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Better Cardiac Care measures for Aboriginal and Torres Strait Islander people

Fifth national report

2020

AIHW

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Contents

Summary

The Better Cardiac Care for Aboriginal and Torres Strait Islander People project is an initiative of the Australian Health Ministers' Advisory Council. It aims to reduce deaths and ill health from cardiac conditions among Aboriginal and Torres Strait Islander Australians.

Five priority areas consisting of 21 measures were developed to monitor the progress of the project. In this fifth national report, 15 measures reported in the earlier 4 reports are updated – including Measure 1.3, which is updated for the first time since the first annual report. One previously reported measure (5.4) could not be reported since the 2018–19 report due to issues with data quality. Data for the remaining 5 measures not yet reported are currently under development and are expected to be included in future reports.

Key findings

Some progress has been made toward better cardiac care for Indigenous Australians:

- The level of access for cardiac-related health services has improved. The proportion of Indigenous Australians who received Medical Benefits Schedule (MBS) health assessments, cardiac-related diagnostic MBS services and the recommended intervention following hospitalisation for a severe heart attack has been increasing over time.
- The mortality rate from cardiac conditions is falling among the Indigenous population.

But there are still challenges in some areas:

- Indigenous Australians with suspected or confirmed cardiac disease are less likely to be reviewed by a specialist than non-Indigenous Australians.
- Indigenous Australians are less likely than non-Indigenous Australians to receive the recommended intervention following hospitalisation for a severe heart attack.
- The incidence and recurrence rates of acute rheumatic fever among Indigenous Australians are much higher than among non-Indigenous Australians.
- While the mortality rate from cardiovascular disease is falling, it is still much higher among Indigenous Australians than among non-Indigenous Australians.

Better Cardiac Care Key Findings

Priority area 1: Early cardiovascular risk assessment and management

Indigenous Australians who received a Medicare Benefits Schedule (MBS) health assessment

32% in 2018–19
↑
3% in 2004–05

Priority area 2: Timely diagnosis of heart disease and heart failure

Indigenous Australians who made an MBS claim for cardiac-related diagnostic items

11% in 2018–19
↑
7% in 2004–05

But, in 2018–19, Indigenous Australians with suspected or confirmed cardiac disease were less likely to be reviewed by a specialist than non-Indigenous Australians (**54%** and **68%**, respectively)

Priority area 3: Guideline-based therapy for acute coronary syndrome

Indigenous Australians hospitalised for severe heart attack who received percutaneous coronary intervention (PCI)

65% in 2017–18
↑
26% in 2004–05

But, in 2017–18, Indigenous Australians were still less likely than non-Indigenous Australians to receive PCI (**65%** and **81%**, respectively)

Priority area 4: Optimisation of health status and provision of ongoing preventive care

MBS claims for a follow-up service within 12 months after a cardiovascular therapeutic procedure in 2017–18

74% for Indigenous Australians versus **57%** for non-Indigenous Australians aged 65+

Priority area 5: Strengthening the diagnosis, notification and follow-up of rheumatic heart disease

Incidence rate of acute rheumatic fever in 2018

100 per 100,000 population for Indigenous Australians versus

0.2 per 100,000 population for non-Indigenous Australians

Summary measures: Hospitalisation and mortality

Mortality rate due to cardiac conditions for Indigenous Australians

305 per 100,000 population in 1998
↓
152 per 100,000 population in 2018

But, in 2018, Indigenous mortality rate was **1.6 times** the rate of non-Indigenous Australians

Note: All rates shown are age-standardised, except for rates shown in Priority areas 4 and 5.

Table 1: Summary of results (crude rates(a))

No.	Measures	Key findings	Change over time(b)
1	1.1 Annual health assessments, 2018–19	29% of Indigenous Australians received an MBS-subsidised health assessment.	↑
2	1.2 Cardiovascular disease risk assessment, June 2019	35% of Indigenous regular clients of Indigenous primary health care aged 35–74 had a CVD risk assessment result that classified them as being at high risk.	↔
3	1.3.1 Primary care practitioner follow-up: Blood pressure checked, 2018–19	88% of Indigenous Australians without a circulatory condition who were at high risk of cardiac disease had their blood pressure checked in the previous 2 years.	n.a
	1.3.2 Primary care practitioner follow-up: Discussed quitting smoking, 2018–19	36% of Indigenous Australians without a circulatory condition who were at high risk of cardiac disease who were current smokers and saw a doctor/health professional or specialist in the previous 12 months discussed quitting smoking.	n.a
4	2.1 Cardiac-related diagnostic services, 2018–19	63,746 Indigenous Australians received 1 or more relevant cardiac-related diagnostic services (a rate of 8%).	↑
5	2.3 Suspected or confirmed cardiac disease case reviewed by a specialist, 2018–19	An estimated 101,133 Indigenous Australians had suspected/confirmed cases of cardiac disease, of which 60% were reviewed by a specialist.	n.a
6	3.1 STEMI events treated by PCI, 2015–18	There were 1,046 hospitalised events for STEMI among Indigenous Australians, with 68% of those treated by PCI.	↑
7	3.3 ACS events that included diagnostic angiography or definitive revascularisation, 2015–18	5,744 hospitalised events for ACS among people aged 18 and over were for Indigenous Australians (5% of all ACS events), of which 55% included at least 1 diagnostic angiography or definitive revascularisation procedure.	↑
8	3.5 AMI in-hospital mortality rates, 2015–18	3% of hospitalisations for AMI among Indigenous Australians aged 35 and over ended with death (133 deaths).	↓
9	4.2 Follow-up after receiving a cardiovascular therapeutic procedure in 2017–18	An estimated 1,238 Indigenous Australians made an MBS claim for a cardiovascular therapeutic procedure, of which 70% received a follow-up service within 12 months.	n.a
10	4.3 Specialist physician review after a cardiovascular therapeutic procedure in 2017–18	An estimated 1,238 Indigenous Australians made an MBS claim for a cardiovascular therapeutic procedure, of which 91% were reviewed by a specialist physician within 12 months.	n.a
11	5.1.1 Incidence of ARF, 2018	457 episodes of ARF were reported among Indigenous Australians (a rate of 100 per 100,000 population).	↑
	5.1.2 New diagnoses of RHD, 2018	334 new RHD diagnoses were reported among Indigenous Australians (a rate of 73 per 100,000 population).	↑
12	5.2 Recurrent ARF, 2018	The proportion of recurrent ARF episodes was 26% for Indigenous Australians.	↔
13	5.3 Treatment with benzathine penicillin G doses, 2018	3,209 Indigenous Australians were prescribed BPG every 28 days, of whom, in 2018, 26% received less than 50% of required doses and 23% completed the required doses.	n.a
14	6.1 Hospitalisations for cardiac conditions, 2015–18	There were 33,530 Indigenous hospitalisations for cardiac conditions (a rate of 14 per 1,000 population).	↑
15	6.2.1 Deaths due to cardiac conditions, 2016–2018	1,646 Indigenous Australians died from cardiac conditions (a rate of 76 per 100,000 population).	↓
	6.2.2 In-hospital deaths for cardiac-related hospitalisations, 2015–18	704 Indigenous Australians who were admitted to hospital for cardiac conditions died in hospital (a rate of 29 per 100,000 population).	↓

ACS = acute coronary syndrome; AMI = acute myocardial infarction; ARF = acute rheumatic fever; BPG = benzathine penicillin G; CVD = cardiovascular disease; MBS = Medicare Benefits Schedule; PCI = percutaneous coronary intervention; RHD = rheumatic heart disease; STEMI = ST-segment-elevation myocardial infarction; ↔ =no change; n.a=no trend data available

(a) All rates in this table are crude and will differ from age-standardised rates presented elsewhere in the report. Comparable age-standardised results for Indigenous and non-Indigenous Australians are not presented in this table and can be found in Appendix C.

(b) Change over time data refer to the following years: 2004–05 to 2018–19 for measures 1.1 and 2.1; June 2017 to June 2019 for Measure 1.2; 2004–05 to 2017–18 for measures 3.1, 3.3 and 6.1; 2006–09 to 2015–18 for measures 3.5 and 6.2.2; 2014 to 2018 for measures 5.1.1. 5.1.2 and 5.2; and 1998 to 2018 for Measure 6.2.1.

1 Introduction

Heart-related (cardiac) conditions, such as coronary heart disease, heart failure, and rheumatic heart disease (RHD), contribute substantially to poor health and reduced life expectancy among Aboriginal and Torres Strait Islander people.

Cardiac conditions are more common among Indigenous than non-Indigenous Australians; there are many reasons for this, including higher rates of risk factors for cardiac conditions (such as smoking, low levels of physical activity, overweight or obesity, diabetes and high blood pressure) and poorer access to health services (AIHW 2015b, 2015c; Clark et al. 2012; Lopez et al. 2014).

Better Cardiac Care project

The Better Cardiac Care for Aboriginal and Torres Strait Islander People project is an initiative that was developed at the Better Cardiac Care for Aboriginal and Torres Strait Islander People Forum, held in March 2014 (BCCF 2014).

Representatives from various Indigenous and other organisations, as well as from Australian Government and jurisdictional health departments, attended the forum.

The project aims to reduce mortality and morbidity from cardiac conditions among Indigenous Australians by increasing access to services, better managing risk factors and treatment and improving coordination of care.

The forum established 5 priority areas of interventions that health services should undertake to improve cardiac care for Indigenous Australians that:

- are aligned with national and international best-practice guidelines for cardiac care and chronic disease
- were informed by the Essential Service Standards for Equitable National Cardiovascular Care
- focus on providing sustainable models of care built around partnerships between all health service providers.

The 5 priority areas are:

1. Primary preventive care—early cardiovascular risk assessment and management
2. Clinical suspicion of disease—timely diagnosis of heart disease and heart failure
3. Acute episode—guideline-based therapy for acute coronary syndrome
4. Ongoing care—optimisation of health status and provision of ongoing preventive care
5. Rheumatic heart disease—strengthening the diagnosis, notification and follow-up of RHD.

Reporting on the Better Cardiac Care measures

Since 2015, the Australian Institute of Health and Welfare (AIHW) has published 4 annual reports on the 21 Better Cardiac Care (BCC) measures agreed at the Better Cardiac Care forum (BCCF 2014) to track the implementation and monitoring of the priority areas and associated actions (AIHW 2015a, 2016, 2018a, 2019). Table 1.1 provides a summary of the data available for these 21 measures. The 2 measures that are fully reported are shaded in green. Shaded in blue are the 14 measures that could be partially reported either because they have been modified to suit the data available or use proxy measures to enable reporting, or because data could not be reported nationally. The 5 measures that have not yet been reported are shaded in orange.

Based on data availability, the previous 4 AIHW publications reported on 15 measures. This report—the fifth in the series—provides updated results for 15 previously reported measures, including Measure 1.3, which is updated for the first time since the first annual report. Measure 5.4 could not be reported since the 2018–19 report due to issues with data quality on echocardiograms performed on RHD cases (details provided in Priority area 5). Data for the remaining 5 measures are under development and are expected to be reported in future reports.

Where possible, information is presented for each measure, including comparisons:

- between Indigenous and non-Indigenous Australians
- over time
- by age and sex
- by state and territory
- by remoteness area.

Appendix A outlines specifications for the data sources used; Appendix B provides technical specifications for the reported measures, including information on relevant classification codes (tables B1–B4); and Appendix C provides summary data about the numerator, denominator and rates for each of the measures presented in Chapter 2.

All rates are calculated based on the estimated resident population as at 30 June for the relevant reporting period for each measure, from the 2016 Australian Bureau of Statistics (ABS) Census data. Rates calculated for previous BCC reports were based on the 2011 ABS Census data and therefore data for previous periods may differ from previously published results.

Supplementary tables corresponding to each figure in this report are provided as an attachment, and are available on the AIHW website at www.aihw.gov.au.

Throughout the report and supplementary tables, periods based on full calendar years (1 January to 31 December) are written as, for example, 2018 for 1 year. When there are 2 or more calendar years in the period, the first and final years are written in full. For example, 2016–2018 covers 3 calendar years. For periods based on financial years (1 July to 30 June), the year in which 1 July falls is written in full and the year in which the following 30 June occurs is shown in abbreviated form—for example, 2017–18 for 1 financial year and 2015–18 for 3 financial years (2015–16 to 2017–2018). Periods reported for different measures vary based on the most recent data available to report a particular measure at the time the report was written. For some measures, due to small sample sizes, multiple years of data are combined to allow for reporting of data disaggregated by age and sex, state and territory, and remoteness area.

Table 1.1: BCC measures and data sources

Measure	Data source	Data availablility
Priority area 1: Early cardiovascular risk assessment and management		
1.1 Number and proportion of people who received an MBS health assessment in the previous 12 months	MBS	Available annually
1.2 Number and rate of people aged 20 or over without known cardiac disease with cardiovascular risk assessment and stratification in the previous 2 years	nKPI data collection	Partially available annually
1.3 Proportion of people with risk factors for cardiac disease with evidence of primary care practitioner follow-up	NATSIHS	Partially available periodically
Priority area 2: Timely diagnosis of heart disease and heart failure		
2.1 Number and proportion of people who claimed relevant MBS diagnostic items in the previous 12 months	MBS	Available annually
2.2 Number and proportion of people who received diagnostic services within 30 days of referral		Not available
2.3 Number and proportion of people with suspected/confirmed cardiac disease reviewed by a cardiologist in the previous 12 months	MBS	Partially available annually
Priority area 3: Guideline-based therapy for acute coronary syndrome		
3.1 Number and proportion of people with ST-segment-elevation myocardial infarction: (i) treated by primary percutaneous coronary intervention; (ii) treated with fibrinolysis	NHMD	Partially available annually
3.2 Proportion of people with ST-segment-elevation myocardial infarction who were not provided any reperfusion therapy		Not available
3.3 Proportion of people with acute coronary syndrome who received a diagnostic angiography or definitive revascularisation procedure within the index admission/within 30 days	NHMD	Partially available annually
3.4 Proportion of people diagnosed with acute coronary syndrome discharged from hospital on appropriate secondary prevention medicines		Not available
3.5 In-hospital, 30-day and 12-month mortality rates for people admitted to hospital with a primary diagnosis of acute myocardial infarction	NHMD	Partially available annually
Priority area 4: Optimisation of health status and provision of ongoing preventive care		
4.1 Number and proportion of patients reviewed by a primary health-care professional within 1 week of discharge from hospital		Not available
4.2 Number and proportion of patients with cardiac disease who received follow-up Medicare items within 3 months of hospital discharge	MBS	Partially available annually
4.3 Number and proportion of patients with cardiac disease reviewed by a specialist physician within 3 or 12 months of hospital discharge	MBS	Partially available annually
4.4 Number and proportion of patients with coronary heart disease discharged on secondary prevention medications and remaining on it at 3, 6 and 12 months		Not available
Priority area 5: Strengthening the diagnosis, notification and follow-up of rheumatic heart disease		
5.1 Annual incidence of all acute rheumatic fever episodes	National RHD data collection	Partially available annually
5.2 Proportion of all acute rheumatic fever episodes that were recurrent	National RHD data collection	Partially available annually

(continued)

Table 1.1 (continued): BCC measures and data sources

Measure	Data source	Data availablility
Priority area 5: Strengthening the diagnosis, notification and follow-up of rheumatic heart disease (continued)		
5.3 Median proportion of scheduled benzathine penicillin G doses given to patients with confirmed acute rheumatic fever or rheumatic heart disease in the previous 12 months	National RHD data collection	Partially available annually
5.4 Proportion of people with moderate or severe rheumatic heart disease who received an echocardiogram in the previous 12 months	National RHD data collection	Partially reported previously/no new data to report
Summary measures: Hospitalisation and mortality		
6.1 Age-standardised rates of hospitalisation for a cardiac condition	NHMD	Partially available annually
6.2 Age-standardised rates of cardiac mortality	NMD/NHMD	Partially available annually

🟩 Green shading indicates that data are available to report on the full measure.

🟦 Blue shading indicates that data are available to report on part of the measure.

🟧 Orange shading indicates that data are not yet available for reporting on the measure.

MBS = Medicare Benefits Schedule; NATSIHS = National Aboriginal and Torres Strait Islander Health Survey; NHMD = National Hospital Morbidity Database; nKPI = National Key Performance Indicator; NMD = National Mortality Database; RHD = rheumatic heart disease.

Source: BCCF 2014.

Data development plan

In 2018–19, the Department of Health funded the AIHW to prepare a data development plan to progress development of measures yet to be fully reported. The plan was drawn up after evaluating all available data sources and consulting relevant data custodians. It identified the issues in existing measures and suggested ideas and methods to deal with data gaps to enable full reporting of all measures.

The BCC data development plan workshop was convened in Canberra on 19 August 2019 at the AIHW to seek the advice of internal and external experts on the draft data development plan. Workshop participants included specialist clinicians, researchers and policy and public administrators. Cultural Fusion was engaged to design and facilitate the workshop. Based on the workshop report it prepared, the data development plan was updated with recommendations on how to improve measures that have been fully or partially reported and to progress measures that have not yet been reported. A summary table of the agreed measures, data sources, current reported status, issues and proposed options for consideration, time frame of the proposed options for consideration and workshop outcomes by priority area is provided in Appendix D.

It is expected that future reports will incorporate major revisions based on recommendations from the workshop. Preliminary investigations exploring new data sources, such as the National Integrated Health Services Information Analysis Asset (NIHSI AA) and Primary Care Data, to report measures that are yet to be fully reported, are currently underway.

2 Results

Priority area 1: Early cardiovascular risk assessment and management

Primary prevention in the form of early and consistent risk factor identification and management will improve long-term outcomes for Aboriginal and Torres Strait Islander people, reduce the population burden of chronic cardiac disease and improve the appropriate delivery of care by the health-care system (BCCF 2014).

Priority area 1 measures are based on the premise that all Indigenous Australians with no known cardiac disease should receive an annual health check and cardiovascular risk assessment; appropriate management and follow-up for identified cardiac disease risk factors; and lifestyle modification advice appropriate to their cardiovascular risk level, as per current guidelines (NACCHO & RACGP 2012).

The 3 measures recommended for this priority area are:

- Measure 1.1 on annual health assessments
- Measure 1.2 on cardiovasular disease risk assessment
- Measure 1.3 on primary care practitioner follow-up.

Updated data are available from:

- the 2018–19 Medicare Benefits Schedule (MBS) weighted Voluntary Indigenous Identifier database for Measure 1.1 on health assessments
- the AIHW June 2019 national Key Performance Indicators (nKPIs) for Aboriginal and Torres Strait Islander primary health care data collection for Measure 1.2 on cardiovascular disease risk assessment
- the ABS 2018–19 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS) for Measure 1.3 on primary care practitioner follow-up.

Measure 1.1: Annual health assessments

This measure reports on the number and proportion of Indigenous Australians who had an MBS-subsidised health assessment in the previous 12 months. (Table B2 lists relevant MBS item numbers included in the measure—which includes the Indigenous-specific MBS items 715/228 and other MBS general health assessment items available for both Indigenous and non-Indigenous Australians.)

Why is this important?

Health assessments aim to increase preventive health opportunities, detect chronic disease risk factors, manage existing chronic disease and reduce inequities in access to primary care for Indigenous Australians. Early detection and management of risk factors for cardiac disease (such as smoking, physical inactivity and high blood pressure) can reduce the incidence of cardiac disease and lessen its severity.

All Indigenous Australians are eligible for an annual Indigenous-specific health assessment, which is listed as item 715 or item 228 (available since 1 July 2018) on the MBS. This comprehensive health assessment, though not a specific cardiovasular risk assessment, covers a wide variety of risk factors related to cardiac disease and other chronic diseases. It assesses such aspects as medical history, nutrition, physical activity, smoking and alcohol intake, living conditions and body mass index. Specified target groups may also be eligible for other types of MBS health assessments (Department of Health 2014), referred to as 'general' health assessments in this report. Indigenous Australians who received a general health assessment are also included in this measure. However, the main type of health assessment being measured is item 715. Equivalent health assessments that may occur at private consultations using other MBS-subsidised or unsubsidised general practioner (GP) services are not included in this measure.

Results

Overall

- In 2018–19, nearly one-third of Indigenous Australians (a crude rate of 29%, or an estimated 247,100 people) received a health assessment—97% of which were Indigenous-specific MBS items 715/228.

Time trend

- Between 2004–05 and 2018–19, the age-standardised proportion of Indigenous Australians who had a health assessment rose from 3% to 34% for females, and from 3% to 29% for males (Figure 1.1a).
- From 2017–18 to 2018–19, the overall age-standardised proportion of those who had a health assessment rose by 1 percentage point (from 31% to 32%).
- A marked increase in those who had a health assessment occurred from 2010–11, coinciding with the introduction of the Australian Government's Indigenous Chronic Disease Package.

Age and sex

In 2018–19:

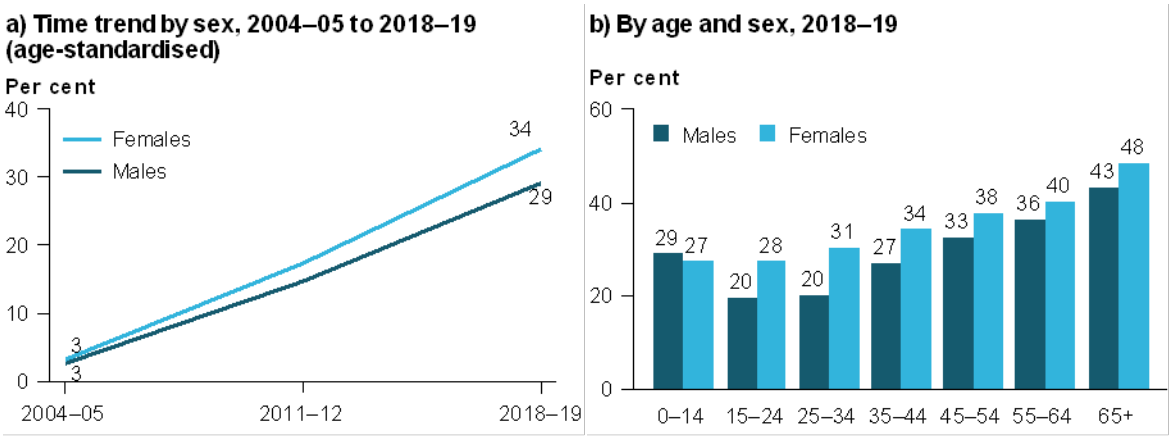
- more than one-quarter (28%) of Indigenous children aged under 15 had a health assessment. Among Indigenous Australians aged 15 and over, the proportion ranged from 24% among those aged 15–24 to 46% among those aged 65 and over
- a higher proportion of Indigenous females than males had a health assessment among those aged 15 and over (Figure 1.1b).

State/territory and remoteness area

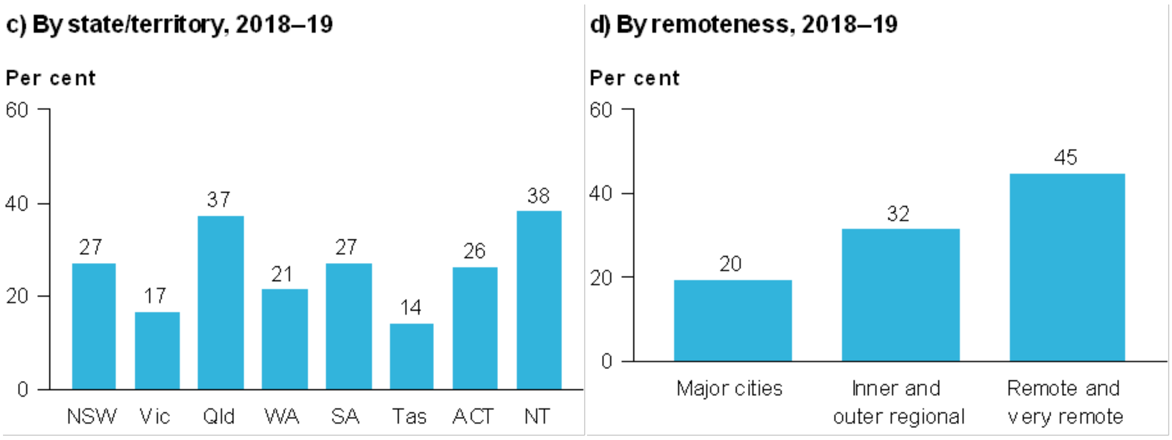
In 2018–19, the proportion of Indigenous Australians who had a health assessment was:

- highest in the Northern Territory (38%), and lowest in Tasmania (14%) (Figure 1.1c)
- highest in *Remote and very remote* areas combined (45%), and lowest in *Major cities* (20%) (Figure 1.1d). High availability of private GPs in *Major cities* may explain the low use of MBS 715 in these areas.

Figure 1.1: Proportion of Indigenous Australians who had an MBS health assessment, by various characteristics


a) Time trend by sex, 2004–05 to 2018–19 (age-standardised)

b) By age and sex, 2018–19


c) By state/territory, 2018–19

d) By remoteness, 2018–19

Notes

1. Rates in Figure 1.1a are age standardised. All other figures show crude rates.
2. Data for these figures are available in the online supplementary tables (tables 1.1a to 1.1d).
3. Indigenous-specific health assessment items 715/228 are combined with other ‘general’ health assessments items for the above annual MBS health assessment results.
4. Analyses are based on the date claims were processed as the MBS weighted Voluntary Indigenous Identifier database are based only on period of processing. As such, results for MBS items 715/228 would not be directly comparable with MBS items 715/228 results based on date of services.
5. Numbers and rates for the general health assessments data have been adjusted for under-identification in the Medicare Australia Voluntary Indigenous Identifier database. General health assessments for non-Indigenous Australians are not directly comparable with Indigenous-specific health assessments.
6. The MBS data reflect billing practices and not necessarily the services provided. For example, MBS data do not generally capture equivalent services provided by jurisdictional-funded primary health care or by public hospitals.

Source: AIHW analysis of Medicare Data.

Measure 1.2: Cardiovascular disease risk assessment

This measure uses data from the nKPI for the Indigenous primary health care data collection. Data are reported on the number and proportion of Indigenous regular clients of Indigenous-specific primary health care organisations, aged 35–74 with no known history of cardiovascular disease (CVD) who 1) had an absolute CVD risk assessment result recorded within the previous 24 months and 2) whose categorised CVD risk was either high (greater than 15% chance of a cardiovascular event in the next 5 years), moderate (10–15% chance) or low (less than 10% chance).

This indicator was collected for the first time in June 2017, and now 5 data points (June 2017, December 2017, June 2018, December 2018 and June 2019) are available to report. Data for previous periods may differ from previously published results as data for all periods shown in this report have been revised to exclude services using Clinical Information Systems that do not capture all the necessary data to calculate CVD risk. Also, services using the Primary Care Information System (predominantly the Northern Territory Government) are not included in these CVD risk assessment results (AIHW 2020a). (For details, see footnotes to Figure 1.2; Appendix A provides further information on the nKPI data collection).

A comprehensive review of the nKPI data collection was undertaken by the AIHW in 2018. Future enhancements being considered for this CVD risk assessment indicator are to expand the age range to cover ages 30–74 so that the indictor would be more in line with recommended practices and redress the fact that younger adults are missed in the current indictor (AIHW 2020b).

Why is this important?

Largely preventable, CVD is the leading cause of death among Indigenous Australians (AIHW 2015b). Multiple modifiable factors (such as smoking status, high blood pressure and body mass index) and non-modifiable factors (such as age, sex and family history) contribute to the risk of developing CVD. These factors can be used to categorise an individual's risk of developing CVD, which can then guide treatment decisions. CVD risk factors may be additive, so the assessment of CVD risk should account for multiple risk factors together, rather than separately (AIHW 2018b).

Results

Overall

- Nationally, as at June 2019, an estimated 35% of Indigenous regular clients aged 35–74 had a CVD risk assessment result recorded in the previous 24 months that classified them as being at high risk, with 6% at moderate risk and 59% at low risk (Figure 1.2a).
- Between June 2017 and June 2019, the proportion of low, moderate and high-risk clients remained relatively stable (Figure 1.2a).

Age and sex

In June 2019:

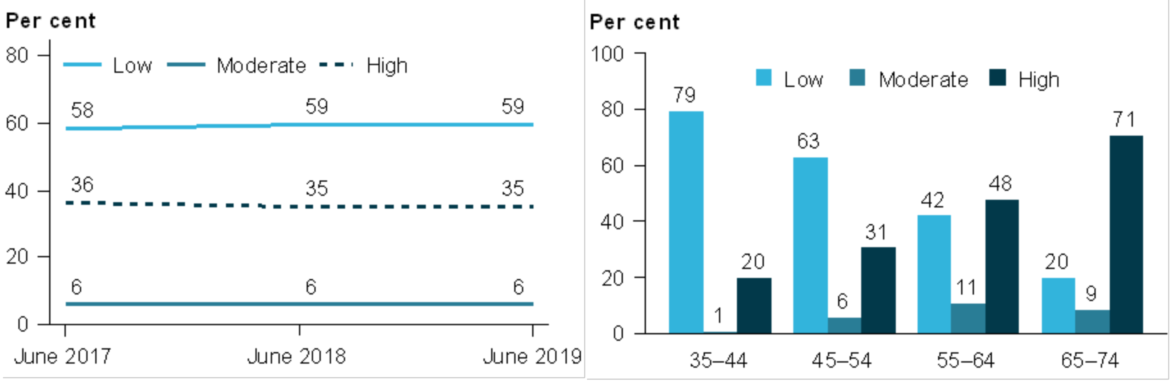
- an estimated 20% of Indigenous regular clients aged 35–44 had a CVD risk assessment result recorded in the previous 24 months that classified them as being at high risk; the proportion was higher (71%) for those aged 65–74 (Figure 1.2b)
- the proportion of low-risk clients was higher for Indigenous women (62%) than Indigenous men (55%). However, men were twice as likely as women (8% compared with 4%) to be classified as being at moderate risk. A slightly higher proportion of men (37%) than women (34%) were classified as being at high risk. (Figure 1.2c).

State/territory and remoteness area

In June 2019, the proportion of high-risk clients:

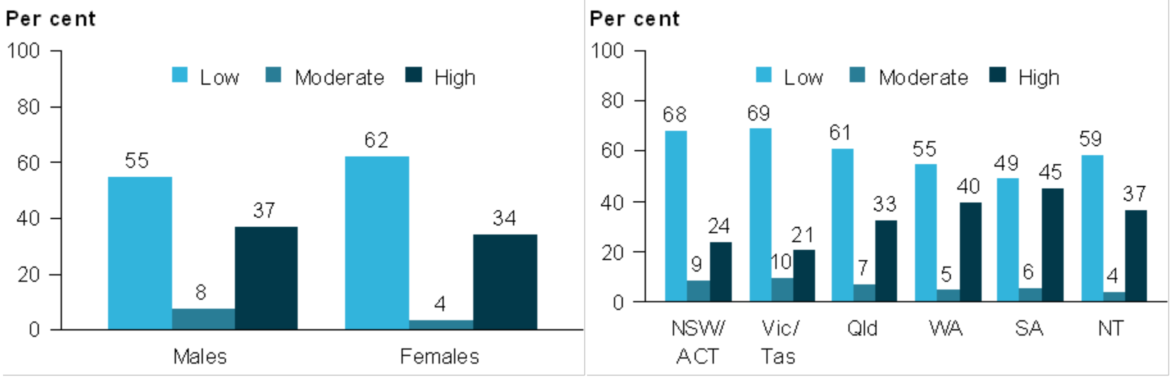
- was highest for Indigenous clients in South Australia (45%) and lowest in Victoria/Tasmania combined (21%) (Figure 1.2d)
- rose with increasing remoteness 27% in *Major cities* to 43% in *Very remote* areas (Figure 1.2e).

Figure 1.2: Clients aged 35–74 who had a CVD risk assessment result recorded in the previous 24 months, by CVD risk level and various characteristics, June 2019



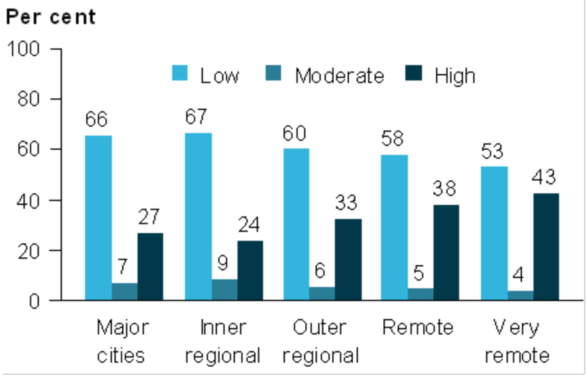
a) By CVD risk, June 2017–June 2019

b) By age, June 2019



c) By sex, June 2019

d) By state/territory, June 2019



e) By remoteness, June 2019

Notes

1. Absolute cardiovascular risk assessments can be calculated using the National Vascular Disease Prevention Alliance (NVDPA) or the Central Australian Rural Practitioners Association (CARPA) method. As the latter applies an extra 5% loading for Indigenous Australians, nKPI data should have the 5% loading removed to make the data comparable with NVDPA data. As the Primary Care Information System is unable to deduct the 5% because the data are captured as categorical scores (low, medium, high), organisations using this system (predominantly the Northern Territory Government) are not included in the results presented.
2. CVD risk calculators embedded in some Clinical Information Systems do not capture all the data needed to apply the full NVDPA risk assessment algorithm. Therefore, data for all periods shown in this report have been revised to include only data from services with Clinical Information Systems that do capture all the necessary data; data from services using systems that do not may underestimate the number of clients at high CVD risk. Hence, data for previous periods may differ from previously published data.
3. Data for these figures are available in the online supplementary tables (tables 1.2a to 1.2e) and in supplementary data tables—Preventative health indicators (S2.85, S2.86, S2.87) of the Indigenous primary heath care: results from the OSR and nKPI collections.

Source: AIHW nKPI data collection.

Measure 1.3: Primary care practitioner follow-up

This measure uses data from the ABS 2018–19 NATSIHS. Data are reported on the:

(i) proportion of Indigenous Australians aged 18 and over without a current and long-term circulatory condition who were at high risk of cardiac disease, who had their blood pressure checked in the previous 2 years.

(ii) proportion of Indigenous Australians aged 18 and over without a current and long-term circulatory condition, who were at high risk of cardiac disease and were current smokers, who saw a doctor/health professional or specialist in the previous 12 months and discussed quitting smoking.

The data provided are proxy measures for primary care practitioner follow-up and are updated for the first time since the first annual report, which used the previous ABS 2012–13 Australian Aboriginal and Torres Strait Islander Health Survey.

Why is this important?

Active follow-up and management of risk factors for cardiac disease through regular monitoring, supporting smoking cessation and providing access to essential medicines are essential to maintain health and reduce risk.

Box 1: At high risk of cardiac disease

Indigenous Australians were classified as being ‘at high risk of cardiac disease’ based on having 1 or more of the following: self-reported type 2 diabetes, self-reported hypertensive disease or measured high blood pressure (systolic or diastolic blood pressure >140/90 mmHg), self-reported high cholesterol, or current smoker (includes those who smoked daily, at least weekly, or less than weekly).

Results: Blood pressure check

Overall

- In 2018–19, 88% of Indigenous Australians without a circulatory condition who were at high risk of cardiac disease had their blood pressure checked in the previous 2 years.

Age and sex

In 2018–19:

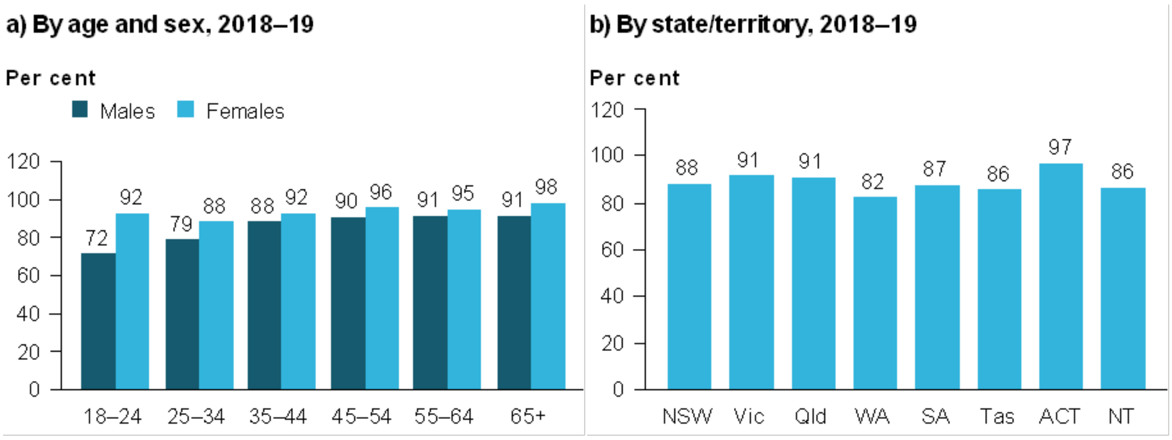
- the proportion of Indigenous Australians at high risk of cardiac disease who had their blood pressure checked in the previous 2 years increased with age from 81% for those aged 18–24 to 95% for those aged 65 and over
- a higher proportion of Indigenous women than men at high risk of cardiac disease had their blood pressure checked in the previous 2 years (Figure 1.3.1a).

State/territory and remoteness area

In 2018–19, the proportion of Indigenous Australians at high risk of cardiac disease who had their blood pressure checked in the previous 2 years was:

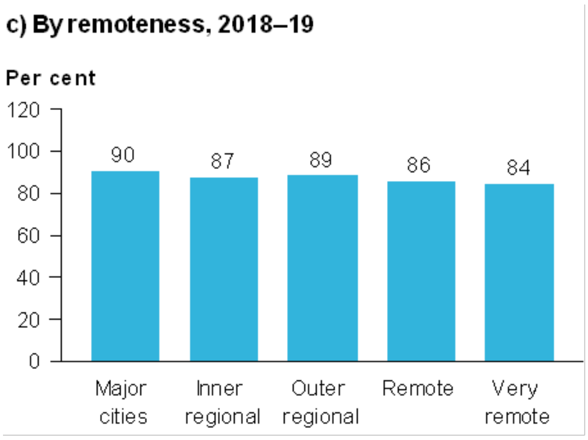
- highest in the Australian Capital Territory (97%), followed by Victoria and Queensland (91%) and lowest in Western Australia (82%) (Figure 1.3.1b)
- highest in *Major cities* (90%) and lowest in *Very remote* areas (84%) (Figure 1.3.1c).

Figure 1.3.1: Proportion of Indigenous Australians without a current and long-term circulatory condition and at high risk of cardiac disease who had their blood pressure checked in the previous 2 years



a) By age and sex, 2018–19

b) By state/territory, 2018–19



c) By remoteness, 2018–19

Notes

1. Data for these figures are available in the online supplementary tables (1.3.1a to 1.3.1.c).
2. Excludes people who reported a current and long-term heart or circulatory condition, comprising Ischaemic heart disease; other heart disease; tachycardia; cerebrovascular disease; oedema; diseases of the arteries, arterioles and capillaries; diseases of veins, lymphatic vessels etc.; other diseases of circulatory system; and symptoms and signs involving the circulatory system.
3. Comprises people who reported having 1 or more of the following: self-reported type 2 diabetes, self-reported hypertensive disease or measured high blood pressure (systolic or diastolic blood pressure >140/90 mmHg); self-reported high cholesterol, or current smoker (includes daily, at least once a week or current smoker less than weekly).

Source: AIHW analysis of ABS 2018–19 NATSIHS.

Results: Discussed quitting smoking

Overall

- In 2018–19, 36% of Indigenous Australians at high risk of cardiac disease who were current smokers and saw a doctor/health professional or specialist in the previous 12 months discussed quitting smoking.

Age and sex

In 2018–19:

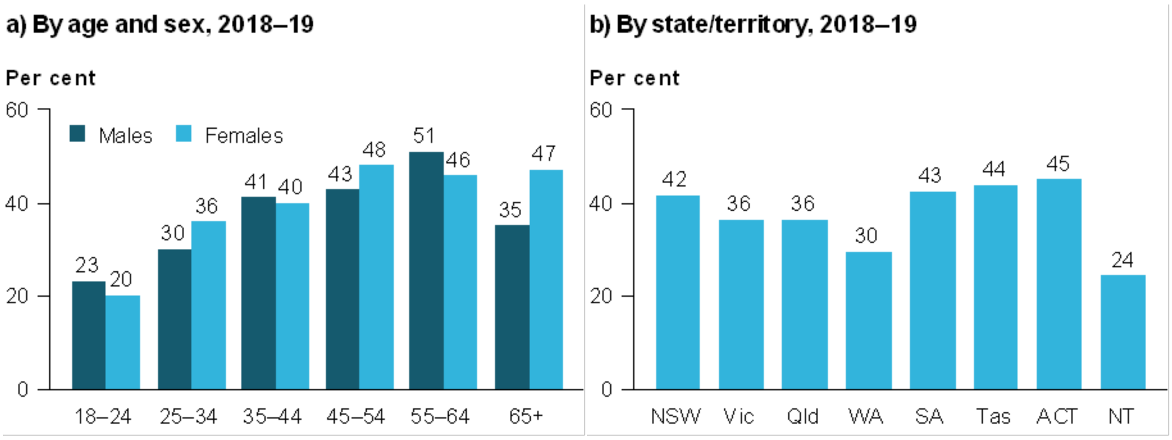
- the proportion of Indigenous Australians at high risk of cardiac disease who discussed quitting smoking with their doctor/health professional or specialist in the previous 12 months increased with age from 21% for those aged 18–24 to 48% for those aged 55–64, decreasing to 41% for those aged 65 and over
- a higher proportion of Indigenous women than men aged 65 and over at high risk of cardiac disease discussed quitting smoking with their doctor/health professional or specialist in the previous 12 months (Figure 1.3.2a).

State/territory and remoteness area

In 2018–19:

- the Northern Territory had the lowest proportion of Indigenous Australians at high risk of cardiac disease who discussed quitting smoking with their doctor/health professional or specialist in the previous 12 months (24%) (Figure 1.3.2b)
- the proportion of Indigenous Australians at high risk of cardiac disease who discussed quitting smoking with their doctor/health professional or specialist in the previous 12 months decreased with remoteness, from 43% in *Major cities* and *Inner regional* areas to 21% in *Very remote* areas (Figure 1.3.2c).

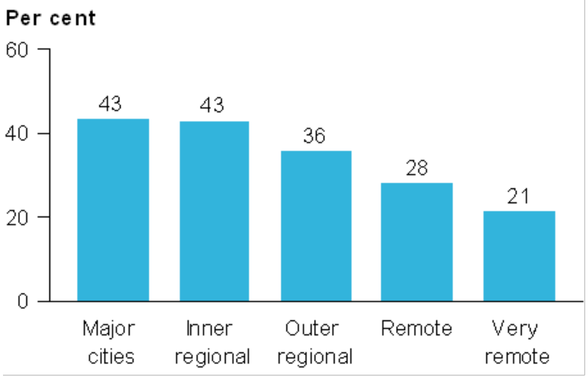
Figure 1.3.2: Proportion of Indigenous Australians without a current and long-term circulatory condition who were at high risk of cardiac disease and were current smokers who saw a doctor/health professional or specialist in the previous 12 months and discussed quitting smoking



a) By age and sex, 2018–19

b) By state/territory, 2018–19

c) By remoteness, 2018–19



Notes

1. Data for these figures are available in the online supplementary tables (1.3.1a to 1.3.1.c).
2. Excludes people who reported a current and long-term heart or circulatory condition, comprising Ischaemic heart disease; other heart disease; tachycardia; cerebrovascular disease; oedema; diseases of the arteries, arterioles and capillaries; diseases of veins, lymphatic vessels etc.; other diseases of circulatory system; and symptoms and signs involving the circulatory system.
3. Comprises people who reported having 1 or more of the following: self-reported type 2 diabetes, self-reported hypertensive disease or measured high blood pressure (systolic or diastolic blood pressure >140/90 mmHg); self-reported high cholesterol, or current smoker (includes daily, at least once a week or current smoker less than weekly).

Source: AIHW analysis of ABS 2018–19 NATSIHS.

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Priority area 2: Timely diagnosis of heart disease and heart failure

Priority area 2 measures are based on the premise that all Aboriginal and Torres Strait Islander people suspected of having heart disease should receive appropriate initial diagnostic services (such as stress testing or coronary angiography for ischaemic heart disease, or echocardiography for heart failure and RHD); these services should be delivered as close to the patient's home as possible, within acceptable time frames according to the level of risk and the patient's condition (BCCF 2014).

The 3 measures recommended for this priority area are:

- Measure 2.1 for cardiac-related diagnostic services
- Measure 2.2 for receipt of diagnostic services (data not available to report)
- Measure 2.3 for specialist review of suspected/confirmed cardiac disease.

Updated data are available from the 2018–19 MBS weighted Voluntary Indigenous Identifier database for Measure 2.1 on cardiac-related diagnostic services and Measure 2.3 on specialist review of suspected/confirmed cardiac disease.

Measure 2.1: Cardiac-related diagnostic services

This measure reports on the number and proportion of Indigenous Australians, compared with non-Indigenous Australians, who received 1 or more relevant cardiac-related diagnostic services in the previous 12 months (Table B2 lists relevant MBS item numbers included in this measure). Additional MBS items in Measure 2.1 (which were first included in the third national report) are also included here; hence, results are not comparable with those for the first and second national reports. These additional items, obtained from the Cardiac Services Clinical Committee of the Medical Benefit Schedule Review Taskforce (Department of Health 2017), were used to capture the status of cardiac-related diagnoses more accurately.

Why is this important?

People suspected of having cardiac disease should receive appropriate and timely diagnostic services. Categories of diagnostic tests captured by this measure are:

- diagnostic procedures and investigations—19 MBS items that include various kinds of electrocardiography, and pacemaker and defibrillator testing
- diagnostic imaging services—25 MBS items that include various kinds of echocardiography, computed tomography scans and angiography (Department of Health 2018).

Results

Overall

In 2018–19:

- 63,746 Indigenous Australians received 1 or more relevant cardiac-related diagnostic services, compared with 2,660,185 non-Indigenous Australians
- 56,248 Indigenous Australians claimed for diagnostic procedures and investigations (age-standardised proportion of 10%) and 23,130 claimed for diagnostic imaging services (age-standardised proportion of 4%)—both proportions were similar to those for non-Indigenous Australians (Figure 2.1a). Note that individuals may claim for services in more than 1 category.

Time trend

- Between 2004–05 and 2018–19, the age-standardised proportion of those with MBS claims for cardiac-related diagnostic items rose from 7% to 11% for Indigenous Australians and from 7% to 10% for non-Indigenous Australians (Figure 2.1b).

Age and sex

In 2018–19, the proportion of Indigenous Australians who had MBS claims for cardiac-related diagnostic items:

- increased with age, from 2% among those aged 0–14 to 26% among those aged 65 and over. It was higher than that for non-Indigenous Australians in all age groups, except for those aged 65 and over, where proportions were higher for non-Indigenous Australians (Figure 2.1c)
- was similar for Indigenous and non-Indigenous males, but higher for Indigenous females than non-Indigenous females, with Indigenous females having slightly higher proportions than Indigenous males (Figure 2.1d).

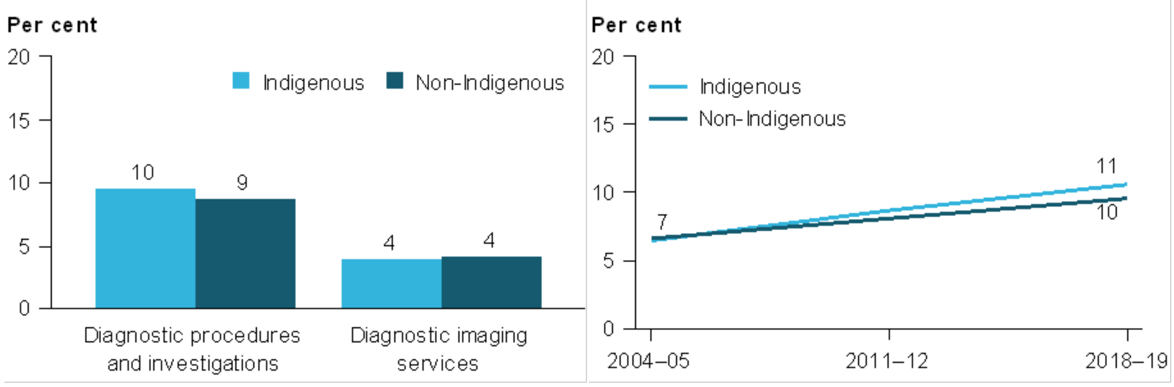
State/territory and remoteness area

In 2018–19, the proportion of Indigenous Australians who had MBS claims for cardiac-related diagnostic items:

- ranged from 8% to 12% across states and territories, and was about 11% across all remoteness areas among Indigenous Australians (figures 2.1e and 2.1f)

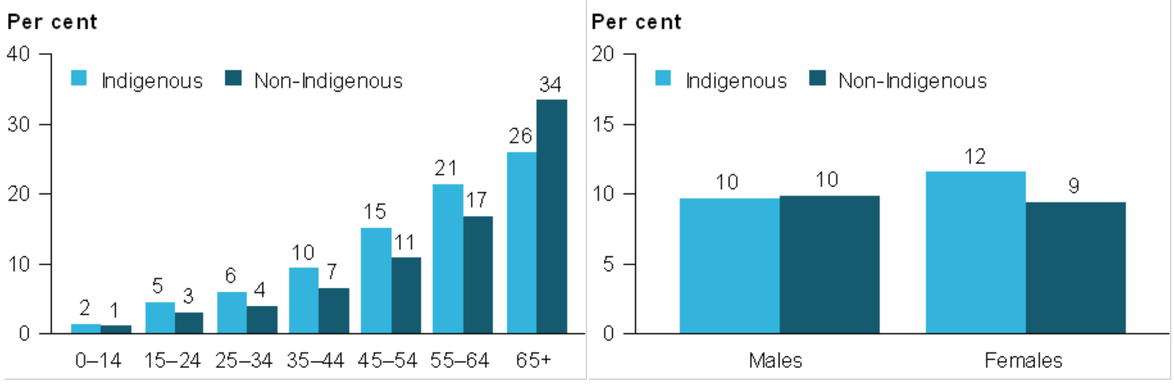
- were about 2 times higher among Indigenous Australians living in the Northern Territory and *Remote and very remote* areas combined than among their non-Indigenous counterparts (figures 2.1e and 2.1f).

Figure 2.1: Age-standardised and age-specific proportion of people who claimed cardiac-related MBS diagnostic items, by Indigenous status and various characteristics



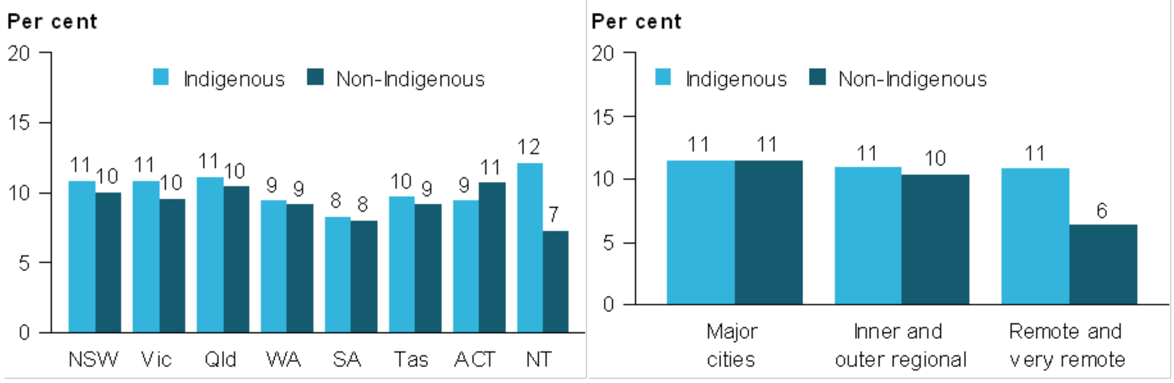
a) By diagnostic item group, 2018–19

b) Time trend, 2004–05 to 2018–19



c) By age, 2018–19

d) By sex, 2018–19



e) By state/territory, 2018–19

f) By remoteness, 2018–19

Notes

1. Rates in Figure 2.1c are age specific and therefore not age standardised. All other figures show age-standardised rates.
2. Data for these figures are available in the online supplementary tables (tables 2.1a–2.1f).
3 The MBS data reflect billing practices and not necessarily the services provided. For example, MBS data do not generally capture equivalent services provided by jurisdictional-funded primary health care or by public hospitals.
4. Numbers and rates have been adjusted for under-identification in the Medicare Australia Voluntary Indigenous Identifier database.

Source: AIHW analysis of Medicare Data.

Measure 2.3: Suspected or confirmed cardiac disease case reviewed by a specialist

This measure reports on the number and proportion of people with suspected or confirmed cardiac disease reviewed by a specialist in the relevant financial year. Unlike the third national report, the fourth and this fifth report reports on review by a specialist rather than by a cardiologist only, as the necessary MBS items for cardiologist review are not available in the MBS weighted Voluntary Indigenous Identifier database.

A proxy measure for identifying suspected or confirmed cardiac cases was used by selecting cardiac-related MBS claims for diagnostic or therapeutic procedure items.

(Table B2 lists relevant MBS item numbers included in this measure.)

Why is this important?

Specialists play a critical role in diagnosing and treating people with cardiac disease. Improving the level of access to specialist services is very important to improve timeliness and accuracy of the diagnosis of cardiac diseases, especially for Indigenous Australians.

Results

Overall

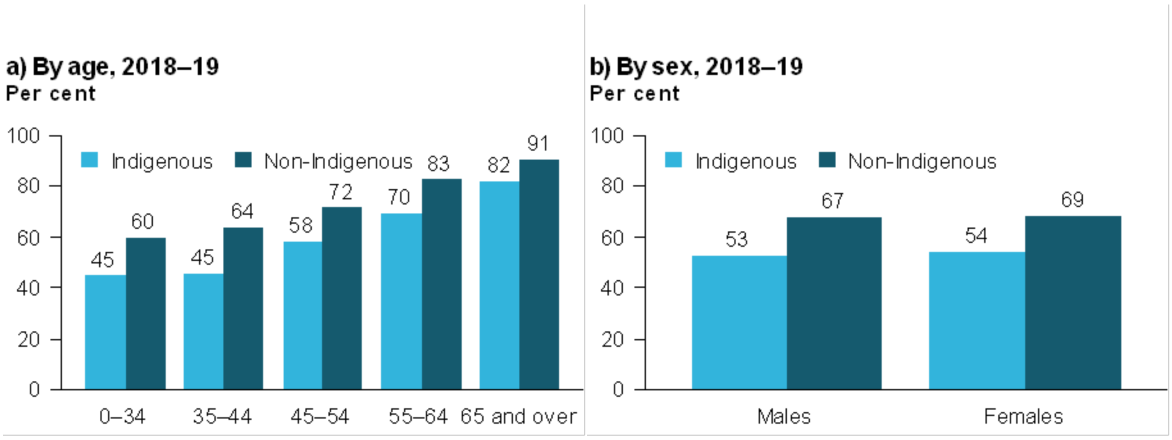
- In 2018–19, an estimated 101,133 Indigenous Australians, and 5,259,299 non-Indigenous Australians had suspected/confirmed cases of cardiac disease, of which 54% and 68% (age-standardised proportions), respectively, were reviewed by a specialist.

Age and sex

In 2018–19:

- the proportion of people who received a specialist review increased with age, for both Indigenous Australians (from 45% in those aged 0–34 to 82% in those aged 65 and over) and non-Indigenous Australians (equivalently, from 60% to 91%) (Figure 2.3a)
- a higher proportion of females than males were reviewed by a specialist, for both Indigenous and non-Indigenous Australians (Figure 2.3b).

Figure 2.3: Age-specific and age-standardised proportion of people with suspected/confirmed cardiac disease who were reviewed by a specialist, by Indigenous status, age and sex



Notes

1. Rates in Figure 2.3a are age specific and therefore not age standardised. Rates in Figure 2.3b are age standardised.
2. Data for these figures are available in the online supplementary tables (tables 2.3a–2.3b).
3. The MBS data reflect billing practices and not necessarily the services provided. For example, MBS data do not generally capture equivalent services provided by jurisdictional-funded primary health care or by public hospitals.
4. Numbers and rates have been adjusted for under-identification in the Medicare Australia Voluntary Indigenous Identifier database.

Source: AIHW analysis of Medicare Data.

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Priority area 3: Guideline-based therapy for acute coronary syndrome

Priority area 3 measures are based on the premise that all Aboriginal and Torres Strait Islander people with acute coronary syndrome (ACS) should receive guideline-based therapy (BCCF 2014). ACS includes a broad spectrum of acute clinical presentations, ranging from unstable angina to acute myocardial infarction (AMI).

Data from the National Hospital Morbidity Database (NHMD) are about separations (see Glossary), not individuals; it is not possible to group associated hospitalisations without data linkage. Priority area 3 measures exclude hospitalisations ending in a transfer to another acute hospital to reduce double-counting of people with ACS. As such, only the 'last' hospitalisation for each ACS event is generally counted. However, separate hospitalisations without transfers are counted separately; for example, if a person had 2 ACS events in 1 year, both would be counted. Likewise, if a person had 2 ACS events in a year but had 3 separations due to a transfer to another hospital, only 2 separations would be counted (see Appendix A for further details; tables B3 and B4 present classification codes used for these measures).

The 5 measures recommended for this priority area are:

- Measure 3.1 for ST-segment-elevation myocardial infarction (STEMI) events treated by percutaneous coronary intervention (PCI)
- Measure 3.2 for STEMI events not provided any reperfusion therapy (data not available to report)
- Measure 3.3 for ACS events that included diagnostic angiography or definitive revascularisation
- Measure 3.4 for ACS patients disharged from hospital on appropriate secondary prevention medicines (data not available to report)
- Measure 3.5 for AMI in-hospital mortality rates.

Updated data are available from the 2017–18 NHMD for Measure 3.1 on STEMI events treated by PCI, Measure 3.3 on ACS events that included diagnostic angiography or revascularisation and Measure 3.5 on AMI in-hospital mortality rates.

Measure 3.1: ST-segment-elevation myocardial infarction events treated by percutaneous coronary intervention

This measure reports on the number and proportion of hospitalised events where percutaneous coronary intervention (PCI)—a procedure to restore blood flow to a blocked coronary artery—was provided to patients aged 18 and over for STEMI (in other words, a severe heart attack).

Why is this important?

When a person experiences a heart attack, it is because the artery supplying blood to an area of the heart muscle is blocked. A PCI should be undertaken where clinically appropriate. In general, if access to PCI is not available within recommended time frames, a medicine that dissolves blood clots (fibrinolysis) should be offered (ACSQHC 2014).

A major factor in choosing PCI as treatment over fibrinolysis is timing, including time delays in seeking medical help, in transportation and whether PCI can be performed promptly by a qualified interventional cardiologist in an appropriate facility (usually within 90 minutes of first medical contact (Aroney et al. 2006; Chew et al. 2016). A broad variety of cultural and systemic factors are thought to contribute to delays in treatment among Indigenous Australians, many of which are exacerbated by living in remote areas (Ilton et al. 2014).

Results

Overall

In 2015–16 to 2017–18 combined:

- there were 1,046 hospitalised events for STEMI among Indigenous adults (4% of all hospitalised STEMI events), with 68% (crude rate) of those treated by PCI
- based on age-standardised proportions, 68% of hospitalised STEMI events among Indigenous adults were treated by PCI, compared with 81% of such events for non-Indigenous adults (rate ratio of 0.8) (Figure 3.1a).

Time trend

- Between 2004–05 and 2017–18, the age-standardised proportion of hospitalised STEMI events treated by PCI among Indigenous adults rose from 26% to 65%, and from 53% to 81% among non-Indigenous adults (Figure 3.1b).

Age and sex

In 2015–16 to 2017–18 combined, the treatment of hospitalised STEMI events by PCI:

- was lower for Indigenous adults than non-Indigenous adults across all age groups (Figure 3.1c)
- was lowest for those aged 65 and over, regardless of Indigenous status (Figure 3.1c)
- was higher among both non-Indigenous men and women than among Indigenous men and women (Figure 3.1d).

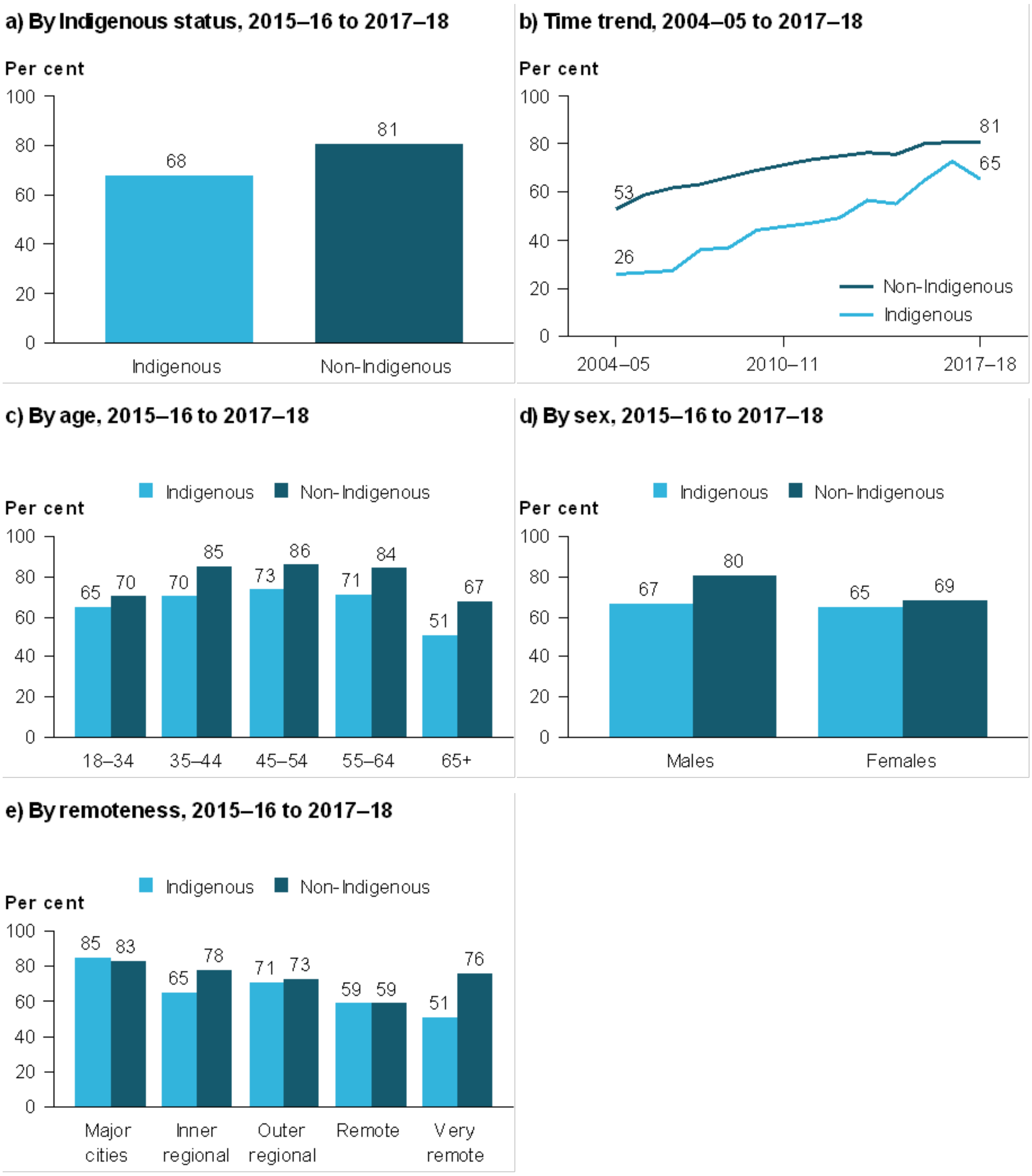
Remoteness area

In 2015–16 to 2017–18 combined, the age-standardised proportion of hospitalised STEMI events treated by PCI:

- fell with increasing remoteness (from 85% in *Major cities* to 51% in *Very remote* areas for Indigenous adults)

- resulted in the gap between Indigenous and non-Indigenous adults being widest in *Very remote* areas (Figure 3.1e).

Figure 3.1: Age-standardised and age-specific proportion of hospitalised events for STEMI among people aged 18 and over who were treated by PCI, by Indigenous status and various characteristics



Notes

1. The time series analysis shown in Figure 3.1b is for New South Wales, Victoria, Queensland, Western Australia, South Australia, and the Northern Territory combined. The analyses shown in the other figures include data for all jurisdictions (see Appendix A).
2. Rates in Figure 3.1c are age specific and therefore not age standardised; all other figures show age-standardised rates.
3. Data for these figures are available in the online supplementary tables (tables 3.1a to 3.1e).
4. The NHMD includes data on hospitalisations and not people, so the number of people is an estimate only. Hospitalisations ending in transfer to another acute hospital were excluded, so that only the ‘last’ hospitalisation episode is counted. PCIs are also performed in a non-admitted patient setting, but these are not captured in the NHMD.
5. There is some under-identification of Indigenous Australians in the NHMD. Eligibility for reperfusion therapy cannot be determined using NHMD data.

Source: AIHW NHMD.

Measure 3.3: Acute coronary syndrome events that included diagnostic angiography or definitive revascularisation

This measure reports on the number and proportion of hospitalised events for ACS among people aged 18 and over that included diagnostic angiography and/or a definitive revascularisation procedure—that is, a PCI or coronary artery bypass graft (CABG) (which is open heart surgery with grafting of vessels).

Why is this important?

Diagnostic angiography and definitive revascularisation procedures are essential forms of diagnosis and treatment for ACS, and timely use of these procedures can save many lives (BCCF 2014; NHFA & CSANZ 2016).

Barriers to accessing timely ACS treatment can be explained, in part, by geographical disparity in services. Mapping of cardiac services suggests that 60% of Indigenous Australians cannot access a PCI-capable hospital within an hour's drive of their home (Clark et al. 2012). But differences in cardiac procedure rates have also been found to be affected by other factors, such as comorbid conditions and severity of the condition (Cunningham 2002; Randall et al. 2013).

Results

Overall

In 2015–16 to 2017–18 combined:

- 5,744 hospitalised events for ACS among people aged 18 and over were for Indigenous Australians (5% of all ACS events), of which 53% (crude rate) included diagnostic angiography (29% PCI; 3% CABG) and 55% included at least 1 diagnostic angiography or definitive revascularisation procedure
- the age-standardised proportion of hospitalised ACS events among Indigenous adults receiving a diagnostic angiography and/or a definitive revascularisation procedure was 57%, compared with 69% for non-Indigenous adults (rate ratio of 0.8) (Figure 3.3a).

Time trend

- Between 2004–05 and 2017–18, the age-standardised proportion of hospitalisations for ACS events among Indigenous adults that included either a diagnostic angiography or a definitive revascularisation procedure rose from 32% to 59%, compared with a rise from 45% to 69% among non-Indigenous adults (Figure 3.3b).

Age and sex

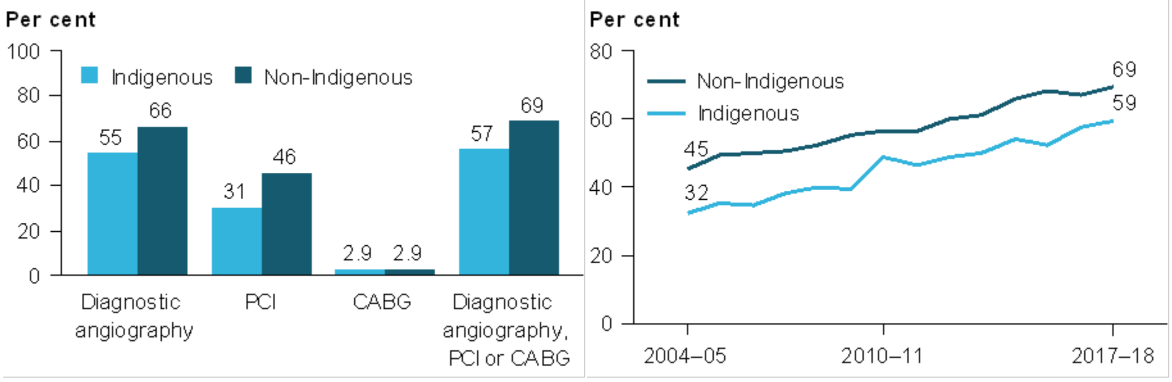
In 2015–16 to 2017–18 combined:

- the proportion of hospitalised ACS events that included diagnostic angiography or a definitive revascularisation procedure was lower for Indigenous adults than for non-Indigenous adults in all age groups (Figure 3.3c)
- non-Indigenous men and women had higher rates of diagnostic angiography or definitive revascularisation procedures than their Indigenous counterparts (Figure 3.3d).

Remoteness area

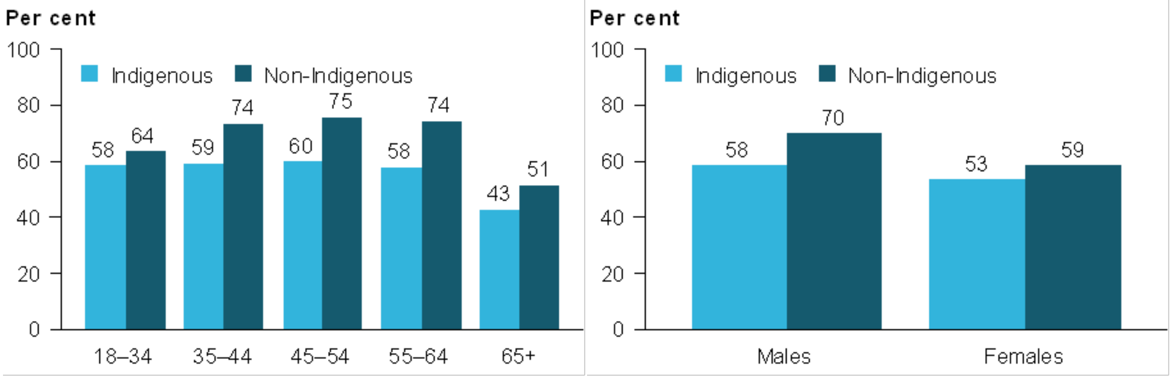
- In 2015–16 to 2017–18 combined, except for *Very remote* areas, the age-standardised proportions of hospitalised ACS events for Indigenous adults who received a diagnostic angiography or a definitive revascularisation procedure were lower than that for non-Indigenous adults. Proportions in *Very Remote* areas were similar (Figure 3.3e).

Figure 3.3: Age-standardised and age-specific proportion of hospitalised events among people aged 18 and over who had ACS and were treated by PCI and/or CABG, by Indigenous status and various characteristics



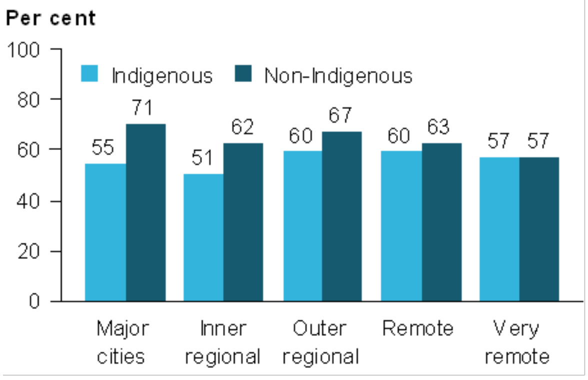
a) By procedure type, 2015–16 to 2017–18

b) Time trend, 2004–05 to 2017–18



c) By age, 2015–16 to 2017–18

d) By sex, 2015–16 to 2017–18



e) By remoteness, 2015–16 to 2017–18

Notes

1. The time series analysis shown in Figure 3.3b is for New South Wales, Victoria, Queensland, Western Australia, South Australia, and the Northern Territory combined. The analyses shown in the other figures include data for all jurisdictions (see Appendix A).
2. Rates in Figure 3.3c are age specific and therefore not age standardised; all other figures show age-standardised rates.
3. Data for these figures are available in the online supplementary tables (tables 3.3a to 3.3e).
4. The NHMD includes data on hospitalisations, so the number of people is an estimate only. Hospitalisations ending in transfer to another acute hospital were excluded. The proportion of ACS patients who receive angiography or revascularisation might be underestimated. PCIs are also performed in a non-admitted patient setting, but these are not captured in the NHMD.
5. There is some under-identification of Indigenous Australians in the NHMD.

Source: AIHW NHMD.

Measure 3.5: Acute myocardial infarction in-hospital mortality rates

This measure reports on the rate of separations for AMI among patients aged 35 and over that ended with death, by Indigenous status.

Why is this important?

AMI, also known as a heart attack, causes the death of some heart muscle. Improvements in treatment for people with AMI reduce the mortality rate over both the short and long term (Ong & Weeramanthri 2000; Tideman et al. 2014).

Results

Overall

In 2015–16 to 2017–18 combined:

- about 3% (crude rate) of hospitalisations for AMI among Indigenous Australians aged 35 and over ended with death (133 deaths)
- the age-standardised in-hospital death rate was similar for Indigenous adults and non-Indigenous adults (2.8% versus 2.6%, respectively), with a rate ratio of 1.1 (Figure 3.5a).

Time trend

- Between 2006–09 and 2015–18, the age-standardised in-hospital death rate fell among both Indigenous adults (from 4% to 3%) and non-Indigenous adults (5% to 3%) (Figure 3.5b).

Age and sex

In 2015–16 to 2017–18 combined:

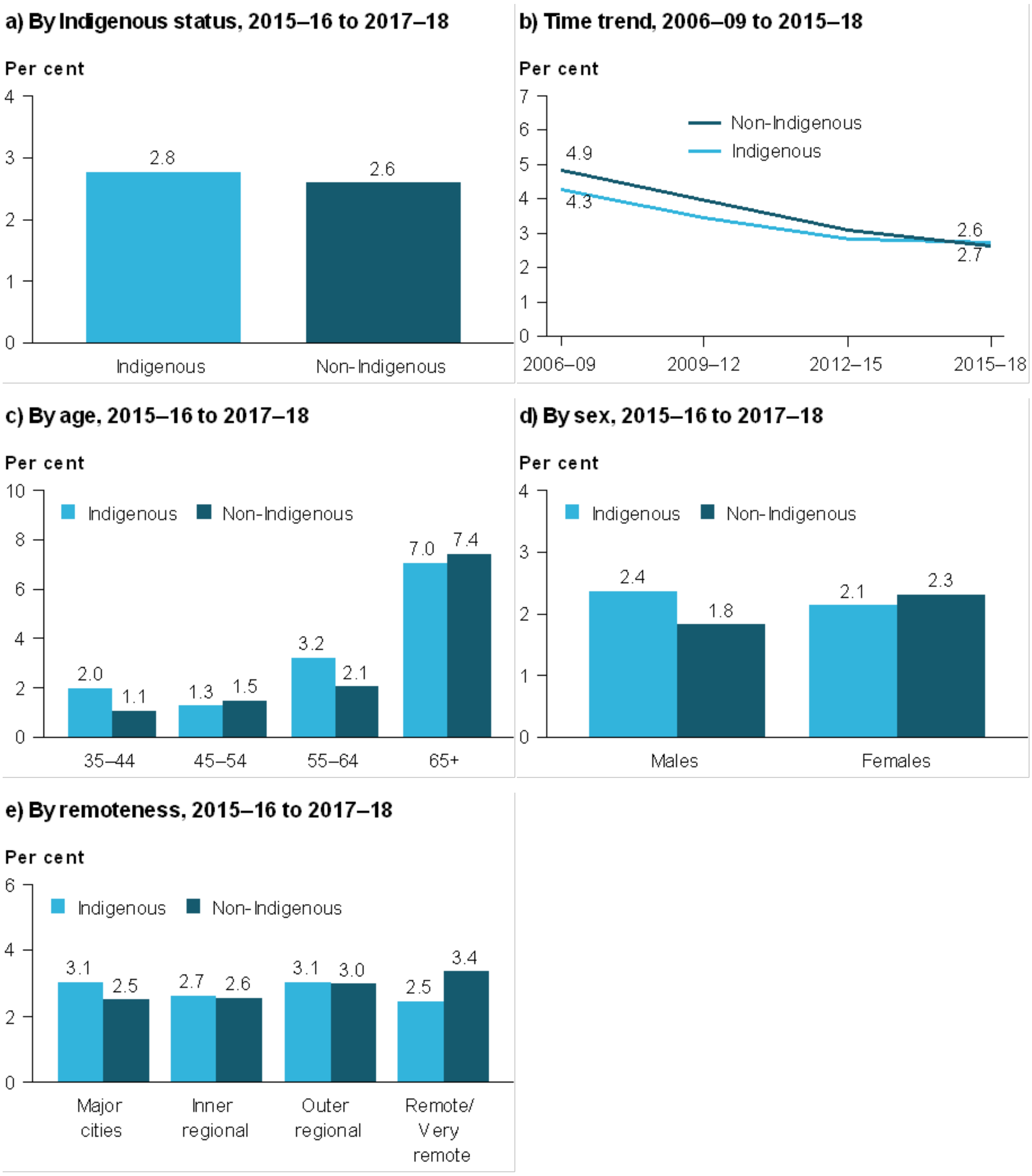
- Indigenous Australians aged 35–44 and 55–64 had slightly higher in-hospital death rates than non-Indigenous Australians of the same age. In-hospital death rates were similar for Indigenous and non-Indigenous Australians aged 45–54 and for those aged over 65 (Figure 3.5c)
- the age-standardised in-hospital death rate was about 2% for both Indigenous and non-Indigenous men and women (Figure 3.5d).

Remoteness area

In 2015–16 to 2017–18 combined:

- the age-standardised in-hospital death rate among Indigenous adults was about 3% across all remoteness areas (ranging from 2.5% in *Remote and very remote* areas combined to 3.1% in *Major cities* and *Outer regional* areas) (Figure 3.5e)
- compared with non-Indigenous adults, age-standardised in-hospital death rates for Indigenous adults were slightly lower in *Remote and very remote* areas combined, slightly higher in *Major cities* and similar in *Inner regional* and *Outer regional* areas (Figure 3.5e).

Figure 3.5: Age-standardised and age-specific rate of hospitalised events for AMI among people aged 35 and over that ended with the death of the patient, by Indigenous status and various characteristics



Notes

1. The time series analysis shown in Figure 3.5b is for New South Wales, Victoria, Queensland, Western Australia, South Australia, and the Northern Territory combined. The analyses shown in the other figures include data for all jurisdictions (see Appendix A).
2. Rates in Figure 3.5c are age specific and therefore not age standardised; all other figures show age-standardised rates.
3. Data for these figures are available in the online supplementary tables (tables 3.5a to 3.5e).
4. Data broken down by state and territory could not be provided, as they were not comparable due to different practices for recording deaths in the NHMD. In-hospital morbidity rates might also be affected by different approaches to pre- and post-hospital care, so should be interpreted in the context of overall cardiac mortality. The NHMD does not include information on cause of death.
5. While the indicator refers to proportions of people, the data presented for this indicator are based on proportions for hospitalisations. Hospitalisations ending in transfer to another acute hospital were excluded.
6. There is some under-identification of Indigenous Australians in the NHMD.

Source: AIHW NHMD

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Priority area 4: Optimisation of health status and provision of ongoing preventive care

Priority area 4 measures are based on the premise that all Aboriginal and Torres Strait Islander people with cardiac conditions should receive ongoing multidisciplinary primary health care and specialist physician follow-up as required, to prevent further illness, and to optimise health status (BCCF 2014).

The 4 measures recommended for this priority area are:

- Measure 4.1 for review by a primary health-care professional after discharge from hospital (data not available to report)
- Measure 4.2 for follow-up services after receiving a cardiovascular therapeutic procedure
- Measure 4.3 for specialist physician review after a cardiovascular therapeutic procedure
- Measure 4.4 for patients with coronary heart disease discharged on secondary prevention medications (data not available to report).

Updated data are available from the 2018–19 MBS data and the weighted Voluntary Indigenous Identifier database for Measure 4.2 and Measure 4.3 to calculate follow-up services/specialist physician review within 12 months of a cardiovascular therapeutic procedure that occurred in 2017–18.

Measure 4.2: Follow-up services after receiving a cardiovascular therapeutic procedure

This measure reports on the number and proportion of patients with a cardiac condition who received a follow-up MBS-subsidised service within 12 months of having a cardiovascular therapeutic procedure (as measured through MBS claims).

MBS follow-up items include team care arrangement, GP management plans, allied health services items, and practice nurse services. (Table B2 contains a full list of items.)

This measure could not be fully reported as the data linkage between the MBS and hospital data currently includes data for certain jurisdictions only, and its usefulness for reporting against this measure is being explored as part of the BCC data development plan.

The definition of this measure in the more recent reports differs from that in the first and second annual reports. It was previously reported as the ‘number and proportion of patients with a cardiac condition who received the following MBS chronic disease management items: team care arrangement, GP management plan, and allied health services items’. The definition was changed to better reflect the purpose of the agreed measure.

Why is this important?

Secondary prevention—which includes a broad variety of multidisciplinary interventions and disease management (such as team care arrangements and GP management plans)—is important to reduce the recurrence of cardiac events or complications in patients with an established cardiac condition diagnosis. These interventions have been shown to reduce hospital readmission and mortality rates (NHFA 2010).

Results

Overall

In 2017–18:

- an estimated 1,238 Indigenous Australians and 116,947 non-Indigenous Australians made an MBS claim for a cardiovascular therapeutic procedure
- about 70% of Indigenous Australians and 51% of non-Indigenous Australians made an MBS claim for follow-up services within 12 months after a cardiovascular therapeutic procedure.

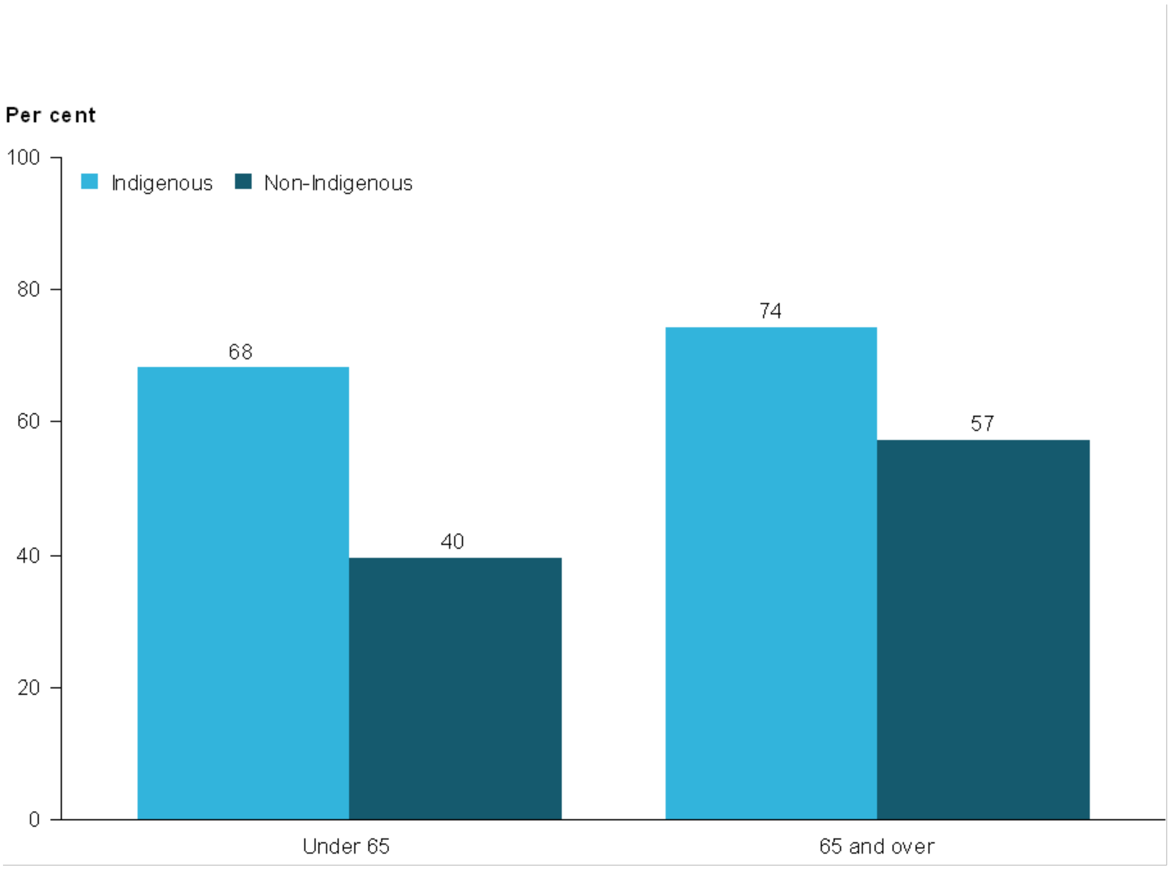
Age

In 2017–18:

- about 68% of Indigenous Australians and 40% of non-Indigenous Australians aged under 65 made an MBS claim for follow-up services within 12 months after a cardiovascular therapeutic procedure. Among those aged 65 and over, the proportions were 74% for Indigenous Australians and 57% for non-Indigenous Australians (Figure 4.2).

Due to small numbers, analysis could not be done for other subpopulations.

Figure 4.2: Proportion of people who had follow-up MBS services within 12 months of a cardiovascular therapeutic procedure in 2017–18, by Indigenous status and age



Notes

1. Rates in this figure are crude.
2. Data for this figure are available in the online supplementary tables (Table 4.2).
3. The MBS data reflect claiming practices, and not necessarily services provided.
4. As some of the MBS items used to identify people with a cardiac condition are diagnostic, not all people with these items would have cardiac conditions (as some of the tests would have been negative).
5. Numbers and rates have been adjusted for under-identification in the Medicare Australia Voluntary Indigenous Identifier database.

Source: AIHW analysis of Medicare Data.

Measure 4.3: Specialist physician review after a cardiovascular therapeutic procedure

This measure reports on the number and proportion of patients with a cardiac condition who were reviewed by a specialist physician within 12 months of a cardiovascular therapeutic procedure (as captured through MBS claims).

This measure could not be fully reported as the data linkage between MBS and hospital data currently includes data for certain jurisdictions only, and its usefulness for reporting against this measure is being explored as part of the BCC data development plan.

Why is this important?

Substantial evidence shows that integrated cardiac and specialist services within a general practice setting, combined with increased use of specialist services, is highly effective in reducing CVD mortality and morbidity and improves quality of life.

Results

Overall

In 2017–18:

- an estimated 1,238 Indigenous Australians and 116,947 non-Indigenous Australians made an MBS claim for a cardiovascular therapeutic procedure
- about 91% of Indigenous Australians and 97% of non-Indigenous Australians made an MBS claim for specialist services within 12 months after a cardiovascular therapeutic procedure.

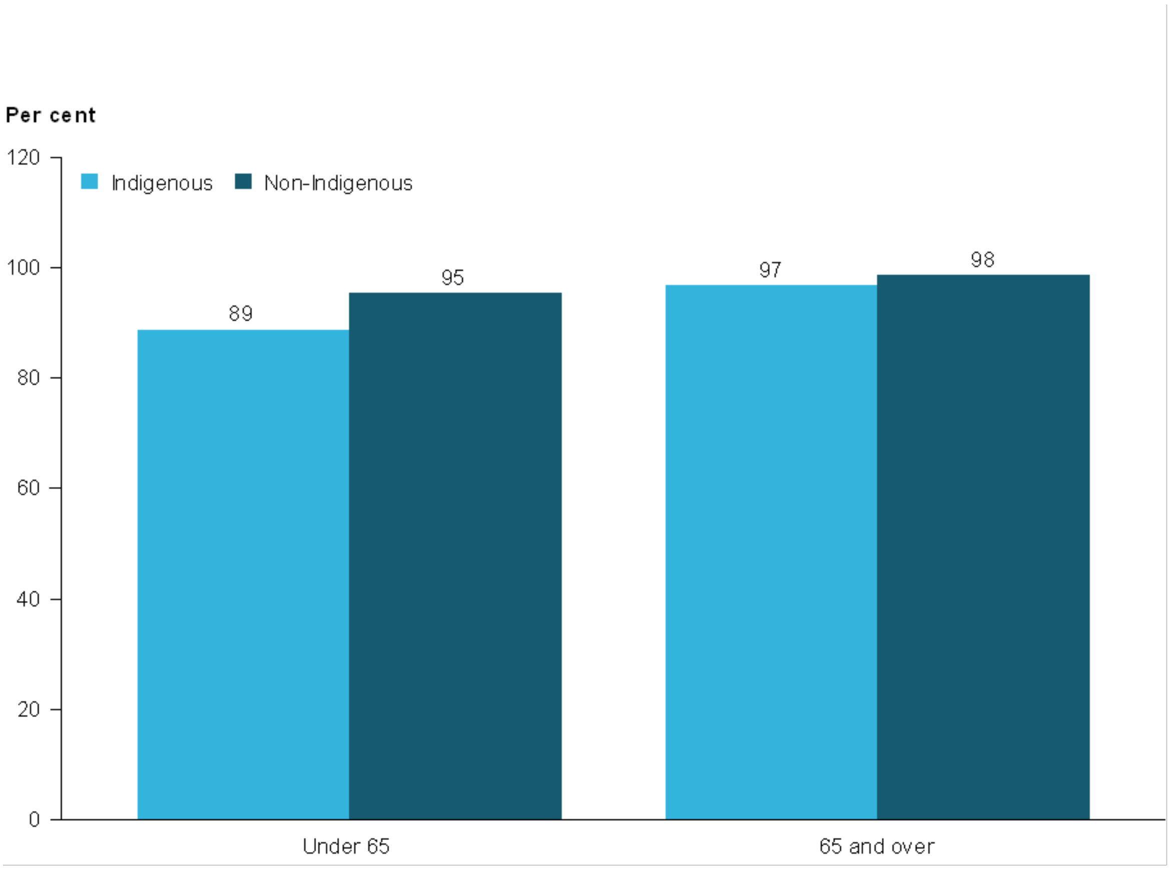
Age

In 2017–18:

- about 89% of Indigenous Australians and 95% of non-Indigenous Australians aged under 65 made an MBS claim for specialist services within 12 months after a cardiovascular therapeutic procedure (Figure 4.3)
- among those aged 65 and over, the proportions were 97% for Indigenous Australians and 98% for non-Indigenous Australians (Figure 4.3).

Due to small numbers, analysis could not be done for other subpopulations.

Figure 4.3: Proportion of people who were reviewed by a specialist physician within 12 months of a cardiovascular therapeutic procedure in 2017–18, by Indigenous status and age



Notes

1. Rates in this figure are crude.
2. Data for this figure are available in the online supplementary tables (Table 4.3).
3. The MBS data reflect claiming practices, and not necessarily services provided.
4. As some of the MBS items used to identify people with a cardiac condition are diagnostic, not all people with these items would have cardiac conditions (as some of the tests would have been negative).
5. Numbers and rates have been adjusted for under-identification in the Medicare Australia Voluntary Indigenous Identifier database.

Source: AIHW analysis of Medicare Data.

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Priority area 5: Strengthening the diagnosis, notification and follow-up of rheumatic heart disease

Priority area 5 measures are based on the premise that:

- all Aboriginal and Torres Strait Islander people suspected to have acute rheumatic fever (ARF) or rhuematic heart disease (RHD) should receive an echocardiogram as early as possible
- new cases should be automatically reported to a central register to help track patients and ensure ongoing care.

Previously, data for this section were separately supplied to the AIHW from each individual state-based RHD register. Since mid-2018, information from these registers in each jurisdiction has been compiled by the AIHW. Data are provided by registers in Queensland, Western Australia, South Australia and the Northern Territory (AIHW 2020c). Although data from the New South Wales RHD Register are also provided to the AIHW, these data are not currently comparable with data from the other jurisdictions. Details of the National RHD data collection are available in Appendix A. From the 2018–19 BCC report, data are sourced directly from the National RHD data collection, with analysis performed in house.

As some people with ARF/RHD move between states and territories, and because of the long-term nature of the disease and follow-up, the same ARF episode may be recorded in multiple jurisdictions. Within the national collection, duplicate cases between states and territories are identified and removed, thereby improving data quality. Improved consistency in data definitions between jurisdictions may have caused changes in some analyses, also leading to results that differed from those in previous publications.

As a result of these changes, information presented in this section is not comparable with the content of previous reports.

The 4 measures recommended for this priority area are:

- Measure 5.1 for the annual incidence of ARF and RHD
- Measure 5.2 for recurrent ARF
- Measure 5.3 for preventive treatment with benzathine penicillin G (BPG) doses
- Measure 5.4 for echocardiograms among patients with severe or moderate RHD (data not available to report).

The data in the National RHD data collection underestimates echocardiography performed on RHD cases and should not be used to estimate compliance with ARF and RHD key performance indicators. Data custodians indicated that difficulty in obtaining echocardiogram reports from multiple external data sources means that data are incomplete; therefore, updated data on echocardiograms performed on RHD cases (Measure 5.4) are not provided in this report.

Measure 5.1: Annual incidence of acute rheumatic fever and rheumatic heart disease

This measure reports on the incidence (first known and recurrent episodes) of ARF, and newly diagnosed cases of RHD.

Rates comparing the Indigenous and non-Indigenous populations have not been adjusted for differences in age structure, as age-standardised rates could not be calculated due to small numbers among the non-Indigenous population.

Why is this important?

ARF and RHD are preventable conditions, which are emblematic of Indigenous disadvantage; ARF is the result of an autoimmune response to a group A streptococcus (Strep A) bacterial infection (Parnaby & Carapetis 2010). ARF causes acute illness during which permanent damage to the heart muscle and heart valves can occur. This is known as RHD. RHD can result from 1 or multiple ARF episodes. The diagnosis of ARF is difficult, relying on clinical decisions and various diagnostic tools and tests. RHD can lead to expensive and invasive treatment and, in the worst cases, premature death.

While it is rare among non-Indigenous Australians, ARF is relatively common among Indigenous Australians. ARF and RHD have been linked to socioeconomic disadvantage, such as household overcrowding and lack of access to ‘health hardware’ (for example, working toilets, showers, taps) (Coffey et al. 2018; Jaine et al. 2011; Sims et al. 2016; Wyber & Carapetis 2015).

There are several opportunities where the disease pathway from Strep A infection to ARF and then RHD can be interrupted. Primordial prevention strategies aim to reduce exposure to Strep A infections by focusing on the social determinants of health. Primary prevention of ARF interrupts the link between Strep A infection and the autoimmune response that leads to ARF by identifying and treating Strep A infections with appropriate antibiotics. Secondary prevention aims to reduce the risk of recurrent ARF and includes secondary prophylaxis. Tertiary prevention aims to slow disease progression and prevent complications associated with RHD, and can include surgery to repair or replace damaged heart valves once a disease is established (Noonan 2020).

Results: Incidence of first known and recurrent ARF in Queensland, Western Australia, South Australia, and the Northern Territory combined

Overall

In 2018:

- 457 episodes of ARF were reported among Indigenous Australians (a rate of 100 per 100,000 population)
- 21 ARF episodes were reported among non-Indigenous Australians (a rate of 0.2 per 100,000 population) (Figure 5.1.1a).

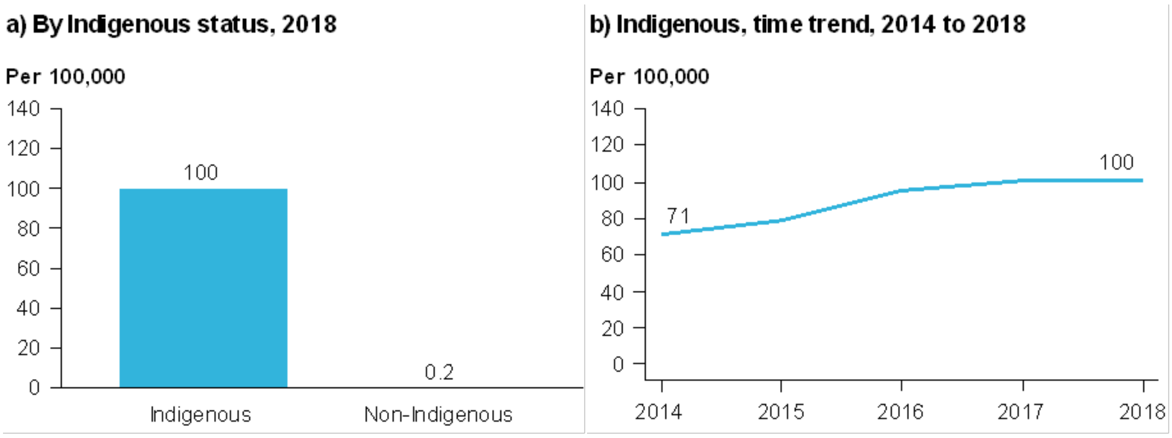
Time trend

- Between 2014 and 2018, the incidence of ARF among Indigenous Australians rose from 71 to 100 per 100,000 population (Figure 5.1.1b). The reason for this rise is unclear, but it could be due to a combination of factors, such as increased community and primary health-care awareness, and new legislation in some jurisdictions mandating notification of diagnoses that increased notification of people with ARF in recent years.

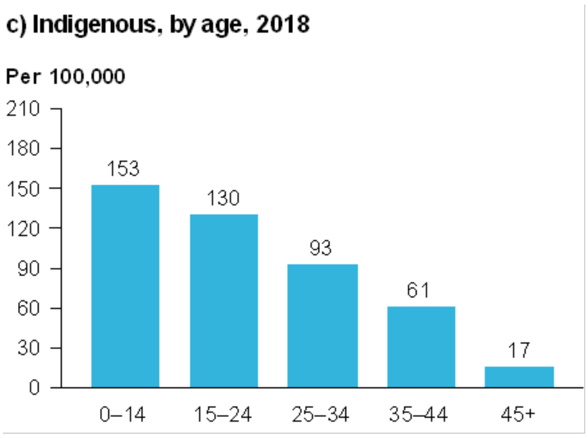
Age

- In 2018 among Indigenous Australians, the incidence rate of ARF was highest among the youngest age group (0–14 years) and lowest among those aged over 45 (Figure 5.1.1c)

Figure 5.1.1: Incidence of ARF, by various characteristics


a) By Indigenous status, 2018

b) Indigenous, time trend, 2014 to 2018


c) Indigenous, by age, 2018

Notes

1. Data for these figures are for Queensland, Western Australia, South Australia, and the Northern Territory combined.
2. The rates in Figure 5.1.1a have not been adjusted for differences in age structure between the Indigenous and non-Indigenous populations.
3. Data for these figures are available in the online supplementary tables (tables 5.1.1a to 5.1.1c).
4. Incidence includes both first known ARF episodes and recurrent episodes and include all confirmation statuses (definite, probable and possible).

Source: AIHW analysis of the National RHD data collection.

Results: New diagnoses of RHD in Queensland, Western Australia, South Australia, and the Northern Territory combined

Overall

In 2018:

- 334 new RHD diagnoses were reported among Indigenous Australians (a rate of 73 per 100,000 population)
- 63 new RHD diagnoses were reported among non-Indigenous Australians (a rate of 0.7 per 100,000 population) (Figure 5.1.2a).

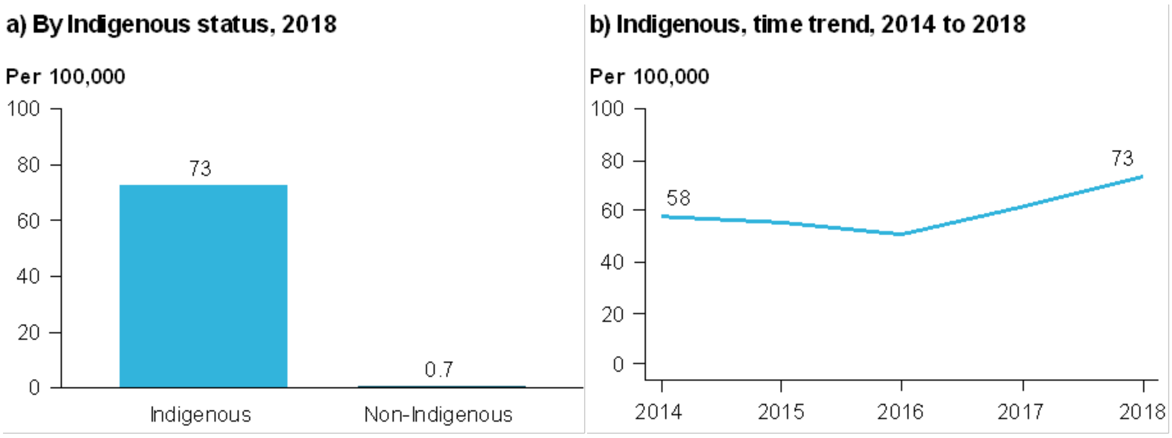
Time trend

- Between 2014 and 2018, new diagnoses of RHD among Indigenous Australians rose from 58 to 73 per 100,000 population (Figure 5.1.2b). Similar to the rise in the incidence rate of ARF, the increase in new diagnoses of RHD could be due to better awareness and increased notification of people with RHD in recent years.

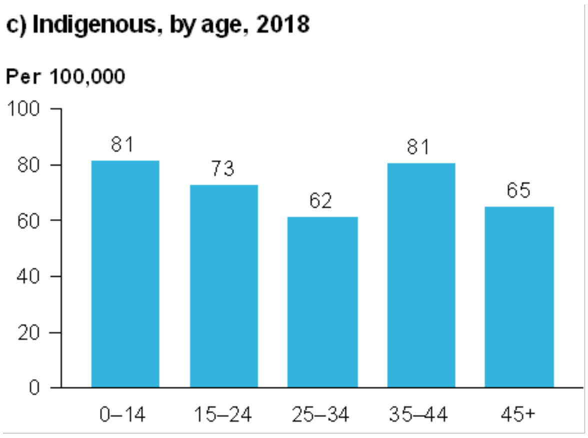
Age

- In 2018 among Indigenous Australians, the incidence rate of new RHD diagnoses was highest among those aged 0–14 and 35–44 and was lowest among those aged 25–34 (Figure 5.1.2c).

Figure 5.1.2: New diagnoses of RHD, by various characteristics


a) By Indigenous status, 2018

b) Indigenous, time trend, 2014 to 2018


c) Indigenous, by age, 2018

Notes

1. Data for these figures are for Queensland, Western Australia, South Australia, and the Northern Territory combined.
2. The rates in Figure 5.1.2a have not been adjusted for differences in age structure between the Indigenous and non-Indigenous populations.
3. Data for these figures are available in the online supplementary tables (tables 5.1.2a to 5.1.2c).

Source: AIHW analysis of the National RHD data collection.

Measure 5.2: Recurrent acute rheumatic fever

This measure reports on the proportion of all ARF episodes that were recurrent (a reported ARF episode in an individual with known past ARF or RHD).

Note that the proportion of all ARF episodes that are recurrent is not an easy measure to interpret over time, and may not produce meaningful results, as primary and secondary prevention measures affect both the numerator and denominator. The AIHW's 2020 ARF/RHD annual report reported on ARF recurrences per 100 patient-years among those prescribed secondary prophylaxis, as a more meaningful measure to account for the different amounts of time people who have had an ARF episode are at risk of having a recurrent episode (AIHW 2020c). Improvements to this measure will be considered for future releases of the BCC report.

Why is this important?

Preventive penicillin treatment for people who have had an ARF episode aim to prevent Strep A infections and thereby reduce the risk of ARF recurrence and the development of RHD. Known as secondary prophylaxis, effective preventive treatment involves the prolonged use of antibiotics with BPG administered every 21–28 days for between 5 and 10 years after the ARF epidsode (RHD Australia 2020). Trends in the number of recurrent ARF episodes among people prescribed secondary prophylaxis may be used to monitor the effectiveness of ARF/RHD program implementation.

Results: Recurrence of ARF in Queensland, Western Australia, South Australia, and the Northern Territory combined

Overall

- In 2017–2018 combined, 26% of ARF episodes (239 of 906) diagnosed in Indigenous Australians were recurrences, and 18% of ARF episodes for non-Indigenous Australians (9 of 51) were recurrences (Figure 5.2a).
- In 2018, among people prescribed BPG there were 3.1 ARF recurrences for every 100 patient-years at risk (AIHW 2020c).

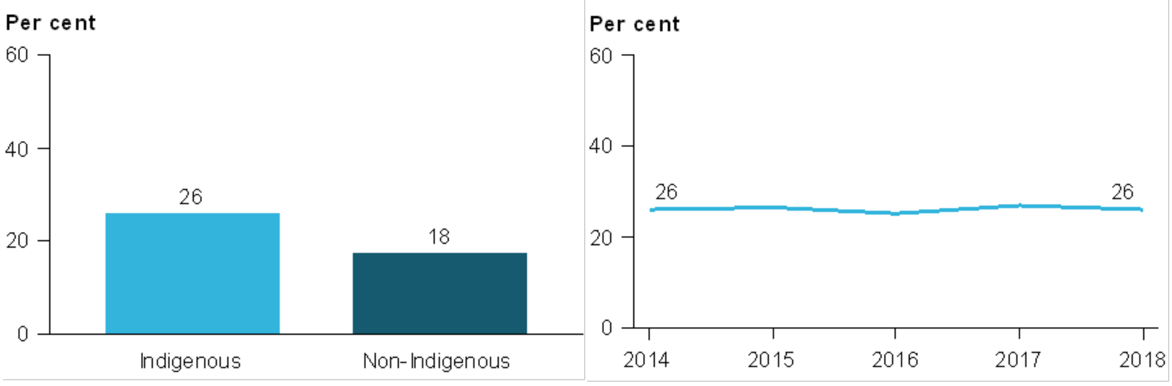
Time trend

- Between 2014 and 2018, the proportion of ARF episodes among Indigenous Australians that were recurrent remained stable at 26% (Figure 5.2b).

Age

- In 2018, the proportion of recurrent ARF episodes among Indigenous Australians rose with increasing age—it was lowest among those aged 14 and under (18%) and highest among those aged 35 and over (38%) (Figure 5.2c).
- The rate of recurrences per 100 patient-years among people prescribed BPG in 2018 generally decreased with age, from 4.9 among those aged 0–14 to 1.5 among those aged 45 and over (AIHW 2020c).

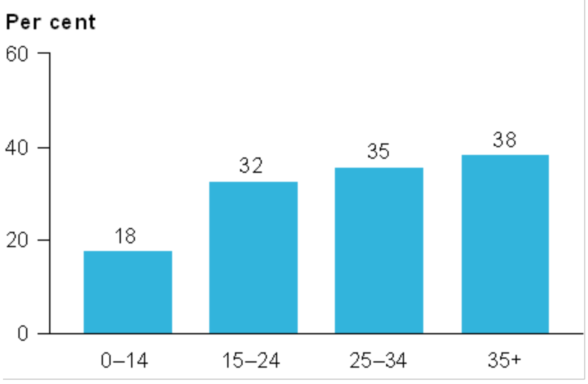
Figure 5.2: Proportion of ARF episodes that were recurrent, by various characteristics



a) By Indigenous status, 2017–2018

b) Indigenous, time trend, 2014 to 2018

c) Indigenous, by age, 2018



Notes

1. Data for these figures are for Queensland, Western Australia, South Australia, and the Northern Territory combined.
2. Two years of data (2017–2018) are combined to calculate proportion of ARF epidsodes that were recurrent in Figure 5.2a because of the small number of recurrent cases among non-Indigenous Australians.3. Data for these figures are available in the online supplementary tables (tables 5.2a to 5.2c).

Source: AIHW analysis of the National RHD data collection.

Measure 5.3: Preventive treatment with benzathine penicillin G

This measure presents the number and proportion of required doses of BPG given to patients who were prescribed preventive treatment in 2018. This is known as secondary prevention of ARF.

The number of people prescribed BPG differs from that reported in previous reports as more stringent inclusion criteria have been used for the analysis. For inclusion in the analysis, people had to be prescribed a schedule of intramuscular BPG on a 28-day regimen and to have received at least 1 dose in 2018.

Previously, the number of people prescribed BPG who received less than 50%, 50% to 80%, or more than 80% of required doses in the previous 12 months was reported. Starting with the fourth report, this measure describes the number of people prescribed 4-weekly BPG who received less than 50%, 50% to 79%, 80% to 99%, and 100% or more of their required doses, to highlight the cohort of patients who received all recommended doses. If someone is on treatment for an entire year, they should have at least 13 doses delivered. Some people may have received more than 13 doses resulting in an adherence of more than 100%. These people are included in the group who received 100% or more of the required doses. The expected number of doses for people on treatment for part of the year only was adjusted accordingly.

Why is this important?

For people with a history of ARF or RHD, a program of prolonged use of antibiotics is recommended to prevent recurrent ARF or worsening of RHD (RHD Australia 2020). The antibiotics prevent primary Strep A infections and hence prevent subsequent ARF episodes.

The current Australian guidelines state that all people with ARF or RHD should receive BPG every 3–4 weeks, and that treatment should continue for between 5 and 10 years after the most recent episode of ARF or until age 21 (whichever is longer). Some people may require BPG for a longer period, depending on their age and severity of their RHD and other risk factors. Some people's secondary prophylaxis may require BPG at a different frequency, or use of alternative antibiotics (RHD Australia 2020).

Results: Preventive treatment with benzathine penicillin G in Queensland, Western Australia, South Australia, and the Northern Territory combined

Overall

In 2018:

- 3,209 Indigenous Australians were eligible for inclusion in calculations about BPG delivery, of whom:
  - 26% (836) received less than 50% of the required doses
  - 32% (1,012) received 50%–79% of the required doses
  - 19% (613) received 80%–99% of the required doses
  - 23% (748) received 100% or more of the required doses (Figure 5.3a)
- 130 non-Indigenous Australians were prescribed BPG, of whom 34 (26%) received 100% or more of the required BPG doses (Figure 5.3a).

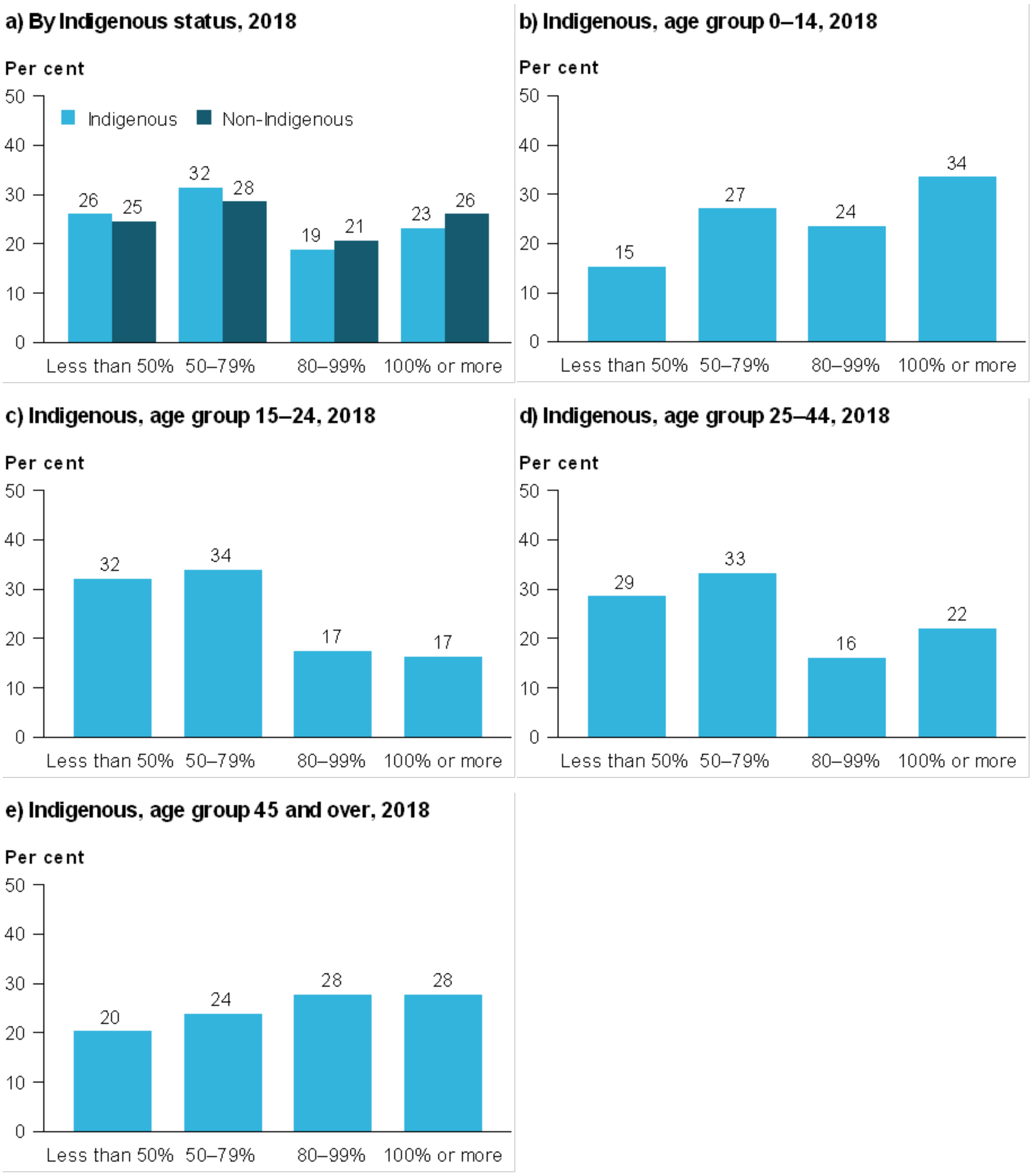
Age

Among Indigenous Australians prescribed BPG:

- adherence was highest among those aged 0–14, with 58% receiving at least 80% of required doses (Figure 5.3b).

- adherence was lowest among the 15–24 age group, where only 34% received at least 80% of required doses (Figure 5.3c).

Figure 5.3: Proportion of required BPG doses received, by people with ARF and/or RHD on a 28-day BPG regime, 2018



Notes

1. Data for these figures are available in the online supplementary tables (tables 5.3a to 5.3e).
2. Data are from Queensland, Western Australia, South Australia, and the Northern Territory combined.
3. This analysis includes people who were prescribed BPG for the whole of 2018, as well as those on BPG for part of the year only. People who did not receive any doses during 2018 are excluded.
4. People on BPG can have more than 13 doses in 1 year; therefore, 100% of doses is defined as 100% or more of doses.

Source: AIHW analysis of the National RHD data collection.

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Summary measures: hospitalisation and mortality

As well as the measures relating to the priority areas, 2 summary measures monitor hospitalisations and mortality from cardiac conditions among Aboriginal and Torres Strait Islander people.

The measures are broad indicators of the effectiveness of early risk assessment and preventive care, and provide a population-wide perspective on the impact of cardiac conditions over time.

The measures can be reported using existing data collections (the NHMD and the National Mortality Database—or NMD).

Hospitalisation results in Measure 6.1 are a count of *hospitalisations* for cardiac conditions and not a count of individuals, as some hospitalisations could represent transfers for ongoing care, or hospitalisations of a single individual at different times during the year.

The full range of diagnosis codes for cardiac conditions was used, as opposed to those for events only. This differs from the approach used for priority area 3 measures, where data on specific cardiac hospitalised events were captured, and hospitalisations ending with transfers were excluded.

Measure 6.1: Hospitalisations for cardiac conditions

This measure presents the rates of hospitalisations for cardiac conditions.

Why is this important?

The hospitalisation rate for cardiac conditions is a broad indicator of the effectiveness of early risk assessment and preventive care.

Results

Overall

In 2015–16 to 2017–18 combined:

- there were 33,530 Indigenous hospitalisations for cardiac conditions—a crude rate of 14 per 1,000 population
- the age-standardised hospitalisation rate of cardiac conditions for Indigenous Australians (24 per 1,000 population) was about twice the rate for non-Indigenous Australians (13 per 1,000 population) (Figure 6.1a).

Time trend

- Between 2004–05 and 2017–18, age-standardised hospitalisation rates for cardiac conditions increased slightly for Indigenous Australians (22 to 24 per 1,000 population) but remained relatively stable for non-Indigenous Australians (14 per 1,000 population) (Figure 6.1b).

Age and sex

In 2015–16 to 2017–18 combined, hospitalisation rates for cardiac conditions:

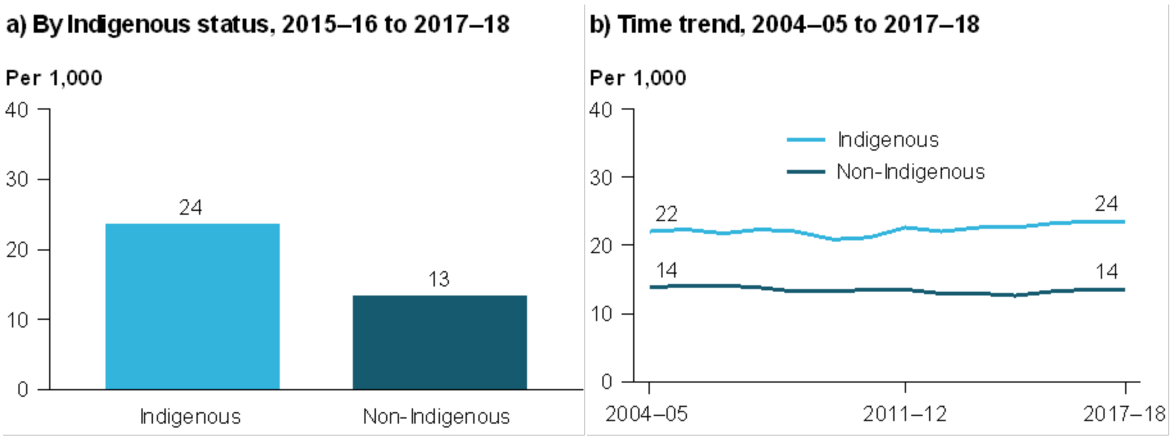
- increased with age for both Indigenous and non-Indigenous Australians, but Indigenous Australians had higher rates of hospitalisation than non-Indigenous Australians, especially among younger age groups (Figure 6.1c)
- were higher for males than females, with a greater difference among non-Indigenous than Indigenous Australians (Figure 6.1d).

State/territory and remoteness area

In 2015–16 to 2017–18 combined, the age-standardised hospitalisation rate for cardiac conditions:

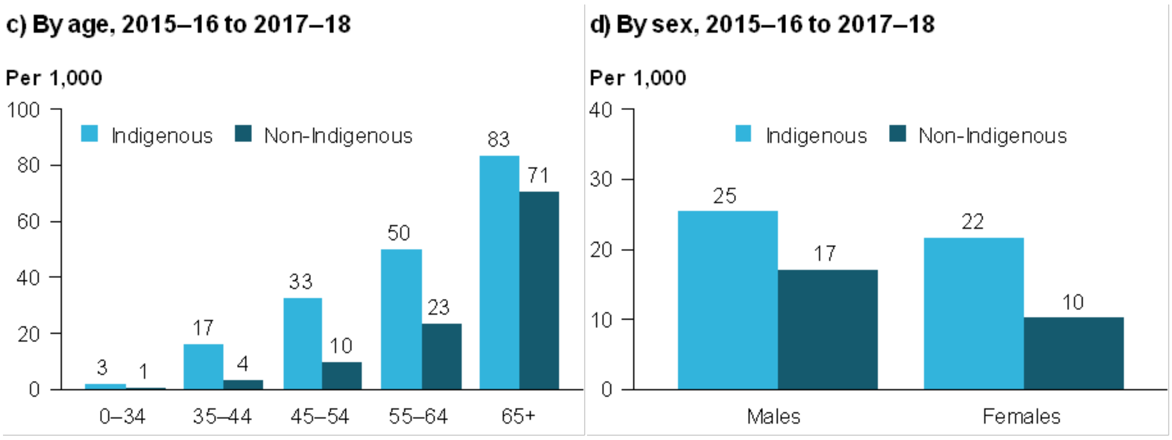
- was highest for Indigenous Australians in the Northern Territory (39 per 1,000 population) and Western Australia (29 per 1,000), where, in each case, it was more than double the rate of non-Indigenous Australians (Figure 6.1e)
- was highest for Indigenous Australians in *Remote* (35 per 1,000) and *Very remote* areas (34 per 1,000), where, in each case, it was more than double the rate of non-Indigenous Australians (Figure 6.1f).

Figure 6.1: Age-standardised and age-specific hospitalisation rate for cardiac conditions, by Indigenous status and various characteristics



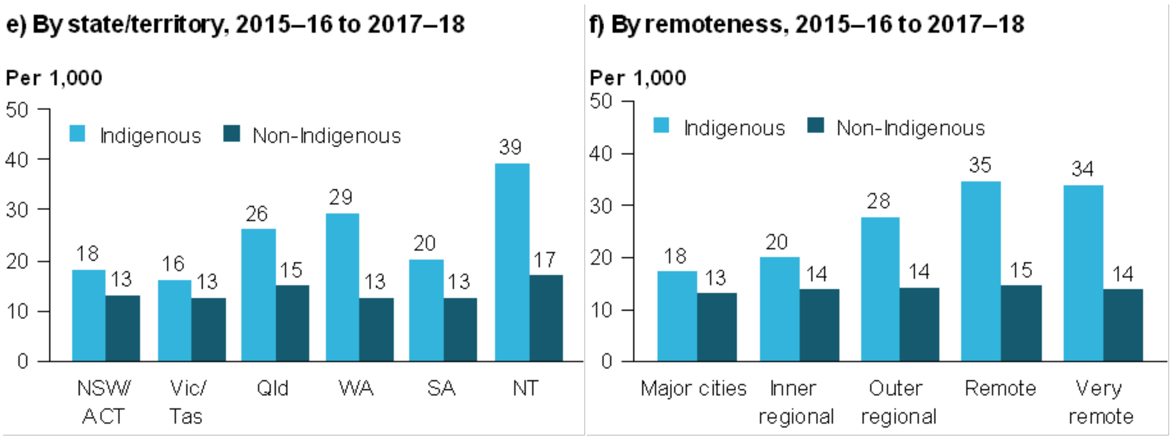
a) By Indigenous status, 2015–16 to 2017–18

b) Time trend, 2004–05 to 2017–18



c) By age, 2015–16 to 2017–18

d) By sex, 2015–16 to 2017–18



e) By state/territory, 2015–16 to 2017–18

f) By remoteness, 2015–16 to 2017–18

Notes

1. The time series analysis shown in Figure 6.1b are for New South Wales, Victoria, Queensland, Western Australia, South Australia, and the Northern Territory combined. The analyses shown in the other figures include data for all jurisdictions (see Appendix A).
2. Rates in Figure 6.1c are age specific and therefore not age standardised; all other figures show age-standardised rates.
3. Data for these figures are available in the online supplementary tables (tables 6.1a to 6.1f).
4. There is some under-identification of Indigenous Australians in the NHMD.
5. This is a count of hospitalisations, not of people hospitalised with cardiac conditions, nor of hospitalised cardiac events. Some hospitalisations would not have been associated with diagnoses that represent 'coronary events', and/or they would represent transfers for ongoing care. This should be interpreted in the context of pre- and post-hospital care arrangements.

Source: AIHW NHMD.

Measure 6.2: Deaths due to cardiac conditions

This measure presents the number and age-standardised rate of cardiac mortality and the age-standardised rate of in-hospital mortality for patients admitted with cardiac conditions.

Why is this important?

The mortality rate for cardiac conditions provides a broad indicator of the effectiveness of early risk assessment and preventive care, the timeliness of diagnoses of heart disease and heart failure, and the use of guideline-based treatment.

Results: 6.2.1 Deaths from cardiac conditions

Overall

In 2016–2018 combined, in New South Wales, Queensland, Western Australia, South Australia, and the Northern Territory combined:

- 1,646 Indigenous Australians died from cardiac conditions, a crude rate of 76 per 100,000 population
- the age-standardised death rate due to cardiac conditions for Indigenous Australians (150 per 100,000 population) was about 1.5 times that for non-Indigenous Australians (102 per 100,000) (Figure 6.2.1a).

Time trend

Between 1998 and 2018:

- the age-standardised cardiac mortality rate fell by about half for Indigenous Australians (from 305 to 152 per 100,000 population) and for non-Indigenous Australians (from 199 to 95 per 100,000) (Figure 6.2.1b)
- rate ratios of deaths due to cardiac conditions between Indigenous and non-Indigenous Australians were similar between 1998 (1.5) and 2018 (1.6)
- the rate difference between Indigenous and non-Indigenous Australians fell by about half (from 106 in 1998 to 57 in 2018).

Age and sex

In 2016–2018 combined, cardiac mortality rates were:

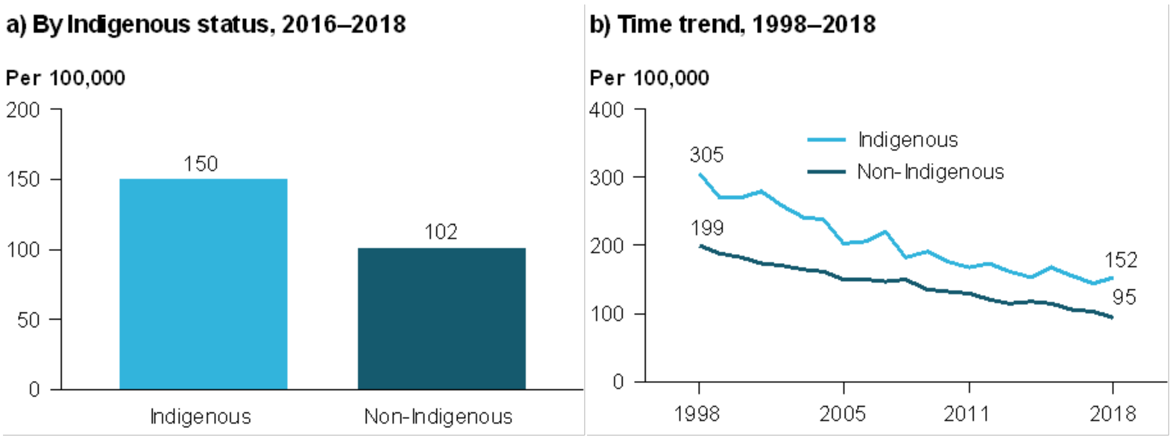
- similar for Indigenous and non-Indigenous Australians aged 65 and over (Figure 6.2.1c)
- higher among Indigenous Australians than non-Indigenous Australians in the other age groups, with rate ratios being most pronounced in those aged 35–44 (slightly over 7 times as high for Indigenous Australians as for non-Indigenous Australians) (Figure 6.2.1c)
- higher among males in both Indigenous and non-Indigenous Australians (Figure 6.2.1d).

State/territory

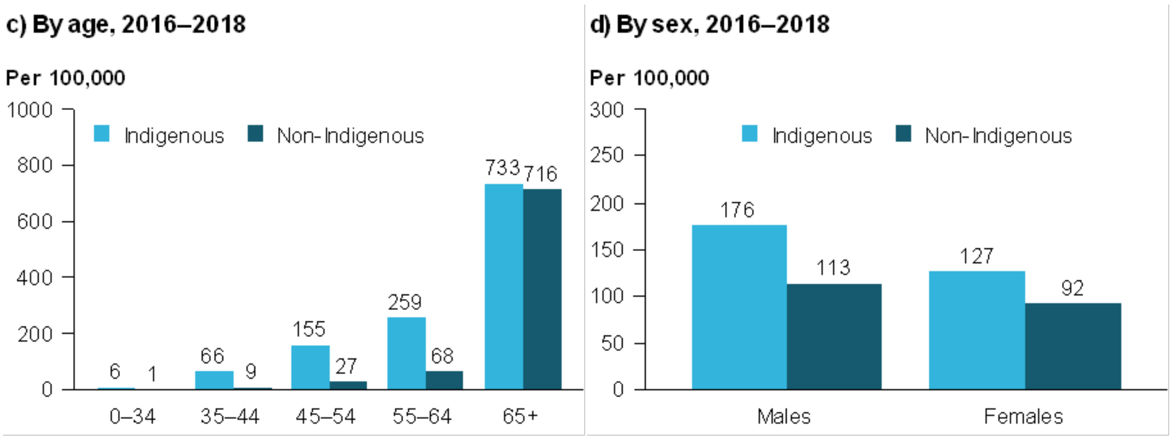
In 2016–2018 combined, age standardised cardiac mortality rates were:

- highest among Indigenous Australians in the Northern Territory (222 per 100,000 population) followed by Western Australia (212 per 100,000)
- 3 times as high for Indigenous Australians as for non-Indigenous Australians in the Northern Territory (a rate ratio of 3.0), and twice as high in Western Australia (a rate ratio of 2.3) (Figure 6.2.1e).

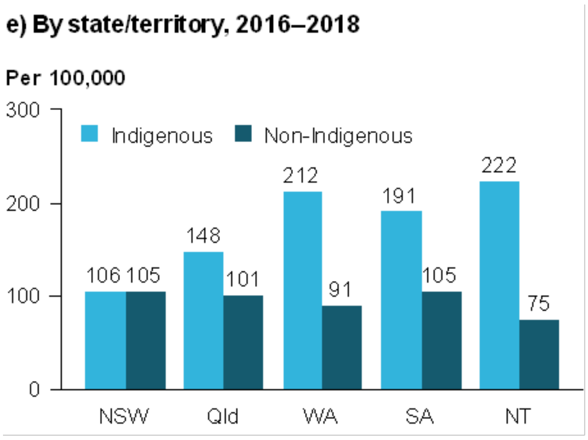
Figure 6.2.1: Age-standardised and age-specific cardiac mortality rate, by Indigenous status and various characteristics


a) By Indigenous status, 2016–2018

b) Time trend, 1998–2018


c) By age, 2016–2018

d) By sex, 2016–2018


e) By state/territory, 2016–2018

Notes

1. Data for these figures are for New South Wales, Queensland, Western Australia, South Australia, and the Northern Territory combined.
2. Rates in Figure 6.2.1c are age specific and therefore not age standardised; all other figures show age-standardised rates.
3. Data for these figures are available in the online supplementary tables (tables 6.2.1a to 6.2.1e).
4. Mortality data are reported for 5 jurisdictions only (New South Wales, Queensland, Western Australia, South Australia and the Northern Territory). The other jurisdictions have a small number of Indigenous deaths, and identification of Indigenous deaths in their death registration systems is relatively poor, making data less reliable.

Source: AIHW NMD.

Results: 6.2.2 In-hospital deaths for cardiac-related hospitalisations

Overall

In 2015–16 to 2017–18 combined:

- 704 Indigenous Australians who were admitted to hospital for cardiac conditions died in hospital—a crude rate of 29 per 100,000 population
- the age-standardised in-hospital death rate for Indigenous Australians admitted for cardiac conditions (56 per 100,000 population) was about twice the rate for non-Indigenous Australians (30 per 100,000) (Figure 6.2.2a).

Time trend

- Between 2006–09 and 2015–18, the age-standardised rate of in-hospital deaths for patients admitted for cardiac conditions fell for both Indigenous Australians (from 66 to 56 per 100,000 population) and non-Indigenous Australians (from 43 to 30 per 100,000) (Figure 6.2.2b).

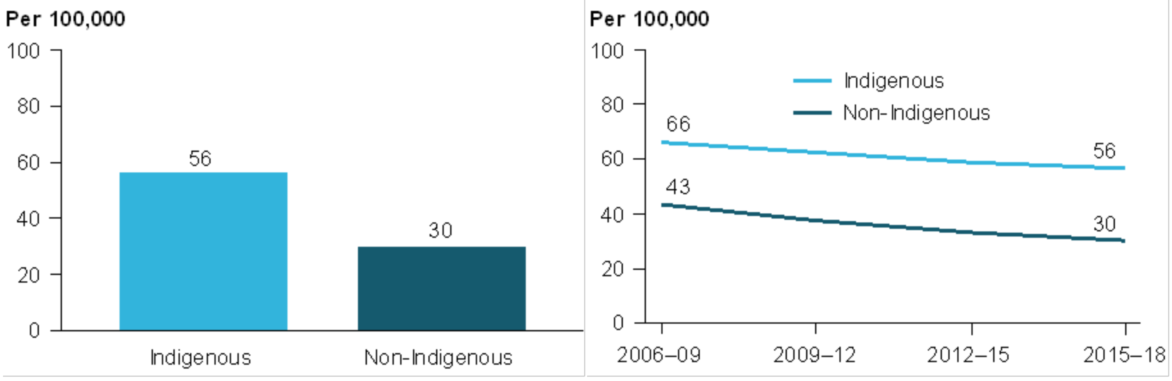
Age and sex

In 2015–16 to 2017–18 combined:

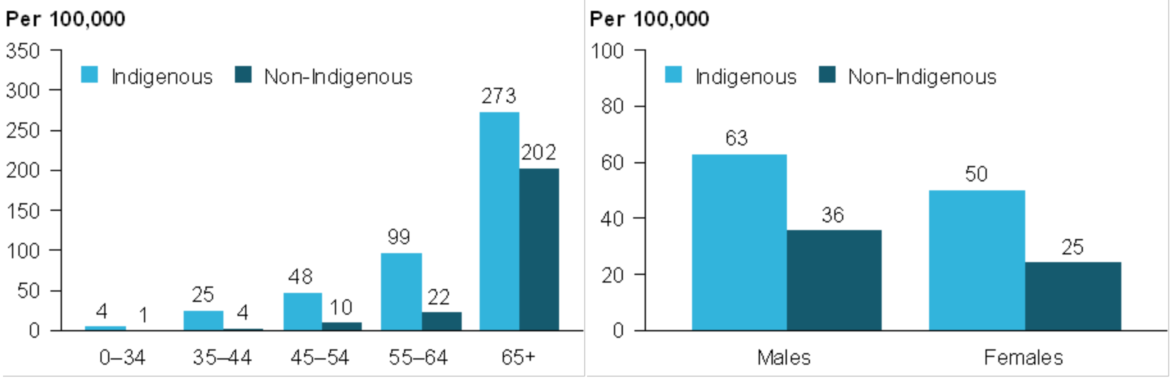
- in-hospital death rates rose with increasing age and were higher among Indigenous Australians than non-Indigenous Australians among all age groups (Figure 6.2.2c)
- age-standardised in-hospital death rates were higher for males than females for both Indigenous and non-Indigenous Australians (Figure 6.2.2d).

Figure 6.2.2: Age-standardised and age-specific in-hospital mortality rate for people admitted for cardiac conditions, by Indigenous status and various characteristics

a) By Indigenous status, 2015–16 to 2017–18 **b) Time trend, 2006–09 to 2015–18**



c) By age, 2015–16 to 2017–18 **d) By sex, 2015–16 to 2017–18**



Notes

1. The time series analysis shown in Figure 6.2.2b are for New South Wales, Victoria, Queensland, Western Australia, South Australia, and the Northern Territory combined. The analyses shown in the other figures include data for all jurisdictions (see Appendix A).
2. Rates in Figure 6.2.2c are age specific and therefore not age standardised; all other figures show age-standardised rates.
3. Data for these figures are available in the online supplementary tables (tables 6.2.2a to 6.2.2d).
4. Data by state and territory could not be provided as they were not comparable due to different practices of recording deaths in the NHMD.
5. In-hospital mortality rates might also be affected by different approaches to pre- and post-hospital care, so should be interpreted in the context of overall cardiac mortality. The NHMD does not include information on cause of death.
6. There is some under-identification of Indigenous Australians in the NHMD.

Source: AIHW NHMD.

Appendix A: Data sources

This appendix provides information on the data sources used in this report, as well as notes about the interpretation of the data to help users understand data issues and limitations.

An important consideration in interpreting data from all collections used in this report is that the propensity of people to identify as being Aboriginal or Torres Strait Islander has changed.

Data from the Australian Bureau of Statistics (ABS) Census of Population and Housing—which were used as the basis for the population estimates used to calculate rates for this report—indicate that the number of Indigenous Australians has increased considerably over various periods since 1971, with particularly large increases between 1991 and 1996 (33%) and 2006 and 2011 (21%). Between the 2011 and 2016 Censuses, the number of Indigenous Australians increased by 19% from 669,900 for 30 June 2011 to 798,400 at 30 June 2016 (ABS 2018a).

This increase was beyond what could be expected based on population growth. About 21% of the increase between the 2011 and 2016 Censuses related to non-demographic factors, such as improvements in Census coverage, a decrease in the number of records with unknown Indigenous status, and an increased likelihood that individuals identified themselves and their children as Indigenous (ABS 2018b).

This change in the propensity of people to identify as Indigenous might affect the comparability of data over time, but it is unknown whether, and by how much, changes in Indigenous identification have occurred in the other data sources used in this report.

ABS 2018–19 National Aboriginal and Torres Strait Islander Health Survey

The ABS conducts a periodic detailed health survey of the Aboriginal and Torres Strait Islander population only. The sample was specifically designed to select a representative sample of Indigenous people. Previous surveys have been conducted in 2012–13 and 2004–05. The latest data available in this series are the 2018–19 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS). It collected information from Indigenous people of all ages in non-remote and remote areas of Australia, including discrete Indigenous communities. The Australian Government departments of Health, and Prime Minister and Cabinet provided funding for the survey.

Of the 8,707 households included in the final sample, 6,388 (73.4%) were fully or adequately responding households. A total of 10,579 people were included in the sample from the 6,388 households. The population benchmark that the survey results were weighted to meet was 814,013—the projected Indigenous population as at 31 December 2018 (excluding persons in non-private dwellings).

Further information on the survey methodology and data quality statement are available on the ABS website: https://www.abs.gov.au/methodologies/national-aboriginal-and-torres-strait-islander-health-survey-methodology/2018-19

Proxy measures for primary care practitioner follow-up

The first measure for 1.3 is on whether blood pressure was checked in the previous 2 years, as a proxy for evidence of primary care practitioner follow-up and whether antihypertensive therapy was started.

The second measure for 1.3 is on whether smokers discussed quitting smoking as a proxy for whether smokers were offered evidence-based smoking cessation intervention. Data were collected on doctor consultations where the respondent was asked whether he/she had discussed any lifestyle issues with a general practitioner (GP)/doctor, nurse or Aboriginal (or Torres Strait Islander) health worker in the previous 12 months. Reducing or quitting smoking was included as an option.

Self-reported data were collected on the prevalence of chronic diseases, such as cardiovascular diseases (CVDs), diabetes and chronic kidney disease. Survey data may underestimate the number of people with CVD and their comorbidities, as people living in institutional care facilities, such as hospital and aged care facilities, were not included in the survey. With all self-reported data, some respondents may not have known or been able to accurately report their health status, which may lead to under-reporting in some cases and over-reporting in others.

Medicare Benefits Schedule data

The Medicare Benefits Schedule (MBS) is a listing of services subsidised by the Australian Government. It is part of the Medicare program managed by the Department of Health and administered by Services Australia.

All Australian residents and certain categories of visitor to Australia are entitled to benefits for medical and hospital services, with the benefits being based on fees determined for each service provided. These services are itemised, forming the schedule of fees. Statistics on each item are collected when benefits are claimed.

The MBS weighted Voluntary Indigenous Identifier database were used for analyses presented in this report and were analysed by the Australian Institute of Health and Welfare (AIHW) via the Health Portfolio Enterprise Data Warehouse of the Department of Health. The data are based on the date claims were processed. Statistics can be compiled by period of service; however, MBS weighted Voluntary Indigenous Identifier data are based only on period of processing.

Changes in the use of an MBS item over time can reflect changes in billing and claiming practices or the introduction of new items, and not necessarily changes in health care provided.

Coverage of MBS data

MBS data reflect services subsidised under Medicare. A person may be provided with equivalent care from a health-care provider who is not eligible to bill Medicare. Legislation (specifically Section 19(2) of the *Health Insurance Act 1973*) prevents salaried health providers funded by government from claiming payments from Medicare (Health Insurance Act 1973), including federal, state and local governments and authorities established by a law of an Australian, state or territory government. This is to ensure that the government pays only once for each health-care service provided. Examples of entities that are ordinarily not eligible to claim under Medicare include state or territory-funded primary health-care services and public hospitals.

Some of these organisations can apply for a Section 19(2) exemption to allow them to claim Medicare payments. For example, some services in rural and remote areas that are funded by state or territory governments can apply for an exemption if they meet eligibility criteria (such as the community's having a small population and a GP shortage).

Demographic information

Information about all people currently enrolled in Medicare (and eligible to receive services) is contained in the Medicare Enrolment File held by Services Australia, the administrator of the Medicare program. Information from the enrolment file (including patient demographic information) is reflected in the MBS data held by the Department of Health. This information is updated from time to time to correct errors and record changing mail addresses.

Indigenous identification

The identification of Indigenous Australians in MBS data is not complete. Since 2002, people who identify as being of Indigenous descent have been able to have this information recorded on the Medicare Enrolment File through the Voluntary Indigenous Identifier. Enrolment is through either an enrolment form or a tick-box on a Medicare Australia enrolment form. Both methods of enrolment indicate that identifying as Indigenous is optional.

As at March 2016, an estimated 65% of the Indigenous population had identified as being of Indigenous origin through the Voluntary Indigenous Identifier process. Coverage varies by age group and state and territory (Table A1).

Table A1: Estimated proportion of Indigenous Australians enrolled through the Voluntary Indigenous Identifier, March 2016 (%)

Age group (years)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
0–4	92.2	80.6	92.0	100.0	86.4	76.6	78.8	95.6	91.6
5–14	54.8	54.8	74.3	78.2	65.0	56.1	62.2	83.9	67.0
15–54	47.7	56.4	66.0	69.8	54.7	45.0	43.7	65.0	58.5
55 and over	48.5	79.4	65.9	67.5	67.2	47.1	63.4	72.3	60.9
Total	**54.7**	**61.3**	**71.2**	**74.8**	**61.9**	**51.4**	**52.7**	**72.7**	**64.6**

Note: The population data used in calculating these proportions are projections for 30 June 2015, and based on 2011 Census data.

Source: Department of Health analysis of MBS and ABS Indigenous population data.

The MBS data presented in this report have been adjusted for under-identification, except for data about MBS item 715 and 228 health assessments (Measure 1.1). As only Indigenous Australians are eligible to receive such health assessments, it is assumed that all people who receive an MBS item 715 or item 228 are Indigenous.

Numbers and rates for other MBS data (on services that can be claimed irrespective of the Indigenous status of the individual), have been adjusted for under-identification in the Medicare Australia Voluntary Indigenous Identifier database.

As not all Indigenous Australians are enrolled on the Voluntary Indigenous Identifier, the relevant MBS data were scaled up using adjustment factors calculated by the Department of Health to reflect the size of the total Indigenous population.

Adjustment factors were developed by comparing the number of people enrolled on the Voluntary Indigenous Identifier with the estimated Indigenous resident population at selected levels of demographic and geographic disaggregation (namely, data by 5-year age groups up to age 65 and over, sex, and remoteness area for each state or territory).

The adjustment factors for each subgroup were calculated as follows:

> *Adjustment factor = 100/estimated percentage of Indigenous population enrolled on the Voluntary Indigenous Identifier.*

To derive the estimates of MBS service use among Indigenous Australians, the number of Voluntary Indigenous Identifier enrollees in each subgroup for whom the MBS item(s) of interest was claimed was multiplied by the adjustment factor for each subgroup.

Estimates for non-Indigenous Australians were derived by subtracting the adjusted Indigenous estimates from the total number of people for whom the relevant MBS items were claimed.

Health assessments for Indigenous and non-Indigenous Australians

Data about the receipt of health assessments among Indigenous and non-Indigenous Australians are not comparable due to differences in eligibility for the various types of health assessments, and the frequency with which they can be claimed.

All Indigenous people, regardless of age, are eligible for an MBS item 715 Indigenous-specific health assessment. An additional Indigenous-specific health assessment (item 228) was added on 1 July 2018. Item 715 or item 228 are generally available annually, with a minimum time allowed between them of 9 months.

There are 4 time-based MBS health assessment items: items 701 (brief), 703 (standard), 705 (long) and 707 (prolonged). Medical practitioners may select 1 of these items to provide a health assessment service to a member of any of the target groups listed in Table A2. The item selected depends on the time taken to complete the health assessment (and is unrelated to the target group). Collectively, these items are referred to as 'general health assessments' in this report. All Australians (including non-Indigenous and Indigenous Australians) are eligible to receive such assessments, but only if they meet specific criteria. These assessments are often available less often than the Indigenous-specific health assessment (Table A2).

Table A2: Target group and frequency of service for other (non-MBS 715/228) MBS health assessments

Target group	Frequency of service
A type 2 diabetes risk evaluation for people aged 40–49 (inclusive) with a high risk of developing type 2 diabetes, as determined by the Australian Type 2 Diabetes Risk Assessment Tool	Once every 3 years to an eligible patient
A health assessment for people aged 45–49 (inclusive) who are at risk of developing chronic disease	Once only per lifetime to an eligible patient
A health assessment for people aged 75 and over	Annually to an eligible patient
A comprehensive medical assessment for permanent residents of residential aged care facilities	Annually to an eligible patient
A health assessment for people with an intellectual disability	Annually to an eligible patient
A health assessment for refugees and other humanitarian entrants	Once only per lifetime to an eligible patient
A health assessment for former serving members of the Australian Defence Force	Once only per lifetime to an eligible patient

Estimate of people with a cardiac condition from MBS data

Since MBS data do not include information about whether people have a cardiac condition, this estimate was based on people who had claimed 1 or more of the cardiac-related MBS items in the relevant financial year (Table B2). As some of these MBS items are diagnostic, not all people with these items would have cardiac conditions (as some of the tests would have been negative).

National Hospital Morbidity Database

Data about hospitalisations were extracted from the AIHW National Hospital Morbidity Database (NHMD), which is a compilation of episode-level records from admitted patient care data collection systems in Australian hospitals in each state and territory.

Information on the characteristics, diagnoses and care of admitted patients in public and private hospitals is provided annually to the AIHW by state and territory health departments. The NHMD holds data on admitted patient separations between 1 July and 30 June of each reference year.

Hospitalisations with a care type of *Newborn (without qualified days)* and records for *Hospital boarders* and *Posthumous organ procurement* were excluded from the analyses for all measures based on NHMD data. Further exclusions and inclusions apply to the analyses for some of the measures, with details provided in the relevant sections of the report.

The principal diagnosis is reported for each hospitalisation and recorded in the NHMD, with additional diagnoses reported if the condition affected patient management. In this report, information on principal diagnoses was used to identify hospitalisations for specific conditions; additional diagnoses have not been considered.

NHMD data presented by state/territory and remoteness area in this report are based on the patient’s usual place of residence. In analysing data by state and territory, due to small numbers, data for the Australian Capital Territory were combined with data for New South Wales, and data for Tasmania were combined with data for Victoria.

For analyses by remoteness area, the NHMD data for 2012–13 onwards were classified according to the Australian Statistical Geography Standard, with prior years classified according to the Australian Standard Geographical Classification. The time trend analyses of hospitalisations data in Measure 3.5 uses combined data across years spanning this change.

A data quality statement for the NHMD is available at Data quality statement: Admitted Patient Care 2017-18 (aihw.gov.au)

Indigenous identification

There is some under-identification of Indigenous Australians in the NHMD, but NHMD data for all states and territories are considered to have adequate Indigenous identification from 2010–11 onwards (AIHW 2013).

An AIHW study in 2011–12 found that the ‘true’ number of hospitalisations nationally for Indigenous Australians was about 9% higher than reported (AIHW 2013). NHMD data presented in this report have not been adjusted for under-identification, so are likely to underestimate the true level of Indigenous hospitalisations.

Some analyses in this report include NHMD data for years before 2010–11 (the time series comparisons for measures 3 and 6, based on NHMD data). Those analyses are limited to data for the 6 jurisdictions assessed by the AIHW as having adequate identification of Indigenous Australians from 2004–05 onwards (New South Wales, Victoria, Queensland, Western Australia, South Australia and public hospitals in the Northern Territory) (AIHW 2010). These 6 jurisdictions represent about 95% of the Australian Indigenous population (AIHW 2015c).

Changes in the level of accuracy of Indigenous identification in hospital records will result in changes in the level of reported hospitalisations for Indigenous Australians.

Caution should be used when interpreting changes over time, as it is not possible to ascertain whether a change in reported hospitalisations is due to changes in the accuracy of Indigenous identification and/or real changes in the rates at which Indigenous Australians were hospitalised.

A rise in hospitalisation rates for a particular population might also reflect increased use of admitted patient hospital services—as opposed to other forms of health care—rather than a worsening of health. Likewise, a fall in hospitalisation rates might not necessarily indicate an improvement in health.

Apart from data from hospitals in Western Australia, hospitalisations where the person's Indigenous status was not stated were excluded from analyses comparing Indigenous and non-Indigenous rates.

In 2015–16 to 2017–18 combined, there were about 729,000 hospitalisations for which Indigenous status was not stated, representing 2% of all hospitalisations in that period. For hospitals in Western Australia, records with an unknown Indigenous status are reported as non-Indigenous, so are included in the 'non-Indigenous' data in these analyses.

Estimation of hospitalised episodes for priority area 3 measures

To reduce double-counting of people with an ACS who were transferred to another hospital for further diagnosis or treatment, the analyses for priority area 3 (guideline-based therapy for acute coronary syndrome, or ACS) measures exclude hospitalisations ending in transfer to another acute hospital. So, only the 'last' hospitalisation for each event of an ACS is generally counted.

While this method reduces double-counting of patients within a contiguous hospitalisation, it purposely includes non-contiguous hospitalisations. For example, if a person had 2 ST-segment-elevation myocardial infarction (STEMI) events in 1 year, both would be counted.

This method was validated in calculating the incidence of acute coronary events when the AIHW compared results from the NHMD and the National Mortality Database (NMD) with results from linked hospitalisation and deaths data from New South Wales and Western Australia (AIHW 2014).

The following limitations were noted as part of these analyses:

- Some hospitalisations ending in transfer did not have a subsequent hospitalisation recorded; some of these patients, for example, could have been transferred interstate.
- Some hospitalisations did not have a principal diagnosis of actute myocardial infarction (AMI) or unstable angina. In Western Australia, the most common principal diagnosis in the subsequent hospitalisation was rehabilitation, while in New South Wales it was atherosclerotic heart disease. It is also possible that the transfer was initiated for what was thought to be ACS, but subsequently was not confirmed.

Further, the validity of this method has not been established for calculating procedures rates. A notable limitation is that, among those events that involved multiple hospitalisations, if a relevant procedure was provided in an earlier hospitalisation but not in the last hospitalisation, that event will not be counted as having included that procedure.

As well, if a patient is transferred to another acute hospital for recovery following a procedure in the first hospitalisation, and admitted on a non-emergency basis in their last hospitalisation, that event would be excluded from the AIHW analysis. This is because hospitalisations ending in transfer to another acute hospital are excluded, with the analysis being restricted to hospitalisations with an urgency of admission of 'emergency'.

For in-hospital mortality (Measure 3.5), the linked analysis suggested that the AIHW method using unlinked data might be missing some events that did not end with death, thereby artificially inflating the in-hospital mortality rate.

It is not known to what extent these findings, which are based on New South Wales data, are applicable to other states and territories.

State/territory comparisons for priority area 3 measures

Previous AIHW analysis has shown that transfer rates for ACS vary by state and territory—in 2010–11, the transfer rate for non-fatal ACS hospitalisations among people aged 40 and over ranged from 13% in Tasmania to 33% in the Northern Territory (AIHW 2014).

These differences at least partly reflect differences in population size and geographical distribution. For example, people with ACS in remote areas are more likely to be transferred from a smaller hospital to larger, more urban hospitals for treatment.

Because of these differences in inter-hospital transfer rates across states and territories, interpreting differences in jurisdictional data for measures 3.1 and 3.3 must be done with caution; hence, those data were not included in Chapter 2. But results by state and territory are shown in Table A3 to provide jurisdictions with their own state or territory data.

As well as the issue of transfers, data for Measure 3.5 are also affected by different practices of recording deaths in admitted patient data. Some jurisdictions record deaths in emergency departments as in-hospital deaths for admitted patients, while others do not. As a result, data for Measure 3.5 are not comparable by state and territory, and are not included in this report.

Table A3: Results for measures 3.1 and 3.3, by state/territory, 2015–16 to 2017–18

	Measure 3.1[(a)] (%)			Measure 3.3[(b)] (%)		
		Age-standardised rate			Age-standardised rate	
State/territory	Indigenous crude rate	Indigenous	Non-Indigenous[(c)]	Indigenous crude rate	Indigenous	Non-Indigenous[(c)]
NSW/ACT	68.8	65.4	75.8	54.7	52.4	63.9
Vic/Tas	75.0	71.4	81.5	60.1	71.9	72.7
Qld	66.2	62.2	69.7	51.4	54.6	57.9
WA	71.5	69.7	83.7	59.8	62.1	77.0
SA	80.4	81.2	77.9	57.1	59.6	77.9
NT	57.2	56.4	67.1	54.3	51.2	59.0

(a) The proportion of hospitalised events for STEMI among people aged 18 and over who were treated by PCI (percutaneous coronary intervention).

(b) The proportion of hospitalised events for ACS among people aged 18 and over that included diagnostic angiography and/or a definitive revascularisation procedure (PCI; or coronary artery bypass graft, or CABG).

(c) 'Non-Indigenous' includes hospitalisations of non-Indigenous Australians only, except for data from Western Australia, which include those for whom Indigenous status was not stated.

Notes

1. Data are for people aged 18 and over who usually live in New South Wales, Victoria, Queensland, Western Australia, South Australia, Tasmania, the Australian Capital Territory or the Northern Territory. Australian Capital Territory data contained in this report have been validated as at the date of extraction; however, ACT Health is continuing to improve its data quality following its system-wide data review.
2. Analysis is restricted to hospitalisations with a care type of 'acute care' and an urgency of admission of 'emergency'.
3. Analysis excludes hospitalisations with a separation mode of 'transferred to another acute hospital'.
4. Analysis is based on principal diagnosis only.
5. See tables B1, B3 and B4 for classification codes used for these measures.

Source: AIHW NHMD

National Key Performance Indicators data collection

The National Key Performance Indicators (nKPIs) measure the health of Aboriginal and Torres Strait Islander people from across Australia.

The population of interest in the nKPIs is the Indigenous regular client population of those primary health-care organisations required to report against the nKPIs. A regular client is defined as a person who has an active medical record—that is, a client who attended the primary health-care organisation at least 3 times in the previous 2 years. Starting from the June 2018 collection, the definition of a regular client excludes deceased patients. These are some caveats to note:

- Some clients may attend an organisation 3 times in 2 years but have another primary health-care organisation as their primary source of care. This will lead to double-counting of that person.
- Some clients may be the normal clients of an organisation but have not attended 3 times in a 2-year period for a number of reasons, including that the client could be in good health. Hence, the nKPI data may be biased towards less healthy clients, as people who are unwell are more likely to attend primary health-care organisations.
- There may be variations in the make-up of regular clients between regions as clients may access different health-care organisations within the same general location for various reasons. This behaviour may be more common in regions with more health-care options and less frequent in *Very remote* areas where local health-care options are more limited.
- Some clients may be transient and stay only temporarily in a community. Organisations with a large proportion of transient clients that are counted as regular clients may appear to have poorer results than other organisations, as they may have less capacity to follow-up on patients, including those with chronic diseases.

In the June 2019 reporting period, data were collected from 234 primary health-care organisations that receive funding from the Department of Health to provide primary health-care services, mainly to Indigenous people.

The nKPIs collect information twice a year (June and December) on a set of 24 process-of-care and health-outcome indicators for Indigenous Australians. The indicators focus on maternal and child health, preventive health, and chronic disease management. Reporting against all 24 indicators began in June 2017.

Absolute cardiovascular risk assessments can be calculated using the National Vascular Disease Prevention Alliance (NVDPA) or the Central Australian Rural Practitioners Association (CARPA) method. As the CARPA method applies an extra 5% loading for Indigenous Australians, nKPI data should have this loading removed to make the data comparable with NVDPA data. As the Primary Care Information System is unable to deduct the 5% loading because the data are captured as categorical scores (low, medium, high), organisations using this system (predominantly the Northern Territory Government) are not included in the results presented (AIHW 2020a).

National Mortality Database

Mortality data are extracted from the AIHW NMD. This database contains information about all deaths registered in Australia since 1964. Deaths are certified by a medical practitioner or the coroner and registered by the Registry of Births, Deaths and Marriages in each state and territory. The ABS codes the cause of death, using international classification standards (currently the International Statistical Classification of Diseases and Related Health Problems, 10th Revision, or ICD-10 for short). Information from the National Coronial Information System is used to code the cause of death for those deaths certified by a coroner. The data are maintained by the AIHW in the NMD.

Due to the relatively small number of Indigenous deaths from cardiac conditions each year, mortality data for the most recent period are presented for the 3-year period 2016–2018 to allow for the reporting of data by age and sex.

For analyses in this report, deaths before 2007 are by year of registration. Deaths from 2007 onwards are by reference year. Registration year before 2007 is equivalent to reference year from 2007 onwards.

For this report, data on deaths registered in:

- 2016 and earlier are based on the final version of cause of death data
- 2017 are based on the revised version, and are subject to further revision by the ABS
- 2018 are based on the preliminary version, and are subject to further revision by the ABS.

Data for 2010 have been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010 (see Technical note 3 in ABS 2012 for further details).

The NMD includes information about both the underlying and associated causes of death—only the underlying causes were used for this report.

The data quality statements underpinning the NMD can be found in quality declaration summaries at www.abs.gov.au/ausstats/abs@.nsf/mf/3303.0 and www.abs.gov.au/ausstats/abs@.nsf/mf/3302.0.

For more information on the AIHW NMD, see Deaths data at https://www.aihw.gov.au/about-our-data/our-data-collections/national-mortality-database.

Indigenous identification

The Indigenous status of a deceased person is identified through the death registration process. There is some degree of under-identification of Indigenous Australians in mortality data as some deceased Indigenous Australians are not reported as Indigenous by the family, health worker or funeral director during the death registration process.

Mortality data presented in this report have not been adjusted for under-identification, so are likely to underestimate the true level of Indigenous mortality (ABS 2015).

In this report, mortality data are reported for 5 jurisdictions—New South Wales, Queensland, Western Australia, South Australia and the Northern Territory—based on the state or territory of usual residence.

Although the identification of Indigenous Australians in deaths data is incomplete to varying degrees in all state and territory registration systems, these 5 jurisdictions have been assessed by the ABS and the AIHW as having adequate identification.

The AIHW considers the quality of Indigenous identification in mortality data for these 5 jurisdictions to be adequate from 1998, so trend data are shown in this report from that year onwards. Registered deaths where Indigenous status was not stated were excluded for the analyses in this report.

National Rheumatic Heart Disease data collection

Under the Rheumatic Fever Strategy, the Australian Government provides funding to support rheumatic heart disease (RHD) control programs in 4 jurisdictions: Queensland, Western Australia, South Australia and the Northern Territory.

These programs are funded to

- improve clinical care, including delivery of and adherence to secondary prophylaxis antibiotics
- provide education and training for health care providers, individuals, families and communities
- collect and provide agreed data annually to the AIHW for national monitoring and reporting of acute rheumatic fever (ARF) and RHD, and measuring program effectiveness in detecting and managing ARF and RHD
- maintain a dedicated state-wide patient register and recall system for ARF and RHD.

In Queensland, Western Australia, South Australia and the Northern Territory, the collection of ARF/RHD notifications is funded by the Department of Health. In Queensland, it is also funded by the state. A state-funded ARF/RHD register has recently started in New South Wales, but data are not available for this report. Data about ARF and RHD diagnoses are not collected by jurisdictional health departments in the Australian Capital Territory, Victoria or Tasmania.

All jurisdictions with RHD registers have different notification and data collection practices; therefore, the numbers, data quality and completeness in the RHD registers are variable. Table A4 summarises the timeline of program and register establishment across the jurisdictions.

Table A4: Timeline of program and register establishment

	NSW	Qld	WA	SA	NT	Vic, Tas, ACT
RHD control program	2015	2009	2009	2010	1997[(a)]	—
ARF/RHD register	2016	2006	2009	2012	1997	—
Definite ARF notifiable	2015	1999	2007	2016	1996	—
Probable ARF notifiable	2015	—	2015	2016	2019	—
Possible ARF notifiable	—	—	2015	2016	—	—
Confirmed RHD notifiable	2015[(b)]	2018	2015	2016	2019	—
Borderline RHD notifiable	—	2018	2015	2016	—	—

(a) The Top End Control Program was established in Darwin in 1997, and expanded in 2000 to include the whole Northern Territory.

(b) In NSW, RHD is only notifiable in persons aged under 35.

Source: RHD Australia (ARF/RHD writing group) 2020.

The registers include demographic and clinical information about people with ARF and RHD. Records are made of diagnoses of RHD and first known and recurrent episodes of ARF. ARF diagnoses are classified as being either definite, probable or possible. Data are collected about diagnoses and episode type, level of severity, preventive treatments and when monitoring activities or surgery are performed.

Data are accurate at the time of collection but are subject to change over time if more or different information is provided about cases. For some jurisdictions, consent must be sought from a patient before they are included in the register. Due to the long-term nature of RHD, even demographic details, such as place of treatment, can change multiple times.

The National RHD data collection comprises data on diagnoses of ARF and RHD in Australia provided from the 4 jurisdictions that are part of the RFS. An agreed subset of information from the AFR/RHD registers in these jurisdictions is compiled by the AIHW in a standardised format to provide comparable information about ARF and RHD in Australia (AIHW 2020c).

Since the fourth Better Cardiac Care (BCC) report, data are sourced directly from the National RHD data collection, with analysis performed in house at the AIHW. All rates of ARF and RHD shown in this report are crude, as the counts are too small to calculate robust age-standardised rates.

Indigenous population

The size of the Indigenous population varies substantially by state and territory. To provide context for the state and territory data shown in this report, population estimates for 2018 are shown in Table A5.

In 2018, the Indigenous population ranged from 7,885 in the Australian Capital Territory to about 275,810 in New South Wales.

The proportion of the population who are Indigenous also varies by state and territory. In 2018, it ranged from less than 1% in Victoria to 31% in the Northern Territory (Table A5).

Table A5: Australian population, by Indigenous status and state/territory, 2018

State/territory	Indigenous[(a)]	Non-Indigenous[(b)]	Total	% Indigenous
NSW	275,810	7,704,358	7,980,168	3.5
Vic	60,584	6,401,435	6,462,019	0.9
Qld	230,954	4,778,470	5,009,424	4.6
WA	104,770	2,489,411	2,594,181	4.0
SA	44,057	1,692,470	1,736,527	2.5
Tas	29,031	456,056	485,087	6.0
ACT	7,885	390,667	398,552	2.0
NT	76,599	170,459	247,058	31.0
Australia[(c)]	**830,542**	**24,152,146**	**24,982,688**	**3.3**

(a) Population counts for Indigenous Australians are projections based on ABS medium-level growth assumptions (Series B).

(b) Population counts for non-Indigenous Australians were derived by subtracting the Indigenous projected population counts from the total Australian estimated resident population counts.

(c) Australia total includes population of Christmas Island, Norfolk Island and Cocos (Keeling) Islands.

Note: Estimates and projections are based on 2016 Census data.

Source: AIHW analysis of ABS population data

Appendix B: Technical specifications

Table B1: Technical specifications for Better Cardiac Care measures in this report

No.	Description	Calculation	Numerator	Denominator	Data sources
1.1	Proportion of Indigenous Australians who received an MBS health assessment within a 12-month period.	Crude rate: Numerator ÷ Denominator x 100 Age-standardised rates (ASR)[(a)] was used in Figure 1.1a.	Number of Indigenous Australians who had an MBS Health Assessment within the financial year.	Indigenous population at the middle of the financial year, calculated from the average of the populations as at 30 June at the beginning and end of the financial year.	MBS and ABS population data
1.2	Proportion of Indigenous regular clients of Indigenous primary health-care organisations, aged 35–74 and with no known history of CVD, who have had an absolute CVD risk assessment recorded within the previous 24 months and whose CVD risk was categorised as high, moderate or low.	Crude rate: Numerator ÷ Denominator x 100	Number of Indigenous regular clients, aged 35–74 and with no known history of CVD, who have had an absolute CVD risk assessment recorded within the previous 24 months with risk assessed as 1) high (greater than 15% chance of a cardiovascular events in the next 5 years); 2) moderate (10-15% chance of a cardiovascular event in the next 5 years); low (less than 10% chance of a cardiovascular event in the next 5 years).	Number of Indigenous regular clients, aged 35–74 years, not recorded as having CVD and who have had an absolute CVD risk assessment results recorded within the previous 24 months.	nKPI data collection
1.3.1	Proportion of Indigenous Australians without a current and long-term circulatory condition who were at high risk of cardiac disease who had their blood pressure checked in the previous 2 years.	Crude rate: Numerator ÷ Denominator x 100	Number of Indigenous Australians without a current and long-term circulatory condition who were at high risk of cardiac disease who had their blood pressure checked in previous 2 years.	Number of Indigenous Australians without a current and long-term circulatory condition who were at high risk of cardiac disease.	NATSIHS
1.3.2	Proportion of Indigenous Australians without a current and long-term circulatory condition who were at high risk of cardiac disease and were current smokers who saw a doctor/health professional or specialist in the previous 12 months and discussed quitting smoking.	Crude rate: Numerator ÷ Denominator x 100	Number of Indigenous Australians without a current and long-term circulatory condition who were at high risk of cardiac disease and were current smokers who saw a doctor/health professional or specialist in the previous 12 months and discussed quitting smoking.	Number of Indigenous Australians without a current and long-term circulatory condition who were at high risk of cardiac disease and were current smokers.	NATSIHS

(continued)

Table B1 (continued): Technical specifications for Better Cardiac Care measures in this report

No.	Description	Calculation	Numerator	Denominator	Data sources
2.1	Proportion of people who had relevant Medicare-listed cardiac-related diagnostic items claimed in the previous 12 months.	Crude rate: Numerator ÷ Denominator x 100 ASR was used in figures 2.1a, 2.1b, 2.1d, 2.1e and 2.1f.	Number of people who had relevant Medicare-listed cardiac-related diagnostic or imaging items (as listed in Table B2) claimed in the financial year.	Population at the middle of the financial year, calculated from the average of the populations as at 30 June at the beginning and end of the financial year.	MBS and ABS population data
2.3	Number and proportion of people with suspected or confirmed cardiac disease reviewed by a specialist in the previous 12 months.	Crude rate: Numerator ÷ Denominator x 100 ASR was used in Figure 2.3b	Number of people who received relevant Medicare-listed cardiac-related diagnostic or therapeutic items (as listed in Table B2) who also received specialist review items (as listed in Table B2) claimed in the financial year.	Number of people who had relevant Medicare-listed cardiac-related diagnostic or therapeutic items (as listed in Table B2) claimed in the financial year.	MBS data
3.1	Proportion of hospitalised events for STEMI among people aged 18 and over who were treated by PCI within the period of care[(b)].	Crude rate: Numerator ÷ Denominator x 100 ASR was used in figures 3.1a, 3.1b, 3.1d and 3.1e.	Number of hospitalisations with a principal diagnosis of STEMI (as listed in Table B4), a care type of 'acute care', urgency of admission of 'emergency', and a separation mode not equal to 'transferred to another acute hospital', with a procedure code related to PCI (as listed in Table B3).	Number of hospitalisations with a principal diagnosis of STEMI (as listed in Table B4), a care type of 'acute care', urgency of admission of 'emergency', and a separation mode not equal to 'transferred to another acute hospital'.	NHMD
3.3	Proportion of hospitalised events for acute coronary syndrome among people aged 18 and over that included diagnostic angiography and/or a definitive revascularisation procedure (PCI or CABG) within the period of care[(b)].	Crude rate: Numerator ÷ Denominator x 100 ASR was used in figures 3.3a, 3.3b, 3.3d and 3.3e.	Number of hospitalisations with a principal diagnosis of STEMI, non-ST-segment-elevation ACS, unspecified AMI, or unstable angina (as listed in Table B4), a care type of 'acute care', urgency of admission of 'emergency', and a separation mode not equal to 'transferred to another acute hospital', with a procedure code related to diagnostic angiography or PCI or CABG (as listed in Table B3).	Number of hospitalisations with a principal diagnosis of STEMI, non-ST-segment-elevation ACS, unspecified AMI or unstable angina (as listed in Table B4), a care type of 'acute care', urgency of admission of 'emergency' and a separation mode not equal to 'transferred to another acute hospital'.	NHMD
3.5	Proportion of people aged 35 and over, admitted to hospital with a principal diagnosis of acute myocardial infarction who died in hospital, by Indigenous status.	Crude rate: Numerator ÷ Denominator x 100 ASR was used in figures 3.5a, 3.5b, 3.5d and 3.5e.	Number of hospitalisations with a principal diagnosis of AMI (as listed in Table B4), a care type of 'acute care', urgency of admission of 'emergency' and a separation mode of 'died'.	Number of hospitalisations with a principal diagnosis of AMI (as listed in Table B4), a care type of 'acute care', urgency of admission of 'emergency', and a separation mode not equal to 'transferred to another acute hospital'.	NHMD

(continued)

Table B1 (continued): Technical specifications for Better Cardiac Care measures in this report

No.	Description	Calculation	Numerator	Denominator	Data sources
4.2	Number and proportion of patients with a cardiac condition who received a follow-up service within 12 months of having a cardiac procedure.	Crude rate: Numerator ÷ Denominator x 100	Number of people who had relevant Medicare-listed cardiac-related therapeutic items (as listed in Table B2) claimed in the financial year, and received Medicare-listed follow-up services including a GP management plan, team care arrangement, allied health service, practice nurse monitoring and support, review of a GP management plan and team care arrangement, and contribution to a multidisciplinary care plan within 12 months (as listed in Table B2).	Number of people who had relevant Medicare-listed cardiac-related therapeutic items (as listed in Table B2) claimed in the financial year.	MBS
4.3	Number and proportion of patients with a cardiac condition who were reviewed by a specialist physician within 12 months of having a cardiac procedure.	Crude rate: Numerator ÷ Denominator x 100	Number of people who had relevant Medicare-listed cardiac-related therapeutic items (as listed in Table B2) claimed in the financial year, and received a Medicare-listed specialist review (as listed in Table B2) within 12 months.	Number of people who had relevant Medicare-listed cardiac-related therapeutic items (as listed in Table B2) claimed in the financial year.	MBS
5.1.1	Incidence (first known and recurrent) of ARF.	Crude rates: Numerator ÷ Denominator x 100,000	Number of first known and recurrent episodes of ARF in the calendar year. .	Population as at 30 June.	National RHD data collection; ABS population data
5.1.2	New diagnoses of RHD.	Crude rates: Numerator ÷ Denominator x 100,000	Number of new diagnoses of RHD in the calendar year.	Population as at 30 June.	National RHD data collection; ABS population data
5.2	Proportion of all ARF episodes that were recurrent.	Crude rates: Numerator ÷ Denominator x 100	Number of recurrent cases of ARF in the calendar year.	Number of new and recurrent cases of ARF in the calendar year.	National RHD data collection
5.3	Proportion of required doses of BPG doses received by people with ARF and/or RHD on a 28-day BPG regime	Crude rates: Numerator ÷ Denominator x 100	Number of people on the ARF/RHD program who received less than 50%, 50% to 79%, 80% to 99% or 100% of required doses in the calendar year.	Number of people on the ARF/RHD program on a 28-day BPG regime who have received at least 1 dose in the calendar year.	National RHD data collection

(continued)

Table B1 (continued): Technical specifications for Better Cardiac Care measures in this report

No.	Description	Calculation	Numerator	Denominator	Data sources
6.1	Cardiac morbidity— rates of hospitalisation for a cardiac condition.	Crude rate: Numerator ÷ Denominator x 1,000 ASR was used in figures 6.1a, 6.1b, 6.1d, 6.1e and 6.1f.	Number of hospitalisations with a principal diagnosis of cardiac condition, and a care type not equal to 'newborn—unqualified days only' or 'organ procurement—posthumous' or 'hospital boarder'.	Population at the middle of the financial year, calculated from the average of the populations as at 30 June at the beginning and end of the financial year.	NHMD and ABS population data
6.2.1	Cardiac mortality— rates of cardiac mortality.	Crude rate: Numerator ÷ Denominator x100,000 ASR was used in figures 6.2.1a, 6.2.1b, 6.2.1d and 6.2.1e.	Number of deaths where a cardiac condition (as listed in Table B4) is the underlying cause of death in the calendar year. Numerator data are reported for NSW, Qld, WA, SA and the NT.	Population as at 30 June. Denominator data are reported for NSW, Qld, WA, SA and the NT.	NMD and ABS population data
6.2.2	Cardiac mortality—in-hospital deaths for cardiac-related hospitalisations.	Crude rate: Numerator ÷ Denominator x 100,000. ASR was used in figures 6.2.2a, 6.2.2b, and 6.2.2d.	Number of hospitalisations with a principal diagnosis of cardiac condition (as listed in Table B4), and a care type not equal to 'newborn—unqualified days only' or 'organ procurement—posthumous' or 'hospital boarder', and a separation mode equal to 'died'.	Population at the middle of the financial year, calculated from the average of the populations as at 30 June at the beginning and end of the financial year.	NHMD and ABS population data

(a) $ASR = \Sigma i \; Ni \; pi / \Sigma i \; Ni$ where: p_i is the age-specific rate for the age group *i* in the population being studied, N_i is the population of the age group and *i* is the standard population.

(b) *Period of care* is contiguous episodes of care, separated only by a transfer within hospitals or between hospitals, and combined into a single 'period of care'. This was estimated by excluding hospitalisations ending in transfer to another acute hospital, so that only the 'last' hospitalisation was counted.

(c) 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 NMD. Deaths registered in 2016 and earlier are based on the final version of cause of death; deaths registered in 2017 are based on the revised version; and deaths registered in 2018 are based on the preliminary version. Revised and preliminary versions are subject to further revision by the ABS.

Table B2: MBS items

MBS item group	MBS item number	Description
MBS health assessment items(a)	228, 700–714, 715, 716–719	Indigenous-specific health assessment and general health assessment, including of a patient who is of Aboriginal or Torres Strait Islander descent.
Diagnostic procedures and investigations(b)	11700–11727	Electrocardiography monitoring, including during exercise or pharmacological stress; ambulatory electrocardiography monitoring; blood dye dilution indicator test; implanted pacemaker testing; and implanted defibrillator testing.
Diagnostic imaging services(c)	55113–55136, 57360, 57361, 59903–59973	Includes echocardiography (includes exercise and pharmacological stress echocardiography), computed tomography, and angiocardiography.
Therapeutic procedures(b)(c)	38200–38766, 13400	Includes cardiac catheterisation, selective coronary angiography, endovascular interventional procedures, and coronary artery bypass.
GP management plan	721	Preparation of a GP management plan by a medical practitioner (including a GP, but not a specialist/consultant physician).
Team care arrangements	723	Preparation of team care arrangement by a medical practitioner (including a GP, but not a specialist/consultant physician).
Allied health services	10950–10954, 10956, 10958, 10960, 10962, 10964, 10966, 10968,10970, 80000, 80005, 80010, 80015, 80020, 80100, 80105, 80110, 80115, 80120, 80125, 80130, 80135, 80140, 80145, 80150, 80155, 80160, 80165, 80170, 81000, 81005, 81010, 81100, 81105, 81110, 81115, 81120, 81125, 81300, 81305, 81310, 81315, 81320, 81325, 81330, 81335, 81340, 81345, 81350, 81355, 81360, 82300, 82306, 82309, 82312, 82315, 82318, 82324, 82327, 82332	Includes Aboriginal and Torres Strait Island health services, dietetics services, diabetes services, audiology services, mental health services, occupational therapy, physiotherapy, exercise physiology, podiatry, chiropractic, osteopathy, psychology, and speech pathology.
Practice nurse monitoring and support	10997	Service provided to a person with a chronic disease by a practice nurse or an Aboriginal and Torres Strait Islander health practitioner.
Review of a GP management plan and team care arrangement	732	Review of a GP management plan or team care arrangement by a medical practitioner (including a GP, but not a specialist or consultant physician).
Contribution to a multidisciplinary care plan	729, 731	Contribution to a multidisciplinary care plan by a medical practitioner (including a GP but not a specialist or consultant physician).
Specialist review	Group A3 services items (99, 104–109, 113) and A4 services items (110, 112, 116, 119, 122, 128, 131–133)	Professional attendance on a patient by a consultant physician practising in his or her speciality.

(a) New MBS items 699/177 for Heart Health Check introduced from 1 April 2019 are not included in this measure for this report and will be considered for future releases of the report.

(b) In this report, patients who received MBS items within ‘diagnostic procedures and investigations’, ‘diagnostic imaging services’ or ‘therapeutic procedures’ are classified as having a suspected or diagnosed cardiac condition.

(c) In this report, patients who received MBS items listed within the ‘therapeutic procedures' group are classified as having a cardiac condition.

Table B3: Australian Classification of Health Interventions (ACHI), 10th edition, procedure codes

Procedure	ACHI code	Description
PCI	38300-00	Percutaneous transluminal balloon angioplasty of 1 coronary artery
	38303-00	Percutaneous transluminal balloon angioplasty of 2 or more coronary arteries
	38306-00	Percutaneous insertion of 1 transluminal stent into single coronary artery
	38306-01	Percutaneous insertion of 2 or more transluminal stents into single coronary artery
	38306-02	Percutaneous insertion of 2 or more transluminal stents into multiple coronary arteries
	38309-00	Percutaneous transluminal coronary rotational atherectomy, 1 artery
	38312-00	Percutaneous transluminal coronary rotational atherectomy, 1 artery with insertion of 1 stent
	38312-01	Percutaneous transluminal coronary rotational atherectomy, 1 artery with insertion of 2 or more stents
	38315-00	Percutaneous transluminal coronary rotational atherectomy, multiple arteries
	38318-00	Percutaneous transluminal coronary rotational atherectomy, multiple arteries with insertion of 1 stent
	38318-01	Percutaneous transluminal coronary rotational atherectomy, multiple arteries with insertion of 2 or more stents
	90218-00	Percutaneous transluminal coronary angioplasty with aspiration thrombectomy, 1 artery
	90218-01	Percutaneous transluminal coronary angioplasty with aspiration thrombectomy, multiple arteries
	90218-02	Percutaneous transluminal coronary angioplasty with embolic protection device, 1 artery
	90218-03	Percutaneous transluminal coronary angioplasty with embolic protection device, multiple arteries
	38300-01	Open transluminal balloon angioplasty of 1 coronary artery
	38303-01	Open transluminal balloon angioplasty of 2 or more arteries
	38306-03	Open insertion of 1 transluminal stent into single coronary artery
	38306-04	Open insertion of 2 or more transluminal stents into single coronary artery
	38306-05	Open insertion of 2 or more transluminal stents into multiple coronary arteries
	38505-00	Open coronary endarterectomy
Diagnostic angiography	38215-00	Coronary angiography
	38218-00	Coronary angiography with left heart catheterisation
	38218-01	Coronary angiography with right heart catheterisation
	38218-02	Coronary angiography with right heart catheterisation
CABG	38497-00	Coronary artery bypass, using 1 saphenous vein graft
	38497-01	Coronary artery bypass, using 2 saphenous vein grafts
	38497-02	Coronary artery bypass, using 3 saphenous vein grafts
	38497-03	Coronary artery bypass, using 4 or more saphenous vein grafts
	38497-04	Coronary artery bypass, using 1 other venous graft
	38497-05	Coronary artery bypass, using 2 other venous grafts
	38497-06	Coronary artery bypass, using 3 other venous grafts
	38497-07	Coronary artery bypass, using 4 or more other venous grafts
	38500-00	Coronary artery bypass, using 1 left internal mammary artery graft

(continued)

Table B3 (continued): Australian Classification of Health Interventions (ACHI), 10th edition procedure codes

Procedure	ACHI code	Description
CABG (continued)	38500-01	Coronary artery bypass, using 1 right internal mammary artery graft
	38500-02	Coronary artery bypass, using 1 radial artery graft
	38500-03	Coronary artery bypass, using 1 epigastric artery graft
	38500-04	Coronary artery bypass, using 1 other arterial graft
	38500-05	Coronary artery bypass, using 1 composite graft
	38503-00	Coronary artery bypass, using 2 or more left internal mammary artery grafts
	38503-01	Coronary artery bypass, using 2 or more right internal mammary artery grafts
	38503-02	Coronary artery bypass, using 2 or more radial artery grafts
	38503-03	Coronary artery bypass, using 2 or more epigastric artery grafts
	38503-04	Coronary artery bypass, using 2 or more other arterial grafts
	38503-05	Coronary artery bypass, using 2 or more composite grafts
	90201-00	Coronary artery bypass, using 1 other graft, not elsewhere classified
	90201-01	Coronary artery bypass, using 2 other grafts, not elsewhere classified
	90201-02	Coronary artery bypass, using 3 other grafts, not elsewhere classified
	90201-03	Coronary artery bypass, using 4 or more other grafts, not elsewhere classified

Source: ACCD 2015.

Table B4: ICD-10, Australian modification codes

Code	Condition
I21.0, I21.1, I21.2, I21.3	STEMI
I21.4	Non-STEMI
I21.9	Unspecified AMI
I20.0	Unstable angina
I20.1–I20.9	Stable angina
I23–I25	Other coronary heart disease
I00–I52	Cardiac conditions, including ARF, chronic RHDs, hypertensive diseases, ischaemic heart diseases, pulmonary heart disease, diseases of pulmonary circulation, and other forms of heart disease

Appendix C: Summary results, by measure

Table C1: Summary results, including numerator and denominator data, for the BCC measures

	Indigenous				Non-Indigenous			
Measures (unit applicable to rates)	**Numerator**	**Denominator**	**Crude rate**	**ASR**	**Numerator**	**Denominator**	**Crude rate**	**ASR**
1.1 Annual health assessments, 2018–19 (%)	247,127	838,866	29.5	. .	. .	. .	. .	. .
1.2 Cardiovascular disease risk assessment, June 2019, high risk (%)	4,911	14,006	35.0	. .	. .	. .	. .	. .
1.3.1 Primary care practitioner follow-up: Blood pressure checked, 2018–19 (%)	223,919	254,522	87.9	. .	. .	. .	. .	. .
1.3.2 Primary care practitioner follow-up: Discussed quitting smoking, 2018–19 (%)	52,965	145,784	36.3	. .	. .	. .	. .	. .
2.1 Cardiac-related diagnostic services, 2018–19 (%)	63,746	838,866	7.6	10.7	2,660,185	24,334,632	10.9	9.6
2.3 Suspected or confirmed cardiac disease case review by a specialist, 2018–19 (%)	61,003	101,133	60.3	53.7	4,337,740	5,259,299	82.5	68.1
3.1 STEMI events treated by PCI, 2015–18 (%)	713	1,046	68.2	68.0	19,681	25,849	76.1	80.9
3.3 ACS events that included diagnostic angiography or definitive revascularisation, 2015–18 (%)	3185	5,774	55.2	56.7	75,586	120,671	62.6	68.6
3.5 AMI in-hospital mortality rates, 2015–18 (%)	133	3,924	3.4	2.8	4,630	87,400	5.3	2.6
4.2 Follow-up after receiving a cardiovascular therapeutic procedure, 2017–18 (%)	867	1,238	70.0	n.a.	60,227	116,947	51.0	n.a.
4.3 Specialist physician review after a cardiovascular therapeutic procedure, 2017–18 (%)	1130	1,238	91.0	n.a.	113,981	116,947	97.0	n.a.
5.1.1 Incidence of ARF, 2018 (number per 100,000)	457	456,380	100.1	n.a.	21	9,130,810	0.2	n.a.
5.1.2 New diagnoses of RHD, 2018 (number per 100,000)	334	456,380	73.2	n.a.	63	9,130,810	0.7	n.a.
5.2 Recurrent ARF, 2017–2018 (%)	239	906	26.4	n.a.	9	51	17.6	n.a.
5.3 Treatment with benzathine penicillin G doses, 2018, more than 100% of doses (%)	748	3.209	23.3	n.a.	34	130	26.2	n.a.
6.1 Hospitalisations for cardiac conditions, 2015–18 (number per 1,000)	33,530	2,419,265	13.9	23.8	1,139,027	70,772,844	16.1	13.5
6.2.1 Deaths from cardiac conditions, 2016–2018 (number per 100,000)	1,646	2,154,549	76.4	150.3	63,561	49,846,516	127.5	101.9
6.2.2 In-hospital deaths for cardiac conditions, 2015–18 (number per 100,000)	704	2,419,265	29.1	56.1	25,930	70,772,844	36.6	30.0

ASR = Age-standardised rate.

Notes

1. Data for measures 5.1.1, 5.1.2, 5.2 and 5.3 are for Queensland, Western Australia, South Australia and the Northern Territory only. Data for Measure 6.2.1 are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory only. Data for other measures are for all states and territories.
2. See Appendix B for detailed technical specifications for these measures, including the data source(s) used.

Appendix D: Data Development Plan summary tables, by priority area

🟩 Green shading indicates that data are available to report on the full measure.

🟦 Blue shading indicates that data are available to report on part of the measure.

🟧 Orange shading indicates that data are not yet available for reporting on the measure.

Table D1: Priority area 1

Agreed measure	Data source	Current reported status	Issues and proposed option for consideration	Time frame	Workshop outcomes
1.1 Number and proportion of regular Aboriginal and Torres Strait Islander clients of health services who received an MBS health assessment within the previous 12 months	Medicare Benefits Schedule (MBS) data	Fully reported in all BCC reports Annual data are available on the number and proportion of Indigenous Australians who had an MBS health assessment in the previous 12 months.	n.a.	n.a.	● Workshop participants agreed this measure should continue as it is currently reported. Limitations of the MBS item 715 and general health assessment items—as to whether they reflect a sufficiently comprehensive assessment of cardiac health and risk of cardiac disease—to be noted in the text and footnotes. ● It was recommended to include MBS item 699—an item focused on patients with or at risk of developing CVD, including specifically Aboriginal and Torres Strait Islanders over the age of 30—in the measure.
1.2 Number and proportion of Aboriginal and Torres Strait Islander people aged 20 and over without known cardiac disease with a documented absolute cardiovascular risk assessment and stratification in the last 2 years per 1,000 Aboriginal and Torres Strait Islander service population	National Key Performance Indicators (nKPI) data collection	Partly reported in the 2018–19 BCC report Annual data are available on the number and proportion of Indigenous regular clients of Indigenous primary health care organisations, aged 35–74 with no known history of CVD, who have had an absolute CVD risk assessment recorded within the previous 24 months and whose CVD risk was categorised as: • high (greater than 15% chance of a cardiovascular event in the next 5 years) • moderate (10–15% chance of a cardiovascular event in the next 5 years) • low (less than 10% chance of a cardiovascular event in the next 5 years).	**Issues:** The 2018–19 BCC report uses the nKPI data collection. Population coverage of the nKPI is limited to Indigenous Australians within a specified age range of 35–74 and includes only regular clients of Indigenous Primary Health Care services. Additionally, services using the Primary Care Information System (predominantly the Northern Territory Government) are not included in the cardiovascular disease risk assessment results. **Option for consideration:** Expansion of the Indigenous Specific Primary Health Care services by including regular clients aged 20 and over and including Indigenous-specific primary health care in main stream primary health care.	3–4 years	● Workshop participants agreed this measure was important to retain and supported reporting this indicator as it is currently reported until a better data source becomes available. ● The measure should be aligned with existing guidelines and clinical practice. ● Agreement is to be pursued on the age at which the measure should commence. NACCHO guidelines suggest the measure should commence at 30 years while work done by ANU suggests it should commence at earlier ages, perhaps 20 or younger. ● Potential of further enhancing this measure using GP data or My Health Record to improve reporting of this measure when data become available.

(continued)

Table D1 (continued): Priority area 1

Agreed measure	Data source	Current reported status	Issues and proposed options for consideration	Time frame	Workshop outcomes
1.3 Proportion of Aboriginal and Torres Strait Islander people identified as having elevated risk of cardiac disease in the previous 2 years, with documented evidence of primary care practitioner follow-up, including the proportion commenced on anti-hypertensive and lipid-lowering therapy and proportion of smokers offered an evidence-based smoking cessation intervention	2012**–**13 Aboriginal and Torres Strait Islander Health Survey (AATSIHS)	Partly reported in 2015 BCC report; updated data for these measures were not available for the 2016, 2017, and 2018**–**19 report; 2018**–**19 survey data are now available to report in the upcoming 2020 report. **Measures reported in 2015 BCC report**: (i) proportion of Indigenous Australians aged 18 and over living in *Non-remote* areas without a current and long-term circulatory condition who were at high risk of cardiac disease who had their blood pressure checked in the previous 2 years (ii) proportion of Indigenous Australians aged 18 and over without a current and long-term circulatory condition who were at high risk of cardiac disease and were current smokers who saw a doctor, health professional or specialist in the previous 12 months and discussed quitting smoking.	**Issues**: No data on primary care practitioner follow-up are available. Instead, data from the 2012−13 AATSIHS were used to report on proxy measures in the 2015 report. Data available do not directly align with requirement and intended purpose of the measure; measure can be reported only 6-yearly. **Options for consideration** **Option 1: Data linkage between the MBS and PBS** Amended measure: Proportion of Indigenous Australians who had a health assessment and who have subsequently commenced on CVD-related medications for treatment of high blood pressure, high cholesterol or smoking cessation Numerator: The number of Indigenous Australians who had a health assessment and have subsequently commenced on CVD related medication for treatment of high blood pressure, high cholesterol, and/or smoking cessation Denominator: The number of Indigenous Australians who have had a health assessment Limitations: • Unable to identify denominator of agreed measure (ie. Number of Indigenous Australians with an elevated risk of cardiac disease). • Unable to establish identified risk factor to CVD related treatment. • It will underestimate the number of people who are known to have CVD, as some CVD patients are on lifestyle modification programs and not being treated by medications. • MBS data reflect billing practices and not necessarily all services received; hence they do not give a comprehensive picture of actual service delivery for Indigenous Australians. For example, MBS data do not include services provided in the public health system or under other arrangements that do not attract an MBS claim. • PBS does not cover all medicines dispensed, such as private prescriptions. • There is more likely to be under-representation of Indigenous people living in remote areas in the PBS. **Option 2: Update data for this measure every 6 years based on the AATSIHS**	2–3 years	• The workshop participants agreed that this measure should continue to be reported and provided support for **option 2**. • Measure would be better disaggregated into 3 sub-measures: 1) Primary care follow-up; 2) Commencement of anti-hypertensives and lipid lowering therapy; and 3) Proportion of patients offered smoking cessation interventions. • Denominator is to be clearly identified as to whether it should be a) Indigenous people or b) Indigenous people identified with elevated cardiac risk. • Technical issues of using survey data are to be clearly articulated: 1) partial reporting, 2) consistency of the AATSIHS questions and content over time that would have an impact on the reliability and quality of the measure over time. • There is potential to further enhance this measure by linking with data from sources such as the Practice Aggregation Tool for the Clinical Audit Tool (PATCAT). • My Health Record would be of potential use when available.

Table D2: Priority area 2

Agreed measure	Data source	Current reported status	Issues and proposed options for consideration	Time frame	Workshop outcomes
2.1 Number and proportion of regular Aboriginal and Torres Strait Islander clients of health services who have had relevant Medicare-listed diagnostic items claimed in the previous 12 months, in particular echocardiography, by region, in comparison to other Australians	Medicare Benefits Schedule (MBS) data	Fully reported in all BCC reports Annual data are available on the number and proportion of people who had relevant Medicare-listed cardiac-related diagnostic items claimed in the previous 12 months, by Indigenous status.	n.a.	n.a.	● Workshop participants agreed that this measure should continue as it is currently reported.
2.2 Number and proportion of Aboriginal and Torres Strait Islander people referred for initial diagnostic services receiving the appropriate test within 30 days of referral, by region	n.a	Not yet reported	**Issues:** No currently available data source to identify if the diagnosis services were required initially or date of referral. **Option for consideration: My Health Record (MHR) or National Primary Health Care Data Asset (Data Asset)** **Limitations:** • It is not yet known whether data available to assess CVD risk and stratification. • There are gaps in coverage as not all people will be registered and not all health practitioners are using MHR or Data Asset. • There are issues in identifying an Indigenous-specific cohort as people can choose to identify Indigenous status at each separate health intervention, leading to inconsistencies throughout the document. • The extent of Indigenous under-identification has yet to be determined. • Data are not available until after 2020 for analyses and reporting.	Long term (anything beyond 2021 report)	● Workshop participants supported retention of the measure. ● No data source is currently available to report on the measure until My Health Record is available. ● It was recommended to check guidelines on 30 days of referral and was suggested adding other categories—1, 3, 6 and 12 months.

(continued)

Table D2 (continued): Priority area 2

Agreed measure	Data source	Current reported status	Issues and proposed options for consideration	Time frame	Workshop outcomes
2.3 Proportion of Aboriginal and Torres Strait Islander people with suspected or confirmed cardiac disease reviewed by a cardiologist within the previous 12 months, in comparison with other Australians	Medicare Benefits Schedule (MBS) data	Partly reported in 2017 and 2018–19 BCC reports Annual data are available on the number of Australians with suspected or confirmed cardiac disease reviewed by a cardiologist in the previous 12 months, by Indigenous status. A proxy measure for identifying suspected or confirmed cardiac cases is used, by selecting people who had claimed 1 or more cardiac-related MBS items for diagnostic or therapeutic procedures in the relevant financial year. The 2018–19 BCC report presents on review by a specialist rather than a cardiologist only, compared with the 2017 BCC report, as the necessary MBS items for cardiologist review are not available in the MBS weighted Indigenous data.	**Issues:** The current measure uses a proxy measure for identifying suspected or confirmed cardiac cases, by selecting people who had claimed 1 or more cardiac-related MBS items for diagnostic or therapeutic procedures. As some of these MBS items are diagnostic, not all people with these items would have cardiac conditions (as some of the tests would have been negative). MBS data do not include information about whether people have a cardiac condition and no information is available on the diagnoses for people with a referral to a cardiologist/specialist . **Options for consideration:** **Option 1: My Health Record (MHR) or National Primary Health Care Data Asset (Data Asset)** **Limitations:** see above **Option 2: Use current method and data source**	 Long term (anything beyond 2021 report)	• Workshop participants agreed that this measure should continue and supported **option 2**. Measure is to be reported as it is currently reported, noting its limitations. • There was continued discussion on whether the broadening of who should conduct the review from cardiologist to specialist (due to data limitations) was appropriate.

Table D3: Priority area 3

Agreed measure	Data source	Current reported status	Issues and proposed options for consideration	Time frame	Workshop outcomes
3.1(i) Proportion of people with ST-elevation myocardial infarction (STEMI) who present within 12 hours of symptom onset and are eligible to receive emergency reperfusion therapy who are (i) treated by primary percutaneous coronary intervention (PCI), by Aboriginal and Torres Strait Islander status.	National Hospital Morbidity Database (NHMD)	Partly reported in all BCC reports Annual data are available on hospitalised events where PCI was provided to patients aged 18 and over for STEMI, by Indigenous status.	**Issues:** Current measure uses the NHMD. NHMD reports data on hospitalised events, not 'people'; no information is available on the time between symptom onset and presentation at a medical facility; patients aged under 18 are excluded due to small numbers. **Options for consideration** ● Amend the measure to report the counting unit of 'events' and not 'people'. ● Amend the measure to remove the criteria 'present within 12 hours of symptom onset'.	Immediate	● Workshop participants agreed this measure should continue as reported. ● It was recommended to amend the indictor as stated in the options for consideration, which were both supported at the workshop.
3.1(ii) Proportion of people with ST-elevation myocardial infarction (STEMI) who present within 12 hours of symptom onset and are eligible to receive emergency reperfusion therapy who are (ii) treated with fibrinolysis, by Aboriginal and Torres Strait Islander status	n.a	Not yet reported	**Issues:** Information about drug treatment/pharmacotherapy received by admitted patients is not routinely recorded in the NHMD or the National non-admitted patient emergency department care database (NNAPEDC). Fibrinolysis is more likely to be administered before hospital admission (for example, in an emergency department) and this information is not available in the NHMD. **Option for consideration: Data linkage between NNAPEDC and Pharmaceutical Benefits Schedule (PBS) data** <u>Amended measure</u>: Number and proportion of patients arriving at the emergency department for STEMI, who receive fibrinolysis, by Indigenous status <u>Numerator</u>: Number of patients arriving at the emergency department with a principal diagnosis of STEMI, who receive fibrinolysis <u>Denominator:</u> Number of patients arriving at the emergency department with a principal diagnosis of STEMI Limitation: • No information is available on the time between symptom onset and presentation at a medical facility. • No information is available on the time between symptom onset and administration of medication in any data source. • NSW and ACT do not participate in the PBS reforms and hence will be excluded from the analysis. • The extent of under-identification of Indigenous Australians in hospital emergency care data is not known. • The limitations of PBS data as are discussed in Measure 1.3.	2–3 years	● Workshop participants agreed that this measure should continue. ● Support was provided for the option proposing data linkage of emergency care database and PBS data, with an acknowledgement of the limitations. ● It was suggested to remove the 'within 12 hours of symptom onset' as current data relates only to presentation at emergency departments.

(continued)

Table D3 (continued): Priority area 3

Agreed measure	Data source	Current reported status	Issues and proposed options for consideration	Time frame	Workshop outcomes
3.2 Proportion of people with STEMI who present within 12 hours of symptom onset and are eligible to receive emergency reperfusion therapy who are not treated by PCI or fibrinolysis, by Aboriginal and Torres Strait Islander status	n.a	Not yet reported	This measure is the same as Masure 3.1 although it is worded differently. It therefore can be deleted.	n.a	● Workshop participants agreed that this measure should be removed as it is the inverse of 3.1 and did not add any further useful information.
3.3 Proportion of people with ACS who received diagnostic angiography or a definitive revascularisation procedure (PCI or coronary artery bypass graft) within the index admission and 30 days of the index admission, by Aboriginal and Torres Strait Islander status.	National Hospital Morbidity Database (NHMD)	Partly reported in all BCC reports Annual data are available on hospitalised events for ACS among people aged 18 or over that included diagnostic angiography, and/or a definitive revascularisation procedure (PCI or CABG), by Indigenous status	**Issues: The** current measure uses the NHMD. The NHMD reports data on hospitalised events, not 'people'; data are not available on whether the procedures were received within the index admission and 30 days of index admission; patients aged under 18 are excluded due to small numbers. **Options for consideration** ● Amend the measure to report counting unit of 'events' and not 'people. ● Amend the measure to remove the criteria '30 days of the index admissions'**.**	Immediate	● Workshop participants agreed this measure should continue as reported. ● It was recommended to amend the indictor as stated in the options for consideration, which were both supported at the workshop.

(continued)

Table D3 (continued): Priority area 3

Agreed measure	Data source	Current reported status	Issues and proposed options for consideration	Time frame	Workshop outcomes
3.4 Proportion of Aboriginal and Torres Strait Islander people diagnosed with ACS (STEMI and non - STEMI) discharged from hospital on appropriate medicines for secondary prevention according to guidelines, specifically aspirin or other antiplatelet agent, statin, ACE-inhibitor or angiotensin receptor blocker and beta-blocker	n.a	Not yet reported	**Issues:** There is no national data collection on medication when patients are discharged from hospital. This requires data linkage between NHMD and PBS data. **Option for consideration: data linkage between the NHMD and the PBS** Agreed measure: Proportion of Indigenous patients discharged from hospital with a principal diagnosis of ACS on appropriate medicines for secondary prevention Numerator: Number of Indigenous patients (excluding in NSW and the ACT) discharged from hospital with a principal diagnosis of ACS and who have subsequently had appropriate medicines for secondary prevention dispensed under the PBS or RPBS on discharge Denominator: Number of Indigenous patients (excluding in NSW and the ACT) discharged from hospital with a principal diagnosis of ACS. Limitation: • NSW and the ACT do not participate in the PBS reforms and hence will be excluded from the analysis. • Aspirin can be bought over the counter and hence may not be captured in the data. • The limitations of PBS data are as discussed in Measure 1.3. • There is some under-identification of Indigenous Australians in the NHMD.	2–3 years	● Workshop participants supported continuation of the measure. ● Support was provided for the option proposing data linkage of NHMD and PBS data, with an acknowledgement of the limitations.
3.5 In-hospital, 30-day and 12-month mortality rates for people admitted to hospital with a primary diagnosis of acute myocardial infarction (AMI) by Aboriginal and Torres Strait Islander status.	National Hospital Morbidity Database (NHMD)	Partly reported in all BCC reports Annual data are available on hospitalised events for AMI among patients aged 35 and over that ended in death, by Indigenous status	**Issues:** Current measure uses the NHMD. The NHMD reports data on hospitalised events, not 'people'; data are not yet available on 30-day and 12-month mortality following hospitalisation; national data linkage between the NHMD and NMD would be required to report on 30-day and 12-month mortality rates; patients aged under 35 are excluded due to small numbers. **Options for consideration** ● Amend the denominator to report the counting unit of 'events' and not people'. ● Amend the measure to include only in-hospital deaths.	Immediate	● Measure should continue and support was provided to amend the indicator to align with data availability. ● Support was provided for linkage of the NHMD and the NMD to identify 30-days and 12-month mortality following hospitalisations for future development.

Table D4: Priority area 4

Agreed measure	Data source	Current reported status	Issues and proposed options for consideration	Time frame	Workshop outcomes
4.1 Number and proportion of patients reviewed by a primary health-care professional within one week of discharge from hospital, by Aboriginal and Torres Strait Islander status and region	n.a	Not yet reported	**Issues:** Visits to primary health-care professionals can be identified from MBS data, but MBS data do not record information on hospitalisation. **Option for consideration: Data linkage between the NHMD and MBS** Amended measure: Number and proportion of patients discharged from hospital with a principal diagnosis of a cardiac disease who have claimed for relevant MBS items for consultation with a primary health-care professional within 12 months after discharge, by Indigenous status Numerator: Number of patients discharged from hospital with a principal diagnosis of a cardiac condition who have claimed for relevant MBS items for consultation with a primary health-care professional within 12 months after discharge Denominator: Total number of patients discharged from hospital with a principal diagnosis of a cardiac condition **Limitations:** • MBS claims for primary health care, post discharge from hospital may not have been related to the patient's cardiac condition. • Limitations of MBS and NHMD data apply as discussed previously.	2–3 years	• Measure is to be continued and support was provided for data linkage of the NHMD and the MBS. • Cardiac conditions that are in scope for this measure are to be clarified. • Revisit the timeframe to ensure that it matches recommended guidelines. • Include other review points at 2 week and/or 4 weeks post discharge if available in the data.
4.2 Number and proportion of patients with documented evidence of receiving a Medicare Chronic Disease Management item (such as Team Care Arrangement, General Practitioner Management Plan or allied health service item) within 3 months of discharge from hospital, by Aboriginal and Torres Strait Islander status and region	Medicare Benefits Schedule (MBS) data	Partly reported in all BCC reports Annual data are available to report on patients with a cardiac condition who received a follow-up service within 12 months of having a cardiac procedure (as measured through MBS claims), by Indigenous status. MBS follow-up items include: (a) team care arrangement (b) general practice management plan (c) allied health service items (d) practise nurse services	**Issues:** Current measure uses MBS data. MBS data do not record information on hospitalisations; in the 2015, 2016, 2017 and 2018–19 BCC report, measure is reported on whether people with a cardiac condition received follow-up services within 12 months of a cardiac procedure (based on MBS claims). **Options for consideration:** **Option 1: Data linkage between the MBS and the NHMD** Amended measure: Number and proportion of patients with a cardiac condition discharged from hospital who received a follow-up Medicare Chronic Disease Management Plan within 12 months after discharge, by Indigenous status Numerator: Number of patients discharged from hospital with a principal diagnosis of a cardiac condition and received Medicare-listed follow-up services, including a GP management plan, team care arrangement, allied health service, practice nurse monitoring and support, review of a GP management plan and team care arrangement, and contribution of a multidisciplinary care plan within 12 months Denominator: Total number of patients discharged from hospital with a principal diagnosis of a cardiac condition **Option 2: Use current method and data source**	2–3 years	• Workshop participants agreed that this measure should continue. • Support was provided for **Option 1** proposing data linkage between the MBS and the NHMD. • It was recommended that reporting period should be within 3 months as specified in agreed measure (if data are available to report).

(continued)

Table D4 (continued): Priority area 4

Agreed measure	Data source	Current reported status	Issues and proposed options for consideration	Time frame	Workshop outcomes
4.3 Number and proportion of Aboriginal and Torres Strait Islander patients with cardiac disease reviewed by a specialist physician within 3 months and 12 months of discharge from hospital, by region	Medicare Benefits Schedule (MBS) data	Partly reported in 2017 and 2018-19 BCC report Annual data are available to report on the number of patients with a cardiac condition who were reviewed by a specialist physician within 12 months of having a cardiac procedure (as captured through MBS claims), by Indigenous status.	**Issues:** Current measure uses MBS data. MBS data do not record information on hospitalisations: in the 2017 and 2018–19 BCC reports, the measure is reported on the number of patients with a cardiac condition reviewed by a specialist physician within 12 months of having a cardiac procedure (based on MBS claims). **Options for consideration:** **Option 1: Data linkage between the MBS and the NHMD** Amended measure: Number and proportion of Indigenous patients discharged from hospital with a principal diagnosis of a cardiac condition reviewed by a specialist physician within 12 months of discharge from hospital Numerator: Number of Indigenous patients discharged from hospital with a principal diagnosis of a cardiac condition who received a Medicare-listed specialist review within 12 months Denominator: Total number of Indigenous patients discharged from hospital with a principal diagnosis of a cardiac condition **Option 2: Use current method and data source**	2–3 years	● Workshop participants agreed that this measure should continue. ● Support was provided for **Option 1,** proposing data linkage between the MBS and the NHMD. ● It was recommended that reporting period should be within 3 months and 12 months as specified in agreed measure (if data are available to report).

(continued)

Table D4 (continued): Priority area 4

Agreed measure	Data source	Current reported status	Issues and proposed options for consideration	Time frame	Workshop outcomes
4.4 Number and proportion of Aboriginal and Torres Strait Islander people with a diagnosis of coronary heart disease (CHD) prescribed secondary prevention medications (aspirin or other antiplatelet agent, a statin, an ACE inhibitor or angiotensin receptor blocker, and a beta-blocker, as appropriate) at discharge and remaining on their medications at 3,6 and 12 months post-discharge by region	n.a	Not yet reported	**Issues:** Secondary prevention medications can be identified from PBS data. However, PBS data do not include information on hospitalisations. From PBS data, the drug, and the fact it was supplied at a hospital pharmacy is known. Linkage with PBS and hospital data is required to identify people who use medication after discharge and remain on their medication post-discharge. Linkage with the National Mortality Database (NMD) is also required to exclude people who died 3, 6 and 12 months post-discharge. **Option for consideration: Data linkage between the NHMD, the PBS , and the NMD** Amended measure: Number and proportion of Indigenous patients discharged from hospital with a principal diagnosis of CHD on appropriate medicines for secondary prevention **after** discharge remaining on their medications at 3, 6, and 12 months post-discharge. Numerator: Number of Indigenous patients discharged from hospital with a principal diagnosis of CHD on appropriate medicines for secondary prevention **after** discharge and remaining on their medications at 3, 6 and 12 months post-discharge. Denominator: Number of Indigenous patients discharged from hospital with a principal diagnosis of CHD on appropriate medicines for secondary prevention **after** discharge. **Limitations:** • The measure will not be able to identify patients on appropriate medications at discharge from hospital but can link patients who have had medications dispensed only **after** discharge. • From the PBS, we can only identify if medications were dispensed around these time frames but we don't know what compliance is like. • Aspirin will not always be able to be identified in the PBS as people may buy it over the counter. • Other limitations of PBS data are as discussed previously. • There is some under-identification of Indigenous Australians in the NHMD and the NMD.	2–3 years	• Workshop participants agreed that this measure should continue. • Support was provided for the option proposing data linkage of the NHMD, the PBS and the NMD. • Follow-up with MHR development in the future.

Table D5: Priority area 5

Agreed measure	Data source	Current reported status	Issues and proposed options for consideration	Time frame	Workshop outcomes
5.1 Annual incidence of all Acute Rheumatic Fever (ARF) episodes, by Aboriginal and Torres Strait Islander status	National Rheumatic Heart Disease (RHD) data collection	Partly reported in all BCC reports Annual data are available to report on new episodes of ARF from Queensland, Western Australia, South Australia, and the Northern Territory combined,	**Issues:** Data are not available for ACT, Vic and Tas. NSW has established the registry and data are in development. **Option for consideration:** Establishment and/or improvement of jurisdictional RHD registers.	Long term (anything beyond 2021 report)	Follow up with RHD team at the AIHW regarding establishment and/or improvement of jurisdictional RHD registers.
5.2 Proportion of all ARF episodes that are recurrent, by Aboriginal and Torres Strait Islander status	National Rheumatic Heart Disease (RHD) data collection	Partly reported in all BCC reports Annual data are available to report on the proportion of ARF episodes that are recurrent for various years from Queensland, Western Australia, South Australia, and the Northern Territory combined.	**Issues:** Data are not available for ACT, Vic and Tas. NSW has established the registry and data are in development. **Option for consideration:** Establishment and/or improvement of jurisdictional RHD registers.	Long term (anything beyond 2021 report)	Follow up with RHD team at the AIHW regarding establishment and/or improvement of jurisdictional RHD registers.
5.3 Median proportion of schedule benzathine penicillin doses given to patients with confirmed ARF or RHD in the preceding 12 months, by Aboriginal and Torres Strait Islander status	National Rheumatic Heart Disease (RHD) data collection	Partly reported in all BCC reports Annual data are available to report on the percentage of required doses of benzathine penicillin for Queensland, Western Australia, South Australia, and the Northern Territory combined.	**Issues** Data are not available for ACT, Vic and Tas. NSW has established the registry and data are in development. **Option for consideration:** Establishment and/or improvement of jurisdictional RHD registers.	Long term (anything beyond 2021 report)	Follow up with RHD team at the AIHW regarding establishment and/or improvement of jurisdictional RHD registers.
5.4 Proportion of people with moderate or severe rheumatic heart disease who received an echocardiogram in the previous 12 months, by Aboriginal and Torres Strait Islander status	National Rheumatic Heart Disease (RHD) data collection	Partly reported in 2017 BCC report; unable to update measure in 2018–19 report Data are reported in the 2017 BCC report on the proportion of people with moderate or severe RHD who received an echocardiogram in the previous 12 months from Queensland, Western Australia, South Australia combined.	**Issues:** Data were reported in the 2017 BCC report for only 3 jurisdictions: Queensland, Western Australia and South Australia. Updated data were not available for reporting in the 2018–19 report. AIHW is working with jurisdictions to resolve data issues. **Option for consideration:** Establishment and/or improvement of jurisdictional RHD registers.	Long term (anything beyond 2021 report)	Follow up with RHD team at the AIHW regarding establishment and/or improvement of jurisdictional RHD registers.

Table D6: Summary measures

Agreed measure	Data source	Current reported status	Workshop outcomes
6.1 Age-standardised rates of hospitalisation for a cardiac condition, by Aboriginal and Torres Strait Islander status	National Hospital Morbidity Database (NHMD)	Partly reported in all BCC reports. Data are reported on rates of hospitalisations for cardiac conditions. Data for the Australian Capital Territory were not available. For the jurisdiction breakdown, data for Victoria and Tasmania were combined.	Workshop participants agreed that this measure should continue as reported but to ensure that all relevant cardiac conditions are included.
6.2 Age-standardised rates of cardiac mortality, by Aboriginal and Torres Strait Islander status	National Mortality Database (NMD) National Hospital Morbidity Database (NHMD)	Partly reported in all BCC reports. Data are reported on the number and age-standardised rate of cardiac mortality, and the age-standardised rate of in-hospital mortality for patients admitted with cardiac conditions. Data are reported for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory only. This is because the other jurisdictions have a small number of Indigenous deaths, and identification of Indigenous deaths in their death registrations is relatively poor, making the data less reliable.	Workshop participants agreed that this measure should continue as reported.

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Abbreviations

AATSIHS	Aboriginal and Torres Strait Islander Health Survey
ABS	Australian Bureau of Statistics
ACS	acute coronary syndrome
ACT	Australian Capital Territory
AIHW	Australian Institute of Health and Welfare
AMI	acute myocardial infarction
ARF	acute rheumatic fever
ASR	age-standardised rate
BCC	Better Cardiac Care
BPG	benzathine penicillin G
CABG	coronary artery bypass graft
CARPA	Central Australian Rural Practitioners Association
CHD	coronary heart disease
CVD	cardiovascular disease
GP	general practitioner
ICD-10	International Statistical Classification of Diseases and Relation Health Problems, 10th Revision
MBS	Medicare Benefits Schedule
MHR	My Health Record
NACCHO	National Aboriginal Community Controlled Health Organisation
NATSIHS	National Aboriginal and Torres Strait Islander Health Survey
NHMD	National Hospital Morbidity Database

nKPI	National Key Performance Indicators
NMD	National Mortality Database
NNAPEDC	National Non-admitted Patient Emergency Department Care
NSW	New South Wales
NT	Northern Territory
NVDPA	National Vascular Disease Prevention Alliance
PBS	Pharmaceutical Benefits Scheme
PCI	percutaneous coronary intervention
PCIS	Primary Care Information System
Qld	Queensland
RHD	rheumatic heart disease
RHDR	rheumatic heart disease register
SA	South Australia
STEMI	ST-segment-elevation myocardial infarction
Tas	Tasmania
Vic	Victoria
WA	Western Australia

Symbols

—	nil
. .	not applicable
n.a.	not available
no.	number

Glossary

Aboriginal and Torres Strait Islander: A person who identified themselves, or was identified by another household member, as being of Aboriginal and/or Torres Strait Islander origin. See also **Indigenous**.

acute coronary syndrome (ACS): An acute myocardial infarction (**heart attack**) and unstable angina (pressure in the chest while at rest or doing light physical activity) when a patient first presents as a clinical emergency with chest pain or other features.

acute myocardial infarction (AMI): A 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.

admitted patient: A patient who undergoes a hospital's admission process to receive treatment and/or care either in hospital and/or in the person's home (for hospital-in-the-home patients) (METeOR identifier: 268957).

age-standardisation: A set of techniques used to remove, as far as possible, the effects of differences in age when comparing 2 or more populations.

care type: Describes the overall nature of clinical service provided to an **admitted patient** during an episode of care (METeOR identifier: 491557). Care types for admitted patients are classified as:

- acute care
- rehabilitation care
- palliative care
- geriatric evaluation and management
- psychogeriatric care
- maintenance care
- newborn care
- other admitted patient care (where the principal clinical intent does not meet the criteria for any of the other categories).

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.

definitive revascularisation procedure: A procedure used to increase coronary artery blood flow (such as **percutaneous coronary intervention** and **coronary artery bypass graft**).

diagnostic angiography: A medical imaging technique used to visualise the inside of blood vessels. It enables the diagnosis of various disorders and injuries to the blood vessels.

heart attack: A 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**.

hospitalisation (separation): 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 **care type** (for example, from acute care to palliative care).

Indigenous: A term used interchangeably with **Aboriginal and Torres Strait Islander** in this report.

mode of separation: The status at **separation** of an **admitted patient** (discharge, transfer or death) and the place to which a patient is released (where applicable) (METeOR identifier: 270094).

non-Indigenous: A term used to describe people who indicated they are not of Aboriginal and/or Torres Strait Islander origin. Compare with **Other Australians**.

non-ST-segment-elevation acute coronary syndrome: A syndrome that encompasses both unstable angina (pressure in the chest while at rest or doing light physical activity) and non-ST-segment-elevation myocardial infarction (the less severe type of heart attack). See also **ST-segment-elevation myocardial infarction**.

Other Australians: A term used to describe people who did not identify as being of Aboriginal and/or Torres Strait Islander origin, and people for whom information on their Indigenous status was not available. Compare with **non-Indigenous**.

percutaneous coronary intervention (PCI): A surgical procedure used to restore blood flow to blocked coronary arteries. Two types are used: coronary angioplasty without stent, and coronary stenting.

principal diagnosis: The diagnosis established after study to be chiefly responsible for occasioning an episode of **admitted patient** care, an episode of residential care or an attendance at the health-care establishment (METeOR identifier: 514273).

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 (METeOR identifier: 514040).

rate difference: The literal, or absolute, gap between 2 population rates; for this report, it was calculated as the rate for Indigenous Australians minus the rate for non-Indigenous Australians.

rate ratio: An expression of the relative difference between populations by taking scale into account; for this report, it was calculated as the rate for Indigenous Australians divided by the rate for non-Indigenous Australians. It is interpreted as follows:

- a rate ratio of 1 indicates there is no difference between the rates
- a rate ratio of less than 1 indicates the rate is lower in the Indigenous population
- a rate ratio greater than 1 indicates the rate is higher in the Indigenous population.

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

separation: See **hospitalisation**.

ST-segment-elevation myocardial infarction (STEMI): The more severe type of **heart attack** (there are 2 types, classified according to their severity). In a STEMI, the artery supplying an area of the heart muscle is completely blocked. See also **non-ST-segment-elevation acute coronary syndrome**.

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List of tables

List of figures

Related publications

This report, *Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: fifth national report 2020*, is part of a series of reports. Earlier editions can be downloaded from https://www.aihw.gov.au/reports/indigenous-australians/better-cardiac-care-measures-18-19/contents/table-of-contents.

The following Australian Institute of Health and Welfare (AIHW) publications relating to the Better Cardiac Care project, and to the health of Aboriginal and Torres Strait Islander people, might also be of interest:

AIHW 2020. Acute rheumatic fever and rheumatic heart disease in Australia, 2014–2018. Web report. Cat no. CVD 88. Canberra: AIHW. https://www.aihw.gov.au/reports/heart-stroke-vascular-diseases/acute-rheumatic-fever/contents/summary.

AIHW 2016. Australian Burden of Disease Study: impact and causes of illness and death in Aboriginal and Torres Strait Islander people 2011. Cat. no. BOD 7. Canberra: AIHW.

These reports can be downloaded from http://www.aihw.gov.au/publications. The website also includes information on ordering printed copies.

This is the fifth national report on the 21 Better Cardiac Care measures for Aboriginal and Torres Strait Islander people, with updated data available for 15 measures. The level of access for cardiac-related health services is improving for Indigenous Australians. While the mortality rate from cardiac conditions is falling among the Indigenous population, it is still higher than among non-Indigenous Australians. The incidence of acute rheumatic fever among Indigenous Australians continues to be much higher than in non-Indigenous Australians.

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better decisions,
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