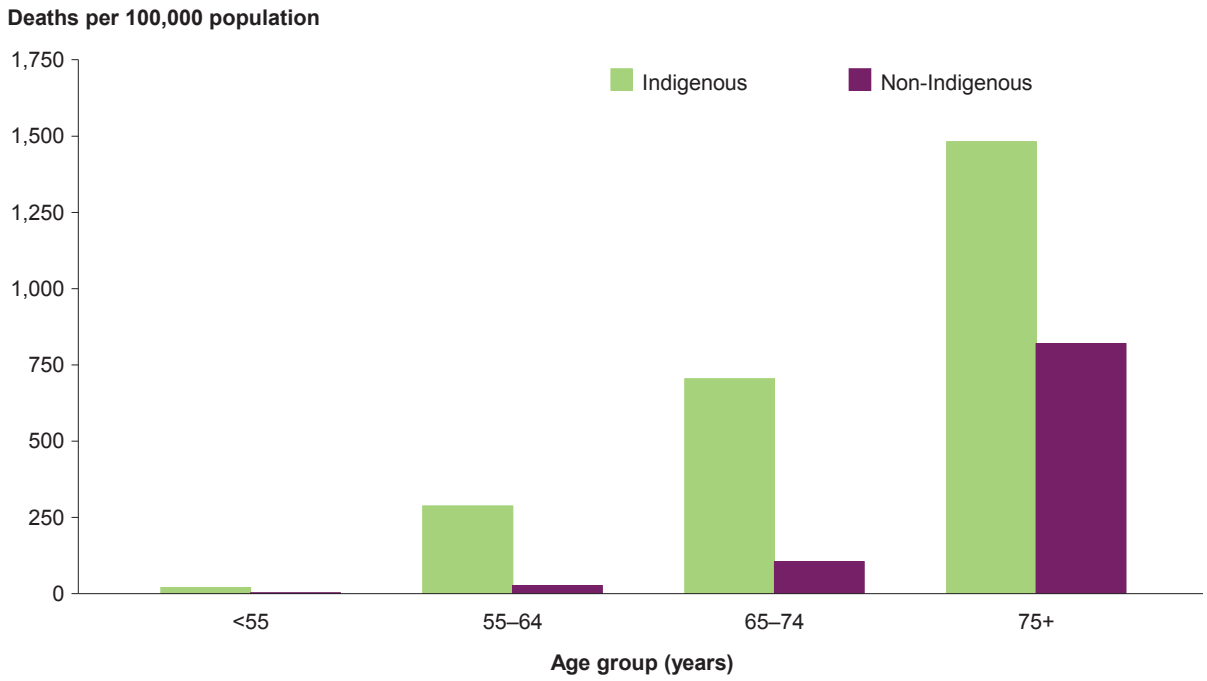
Among Indigenous people, CKD was recorded on 16% of all death certificates in these jurisdictions, compared with 10% among non-Indigenous persons.

Indigenous people were 3 times as likely to have CKD listed as an underlying or associated cause of death than non-Indigenous people (188 and 59 deaths, respectively, per 100,000 population). The disparity in death rates was higher for Indigenous females (3.9 times as high) than for Indigenous males (2.6 times as high).

Age

Death rates where CKD was recorded as an underlying or associated cause of death were higher in older age groups in both the Indigenous and non-Indigenous populations (Figure 5.12).

The gaps in CKD death rates between Indigenous and non-Indigenous people were wider for younger age groups, being 8 times as high for the under 55 age group (20.1 and 2.4, respectively, per 100,000 population) and 11 times as high for the 55–64 age group (287 and 26, respectively, per 100,000 population). At age 75 and over, the gap reduced and the CKD death rate among Indigenous people was twice that of non-Indigenous people (1,481 and 819, respectively, per 100,000 population).



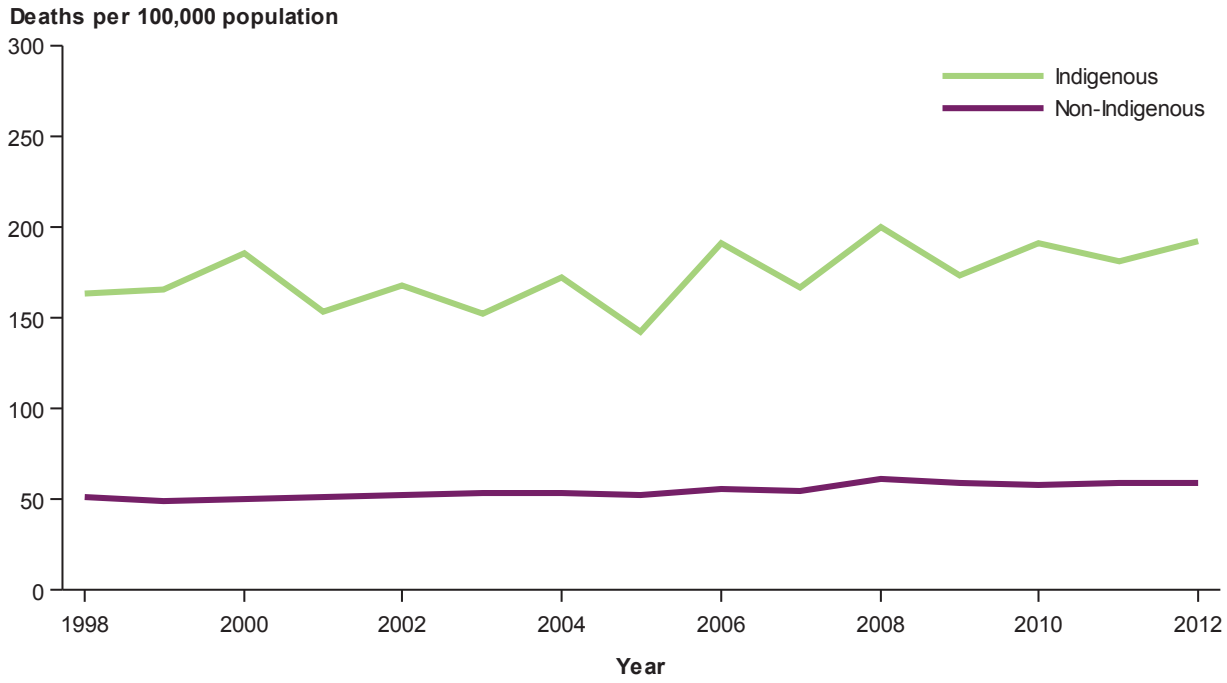
Note: Data are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.
Source: AIHW National Mortality Database. See Appendix Table C33.

Figure 5.12: Deaths with CKD as underlying or associated cause, by Indigenous status and age, 2010–2012

Trend

In 1998, there were 227 Indigenous deaths where CKD was an underlying or associated cause of death, increasing to 337 in 2006 and 411 in 2012. Despite some annual variation, rates of death of Indigenous people where CKD was an underlying or associated cause of death remained at around 170 per 100,000 population between 1998 and 2012 (Figure 5.13).

As for diabetes, the gap in the CKD death rates between Indigenous and non-Indigenous people has not changed, with Indigenous rates remaining at around 3 times as high as non-Indigenous rates over this period.



Notes

1. Rates have been age standardised to the 2001 Australian population.
2. Data are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.

Source: AIHW National Mortality Database.

Figure 5.13: Deaths with CKD as underlying or associated cause, by Indigenous status and sex, 1998–2012

Despite an increasing burden of comorbid conditions, there has been improved survival for both Indigenous and non-Indigenous patients receiving kidney replacement therapy. However, the gap in survival between Indigenous and non-Indigenous patients has not narrowed (Lawton et al. 2015).

6 Comorbidity of cardiovascular disease, diabetes and chronic kidney disease

CVD, diabetes and CKD have complex causes and share numerous health risk factors. The diseases often occur together in an individual, and their interactions may worsen health. The presence of one or more additional diseases co-occurring with a primary disease, or at least two diseases together is known as *comorbidity*.

The presence of multiple health risk factors increases the risk of developing chronic disease (AIHW 2015d). Once established, CVD, diabetes or CKD may each contribute to, or exacerbate the presence of, other diseases. Shared risk factors and pathologies often result in comorbidity, which increases with age to be many times as common in people aged 65 and over than in those aged 45–64 (AIHW 2014d). Comorbidity in people with CVD, diabetes and CKD often indicates more severe disease and less ability to recover (Couser et al. 2011; De Cosmo et al. 2014; Fox et al. 2012). The presence of comorbidities is associated with worse health outcomes, more frequent and complex disease management, and increased health costs.

Comorbidity has emerged as an important clinical, public health and research issue over the past few decades. Given Australia's ageing population, unfavourable trends in some health risk factors and a high prevalence of CVD, diabetes and CKD in the community, the prevalence of comorbidity is expected to continue to increase. This will escalate the burden of these diseases on individuals, families and the health-care system in the future. However, there is great potential for integrating prevention and care, and for treating these diseases collectively to improve individual health outcomes (AIHW 2014a).

Comorbidity is especially relevant to Aboriginal and Torres Strait Islander people (Close the Gap Steering Committee 2015). Earlier chapters of this report have indicated that for Indigenous people, CVD, diabetes and CKD occur more often and at younger ages than in their non-Indigenous counterparts. This chapter will show that these diseases also occur together more frequently in the Indigenous population than in the non-Indigenous population.

How many Indigenous people had cardiovascular disease, diabetes and chronic kidney disease comorbidity?

In 2012–13, an estimated 116,900 Indigenous adults, or more than 1 in 3 (35%) of the total Indigenous adult population, had CVD, diabetes or CKD. This proportion was higher than in the non-Indigenous population (30%).

Of all Indigenous adults with CVD, diabetes or CKD, 38% had 2 or more conditions together, compared with an equivalent figure of 26% for the non-Indigenous population (Figure 6.1). Notably, 10% of Indigenous adults had diabetes and CKD together, compared with 2% of the non-Indigenous population, and 11% had all 3 conditions together, compared with 4% of the non-Indigenous population.

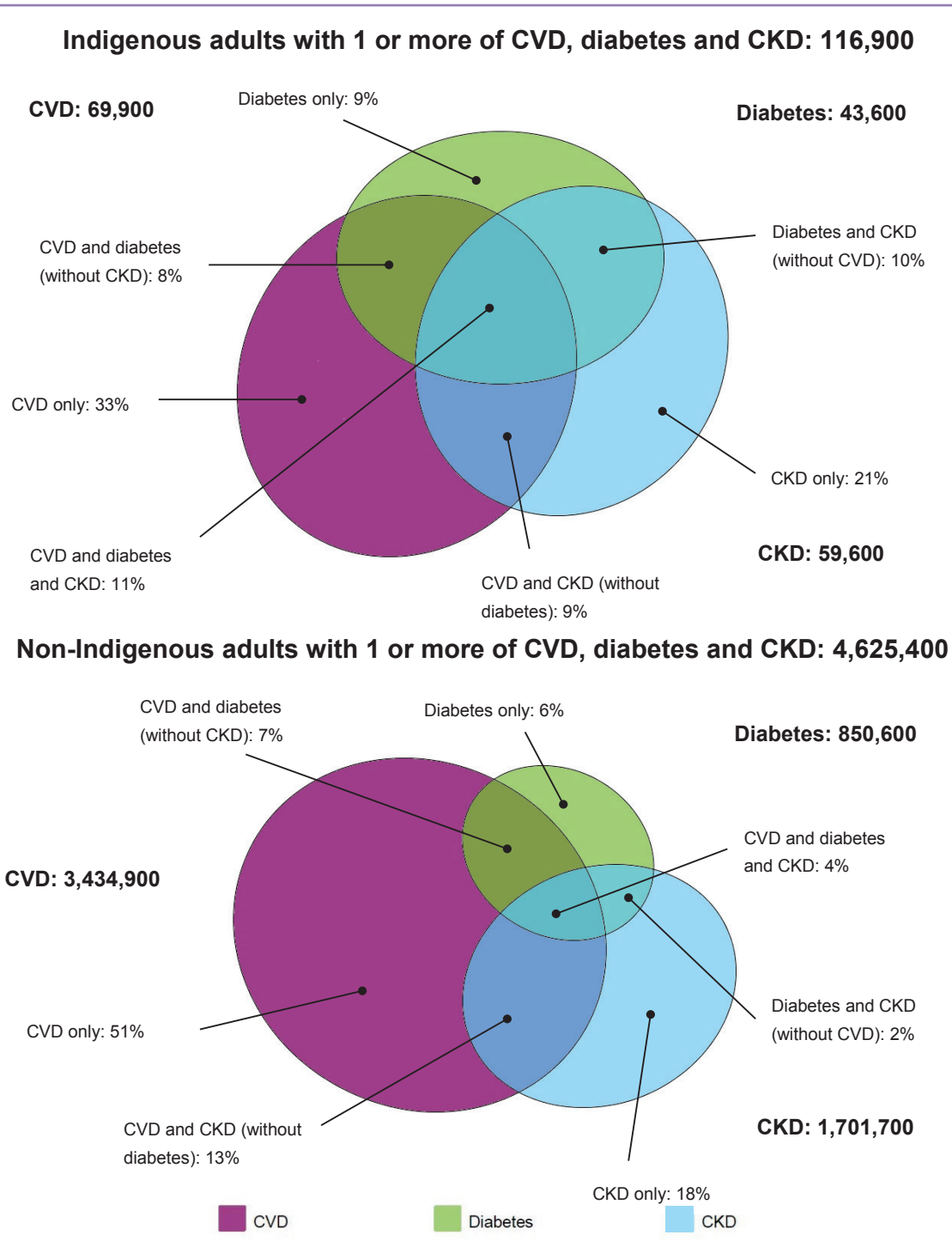
In the Indigenous population, 33% had CVD only without diabetes or CKD comorbidities—a lower proportion than in the non-Indigenous population (51%).

Age

The prevalence of comorbidity increases with age in both the Indigenous and non-Indigenous populations. Comorbidity, however, is greater at each age in the Indigenous population, indicated pictorially in Figure 6.2 by the greater overlap of diseases.

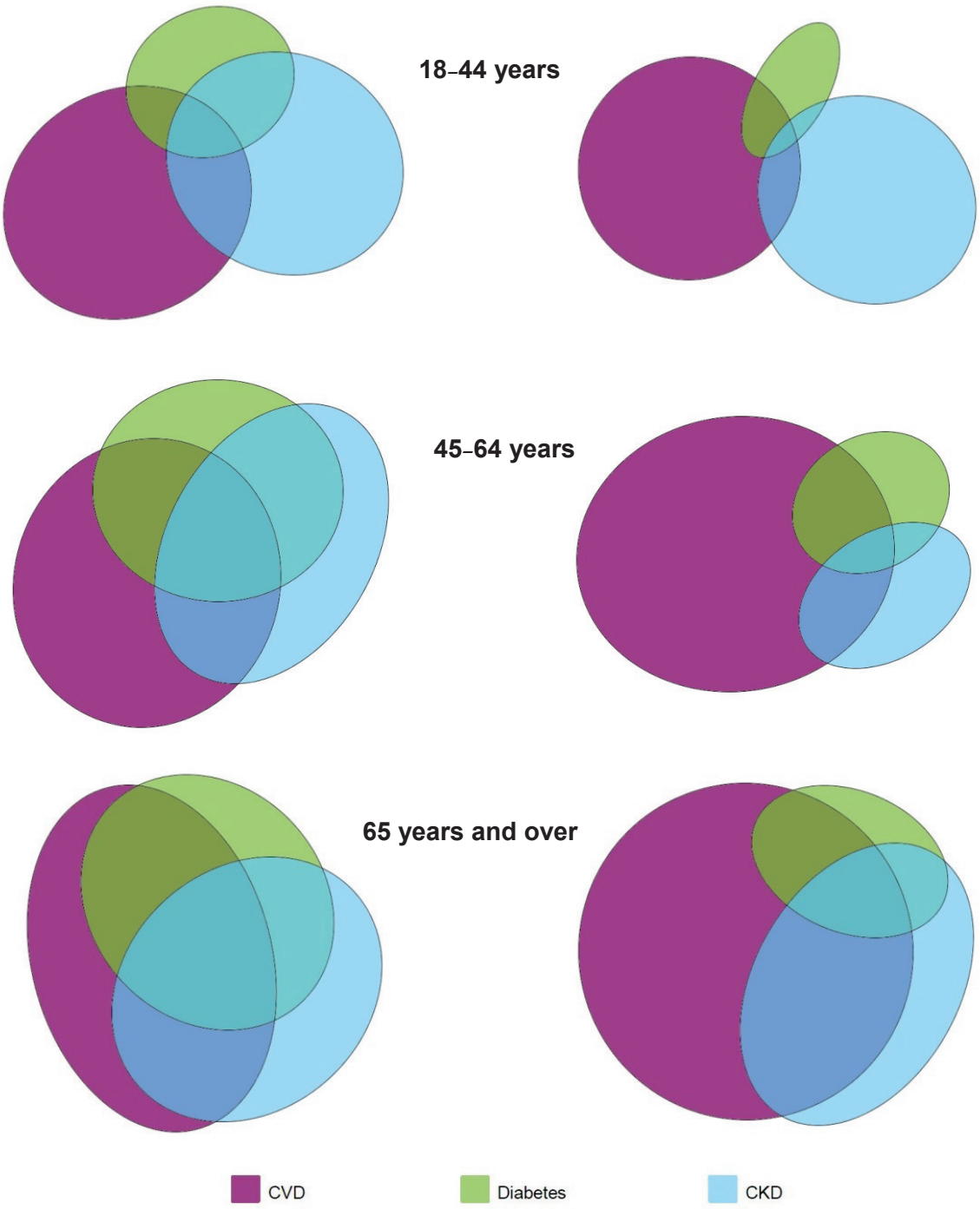
Among Indigenous adults aged 18–44 with CVD, diabetes or CKD, 21% had 2 or more conditions together, and 3.7% had all 3 conditions. This increases considerably for the population aged 65 and over—58% of Indigenous adults aged 65 and over with CVD, diabetes or CKD had 2 or more conditions together, and 19% had all 3 conditions.

By comparison, among non-Indigenous adults aged 18–44 with CVD, diabetes or CKD, 8% had 2 or more conditions together, and 0.4% had all 3 conditions. Among non-Indigenous adults aged 65 and over with CVD, diabetes or CKD, 40% had 2 or more conditions together, and 7% had all 3 conditions.



Source: AIHW analysis of unpublished data from the 2011–12 NHMS and the 2012–13 NATSIHMS. See Appendix Table C34.

Figure 6.1: Prevalence of CVD, diabetes and CKD and their comorbidity among persons aged 18 and over, by Indigenous status, 2011–2013



Source: AIHW analysis of unpublished data from the 2011–12 NHMS and the 2012–13 NATSIHMS. See Appendix Table C34.

Figure 6.2: Proportional representation of CVD, diabetes and CKD and their comorbidity, by Indigenous status and age, 2011–2013

Hospital care of comorbidities

Comorbidity can also be examined during hospitalisation. In this setting, comorbidity refers to when diagnoses of 2 or more conditions affecting a patient's care and treatment are entered onto a hospital record. Importantly, since July 2012, Australian Coding Standards rules specify that diabetes must always be coded when documented in the medical record, regardless of whether it has an impact on the patient's management or care (NCCC 2012).

Dialysis hospitalisations have been excluded in this section because they are different from other hospitalisations; namely, they are routine treatments often undertaken on a same-day basis. ANZDATA Registry data indicate that at least half of patients who receive regular dialysis for their ESKD had a comorbidity of diabetes or CVD (ANZDATA 2013).

Diagnoses of CVD, diabetes or CKD

In 2013–14, there were 65,707 non-dialysis hospitalisations of Indigenous people aged 25 and over where CVD, diabetes or CKD was present as a principal diagnosis and/or additional diagnoses—three-quarters (76%) included diabetes.

Of these, 41,201 hospitalisations (63%) had only 1 of the diseases recorded—27,968 hospitalisations were for diabetes only, with CVD and CKD not mentioned as affecting the hospitalisation; 11,702 were for CVD only and 1,531 were for CKD only.

The remaining 24,506 hospitalisations (37%) recorded 2 or 3 of the diseases—11% diabetes and CVD together, 3% CVD and CKD, 5% CVD and diabetes and 18% all 3 diseases (Figure 6.3). In the non-Indigenous population, 23% of hospitalisations with CVD, diabetes or CKD as a principal or additional diagnosis had 2 or 3 of the diseases recorded.

The proportion of Indigenous hospitalisations with all 3 diseases (18%) was notably higher than that in the non-Indigenous population (7%).

Age

The rate of hospitalisation with comorbidity increases with age—27% of hospitalisations of Indigenous people aged 25–44 had 2 or 3 of the conditions, increasing to 40% aged 45–64, and 43% aged 65 and over (Appendix Table C35).

These rates are considerably higher than among the non-Indigenous population—9% aged 25–44, 19% aged 45–64 and 27% aged 65 and over had 2 or 3 of the conditions on their hospital record.

Source: AIHW NHMD. See Appendix Table C35.

Figure 6.3: Hospitalisations (excluding regular dialysis) for people aged 25 and over with diagnosis of CVD, diabetes or CKD, by Indigenous status, 2013–14

Multiple causes of death

CVD, diabetes and CKD are often listed concurrently on death certificates. It is common for 2 or more comorbid conditions to contribute to a death. These are classed as either the underlying cause of death, the immediate cause, an intervening cause, or a condition(s) that contributed to the death but was not related to the disease or condition causing the death.

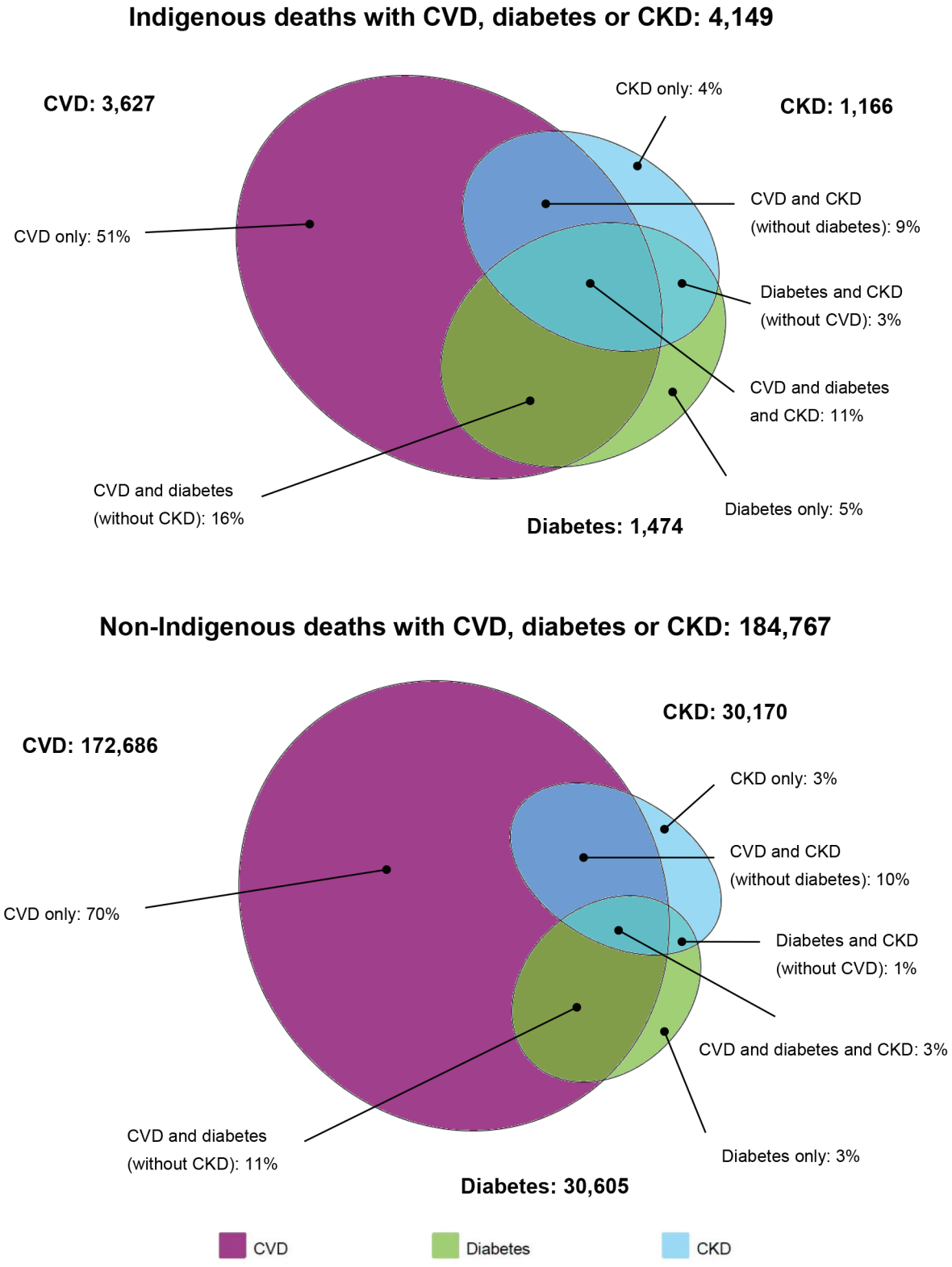
In 2010–2012, 4,149 Aboriginal and Torres Strait Islander people in the five jurisdictions with adequate identification of Indigenous status had CVD, diabetes or CKD recorded as either an underlying or an associated cause of death. These deaths comprised 58% of total Indigenous deaths during the period. Among non-Indigenous deaths, 61% had CVD, diabetes or CKD recorded as an underlying or associated cause.

CVD, diabetes and CKD were more commonly listed together on Indigenous death certificates—in 2010–12, 23% of Indigenous deaths had any 2 of the conditions listed, compared with 14% of non-Indigenous deaths (Figure 6.4).

In 2010–12, 16% of all Indigenous deaths with CVD, diabetes or CKD had CVD and diabetes listed together, compared with 11% of non-Indigenous deaths. Notably, 11% of Indigenous deaths had all 3 conditions listed, compared with 3% of non-Indigenous deaths.

Age

CVD, diabetes and CKD are more commonly listed together on death certificates among older Indigenous people. For deaths of Indigenous persons aged 0–44 listing CVD, diabetes or CKD, 22% had 2 or more conditions listed together on death certificates, compared with 8% of non-Indigenous deaths in the same age group. The equivalent figure for Indigenous deaths for the 65 and over age group increased to 44%, compared with 24% of non-Indigenous deaths in the same age group (Appendix Table C36).



Source: AIHW National Mortality Database. See Appendix Table C36.

Figure 6.4: CVD, diabetes or CKD as underlying or associated cause of death, by Indigenous status, 2010–12

Appendix A: Data sources

ABS 2012–13 Australian Aboriginal and Torres Strait Islander Health Survey and the ABS 2011–12 Australian Health Survey

In this report, the ABS 2012–13 AATSIHS was used for estimates of Indigenous disease and risk factor prevalence. The ABS 2011–12 AHS was used for non-Indigenous estimates.

ABS 2011–12 AHS

The 2011–12 AHS combines the existing National Health Survey with two new components: a National Nutrition and Physical Activity Survey and the NHMS. The AHS collected information from around 32,000 people from 25,000 households.

All people selected in the AHS were selected in either the National Health Survey or the National Nutrition and Physical Activity Survey. However, there was a core set of data items common to both surveys; therefore, information for these data items is available for all persons in the AHS (approximately 32,000). This core set of data items included household information, demographics, self-assessed health status and conditions. All people aged 5 and over were then invited to participate in the voluntary NHMS.

For information on the scope and data quality of the AHS, see the *Australian Health Survey: users' guide, 2011–13*: <http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/4363.0.55.001Main%20Features12011-13?opendocument&tabname=Summary&prodno=4363.0.55.001&issue=2011-13&num=&view>.

ABS 2012–13 AATSIHS

The 2012–13 AATSIHS, which forms part of the broader *2011–13 Australian Health Survey*, collected information from an additional sample of around 12,900 people from 8,300 households. The AATSIHS includes the NATSIHS, the National Aboriginal and Torres Strait Islander Nutrition and Physical Activity Survey and the NATSIHMS.

All Aboriginal and Torres Strait Islander people selected in the AATSIHS responded to either the NATSIHS or the National Aboriginal and Torres Strait Islander Nutrition and Physical Activity Survey. However, there was a core set of data items common to both surveys; therefore, information for these data items is available for all persons in the AATSIHS (approximately 12,900 persons). This core set of data items included household information, demographics, self-assessed health status and self-assessed body mass. All Aboriginal and Torres Strait Islander people aged 18 and over were then invited to participate in the voluntary NATSIHMS.

For information on the scope and data quality of the AATSIHS, see the *Australian Aboriginal and Torres Strait Islander Health Survey: users' guide, 2012–13*: <http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/4727.0.55.002Main%20Features12012-13?opendocument&tabname=Summary&prodno=4727.0.55.002&issue=2012-13&num=&view>.

Note that the AATSIHS may underestimate the number of people with CVD, diabetes, CKD and their comorbidities as people living in institutional care facilities such as hospitals and aged care facilities were not included in the survey. This excludes a section of the population where high levels of chronic diseases are expected to occur. Some respondents may not have known or been able to accurately report their health status, while other may have overreported their condition.

AIHW National Hospital Morbidity Database

The NHMD is a compilation of episode-level records from admitted patient morbidity data collection systems in Australian hospitals. The database contains data relating to admitted patients in almost all hospitals in Australia.

The counting unit for the NHMD is the separation. A separation is an episode of care for an admitted patient, which can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay beginning or ending in a change of type of care (for example, from acute care to rehabilitation).In this report, the term 'hospitalisation' is used for separation.

The hospital separations data do not include episodes of non-admitted patient care provided in outpatient clinics or emergency departments. Patients in these settings may be admitted subsequently, with the care provided to them as admitted patients being included in the NHMD. The following care types were excluded when undertaking the analysis: 7.3 (newborn—unqualified days only), 9 (organ procurement—posthumous) and 10 (hospital boarder).

Data on diagnoses are recorded uniformly using the *International statistical classification of diseases and related health problems, 10th revision, Australian modification* (ICD-10-AM, 8th edition) (NCCC 2012). Information on procedures was recorded using the Australian Classification of Health Interventions. The relevant diagnosis and procedure codes used in this report are described at Appendix B.

In this report, disease data relate to both principal and additional diagnoses reported for hospitalisations unless otherwise specified.

The Indigenous status data in the NHMD for all states and territories are considered of sufficient quality for statistical reporting from 2010–11 onwards. In 2011–12, for instance, an estimated 88% of Indigenous patients were correctly identified in public hospitals. Indigenous identification varied by remoteness, ranging from 77% in *Major cities* to 99% in *Very remote* areas (AIHW 2013b). Records where Indigenous status was not stated are excluded from analyses that compare Indigenous and non-Indigenous hospitalisation rates.

Improvements in Indigenous identification in hospitals enable CVD trend analysis from 2004–05 to 2013–14 for most hospitals, except for those in the Australian Capital Territory, Tasmania and the private hospital in the Northern Territory. Note that no trend analysis was undertaken for diabetes and CKD hospitalisations, because of changes in hospital coding practices.

A data quality statement for the AIHW NHMD can be found at:

<http://meteor.aihw.gov.au/content/index.phtml/itemId/611030>.

Additional information can also be found at Appendix A of *Admitted patient care 2013–14: Australian hospital statistics* (AIHW 2015g).

AIHW National Mortality Database

Cause of Death Unit Record File data are provided to the AIHW by the Registries of Births, Deaths and Marriages and the National Coronial Information System (managed by the Victorian Department of Justice) and include cause of death coded by the ABS. The data are maintained by the AIHW in the National Mortality Database.

As the registration of deaths is a legal requirement in Australia, this data set is considered to be nearly complete, although there is no formal validation of completeness.

Deaths were coded according to the *International statistical classification of diseases and related health problems, 10th revision* (ICD-10) (see Appendix B). Data in this report are based on year of registration of death.

The ABS has assessed the quality of Indigenous identification in death registration data by state and territory in the Census Data Enhancement Indigenous Mortality Quality Study. Indigenous identification in South Australia, Western Australia and the Northern Territory has been of sufficient quality to include in mortality analyses from 1991 onwards, with Queensland and New South Wales included from 1998 onwards.

In this report, registered deaths where Indigenous status was not stated are excluded from analyses that compare Indigenous and non-Indigenous mortality rates.

Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.

Data have been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010. For more detail, refer to Technical note 3 in *Causes of death, Australia, 2010* (ABS cat. no. 3303.0).

The data quality statements underpinning the AIHW National Mortality Database can be found in the following ABS publications:

Deaths Australia (ABS cat. no. 3302.0) <http://www.abs.gov.au/ausstats/abs%40.nsf/mf/3302.0/>, and

Causes of death, Australia (ABS cat. no. 3303.0) <http://www.abs.gov.au/ausstats/abs%40.nsf/mf/3303.0/>.

Australia and New Zealand Dialysis and Transplant Registry

The ANZDATA Registry collects information to monitor dialysis and transplant treatments from all renal units in Australia and New Zealand on all patients receiving kidney replacement therapy where the intention to treat is long term. Cases of acute kidney failure are excluded. The registry is coordinated within the Queen Elizabeth Hospital in Adelaide, and compiles data on incidence and prevalence of treated ESKD, complications, comorbidities and patient deaths. All relevant hospitals and related dialysis units participate. While patients have the option of opting out of having part or all of their data recorded, this rarely happens. This report includes information from the ANZDATA Registry for the period 2000 to 2013 by calendar year.

The interpretation and reporting of these data are the responsibility of the AIHW and in no way should be seen as an official policy or interpretation of the ANZDATA Registry.

Information about the data quality of the ANZDATA Registry can be found in the *37th Annual ANZDATA Report 2014* <http://www.anzdata.org.au/v1/report_2014.html>.

Appendix B: Method and classifications

Age-specific rates

Age-specific rates are calculated by dividing the number of cases occurring in a specified age group by the corresponding population in the same age group, expressed as a rate (for example, number per 100,000 persons).

Age-standardised rates

Age-standardisation is a method of removing the influence of age when comparing populations with different age structures—either different populations at one time or the same population at different times. Two different methods of age-standardisation can be used: direct and indirect. Direct age-standardisation is used in this report. The Australian estimated resident population as at 30 June 2001 has been used as the standard population.

Rate ratio

The rate ratio measures the relative difference between two population groups. In this report, the ratio is calculated by dividing the age-standardised rate for Indigenous people by the age-standardised rate for non-Indigenous people.

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.

Significance testing

The observed value of a rate may vary because of the influence of chance or natural variation. To provide an indication of whether two rates are statistically different, 95% confidence intervals can be calculated. These describe a span of numbers around an estimate which has a 95% chance of including the true value. When comparing two groups, if the confidence intervals do not overlap, the difference is considered not to be due to chance.

This report presents 95% confidence intervals for survey data.

Disease classifications

Australian Health Survey

This section provides classification information for CVD, diabetes and CKD for ABS AATSIHS 2012–13 and AHS 2011–12 estimates. For more detailed information:

Australian Health Survey: users' guide, 2011–13 <http://www.abs.gov.au/ausstats/abs@.nsf/PrimaryMainFeatures/4363.0.55.001?OpenDocument=>

Australian Aboriginal and Torres Strait Islander Health Survey: users' guide, 2012–13 <http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/4727.0.55.002Main%20Features12012-13?opendocument&tabname=Summary&prodno=4727.0.55.002&issue=2012-13&num=&view=>

Cardiovascular disease

The prevalence of CVD was generated using self-reported data only for people who participated in the 2011–12 NHMS and the 2012–13 NATSIHMS. The ICD-10 was used as the basis for coding CVD in both surveys.

The conditions listed in Table B1 were included as part of the definition for CVD. Different condition statuses were included for counts of each of the conditions:

- 1: Ever told has condition, still current and long term
- 2: Ever told has condition, still current but not long term
- 3: Ever told has condition, not current.

Table B1: CVD classification

Condition	Condition status
Hypertensive diseases	1
Ischaemic heart diseases (also known as CHD)	1, 2 and 3
Other heart diseases	1, 2 and 3
Tachycardia	1
Cerebrovascular diseases	1, 2 and 3
Oedema	1
Diseases of arteries arterioles and capillaries	1
Diseases of veins, lymphatic vessels etc.	1
Other diseases of circulatory system	1
Symptoms, signs involving circulatory system	1

Coronary heart disease

The prevalence of CHD was generated using self-reported data only from the 2012–13 AATSIHS (Core component) and the 2011–12 AHS (Core component). The ICD-10 was used as a basis for coding CHD, which was defined as ischaemic heart diseases with condition status 1, 2, or 3 (see Table B1).

Diabetes

The 2011–12 NHMS and 2012–13 NATSIHMS collected two blood tests for diabetes—fasting plasma glucose and glycated haemoglobin (commonly referred to as HbA1c). Since a proportion of respondents did not fast and therefore did not obtain an FPG result, this report uses HbA1c results to include the greatest number of respondents with biomedical markers for diabetes.

The population with diabetes was derived using a combination of HbA1c blood test results and self-reported information (from NHMS/NATSIHMS participants) on diabetes diagnosis and medication use. Condition statuses 1 and 3 were used.

People who were told by a doctor or nurse that they have diabetes, but who were not taking medication for diabetes and had HbA1c <6.5% were classified as not having diabetes.

Chronic kidney disease

The 2011–12 NHMS and 2012–13 NATSIHMS collected data on measures of kidney function (eGFR) and kidney damage (ACR), which, together, identify signs of CKD (ABS 2013c, 2014a).

The different stages of CKD were defined as follows:

- Stage 1: kidney damage with normal kidney function—eGFR ≥90 mL/min/1.73 m2 and albuminuria (ACR of ≥2.5 mg/mmol for females and ≥3.5 mg/mmol for males)
- Stage 2: kidney damage with mild loss in kidney function—eGFR 60–89 mL/min/1.73 m2 and albuminuria (ACR of ≥2.5 mg/mmol for females and ≥3.5 mg/mmol for males)
- Stage 3a: mild–moderate loss of kidney function—eGFR 45–59 mL/min/1.73 m2, and Stage 3b: moderate–severe loss of kidney function—eGFR 30–44 mL/min/1.73 m2
- Stage 4: severe loss of kidney function—eGFR 15–29 mL/min/1.73 m2
- Stage 5: end-stage kidney disease—eGFR <15 mL/min/1.73 m2 or on dialysis.

Comorbidity of CVD, diabetes and CKD

Prevalence data in the comorbidity chapter were sourced from the 2012–13 NATSIHMS and the 2011–12 NHMS, which provides the best prevalence estimates by minimising the potential for undiagnosed cases.

Disease definitions are provided in Table B2 below.

Table B2: Comorbidity definitions

Condition	Definition
Cardiovascular disease only	Self-reported. No CKD and no diabetes.
Diabetes only	Self-reported and HbA1c. No CVD and no CKD.
Chronic kidney disease only	Measured data only. No CVD and no diabetes.
Cardiovascular disease and diabetes only	Self-reported CVD AND self-reported and HbA1c diabetes.
Cardiovascular disease and chronic kidney disease only	Self-reported CVD AND measured CKD.
Chronic kidney disease and diabetes only	Self-reported and HbA1c diabetes AND measured CKD.
Cardiovascular disease, diabetes and chronic kidney disease	Self-reported CVD AND self-reported and HbA1c diabetes AND measured CKD

Cause of death and hospital diagnosis

Australia uses the *International statistical classification of diseases and related health problems* for coding causes of death (see Table B3).

For hospital diagnoses and procedures, a slightly different classification, modified for Australia is used, not affecting the codes used in this report.

Table B3: ICD-10 and ICD-10-AM codes for disease groups

Disease	ICD-10 and ICD-10-AM codes
Cardiovascular diseases	**I00–I99**
Acute rheumatic fever and rheumatic heart disease	I00–I09
Hypertensive disease	I10–I15
Coronary heart disease	I20–I25
Angina	I20
Acute myocardial infarction	I21
Heart failure and cardiomyopathy	I50, I25.5, I42.0, I42.5–I42.9, I43
Cerebrovascular disease	I60–I69
Stroke	I60–I64
Peripheral vascular disease	I70–I74
Congenital heart disease	Q20–Q28
Diabetes	**E10–E11, E13–E14, O24.0–O24.4, O24.9**
Type 1 diabetes	E10
Type 2 diabetes	E11
Other and unspecified diabetes	E13–E14, O24.0–O24.3, O24.9
Gestational diabetes	O24.4
Chronic kidney disease	**B52*, D59.3*, N00–N07, N08**, N11–N12, N14–N15, N16**, N18–N19, N25–N28, N39.1–N39.2, Q60–Q63, T82.4, T86.1, E10.2, E11.2, E12.2, E13.2, E14.2, E85.1*, I12–I13, I15.0–I15.1, Z49.0–Z49.2**, Z94.0**, Z99.2****
Preparatory care for dialysis	Z49.0**
Haemodialysis	Z49.1**
Peritoneal dialysis	Z49.2**
Kidney transplant and dialysis status	Z94.0**, Z99.2**

* These codes were used for identification in the National Mortality Database only.

** These codes were used for identification in the NHMD only.

Remoteness

Comparisons of region in this report use the classification of areas in the Australian Statistical Geography Standard 2011 Remoteness Structure—*Major cities, Inner regional, Outer regional, Remote, Very Remote and Migratory. Migratory* is not used in this publication.

These areas are based on a measure of the remoteness of a location from the services provided by large towns or cities.

Throughout this report, data constraints sometimes require that areas be grouped together.

Further information is available on the ABS website at:

<http://www.abs.gov.au/websitedbs/d3310114.nsf/home/australian+statistical+geography+standard+(asgs)>.

Populations

Aboriginal and Torres Strait Islander and non-Indigenous populations

The population data used in this report are estimated resident populations derived from the ABS 2011 Census of Population and Housing (ABS 2014b).

Aboriginal and Torres Strait Islander populations by state:

<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3238.02001%20to%202026?OpenDocument>.

Non-Indigenous population by state:

<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3101.0Sep%202014?OpenDocument>

Aboriginal and Torres Strait Islander and non-Indigenous populations by state and remoteness areas:

<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3238.0.55.001June%202011?OpenDocument>.

Appendix C: Detailed statistical tables

Table C1: Current daily smoking among persons aged 18 and over, by Indigenous status and selected population characteristics, 2011–13

	Number ('000)		Per cent (95% CI*)	
Population subgroup	**Indigenous**	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
Age group (years)				
15–17	7.7	31.9	17.8 [14.3–21.3]	3.9 [2.5–5.3]
18–24	36.1	335.9	42.6 [39.2–46.0]	15.8 [13.7–17.9]
25–34	44.7	596.7	51.5 [48.3–54.7]	18.9 [17.3–20.5]
35–44	37.6	566.1	48.3 [44.5–52.1]	18.3 [16.9–19.7]
45–54	27.8	583.9	46.3 [42.2–50.4]	19.6 [18.2–21.0]
55+	16.2	552.6	28.7 [25.7–31.7]	10.1 [9.3–10.9]
Persons (number/age-standardised rate for 18+[(a)])	*162.4*	*2,635.2*	*42.1 [40.3–43.9]*	*16.0 [15.3–16.7]*
Remoteness[(a)]				
Major cities	52.0	1,749.4	39.0 [35.8–42.2]	14.6 [13.9–15.3]
Inner regional	34.1	555.1	42.1 [38.3–45.9]	18.7 [16.9–20.5]
Outer regional	33.0	287.5	40.6 [37.0–44.2]	21.6 [19.5–23.7]
Total Non-remote	119.1	2,592.0	40.2 [38.1–42.3]	15.9 [15.2–16.6]
Remote	14.0	n.p.	46.1 [42.0–50.2]	n.p.
Very remote	29.2	n.p.	50.0 [46.3–53.7]	n.p.
Total Remote	43.3	43.2	48.7 [45.9–51.5]	25.2 [17.7–32.7]

* CI = confidence interval.

(a) Rates have been age standardised to the 2001 Australian population.

Note: Data are not available for *Remote* and *Very remote* for non-Indigenous Australians.

Sources: ABS 2014b; AIHW analysis of unpublished data from the AATSIHS 2012–13 (Core component) and the AHS 2011–12 (Core component).

Table C2: Insufficient physical activity among persons aged 18 and over, by Indigenous status and age, 2011–13

	Number ('000)		Per cent (95% CI)	
Age group (years)	**Indigenous**	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
18–24	30.2	836.3	45.1 [40.7–49.5]	39.6 [36.8–42.4]
25–34	32.1	1,361.3	48.6 [44.3–52.9]	43.7 [41.6–45.8]
35–44	31.3	1,502.2	52.2 [48.4–56.0]	49.2 [47.6–50.8]
45–54	28.0	1,433.6	60.0 [55.7–64.3]	48.6 [46.4–50.8]
55–64	17.2	1,293.2	63.2 [57.9–68.5]	51.6 [49.8–53.4]
65+	11.5	1,720.0	68.6 [63.2–74.0]	59.9 [58.2–61.6]
Persons (number/age-standardised rate[(a)])	*150.3*	*8,146.6*	*55.8 [54.0–57.6]*	*48.8 [47.8–49.8]*

(a) Rates have been age standardised to the 2001 Australian population.

Note: Based on the National Physical Activity Guidelines for Australian adults, which recommend at least 30 minutes of moderate-intensity physical activity on most, preferably all, days.

Source: AIHW analysis of unpublished data from the AATSIHS 2012–13 (Core component) and the AHS 2011–13 (2011–12 Core component).

Table C3: Excessive alcohol consumption among persons aged 18 and over, by Indigenous status and selected population characteristics, 2011–13

	Number ('000)		Per cent (95% CI)	
Population subgroup	**Indigenous**	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
Age group (years)				
18–24	15.3	395.8	18.0 [14.0–22.0]	18.7 [15.9–21.5]
25–34	19.4	627.2	22.3 [19.0–25.6]	19.9 [17.9–21.9]
35–44	17.7	634.2	22.8 [19.2–26.4]	20.6 [19.0–22.2]
45–54	11.0	572.1	18.4 [14.4–22.4]	19.2 [17.4–21.0]
55–64	6.0	584.6	17.3 [12.8–21.8]	23.0 [20.8–25.2]
65+	2.8	442.2	13.0 [8.6–17.4]	15.2 [13.7–16.7]
Persons (number/age-standardised rate[(a)])	*72.3*	*3,256*	*19.2 [17.6–20.8]*	*19.5 [18.6–20.4]*
Remoteness[(a)]				
Major cities	25.3	2,235.7	19.2 [16.5–21.9]	18.6 [17.6–19.6]
Inner regional	16.0	644.6	20.2 [16.9–23.5]	20.7 [18.2–23.2]
Outer regional	15.4	316.5	19.5 [15.2–23.8]	22.7 [19.8–25.6]
Total Non-remote	56.7	3,196.9	19.5 [17.6–21.4]	19.3 [18.4–20.2]
Remote	7.2	n.p.	23.6 [18.2–29.0]	n.p.
Very remote	8.3	n.p.	15.2 [11.8–18.6]	n.p.
Total Remote	15.5	59.1	18.2 [15.5–20.9]	30.9 [24.3–37.5]

(a) Rates have been age-standardised to the 2001 Australian population.

Note: Data are not available for *Remote* and *Very remote* for non-Indigenous Australians.

Source: AIHW analysis of unpublished data from the AATSIHS 2012–13 (NATSIHS component) and the AHS 2011–12 (National Health Survey component).

Table C4: Inadequate fruit and vegetable consumption among persons aged 18 and over, by Indigenous status and selected population characteristics, 2011–13

Population subgroup	Number ('000)		Per cent (95% CI)	
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous
Inadequate fruit consumption				
Age group (years)				
18–24	51.3	1,245.5	60.7 [57.0–64.4]	58.5 [55.6–61.4]
25–34	53.6	1,826.1	61.9 [58.8–65.0]	57.9 [56.1–59.7]
35–44	45.0	1,785.0	57.8 [54.2–61.4]	57.8 [56.0–59.6]
45–54	36.4	1,525.1	60.7 [57.2–64.2]	51.2 [49.4–53.0]
55–64	18.4	1,130.6	52.6 [47.9–57.3]	44.5 [42.5–46.5]
65+	10.3	1,122.6	47.5 [42.7–52.3]	38.7 [37.3–40.1]
Persons (number/age-standardised rate[(a)])	*215.1*	*8,635.0*	*57.4 [55.8–59.0]*	*51.9 [51.2–52.6]*
Remoteness[(a)]				
Major cities	79.3	6,085.6	59.0 [55.8–62.2]	50.6 [49.8–51.4]
Inner regional	45.6	1,693.0	57.1 [53.4–60.8]	55.5 [53.4–57.6]
Outer regional	45.6	764.2	58.3 [54.2–62.4]	55.9 [52.9–58.9]
Total Non-remote	170.5	8,542.9	58.4 [56.3–60.5]	51.9 [51.2–52.6]
Remote	16.8	n.p.	58.3 [54.0–62.6]	n.p.
Very remote	27.7	n.p.	51.7 [48.0–55.4]	n.p.
Total Remote	44.6	92.1	54.0 [51.3–56.7]	53.1 [48.4–57.8]
Inadequate vegetable consumption				
Age group (years)				
18–24	82.3	2,057.1	97.3 [96.2–98.4]	96.6 [95.5–97.7]
25–34	83.4	3,032.5	96.2 [95.1–97.3]	96.1 [95.4–96.8]
35–44	74.9	2,920.0	96.2 [95.0–97.4]	94.6 [93.9–95.3]
45–54	56.9	2,736.1	94.8 [93.2–96.4]	91.8 [90.6–93.0]
55–64	32.2	2,268.3	92.0 [89.7–94.3]	89.3 [88.1–90.5]
65+	19.3	2,591.4	89.2 [85.9–92.5]	89.2 [88.1–90.3]
Persons (number/age-standardised rate[(a)])	*349.0*	*15,605.4*	*94.5 [93.7–95.3]*	*93.1 [92.6–93.6]*
Remoteness[(a)]				
Major cities	123.8	11,355.2	94.8 [93.5–96.1]	94.2 [93.7–94.7]
Inner regional	72.3	2,851.6	93.1 [91.2–95.0]	90.8 [89.6–92.0]
Outer regional	73.0	1,238.1	93.4 [91.6–95.2]	89.4 [86.9–91.9]
Total Non-remote	269.2	15,444.9	93.9 [93.0–94.8]	93.1 [92.6–93.6]
Remote	27.3	n.p.	94.6 [92.6–96.6]	n.p.
Very remote	52.5	n.p.	97.8 [96.8–98.8]	n.p.
Total Remote	79.8	160.6	96.6 [95.7–97.5]	92.2 [88.8–95.6]

(a) Rates have been age-standardised to the 2001 Australian population.

Notes

1. Based on the 2013 NHMRC Guidelines. For more information, see *Usual daily intake of fruit* and *Usual daily intake of vegetables* in the Glossary of cat. no. 4727.0.55.006 (AATSIHS 2012–13).
2. Data are not available for *Remote* and *Very remote* for non-Indigenous Australians.

Source: AIHW analysis of unpublished data from the AATSIHS 2012–13 (Core component) and the AHS 2011–12 (Core component).

Table C5: BMI by Indigenous status among persons aged 18 and over, 2011–13

	Number ('000)		Per cent (95% CI)	
BMI category	**Indigenous**	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
Underweight	9.7	237.3	2.7 [2.2–3.2]	1.7 [1.4–2.0]
Normal weight	86.1	5,045.0	24.9 [23.5–26.3]	35.7 [34.8–36.6]
Overweight	91.6	5,021.8	29.9 [28.4–31.4]	35.4 [34.7–36.1]
Obese	123.6	3,870.4	42.5 [40.8–44.2]	27.2 [26.4–28.0]
Overweight/obese	215.2	8,892.2	72.4 [70.9–73.9]	62.6 [61.6–63.6]
Persons (number/age-standardised rate[(a)])	*311.0*	*14,174.5*	*100.0*	*100.0*

(a) Rates have been age standardised to the 2001 Australian population.

Note: Measured BMI. Excludes people for whom height and/or weight were not measured (16.2% of Aboriginal and Torres Strait Islander people aged 15 and over and 15.7% of non-Indigenous people aged 15 and over).

Source: ABS 2014b.

Table C6: Overweight and obesity among persons aged 15 and over, by Indigenous status and selected population characteristics, 2011–13

	Number ('000)		Per cent (95% CI)	
Population subgroup	**Indigenous**	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
Age group (years)				
15–17	11.1	165.0	34.9 [29.5–40.3]	24.2 [20.2–28.2]
18–24	40.2	674.6	55.3 [51.3–59.3]	36.1 [33.6–38.6]
25–34	48.6	1,439.9	65.9 [62.4–69.4]	54.3 [52.2–56.4]
35–44	50.0	1,681.5	75.2 [72.1–78.3]	64.8 [62.8–66.8]
45–54	39.9	1,802.4	76.6 [73.3–79.9]	71.0 [69.1–72.9]
55+	36.4	3,293.8	79.6 [76.7–82.5]	72.8 [71.3–74.3]
Persons (number/age-standardised rate for 18+[(a)])	*226.3*	*9,057.2*	*72.4 [70.9–73.9]*	*62.6 [61.6–63.6]*
Remoteness[(a)]				
Major cities	74.6	6,105.1	74.4 [72.1–76.7]	60.8 [59.6–62.0]
Inner regional	47.0	1,869.8	75.6 [72.3–78.9]	67.7 [65.9–69.5]
Outer regional	46.9	820.0	72.4 [68.4–76.4]	67.6 [64.5–70.7]
Total Non-remote	168.5	8,794.9	74.0 [72.3–75.7]	62.5 [61.5–63.5]
Remote	17.5	n.p.	71.6 [68.0–75.2]	n.p.
Very remote	29.1	n.p.	64.6 [60.2–69.0]	n.p.
Total Remote	46.6	97.3	67.1 [64.0–70.2]	69.7 [64.5–74.9]

(a) Rates have been age standardised to the 2001 Australian population.

Notes

1. Data are not available for *Remote* and *Very remote* for non-Indigenous Australians.
2. Excludes people for whom height and/or weight were not measured (15.0% of Aboriginal and Torres Strait Islander people aged 18 and over and 15.6% of non-Indigenous people aged 18 and over).

Sources: ABS 2014b; AIHW analysis of unpublished data from the AATSIHS 2012–13 (Core component) and the AHS 2011–12 (Core component).

Table C7: High blood pressure among persons aged 18 and over, by Indigenous status and selected population characteristics, 2011–13

	Number ('000)		Per cent (95% CI)	
Population subgroup	**Indigenous**	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
Age group (years)				
18–24	5.0	100.4	6.6 [4.7–8.5]	5.3 [4.0–6.6]
25–34	10.6	245.4	14.2 [11.5–16.9]	8.9 [7.8–10.0]
35–44	15.8	390.0	23.5 [20.7–26.3]	14.8 [13.4–16.2]
45–54	16.1	649.4	30.8 [26.9–34.7]	25.4 [23.9–26.9]
55+	16.8	1,696.1	36.4 [32.7–40.1]	37.6 [36.2–39.0]
Persons (number/age-standardised rate[(a)])	*64.2*	*3,081.2*	*24.6 [22.9–26.3]*	*21.0 [20.4–21.6]*
Remoteness[(a)]				
Major cities	21.3	2,116.6	24.3 [21.4–27.2]	21.0 [20.2–21.8]
Inner regional	11.7	663.3	22.5 [19.1–25.9]	21.8 [20.4–23.2]
Outer regional	14.0	271.4	24.8 [20.9–28.7]	20.9 [17.9–23.9]
Total Non-remote	47.0	3,051.2	24.0 [22.0–26.0]	21.0 [20.3–21.7]
Remote	6.1	n.p.	26.4 [22.8–30.0]	n.p.
Very remote	11.2	n.p.	27.1 [23.7–30.5]	n.p.
Total Remote	17.3	30.0	26.9 [24.4–29.4]	20.2 [13.6–26.8]

(a) Rates have been age-standardised to the 2001 Australian population.

Notes

1. Data are not available for *Remote* and *Very remote* for non-Indigenous Australians.
2. Excludes persons for whom blood pressure was not measured or for whom a valid reading was not obtained (13.8% of Aboriginal and Torres Strait Islander people aged 18 years and over and 14.4% of non-Indigenous people aged 18 years and over).

Sources: ABS 2014b; AIHW analysis of unpublished data from the AATSIHS 2012–13 (Core component) and Non-Indigenous people: AHS 2011–12 (Core component).

Table C8: Dyslipidaemia among persons aged 18 and over, by Indigenous status, 2012–13

	Number ('000)		Per cent (95% CI)	
	Indigenous	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
Abnormal triglycerides	70.4	1,859.0	26.6 [22.9–30.3]	13.8 [12.6–15.0]
Abnormal LDL	71.0	4,466.6	25.8 [22.0–29.6]	33.1 [31.5–34.7]
Abnormal HDL	144.5	3,882.3	41.1 [38.2–44.0]	23.0 [21.6–24.4]
Abnormal total cholesterol	91.5	5,560.8	26.1 [23.0–29.2]	32.7 [31.4–34.0]
Total dyslipidaemia	*185.4*	*8,477.5*	*70.5 [67.2–73.8]*	*62.4 [60.5–64.3]*

Notes

1. Rates have been age standardised to the 2001 Australian population.
2. Abnormal HDL cholesterol is defined as less than 1.0 mmol/L for males, and less than 1.3 mmol/L for females.
3. Includes only those persons who fasted for 8 hours or more before their blood test. For Australia in 2012–13, approximately 77.6% of Aboriginal and Torres Strait Islander people aged 18 and over who participated in the biomedical component had fasted. Similarly, for 2011–12, approximately 79.3% of non-Indigenous people aged 18 and over who participated in the biomedical component of the AHS had fasted.

Source: ABS 2014a.

Table C9: Total dyslipidaemia among persons aged 18 and over, by Indigenous status and selected population characteristics, 2011–13

	Number ('000)		Per cent (95% CI)	
Population subgroup	**Indigenous**	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
Age group (years)				
18–24	28.1	562.6	43.9 [33.5–54.3]	33.3 [26.4–40.2]
25–34	35.2	1,280.9	54.4 [46.1–62.7]	51.4 [47.6–55.2]
35–44	47.1	1,442.0	73.8 [67.2–80.4]	59.2 [55.1–63.3]
45–54	36.4	1,692.2	78.9 [72.0–85.8]	70.8 [67.0–74.6]
55+	38.5	3,499.8	85.3 [79.6–91.0]	79.3 [77.3–81.3]
Persons (number/age-standardised rate[(a)])	*185.4*	*8,477.5*	*70.5 [67.2–73.8]*	*62.4 [60.5–64.3]*
Remoteness[(a)]				
Major cities	64.3	6,042.5	66.6 [62.3–70.9]	62.1 [60.0–64.2]
Inner regional	43.7	1,759.2	71.7 [62.2–81.2]	64.2 [60.2–68.2]
Outer regional	43.5	612.5	68.6 [60.5–76.7]	61.8 [54.9–68.7]
Total Non-remote	151.4	8,414.2	68.5 [64.7–72.3]	62.4 [60.5–64.3]
Remote	13.3	n.p.	78.6 [73.5–83.7]	n.p.
Very remote	20.7	n.p.	84.2 [80.8–87.6]	n.p.
Total Remote	34.0	63.2	81.8 [78.9–84.7]	57.5 [46.9–68.1]

(a) Rates have been age standardised to the 2001 Australian population.

Notes

1. Includes only those persons who fasted for 8 hours or more before their blood test. For Australia in 2012–13, approximately 77.6% of Aboriginal and Torres Strait Islander people aged 18 and over who participated in the biomedical component had fasted. Similarly, for 2011–12, approximately 79.3% of non-Indigenous people aged 18 and over who participated in the biomedical component of the AHS had fasted.
2. Data are not available for *Remote* and *Very remote* for non-Indigenous Australians.

Sources: ABS 2014a; AIHW analysis of unpublished data from the 2011–12 NHMS and the 2012–13 NATSIHMS.

Table C10: IFG among persons aged 18 and over, by Indigenous status and selected population characteristics, 2011–13

	Number ('000)		Per cent (95% CI)	
Population subgroup	**Indigenous**	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
Age group (years)				
18–44	8.1*	70.6	4.2 [2.1–6.3]	1.1 [0.6–1.6]
45–54	1.8*	82.5	3.8 [0.4–7.2]	3.5 [2.3–4.7]
55–64	2.1*	100.2	7.6 [2.8–12.4]	4.8 [3.6–6.0]
65+	1.3*	157.9	7.5 [2.2–12.8]	6.9 [5.5–8.3]
Persons (number/age-standardised rate[(a)])	*13.3*	*411.2*	*5.3 [3.6–7.0]*	*2.9 [2.4–3.4]*
Remoteness[(a)]				
Major cities	5.2*	258.8	5.7 [2.7–8.7]	2.7 [2.1–3.3]
Inner regional	3.5*	106.2	5.5 [1.3–9.7]	3.2 [2.2–4.2]
Outer regional	1.7*	42.6*	3.5 [0.8–6.2]	3.9 [1.9–5.9]
Total Non-remote	10.4	407.6	5.0 [3.1–6.9]	2.9 [2.4–3.4]
Remote	1.1*	n.p.	6.4 [2.7–10.1]	n.p.
Very remote	1.8*	n.p.	6.9 [3.3–10.5]	n.p.
Total Remote	2.9	3.6	6.7 [4.1–9.3]	2.7 [0.0–5.4]

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

(a) Rates have been age standardised to the 2001 Australian population.

Notes

1. Includes only those persons who fasted for 8 hours or more before their blood test. For Australia in 2012–13, approximately 77.6% of Aboriginal and Torres Strait Islander people aged 18 and over who participated in the biomedical component had fasted. Similarly, for 2011–12, approximately 79.3% of non-Indigenous people aged 18 and over who participated in the biomedical component of the AHS had fasted.
2. Data are not available for *Remote* and *Very remote* for non-Indigenous Australians.

Source: AIHW analysis of unpublished data from the 2011–12 NHMS and the 2012–13 NATSIHMS.

Table C11: Prevalence of CVD among persons aged 18 and over, by Indigenous status and selected population characteristics, 2011–13

	Number ('000)		Per cent (95% CI)	
Population subgroup	**Indigenous**	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
Age group (years)				
18–34	14.7	207.5	8.6 [5.1–12.1]	3.9 [2.8–5]
35–44	14.2	354.2	18.2 [13.6–22.8]	11.4 [9.2–13.6]
45–54	18.0	616.3	30 [23.2–36.8]	20.5 [17.8–23.2]
55–64	15.1	856.8	43 [34.8–51.2]	33.7 [30.7–36.7]
65+	13.0	1,640.0	59.9 [51–68.8]	56.4 [53.3–59.5]
Persons (number/age-standardised rate[(a)])	*74.9*	*3,674.9*	*26.5 [23.8–29.2]*	*20.7 [19.8–21.6]*
Remoteness[(a)]				
Major cities	22.5	2,506.5	24 [18.1–29.9]	20.5 [19.3–21.7]
Inner regional	15.8	809.5	26.8 [21.4–32.2]	20.8 [18.6–23]
Outer regional	14.8	322.7	23.3 [17.6–29]	22 [19.1–24.9]
Total Non-remote	53.1	3,638.6	24.5 [21.1–27.9]	20.7 [19.7–21.7]
Total Remote	21.8	36.3	33.2 [30.4–36]	23.2 [15.4–31]

(a) Rates have been age standardised to the 2001 Australian population.

Notes

1. CVD data comprise self-reported diagnoses among those people who participated in the biomedical components of the surveys. Refer to Appendix B for further information.
2. Total remote comprises *Remote* and *Very remote*.

Source: AIHW analysis of unpublished data from the 2011–12 NHMS and the 2012–13 NATSIHMS.

Table C12: Prevalence of CHD among persons aged 18 and over, by Indigenous status and age, 2011–13

	Number ('000)		Per cent (95% CI)	
Age group (years)	**Indigenous**	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
18–34	0.9*	6.9**	0.5 [0.2–0.8]	0.1 [0.0–0.3]
35–44	2.2	19.0	2.8 [1.9–3.7]	0.6 [0.4–0.8]
45–54	4.4	55.0	7.4 [5.3–9.5]	1.8 [1.3–2.3]
55–64	4.2	122.1	12.0 [9.0–15.0]	4.8 [4.0–5.6]
65+	3.9	376.2	18.2 [14.2–22.2]	13 [11.7–14.3]
Persons (number/age-standardised rate[(a)])	*15.6*	*579.2*	*6.3 [5.4–7.2]*	*3.2 [2.9–3.5]*

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

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

(a) Rates have been age standardised to the 2001 Australian population.

Note: Self-reported data for coronary heart diseases—current and long term, still current (but not long term), and not current.

Source: AIHW analysis of unpublished data from AATSIHS 2012–13 (Core component) and the AHS 2011–12 (Core component).

Table C13: Incidence of acute coronary events among persons aged 25 and over, by Indigenous status and age, 2012

	Number		Per 100,000 population	
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous
Age group (years)				
25–34	. .	. .	104	8
35–44	. .	. .	552	75
45–54	. .	. .	1,035	249
55–64	. .	. .	1,519	474
65–74	. .	. .	1,902	830
75+	. .	. .	2,413	1,989
Persons (number/age-standardised rate[(a)])	*2,034*	*46,182*	*995*	*399*
Year[(a)]				
2011	1,915	46,902	937	415
2010	1,888	47,205	955	428
2009	1,967	47,656	1,029	443
2008	1,819	50,396	1,035	480
2007	1,762	52,889	1,048	515

(a) Rates have been age standardised to the 2001 Australian population.

Notes

1. The estimated number of heart attacks (acute coronary events) in a given year is derived from hospitalisations with principal diagnoses of acute myocardial infarction or unstable angina that did not end in a transfer to another acute hospital or death in hospital, plus deaths from acute CHD.
2. Australian estimates are based on data from the five jurisdictions where the quality of identification of Indigenous status is considered to be reasonable in both the NHMD and the National Mortality Database (New South Wales, Queensland, Western Australia, South Australia and the Northern Territory).

Sources: AIHW NHMD; AIHW National Mortality Database.

Table C14: Major causes of hospitalisation for CVD among Indigenous persons, 2013–14

	Number of hospitalisations		
CVD type	**Males**	**Females**	**Persons**
CHD	2,700	2,071	4,771
Heart failure and cardiomyopathy	868	862	1,730
Stroke	430	408	838
Peripheral vascular disease	257	163	420
ARF and RHD	203	313	516
Hypertensive heart disease	141	215	356
Other cardiovascular diseases	1,690	1,547	3,237
CVD total	**6,289**	**5,579**	**11,868**
Congenital heart disease	115	116	231

Source: AIHW NHMD.

Table C15: CVD hospitalisation rates by Indigenous status, principal diagnosis, 2013–14

	Hospitalisations per 100,000 population					
	Indigenous			Non-Indigenous		
Population subgroup	Males	Females	Persons	Males	Females	Persons
Age group (years)						
<25	196	237	216	134	121	128
25–34	725	681	703	267	249	258
35–44	2,244	1,767	1,997	717	534	625
45–54	5,094	3,826	4,432	1,806	997	1,398
55–64	7,703	5,906	6,778	4,080	1,930	2,993
65–74	11,349	8,912	10,050	7,923	4,340	6,109
75+	13,819	11,563	12,493	14,826	10,887	12,570
All ages	1,783	1,579	1,681	2,385	1,688	2,035
All ages (age-standardised rate)[(a)]	3,519	2,824	3,149	2,215	1,368	1771.0
Hospitalisations (number)	*6,289*	*5,579*	*11,868*	*268,333*	*191,671*	*460,004*
Remoteness[(b)]						
Major cities	. .	. .	2,463	. .	. .	1,742
Inner and outer regional	. .	. .	3,297	. .	. .	1,952
Remote and very remote	. .	. .	4,100	. .	. .	1,928
Rate ratio (Remote and very remote/ Major cities)	. .	. .	1.7	. .	. .	1.1

(a) Rates have been age standardised to the 2001 Australian population.

(b) Remoteness excludes usual residence not stated; denominator for rates based on June population.

Source: AIHW NHMD.

Table C16: CHD hospitalisation rates by Indigenous status, principal diagnosis, 2013–14

	Hospitalisations per 100,000 population					
	Indigenous			Non-Indigenous		
Age group (years)	Males	Females	Persons	Males	Females	Persons
<25	8	1	4	1	1	1
25–34	187	80	133	26	8	17
35–44	1,127	733	923	197	66	131
45–54	2,607	1,889	2,232	763	243	500
55–64	3,513	2,792	3,142	1,784	572	1,171
65–74	5,109	3,270	4,129	3,169	1,256	2,201
75+	4,386	2,697	3,393	4,320	2,398	3,219
All ages	766	586	676	844	395	619
All ages (age-standardised rate)[(a)]	1,554	1,068	1,294	792	327	550
Hospitalisations (number)	*2,700*	*2,071*	*4,771*	*94,994*	*44,896*	*139,890*

(a) Rates have been age-standardised to the 2001 Australian population.

Source: AIHW NHMD.

Table C17: Coronary procedures in hospitalisations for CHD, by Indigenous status, 2004–06 to 2012–14

	Indigenous	Non–Indigenous	
	Per cent		Rate ratio
Coronary angiography			
2004–06	30.4	38.9	0.78
2006–08	30.0	40.3	0.74
2008–10	31.4	44.8	0.70
2010–12	34.8	45.4	0.77
2012–14	35.3	44.7	0.79
Revascularisation (PCI and CABG)			
2004–06	15.3	22.5	0.68
2006–08	15.3	21.4	0.71
2008–10	15.2	23.7	0.64
2010–12	18.5	24.4	0.76
2012–14	19.7	25.4	0.78

Notes
1. Rates have been age standardised to the 2001 Australian population.
2. Data are for New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory.

Source: AIHW NHMD.

Table C18: Stroke hospitalisation rates by Indigenous status, principal diagnosis, 2013–14

	Hospitalisations per 100,000 population					
	Indigenous			Non-Indigenous		
Age group (years)	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
<25	8	5	6	4	4	4
25–34	36	44	40	12	15	13
35–44	109	123	116	40	35	37
45–54	331	309	319	103	66	84
55–64	555	344	447	222	122	172
65–74	957	757	850	495	299	396
75+	1,546	1,459	1,495	1,368	1,232	1,290
All ages	122	115	119	166	149	158
All ages (age-standardised rate)[(a)]	296	250	271	161	117	138
Hospitalisations (number)	*430*	*408*	*838*	*18,706*	*16,894*	*35,600*

(a) Rates have been age standardised to the 2001 Australian population.

Source: AIHW NHMD.

Table C19: Major causes of CVD deaths among Indigenous people, 2010–12

	Number		Per cent of CVD deaths	
Major causes	**Males**	**Females**	**Males**	**Females**
CHD	648	334	63.9	42.2
Stroke	101	152	10.0	19.2
Heart failure	86	66	8.5	8.3
Hypertensive disease	37	35	3.6	4.4
ARF and RHD	23	39	2.3	4.9
Peripheral vascular disease	23	22	2.3	2.8
All CVD	*1,014*	*792*	*100*	*100*

Notes
1. Rates have been age standardised to the 2001 Australian population.
2. Data are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.
3. Excludes 878 CVD deaths (0.9% of all CVD deaths) with no stated information on Aboriginal and Torres Strait Islander status.

Source: AIHW National Mortality Database.

Table C20: Death rates with CVD as an underlying cause, by Indigenous status, 2010–12

	Deaths per 100,000 population					
	Indigenous			Non-Indigenous		
Age group (years)	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
<35	8.9	7.6	8.3	2.9	1.7	2.3
35–44	132.2	82.2	106.2	20.2	7.4	13.8
45–54	291.9	153.2	219.9	60.3	22.0	41.0
55–64	465.8	269.1	363.5	148.6	51.4	99.9
65–74	879.8	636.1	747.7	388.2	190.4	288.6
75+	2,786.2	2,188.5	2,425.1	2,526.8	2,521.7	2,523.8
All ages	114.5	88.8	101.6	196.2	212.8	204.5
Age-standardised rate (per 100,000)	333.1	236.4	279.7	198.9	168.0	183.3
Deaths (number)	*1,014*	*792*	*1,806*	*45,047*	*49,124*	*94,171*

Notes
1. Rates have been age standardised to the 2001 Australian population.
2. Data are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.
3. Excludes 878 CVD deaths with no stated information on Aboriginal and Torres Strait Islander status.

Source: AIHW National Mortality Database.

Table C21: Death rates with CHD as an underlying cause, by Indigenous status, 2010–12

	Deaths per 100,000 population					
	Indigenous			Non-Indigenous		
Age group (years)	Males	Females	Persons	Males	Females	Persons
<35	4.5	2.0	3.2	0.7	0.1	0.4
35–44	93.9	31.8	61.6	10.8	1.6	6.1
45–54	221.1	72.6	144.0	38.4	7.7	23.0
55–64	313.4	132.6	219.3	94.9	22.0	58.4
65–74	521.6	275.8	388.3	225.5	79.1	151.7
75+	1,372.3	853.6	1,058.9	1,275.9	1,047.8	1,143.5
All ages	73.2	37.5	55.3	104.5	87.8	96.1
Age-standardised rate (per 100,000)	193.4	98.2	141.1	105.1	69.1	86.0
Deaths (number)	*648*	*334*	*982*	*23,994*	*20,272*	*44,266*

Notes
1. Rates have been age standardised to the 2001 Australian population.
2. Data are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.
3. Excludes 431 CHD deaths with no stated information on Aboriginal and Torres Strait Islander status.

Source: AIHW National Mortality Database.

Table C22: Death rates with stroke as an underlying cause, by Indigenous status, 2010–12

	Deaths per 100,000 population					
	Indigenous			Non-Indigenous		
Age group (years)	Males	Females	Persons	Males	Females	Persons
<35	0.3	1.0	0.6	0.3	0.3	0.3
35–44	2.9	14.1	8.7	2.6	2.5	2.6
45–54	17.4	25.3	21.5	6.5	6.0	6.3
55–64	60.1	41.6	50.5	16.6	11.1	13.9
65–74	79.0	102.3	91.7	54.8	43.9	49.3
75+	540.6	581.2	565.1	434.2	554.1	503.8
All ages	11.4	17.0	14.2	31.0	47.2	39.1
Age-standardised rate (per 100,000)	45.7	51.3	48.8	31.8	37.3	35.1
Deaths (number)	*101*	*152*	*253*	*7,121*	*10,888*	*18,009*

Notes
1. Rates have been age standardised to the 2001 Australian population.
2. Data are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.
3. Excludes 132 stroke deaths with no stated information on Aboriginal and Torres Strait Islander status.

Source: AIHW National Mortality Database.

Table C23: Prevalence of diabetes among persons aged 18 and over, by Indigenous status and selected population characteristics, 2011–13

	Number ('000)		Per cent (95% CI)	
Population subgroup	**Indigenous**	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
Age group (years)				
18–34	3.9*	29.6*	2.3 [1.2–3.4]	0.6 [0.2–1.0]
35–44	8.4	84.7	10.8 [7.2–14.4]	2.7 [1.5–3.9]
45–54	12.4	157.7	20.7 [14.9–26.5]	5.3 [3.8–6.8]
55–64	11.6	221.0	33.2 [25.5–40.9]	8.7 [7.1–10.3]
65+	9.8	414.3	45.5 [35.7–55.3]	14.2 [12.2–16.2]
Persons (number/age-standardised rate[(a)])	*46.2*	*907.3*	*17.9 [15.6–20.2]*	*5.1 [4.6–5.6]*
Remoteness				
Major cities	11.0	651.0	13.9 [10.4–17.4]	5.4 [4.7–6.1]
Inner regional	8.1	178.7	15.1 [9.7–20.5]	4.5 [3.3–5.7]
Outer regional	9.6	69.4	16.7 [11.0–22.4]	4.6 [3.1–6.1]
Total Non-remote	28.7	899.2	15.1 [12.3–17.9]	5.1 [4.6–5.6]
Total Remote	17.5	8.1*	27.5 [24.6–30.4]	4.9 [1.9–7.9]

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

(a) Rates have been age standardised to the 2001 Australian population.

Notes

1. Includes pregnant women.
2. Diabetes prevalence is derived using a combination of HbA1c test results and self-reported information on diabetes diagnosis and medication use.
3. Total remote comprises *Remote* and *Very remote*.

Source: AIHW analysis of unpublished data from the 2011–12 NHMS and the 2012–13 NATSIHMS.

Table C24: Hospitalisations by diabetes type, Indigenous status, 2013–14

	Type 1 diabetes	Type 2 diabetes	Other or unspecified diabetes[a]	Gestational diabetes
Principal diagnosis		**Number of hospitalisations**		
Indigenous	625	2,234	402	505
Non-Indigenous	12,570	24,218	1,018	2,360
		Per cent		
Indigenous	16.6	59.3	10.7	13.4
Non-Indigenous	31.3	60.3	2.5	5.9
Rate ratio	*0.5*	*1.0*	*4.2*	*2.3*
Principal and additional diagnosis[b]		**Number of hospitalisations**		
Indigenous	2,178	46,583	1,212	2,075
Non-Indigenous	50,231	760,642	14,611	34,935
		Per cent		
Indigenous	4.2	89.5	2.3	4.0
Non-Indigenous	5.8	88.4	1.7	4.1
Rate ratio	*0.7*	*1.0*	*1.4*	*1.0*

(a) 'Other or unspecified diabetes' includes ICD-10-AM codes E13–E14, O24.0–O24.3, O24.9.

(b) Hospitalisation counted once, based on first recorded additional diagnosis.

Source: AIHW NHMD.

Table C25: Type 1 diabetes hospitalisation rates, principal and additional diagnoses, by Indigenous status, 2013–14

	Hospitalisations per 100,000 population					
	Indigenous			Non-Indigenous		
Population characteristics	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Age group (years)						
<25	112	168	139	119	162	140
25–34	341	386	364	165	218	191
35–44	475	721	602	208	225	217
45–54	389	479	436	250	235	242
55–64	1,041	859	947	331	274	302
65–74	358	565	468	434	307	370
75+	568	221	364	440	325	374
All ages	275	350	312	224	226	225
All ages (age-standardised rate)[a]	371	430	400	218	220	218
Hospitalisations (number)	*969*	*1,237*	*2,206*	*25,223*	*25,666*	*50,889*
Remoteness[b]						
Major cities	. .	. .	451	. .	. .	204
Inner and outer regional	. .	. .	491	. .	. .	264
Remote and very remote	. .	. .	174	. .	. .	201
Rate ratio (Remote and very remote/ Major cities)	. .	. .	0.4	. .	. .	1.0

(a) Rates have been age standardised to the 2001 Australian population.

(b) Remoteness excludes usual residence not stated; denominator based on June population.

Source: AIHW NHMD.

Table C26: Type 2 diabetes hospitalisation rates, principal or additional diagnoses, by Indigenous status, 2013–14

	Hospitalisations per 100,000 population					
	Indigenous			Non-Indigenous		
Population characteristics	Males	Females	Persons	Males	Females	Persons
Age group (years)						
<25	75	216	144	10	25	17
25–34	1,466	3,299	2,385	120	215	167
35–44	7,880	9,551	8,744	582	682	632
45–54	17,202	20,779	19,068	2,179	1,704	1,939
55–64	26,150	37,171	31,820	6,557	4,344	5,437
65–74	35,696	44,118	40,187	15,228	9,548	12,353
75+	42,467	37,962	39,818	25,076	16,599	20,220
All ages	5,492	7,811	6,653	3,822	2,918	3,368
All ages (age-standardised rate)[(a)]	11,296	13,570	12,426	3,511	2,395	2,915
Hospitalisations (number)	*19,368*	*27,607*	*46,975*	*429,943*	*331,230*	*761,173*
Remoteness[(b)]						
Major cities	. .	. .	9,577	. .	. .	2,974
Inner and outer regional	. .	. .	10,477	. .	. .	2,914
Remote and very remote	. .	. .	21,822	. .	. .	2,595
Rate ratio (Remote and very remote/ Major cities)	. .	. .	2.3	. .	. .	0.9

(a) Rates have been age-standardised to the 2001 Australian population.

(b) Remoteness excludes usual residence not stated; denominator for age-specific rates based on June population.

Source: AIHW NHMD.

Table C27: Death rates with diabetes as an underlying cause or associated cause, by Indigenous status, 2010–12

	Deaths per 100,000 population					
	Indigenous			Non-Indigenous		
Age group (years)	Males	Females	Persons	Males	Females	Persons
<55	25.8	22.4	24.1	3.9	2.3	3.1
55–64	461.6	385.8	422.1	59.6	28.0	43.8
65–74	795.5	831.9	815.2	211.0	109.8	160.0
75+	2,023.8	1,716.3	1838	860.0	631.6	727.5
All ages	81.6	84.3	82.9	72.6	60.4	66.5
Age-standardised rate (per 100,000)	252.9	221.7	235.1	72.7	48.3	59.4
Deaths (number)	*722*	*752*	*1,474*	*16,670*	*13,935*	*30,605*

Notes

1. Rates have been age standardised to the 2001 Australian population.
2. Data are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.
3. Excludes 251 diabetes deaths with no stated information on Aboriginal and Torres Strait Islander status.

Source: AIHW National Mortality Database.

Table C28: Prevalence of biomedical signs of CKD among persons aged 18 and over, by Indigenous status and selected population characteristics, 2011–13

	Number ('000)		Per cent (95% CI)	
Population subgroup	**Indigenous**	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
Age group (years)				
18–34	13.6	312.1	9.0 [6.4–11.6]	6.6 [4.9–8.3]
35–44	10.2	154.3	14 [10.5–17.5]	5.5 [3.8–7.2]
45–54	14.1	168.6	24.9 [18.1–31.7]	6.0 [4.5–7.5]
55–64	11.4	200.2	34.8 [26.5–43.1]	8.4 [6.6–10.2]
65+	10.3	866.5	49.0 [39.6–58.4]	31.3 [29–33.6]
Persons (number/age-standardised rate[(a)])	59.6	1,701.7	22.2 [19.7–24.7]	10.4 [9.6–11.2]
Remoteness[(a)]				
Major cities	13.8	1,243.7	16.9 [12.8–21.0]	10.8 [9.7–11.9]
Inner regional	7.3	344.0	12.8 [7.7–17.9]	10.2 [7.9–12.5]
Outer regional	12.4	101.9	21.6 [14.4–28.8]	7.5 [5.9–9.1]
Total Non-remote	*33.6*	*1,689.6*	*17.1 [14.0–20.2]*	*10.4 [9.6–11.2]*
Total Remote	*26.0*	*12.1**	*38.8 [35.7–41.9]*	*8.4 [4.3–12.5]*

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

(a) Rates have been age standardised to the 2001 Australian population.

Notes

1. CKD and its stages are derived using a combination of participants' eGFR results with their ACR results. See the Glossary for more information.
2. Total remote comprises *Remote* and *Very remote*.

Source: AIHW analysis of unpublished data from the 2011–12 NHMS and the 2012–13 NATSIHMS.

Table C29: Prevalence of biomedical signs of CKD among persons aged 18 and over, by Indigenous status and CKD stage, 2011–13

	Number ('000)		Per cent (95% CI)[(a)]	
CKD stage	**Indigenous**	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
Stage 1	39.2	661.5	12.9 [10.9–14.9]	4.3 [3.6–5.0]
Stage 2	11.2	421.9	5.0 [3.7–6.3]	2.5 [2.1–2.9]
Stage 3a	3.8	466.0	2.0 [1.0–3.0]	2.7 [2.4–3.0]
Stage 3b	*1.8	102.4	0.9 [0.4–1.4]	0.6 [0.4–0.8]
Stage 4–5	*3.6	*50.0	1.4 [0.5–2.3]	0.3 [0.0–0.6]
Total signs of CKD	*59.6*	*1,701.7*	*22.2 [19.7–24.7]*	*10.4 [9.6–11.2]*

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

(a) Rates have been age standardised to the 2001 Australian population.

Note: CKD and its stages are derived using a combination of participants' eGFR results with their ACR results. See Appendix B for more information.

Source: ABS 2014a.

Table C30: Prevalence of treated ESKD by Indigenous status and selected population characteristics, 2013

	Number		Number per 100,000 population	
Population subgroup	**Indigenous**	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
Age group (years)				
0–29	61	1,011	13.8	11.5
30–34	46	615	102.2	37.5
35–39	105	865	268.8	56.9
40–44	160	1,282	376.4	78.8
45–49	241	1,531	666.8	102.0
50–54	281	1,982	890.8	130.0
55–59	274	2,117	1,112.6	152.8
60–64	248	2,507	1,401.3	203.1
65–69	163	2,320	1,418.6	213.1
70–74	65	2,010	917.0	253.7
75+	37	3,398	481.0	228.5
Persons (number/age-standardised rate[(a)(b)])	*1,681*	*19,638*	*393.9*	*79.3*
Remoteness				
Major cities	291	14,190	210.1	83.8
Inner and outer regional	673	5,162	368.8	73.5
Remote and very remote	703	235	747.9	56.1

(a) Excludes those who have received kidney transplants in other counties.

(b) Rates have been age standardised to the 2001 Australian population.

(c) Remoteness excludes invalid usual residence postcode.

Source: ANZDATA Registry.

Table C31: Dialysis hospitalisation rates, as principal diagnosis, by Indigenous status and selected population characteristics, 2013–14

	Hospitalisations per 100,000 population					
	Indigenous			Non-Indigenous		
Population characteristics	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Age group (years)						
<25	342	716	525	210	167	189
25–34	7,243	6,418	6,829	1,057	702	881
35–44	32,775	35,800	34,339	2,431	1,373	1,899
45–54	79,986	91,995	86,251	4,863	3,140	3,993
55–64	98,161	165,704	132,909	9,906	5,914	7,886
65–74	124,283	186,616	157,525	19,377	12,233	15,761
75+	78,624	66,505	71,498	37,286	17,111	25,730
All ages	21,703	31,048	26,380	6,058	3,768	4,908
All ages (age-standardised rate)[(a)]	39,049	50,854	45,084	5,682	3,259	4,389
Hospitalisations (number)	*76,537*	*109,731*	*186,268*	*681,515*	*427,748*	*1,109,263*
Remoteness[(b)]						
Major cities	. .	. .	30,875	. .	. .	4,883
Inner and outer regional	. .	. .	40,597	. .	. .	3,519
Remote and very remote	. .	. .	80,770	. .	. .	1,075
Rate ratio (Remote and very remote/ Major cities)	. .	. .	2.6	. .	. .	0.2

(a) Rates have been age standardised to the 2001 Australian population.

(b) Remoteness excludes usual residence not stated; denominator based on June population.

Source: AIHW NHMD.

Table C32: CKD hospitalisation rates (excluding dialysis), principal and additional diagnoses, by Indigenous status, 2013–14

	Hospitalisations per 100,000 population					
	Indigenous			Non-Indigenous		
Population characteristics	Males	Females	Persons	Males	Females	Persons
Age group (years)						
<25	213	399	304	117	187	151
25–34	739	1,568	1,155	175	288	231
35–44	3,259	3,551	3,410	288	332	310
45–54	7,172	7,918	7,561	671	477	573
55–64	10,510	13,557	12,078	1,632	945	1,285
65–74	15,305	16,361	15,868	4,032	2,316	3,163
75+	18,710	19,810	19,357	12,158	7,283	9,366
All ages	2,404	3,198	2,802	1,401	1,061	1,230
All ages (age-standardised rate)[(a)]	4,770	5,568	5,192	1,325	862	1,067
Hospitalisations (number)	*8,477*	*11,304*	*19,781*	*157,631*	*120,424*	*278,055*
Remoteness[(b)]						
Major cities	. .	. .	3,114	. .	. .	1,144
Inner and outer regional	. .	. .	4,245	. .	. .	1,024
Remote and very remote	. .	. .	10,694	. .	. .	799
Rate ratio (Remote and very remote/ Major cities)	. .	. .	3.4	. .	. .	0.7

(a) Rates have been age standardised to the 2001 Australian population.

(b) Remoteness excludes usual residence not stated; denominator based on June population.

Source: AIHW NHMD.

Table C33: Death rates with CKD as an underlying cause or associated cause, by Indigenous status, 2010–12

	Deaths per 100,000 population					
	Indigenous			Non-Indigenous		
Age group (years)	Males	Females	Persons	Males	Females	Persons
<55	20.2	19.9	20.1	2.8	1.9	2.4
55–64	274.8	298.8	287.3	33.4	19.2	26.3
65–74	684.9	720.6	704.3	131.5	78.4	104.7
75+	1,538.7	1,443.9	1,481.4	1,003.7	686.7	819.7
All ages	60.2	71	65.6	70.4	60.7	65.5
Age-standardised rate (per 100,000)	189.7	186.9	187.9	72.2	48.2	58.7
Deaths (number)	*533*	*633*	*1,166*	*16,155*	*14,015*	*30,170*

Notes

1. Rates have been age standardised to the 2001 Australian population.
2. Data are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.
3. Excludes 272 diabetes deaths with no stated information on Aboriginal and Torres Strait Islander status.

Source: AIHW National Mortality Database.

Table C34: Prevalence of CVD, diabetes and CKD and their comorbidity, persons aged 18 and over, by Indigenous status, 2011–2013

	Number ('000)		Per cent (95% CI)	
Age group (years)	**Indigenous**	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
18–44 years				
CVD only	19.1	439.1	39.1 [30.0–48.2]	43.8 [38.2–49.4]
Diabetes only	4.7*	70.5	9.6 [4.3–14.9]	7.0 [3.9–10.1]
CKD only	14.6	417.3	30 [22.2–37.8]	41.6 [35.3–47.9]
CVD and diabetes only	1.3*	27.2*	2.7 [0.7–4.7]	2.7 [0.3–5.1]
CVD and CKD only	3.6*	37.2*	7.4 [3.4–11.4]	3.7 [1.5–5.9]
CKD and diabetes only	3.7	7.5**	7.5 [4.1–10.9]	0.8 [0.0–1.7]
CVD, CKD and diabetes	1.8	4.4**	3.7 [2.0–5.4]	0.4 [0.0–1.1]
45–64 years				
CVD only	15.3	1,055.6	30.6 [23.1–38.1]	62.2 [58.6–65.8]
Diabetes only	4.0	128.7	8.0 [4.3–11.7]	7.6 [5.4–9.8]
CKD only	7.7	183.0	15.4 [9.3–21.5]	10.8 [8.4–13.2]
CVD and diabetes only	5.2	143.7	10.4 [6.0–14.8]	8.5 [6.4–10.6]
CVD and CKD only	4.2*	116.3	8.4 [3.7–13.1]	6.9 [4.9–8.8]
CKD and diabetes only	6.6	24.5*	13.2 [8.0–18.4]	1.4 [0.4–2.5]
CVD, CKD and diabetes	6.9	44.9	13.8 [9.1–18.5]	2.6 [1.5–3.8]
65+ years				
CVD only	3.6	852.4	20.2 [12.5–27.9]	44.3 [40.9–47.7]
Diabetes only	1.3*	69.1	7.2 [2.1–12.3]	3.6 [2.6–4.6]
CKD only	2.7*	227.0	15.0 [7.1–22.9]	11.8 [9.2–14.4]
CVD and diabetes only	2.8	137.3	15.6 [8.1–23.1]	7.1 [5.7–8.5]
CVD and CKD only	2.4*	446.9	13.2 [4.7–21.7]	23.2 [20.1–26.3]
CKD and diabetes only	1.7*	62.7	9.3 [3.8–14.8]	3.3 [1.8–4.8]
CVD, CKD and diabetes	3.5	129.9	19.4 [12.1–26.7]	6.7 [4.9–8.5]
Total				
CVD only	38.0	2,347.2	32.5 [27.5–37.5]	50.7 [48.5–52.9]
Diabetes only	10.0	268.4	8.5 [5.6–11.4]	5.8 [4.6–7.0]
CKD only	25.1	827.4	21.4 [16.9–25.9]	17.9 [16.0–19.8]
CVD and diabetes only	9.3	308.2	8.0 [5.6–10.4]	6.7 [5.7–7.7]
CVD and CKD only	10.2	600.3	8.7 [5.9–11.5]	13.0 [11.6–14.4]
CKD and diabetes only	12.0	94.7	10.3 [7.6–13.0]	2.0 [1.3–2.7]
CVD, CKD and diabetes	12.3	179.3	10.5 [8.1–12.9]	3.9 [3.1–4.7]

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

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

Note: See Appendix B for comorbidity disease definitions.

Source: AIHW analysis of unpublished data from the 2011–12 NHMS and the 2012–13 NATSIHMS.

Table C35: Hospitalisations (excluding regular dialysis) for people aged 25 and over with diagnosis of CVD, diabetes and CKD, by Indigenous status, 2013–14

	Number of hospitalisations		Per cent	
Age group (years)	**Indigenous**	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
25–44				
CVD only	3,746	55,363	21.4	39.1
Diabetes only	8,371	64,547	47.8	45.5
CKD only	692	9,463	3.9	6.7
CVD and diabetes only	1,472	4,438	8.4	3.1
CVD and CKD only	778	3,356	4.4	2.4
CKD and diabetes only	600	2,059	3.4	1.5
CVD, diabetes and CKD	1,864	2,520	10.6	1.8
45–64				
CVD only	5,323	172,312	15.6	41.6
Diabetes only	14,457	152,893	42.3	36.9
CKD only	646	12,244	1.9	3.0
CVD and diabetes only	4,175	38,194	12.2	9.2
CVD and CKD only	972	9,606	2.8	2.3
CKD and diabetes only	1,760	9,445	5.1	2.3
CVD, diabetes and CKD	6,852	19,695	20.0	4.8
65+				
CVD only	2,633	452,460	18.8	41.8
Diabetes only	5,140	317,944	36.7	29.4
CKD only	193	24,387	1.4	2.3
CVD and diabetes only	1,789	112,684	12.8	10.4
CVD and CKD only	472	54,047	3.4	5.0
CKD and diabetes only	751	30,190	5.4	2.8
CVD, diabetes and CKD	3,021	90,285	21.6	8.3
Total				
CVD only	11,702	680,135	17.8	41.5
Diabetes only	27,968	535,384	42.6	32.7
CKD only	1,531	46,094	2.3	2.8
CVD and diabetes only	7,436	155,316	11.3	9.5
CVD and CKD only	2,222	67,009	3.4	4.1
CKD and diabetes only	3,111	41,694	4.7	2.5
CVD, diabetes and CKD	11,737	112,500	17.9	6.9

Note: Excludes records with sex indeterminate and age not stated.

Source: AIHW NHMD.

Table C36: Deaths with CVD, diabetes and CKD as underlying or associated cause of death, by Indigenous status and age, 2010–12

	Number		Per cent	
Age group (years)	**Indigenous**	**Non-Indigenous**	**Indigenous**	**Non-Indigenous**
0–44 years				
CVD only	454	2,418	68.0	81.3
CVD and CKD	42	91	6.3	3.1
CVD and diabetes	51	116	7.6	3.9
CVD, CKD and diabetes	40	30	6.0	1.0
CKD and diabetes	16	11	2.4	0.4
CKD only	31	183	4.6	6.2
Diabetes only	34	126	5.1	4.2
45–64 years				
CVD only	768	12,247	47.3	73.3
CVD and CKD	136	702	8.4	4.2
CVD and diabetes	293	1,833	18.0	11.0
CVD, CKD and diabetes	216	455	13.3	2.7
CKD and diabetes	63	128	3.9	0.8
CKD only	60	630	3.7	3.8
Diabetes only	88	713	5.4	4.3
65 years and over				
CVD only	878	115,560	47.3	70.0
CVD and CKD	214	16,923	11.5	10.3
CVD and diabetes	338	17,565	18.2	10.6
CVD, CKD and diabetes	197	4,746	10.6	2.9
CKD and diabetes	59	863	3.2	0.5
CKD only	92	5,408	5.0	3.3
Diabetes only	79	4,019	4.3	2.4
All ages				
CVD only	2,100	130,225	50.6	70.5
CVD and CKD	392	17,716	9.4	9.6
CVD and diabetes	682	19,514	16.4	10.6
CVD, CKD and diabetes	453	5,231	10.9	2.8
CKD and diabetes	138	1,002	3.3	0.5
CKD only	183	6,221	4.4	3.4
Diabetes only	201	4,858	4.8	2.6
All CVD deaths	3,627	172,686	87.4	93.5
All diabetes deaths	1,474	30,605	35.5	16.6
All CKD deaths	1,166	30,170	28.1	16.3
All deaths with CVD, CKD or diabetes as any cause	*4,149*	*184,767*	*100*	*100*
All deaths	***7,166***	***300,916***		

Note: Data are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.
Source: AIHW National Mortality Database.

Glossary

Aboriginal or Torres Strait Islander: a person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander.

Acute care: see *care type*.

Acute coronary syndrome: term that describes an acute myocardial infarction (*heart attack*) and *unstable angina* when they first present as clinical emergencies with chest pain or other features.

Acute myocardial infarction: term commonly used to mean a *heart attack*, but more correctly refers only to those heart attacks that have caused some death of heart muscle.

Acute rheumatic fever (ARF): an acute, serious disease that affects mainly children and young adults and can damage the heart valves, the heart muscle and its lining, the joints and the brain. It is brought on by a reaction to a throat infection by a particular bacterium. Now very rare among the non-Indigenous population, it is still at unacceptably high levels among Indigenous people living in remote areas. See *rheumatic heart disease*.

Additional diagnosis: conditions or complaints, either coexisting with the principal diagnosis or arising during the episode of admitted patient care (hospitalisation), episode of residential care or attendance at a health-care establishment that require the provision of care. Multiple diagnoses may be recorded.

Age-standardisation: a method of removing the influence of age when comparing populations with different age structures. This is usually necessary because the rates of many diseases vary strongly (usually increasing) with age. The age structures of the different populations are converted to the same 'standard' structure; then the disease rates that would have occurred with that structure are calculated and compared.

Albuminuria: the presence of more than normal amounts of a protein called albumin in the urine.

Angina: temporary chest pain or discomfort when the heart's own blood supply is inadequate to meet extra needs, as can occur during exercise. See also *unstable angina* and *cardiovascular disease*.

Angioplasty: a method of reducing a blockage in an artery by opening out a balloon that is placed inside the artery at the point of narrowing.

Associated cause(s) of death: any/all cause(s) listed on the death certificate, other than the underlying cause of death. They include the immediate cause, any intervening causes, and conditions that contributed to the death but were not related to the disease or condition causing the death. See also *cause of death*.

Atherosclerosis: a process in which fatty and fibre-like deposits build up on the inner walls of arteries, often forming *plaques* that can then cause blockages. It is the main underlying condition in *heart attack*, *angina*, *stroke* and *peripheral vascular disease*.

Blood cholesterol: fatty substance produced by the liver and carried by the blood to supply the rest of the body. Its natural function is to supply material for cell walls and for steroid hormones, but if levels become too high this can lead to *atherosclerosis* and heart disease.

Blood pressure: the force exerted by the blood on the walls of the arteries as it is pumped around the body by the heart. It is written, for example, as 134/70 mmHg, where the upper number is the systolic pressure (the maximum force against the arteries as the heart muscle contracts to pump the blood out) and the lower number is the diastolic pressure (the minimum force against the arteries as the heart relaxes and fills again with blood). See also *high blood pressure/hypertension*.

Body mass index (BMI): the most commonly used method of assessing whether a person is of normal weight, underweight, *overweight* or *obese*. It is calculated by dividing the person's weight (in kilograms) by their height (in metres) squared; that is, kg ÷ m^2. For both men and women, underweight is a BMI below 18.5, acceptable weight is from 18.5 to less than 25, overweight is 25 and above (includes obese), and obese is 30 and over. Sometimes overweight and obese are combined, and this is defined as a BMI of 25 and over.

Burden of disease: term referring to the quantified impact of a disease or injury on an individual or population. It is measured using the disability-adjusted life year, which is a year of healthy life lost through either premature death or living with disability due to injury or illness.

Cardiomyopathy: a condition in which there is direct and widespread damage to the heart muscle, weakening it. It can be due to various causes such as viral infections and severe alcohol abuse, leading to an enlarged, thickened and dilated heart as well as *heart failure*.

Cardiovascular disease (CVD): any disease of the circulatory system, namely the heart (cardio) or blood vessels (vascular). Includes *heart attack*, *angina*, *stroke*, *heart failure* and *peripheral vascular disease*. CVD is also known as circulatory disease.

Care type: a term that defines the overall nature of a clinical service provided to an admitted patient during an episode of care (admitted care), or the type of service provided by the hospital for boarders or posthumous organ procurement (care other than admitted care). Admitted patient care consists of the following categories: acute care, rehabilitation care, palliative care, geriatric evaluation and management, psychogeriatric care, maintenance care, newborn care, other admitted patient care—this is where the principal clinical intent does not meet the criteria for any of the above. Care other than admitted care includes posthumous organ procurement, hospital boarder.

Cause of death: the causes of death entered on the Medical Certificate of Cause of Death are all diseases, morbid conditions or injuries that either resulted in or contributed to death, and the circumstances of the accident or violence that produced any such injuries. Causes of death are commonly reported by the *underlying cause of death*. See also *associated cause(s) of death*.

Cerebrovascular disease: any disorder of the blood vessels supplying the brain or its covering membranes. A notable and major form of cerebrovascular disease is *stroke*.

Chronic diseases: term applied to a diverse group of diseases, such as *heart disease*, cancer and arthritis, that tend to be long lasting and persistent in their symptoms or development. Although these features also apply to some communicable diseases, the term is usually confined to non-communicable diseases.

Chronic kidney disease: a term that refers to all conditions of the kidney, lasting at least 3 months, where a person has had evidence of kidney damage and/or reduced kidney function, regardless of the specific diagnosis of disease or condition causing the disease.

Circulatory disease: alternative name for *cardiovascular disease*.

Circulatory system: the heart and blood vessels that make up the system that circulates blood around the body to supply oxygen and nutrients to all body tissues and to carry away waste products from them. Also known as the cardiovascular system.

Comorbidity: a term used when a person has two or more health problems at the same time.

Congenital: a condition that is recognised at birth or that is believed to have been present since birth, including conditions that are inherited or caused by environmental factors.

Coronary angiography: diagnostic procedure that gives a picture of the coronary arteries to determine where, and the extent to which, they may be narrowed or blocked.

Coronary artery bypass graft (CABG): surgical procedure using blood vessel grafts to bypass blockages in the coronary arteries and restore adequate blood flow to the heart muscle.

Coronary artery disease: disease of the coronary arteries, typically meaning *atherosclerosis*. When this leads to symptoms such as chest pain, the result is known as *coronary heart disease*.

Coronary heart disease (CHD): disease due to blockages in the heart's own (coronary) arteries, expressed as *angina* or a *heart attack*. Also known as ischaemic heart disease.

Creatinine: a chemical found in the blood and passed in the urine. A test of the amount of creatinine in blood or in blood and urine indicates functioning of the kidneys.

Diabetes (diabetes mellitus): a chronic condition in which the body cannot properly use its main energy source, the sugar *glucose*. This is due to a relative or absolute deficiency in insulin, a hormone produced by the pancreas which helps glucose to enter the body's cells from the bloodstream and then be processed by them. Diabetes is marked by an abnormal build-up of glucose in the blood, and it can have serious short- and long-term effects. For the three main types of diabetes see *type 1 diabetes*, *type 2 diabetes* and *gestational diabetes mellitus*.

Diabetic nephropathy: disease of the capillaries of the *glomeruli* resulting from *diabetes*.

Dialysis: an artificial method of removing waste products and water from the blood as well as regulating levels of circulating chemicals. There are two main forms of dialysis: h*aemodialysis* (which occurs outside the body via a machine) and *peritoneal dialysis (*which occurs inside the patient's body via the lining of the abdominal cavity).

Disease: a physical or mental disturbance involving symptoms (such as pain or feeling unwell), dysfunction or tissue damage, especially if these symptoms and signs form a recognisable clinical pattern.

Dyslipidaemia: abnormal levels of fats, such as cholesterol or triglycerides, in the blood. The standard lipid blood tests include measurements of total cholesterol, low-density lipoprotein cholesterol ('bad' cholesterol), high-density lipoprotein cholesterol ('good' cholesterol), as well as triglycerides. In the ABS Australian Health Survey, dyslipidaemia is defined as persons with one or more of the following: taking lipid-lowering medication, abnormal total cholesterol results, abnormal low-density lipoprotein cholesterol results, abnormal high-density lipoprotein cholesterol results or abnormal triglyceride results.

End-stage kidney disease: the most severe form of chronic kidney disease, also known as Stage 5 chronic kidney disease or kidney failure. People with end-stage kidney disease generally experience a range of symptoms and abnormalities in several organ systems due to severe loss of kidney function. *Kidney replacement therapy* in the form of *dialysis* or a kidney transplant is required for survival when kidney function is no longer sufficient to sustain life.

Estimated glomerular filtration rate: a measure of the rate at which the kidneys filter wastes from the blood, considered to be the best measure of kidney function.

Gestational diabetes mellitus: a form of diabetes that is defined as *glucose* intolerance in pregnant women not previously diagnosed with diabetes. Gestational diabetes mellitus is a temporary form of diabetes that usually disappears after the baby is born. Women who have had gestational diabetes mellitus are at increased risk of developing type 2 diabetes; gestational diabetes mellitus also increases the risk of perinatal *morbidity* and mortality. Compare with *type 1 diabetes* and *type 2 diabetes*.

Glomerular filtration rate: the amount of blood the kidneys can clear of waste products in 1 minute. Usually estimated (*estimated glomerular filtration rate*) using age, gender, and *creatinine* levels in the blood.

Glomeruli: part of the basic filtering unit of the kidney, the nephrons.

Glucose: the main sugar that the body uses for energy. Glucose is a simple sugar that comes from the breakdown of carbohydrates in the diet as well as from the breakdown of glycogen (the storage form of glucose) in the liver. The body requires the hormone *insulin* to use glucose properly.

Heart attack: life-threatening emergency that occurs when a vessel supplying blood to the heart muscle is suddenly blocked completely by a blood clot. The medical term commonly used for a heart attack is *acute myocardial infarction*.

Heart failure: a term that describe when the heart functions less effectively in pumping blood around the body. It can result from a wide variety of diseases and conditions that can impair or overload the heart, such as *heart attack*, other conditions that damage the heart muscle directly (see *cardiomyopathy*), *high blood pressure/hypertension*, or a damaged heart valve.

High blood pressure/hypertension: the definition of high blood pressure (also known as hypertension) can vary but a well-accepted one is from the WHO: a systolic blood pressure of 140 mmHg or more or a diastolic blood pressure of 90 mmHg or more, or [the person is] receiving medication for high blood pressure. Also see *blood pressure*.

Impaired fasting glucose (IFG): the presence of higher than usual levels of *glucose* in the blood after fasting, in the range of 6.1 to 6.9 mmol/L but less than diabetes levels (at least 7.0 mmol/L).

Incidence: the number of new cases (of an illness or event, and so on) occurring during a given period. Compare with *prevalence*.

Indigenous: describes a person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander.

Insulin: a hormone produced in the pancreas that helps *glucose* to enter body cells for energy metabolism.

Insulin-treated diabetes: all types of *diabetes* treated with *insulin*; includes *type 1 diabetes*, *type 2 diabetes*, *gestational diabetes mellitus* and other types of diabetes. It is a term used to describe those on the National (insulin-treated) Diabetes Register and is not a standard classification used in clinical practice.

International Classification of Diseases (ICD): the World Health Organization's internationally accepted classification of death and disease. The 10th Revision (ICD-10) is currently in use.

Kidney replacement therapy: includes having a functional kidney transplant or receiving regular *dialysis*.

Mode of admission: the mechanism by which a person begins an episode of admitted patient care.

Mode of separation: status at separation of a person (discharge/transfer/death) and place to which a person is released (where applicable).

Morbidity: a term that refers to ill health in an individual and to levels of ill health in a population or group.

Non-Indigenous: describes people who have declared they are not of Aboriginal or Torres Strait Islander descent.

Obesity: marked degree of overweight, defined for population studies as a body mass index of 30 or over. See also *overweight*.

Overweight: defined for the purpose of population studies as a body mass index of 25 or over. See also *obesity*.

Percutaneous coronary interventions (PCIs): surgical procedures used to restore blood flow to blocked coronary arteries. Two types are used: coronary angioplasty without *stent*, and coronary stenting.

Peripheral vascular disease: a disease characterised by pain in the extremities, often the legs, due to an inadequate blood supply to them.

Premature mortality: a term that refers to deaths that occur at a younger age than expected. The expected age at death can be determined by life expectancy, for example, or by setting an arbitrary age.

Prevalence: the number or proportion (of cases, instances, and so forth) present in a population at a given time. Compare with *incidence*.

Principal diagnosis: the diagnosis listed in hospital records that was established after study to be chiefly responsible for the hospitalisation.

Procedure: a clinical intervention that is surgical in nature, carries a procedural risk, carries an anaesthetic risk, requires specialised training and/or requires special facilities or equipment available only in an acute care setting.

Rheumatic heart disease (RHD): a chronic disease from damaged heart valves caused by earlier attack(s) of acute rheumatic fever.

Risk factor: any factor that represents a greater risk of a health disorder or other unwanted condition or event. Some risk factors are regarded as causes of disease, others not necessarily so. Along with their opposites, protective factors, risk factors are known as determinants.

Separation: an episode of treatment and/or care for an admitted patient, which can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay beginning or ending in a change of type of care (for example, from acute care to rehabilitation). Separation also means the process by which an admitted patient completes an episode of care either by being discharged, dying, transferring to another hospital or changing type of care.

Statistical significance: an indication from a statistical test that an observed difference or association may be significant or 'real' because it is unlikely to be due just to chance. A statistical result is usually said to be 'significant' if it would occur by chance only once in 20 times or less often.

Stent: a metal mesh tube that is expanded within an artery at a point of narrowing and left there to hold the artery open.

Stroke: a term used when an artery supplying blood to the brain suddenly becomes blocked or bleeds. Often causes paralysis of parts of the body normally controlled by that area of the brain, or speech problems and other symptoms.

Transient ischaemic attack (TIA): a 'mini' *stroke*, with temporary problems in speech or paralysis that last for 24 hours or less, often only minutes. It is a strong warning sign of a more severe stroke.

Type 1 diabetes: a form of diabetes mostly arising among children or younger adults, marked by a complete lack of *insulin* and needing insulin replacement for survival.

Type 2 diabetes: the most common form of diabetes, occurring mostly in people aged 40 or over, and marked by reduced or less effective *insulin*.

Underlying cause of death: the disease or injury that initiated the train of events leading directly to death, or the circumstances of the accidents or violence that produced the fatal injury. See also *cause of death* and *associated cause(s) of death*.

Unstable angina: a form of *angina* that is more dangerous than normal angina but less so than a *heart attack*. It can feature chest pain that occurs at rest; in someone who already has angina it can be marked by new patterns of onset with exertion or by pain that comes on more easily, more often or for longer than previously.

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Related publications

AIHW 2014. Cardiovascular disease, diabetes and chronic kidney disease—Australian facts: mortality. Cat. no. CDK 1. Canberra: AIHW.

AIHW 2014. Cardiovascular disease, diabetes and chronic kidney disease—Australian facts: prevalence and incidence. Cat. no. CDK 2. Canberra: AIHW.

AIHW 2015. Cardiovascular disease, diabetes and chronic kidney disease—Australian facts: morbidity—hospital care. Cat. no. CDK 3. Canberra: AIHW.

AIHW 2015. Cardiovascular disease, diabetes and chronic kidney disease—Australian facts: risk factors. Cat. no. CDK 4. Canberra: AIHW.

Cardiovascular disease, diabetes and chronic kidney disease—Australian facts is a series of 5 reports by the National Centre for Monitoring Vascular Diseases at the Australian Institute of Health and Welfare that describe the combined burden of cardiovascular disease (CVD), diabetes and chronic kidney disease (CKD).

This report on **Aboriginal and Torres Strait Islander people** presents up-to-date statistics on risk factors, prevalence, hospitalisation and deaths from these 3 chronic diseases. It examines age and sex characteristics and variations by geographical location and compares these with the non-Indigenous population.