Australian Government
Australian Institute of Health and Welfare

# Better Cardiac Care measures for Aboriginal and Torres Strait Islander people

## Sixth national report

2021

AIHW

# Better Cardiac Care measures for Aboriginal and Torres Strait Islander people

## Sixth national report

**2021**

Australian Institute of Health and Welfare
Canberra

Cat. no. IHW 263

**The AIHW is an independent statutory Australian Government agency producing authoritative and accessible information and statistics to inform and support better policy and service delivery decisions, leading to better health and wellbeing for all Australians.**



ISBN 978-1-76054-925-1 (Online)

ISBN 978-1-76054-926-8 (Print)

DOI: 10.25816/gf3c-y791

**Suggested citation**

Australian Institute of Health and Welfare 2021. Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: sixth national report 2021. Cat. no. IHW 263. Canberra: AIHW.



Any enquiries about or comments on this publication should be directed to:
Australian Institute of Health and Welfare
GPO Box 570
Canberra ACT 2601
Tel: (02) 6244 1000
Email: info@aihw.gov.au

Published by the Australian Institute of Health and Welfare.

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

# Contents

# Summary

The Better Cardiac Care for Aboriginal and Torres Strait Islander People project is an initiative of the former 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 comprising 21 measures were developed to monitor the progress of the project. In this sixth national report, 14 measures in the earlier reports are updated. Measure 1.3 could not be updated as newer data are not available to report. Measure 5.4 has not been reported since the 2018–19 report due to issues with data quality. Data for the remaining 5 measures are under development and 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.
- The mortality rate from cardiac conditions is falling.

But challenges remain 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 mortality rate from cardiovascular disease is falling, but is still higher than 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

**31%** in 2019–20

↑

**3%** in 2004–05

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

In 2019–20, Indigenous Australians with suspected or confirmed cardiac disease were less likely to be reviewed by a specialist than non-Indigenous Australians (**53%** 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)

**74%** in 2018–19

↑

**28%** in 2006–07

In 2018–19, Indigenous Australians were about **10% less likely** than non-Indigenous Australians to receive PCI

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

Proportion who made MBS claims for a follow-up service within 12 months after a cardiovascular therapeutic procedure that occurred in 2018–19 was about **30% higher** for Indigenous Australians than non-Indigenous Australians aged 65 and over (**77%** and **58%** respectively)

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


In 2019, about **4,100** Indigenous Australians were prescribed benzathine benzylpenicillin G every 21 or 28 days, of whom **37%** received 80% or more of their required doses

### **Summary measures:** Hospitalisation and mortality

Mortality rate due to cardiac conditions for Indigenous Australians **fell by 28%**

**205 per 100,000** population in 2006

↓

**148 per 100,000** population in 2019

In 2019, the mortality rate for Indigenous Australians was **1.6 times** the rate of non-Indigenous Australians

*Note:* All rates shown are age-standardised, except for those 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, 2019–20 | 29% of Indigenous Australians received an MBS-subsidised health assessment. | ↑ |
| 2 | 1.2 CVD risk assessment, June 2020 | 34% 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, were current smokers and saw a doctor or health professional or specialist in the previous 12 months discussed quitting smoking. | n.a. |
| 4 | 2.1 Cardiac-related diagnostic services, 2019–20 | 63,672 Indigenous Australians received one or more relevant cardiac-related diagnostic services (a rate of 7%). | ↑ |
| 5 | 2.3 Suspected or confirmed cardiac disease case reviewed by a specialist, 2019–20 | 100,990 Indigenous Australians had suspected/confirmed cases of cardiac disease, of which 59% were reviewed by a specialist. | n.a. |
| 6 | 3.1 STEMI events treated by PCI, 2016–19 | 1,092 hospitalised events for STEMI were among Indigenous Australians, with 72% of those treated by PCI. | ↑ |
| 7 | 3.3 ACS events that included diagnostic angiography or definitive revascularisation, 2016–19 | 5,881 hospitalised events for ACS among people aged 18 and over were for Indigenous Australians (5% of all events), of which 58% included at least one diagnostic angiography or definitive revascularisation procedure. | ↑ |
| 8 | 3.5 AMI in-hospital mortality rates, 2016–19 | 3% of hospitalisations for AMI among Indigenous Australians aged 35 and over ended with death (126 deaths). | ↓ |
| 9 | 4.2 Follow-up after receiving a cardiovascular therapeutic procedure in 2018–19 | 1,199 Indigenous Australians made an MBS claim for a cardiovascular therapeutic procedure, of which 68% received a follow-up service within 12 months. | n.a. |
| 10 | 4.3 Specialist physician review after a cardiovascular therapeutic procedure in 2018–19 | 1,199 Indigenous Australians made an MBS claim for a cardiovascular therapeutic procedure, of which 89% were reviewed by a specialist physician within 12 months. | n.a. |
| 11 | 5.1.1 Incidence of ARF, 2019 | 463 episodes of ARF were reported among Indigenous Australians (a rate of 102 per 100,000 population). | ↑ |
| | 5.1.2 New diagnoses of RHD, 2019 | 284 new RHD diagnoses were reported among Indigenous Australians (a rate of 63 per 100,000 population). | ↑ |
| 12 | 5.2 Recurrent ARF, 2019 | The proportion of recurrent ARF episodes was 30% for Indigenous Australians. | ↑ |
| 13 | 5.3 Treatment with BPG doses, 2019 | 4,109 Indigenous Australians were prescribed BPG every 21 or 28 days. In 2019, 34% of these received less than 50% of required doses and 19% completed all required doses. | n.a. |
| 14 | 6.1 Hospitalisations for cardiac conditions, 2016–19 | 34,970 Indigenous Australians were hospitalised for cardiac conditions (a rate of 14 per 1,000 population). | ↑ |
| 15 | 6.2.1 Deaths due to cardiac conditions, 2017–19 | 1,702 Indigenous Australians died from cardiac conditions (a rate of 77 per 100,000 population). | ↓ |
| | 6.2.2 In-hospital deaths for cardiac-related hospitalisations, 2016–19 | 667 Indigenous Australians who were admitted to hospital for cardiac conditions died in hospital (a rate of 27 per 100,000 population). | ↓ |

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

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

(b) Change over time data refer to: 2004–05 to 2018–19 for measures 1.1 and 2.1; June 2017 to June 2020 for Measure 1.2; 2006–07 to 2018–19 for measures 3.1, 3.3 and 6.1; 2006–09 to 2016–19 for measures 3.5 and 6.2.2; 2015 to 2019 for measures 5.1.1. 5.1.2 and 5.2; and 2006 to 2019 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. The many reasons for this included 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 was developed at the Better Cardiac Care for Aboriginal and Torres Strait Islander People Forum held in March 2014 (BCCF 2014).

Representatives from 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. These:

- 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 (Brown et al. 2015)
- 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 5 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 priority areas and associated actions (AIHW 2015a, 2016, 2018a, 2019, 2021a). Table 1.1 summarises the data available for the 21 measures. Shaded in green are the 2 fully reported measures. Shaded in blue are the 14 partially reported measures that have been either modified to suit the data available or use proxy measures to enable reporting, or because data could not be reported nationally. Shaded in orange are the 5 measures not yet reported.

Based on data availability, the previous 5 annual reports covered 15 measures. This report, the sixth in the series, updates results for the 14 previously reported measures. Updated data are not available for Measure 1.3 on primary care practitioner follow up. Results shown are therefore the same as in the 2020 report from the ABS 2018–19 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS). 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 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 data sources used. Appendix B provides technical specifications for reported measures, including information on relevant classification codes (tables B1–B4). Appendix C provides summary data about the numerator, denominator and rates for each measure 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 (ABS 2019). Rates calculated for BCC reports before the 2020 report were based on the 2011 ABS Census data and, therefore, data for previous periods may differ from 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 one year. With 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 the 1 July start date falls is written in full and the year in which the 30 June end date occurs is shown in abbreviated form. For example, 2017–18 covers one financial year and 2015–18 covers 3 financial years (2015–16 to 2017–18).

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. Time trend data shown for measures based on hospital and mortality data differ from previous BCC reports to include data from 2006 only because of concerns of backcasting of denominators over a long time in the context of changing Indigenous identification over time. 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: Better Cardiac Care 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 or confirmed cardiac disease reviewed by a cardiologist in the previous 12 months | MBS | Partially available annually |
| Priority area 3: Guideline-based therapy for ACS | | |
| 3.1 Number and proportion of people with STEMI: (i) treated by primary PCI; (ii) treated with fibrinolysis | NHMD | Partially available annually |
| 3.2 Proportion of people with STEMI not provided any reperfusion therapy | | Not available |
| 3.3 Proportion of people with ACS 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 ACS 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 AMI | 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 RHD | | |
| 5.1 Annual incidence of all ARF episodes | National RHD data collection | Partially available annually |
| 5.2 Proportion of all recurrent ARF episodes | National RHD data collection | Partially available annually |

*(continued)*

**Table 1.1 (continued): Better Cardiac Care 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 BPG doses given to patients with confirmed ARF or RHD in the previous 12 months | National RHD data collection | Partially available annually |
| 5.4 Proportion of people with moderate or severe RHD who received an echocardiogram in the previous 12 months | National RHD data collection | Partially reported previously or 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.

ACS = acute coronary syndrome; AMI = acute myocardial infarction; BPG = benzathine benzylpenicillin G; CHD = coronary heart disease; 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; STEMI = ST-segment-elevation myocardial infarction.

*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 convened in Canberra on 19 August 2019 at the AIHW sought advice from internal and external experts on the draft plan. Workshop participants included specialist clinicians, researchers and policy and public administrators. Cultural Fusion designed and facilitated the workshop. Based on its workshop report, the draft plan was updated with recommendations on how to improve measures fully or partially reported and to progress measures not yet been reported. A summary table of agreed measures, data sources, current reported status, issues and proposed options for consideration, time frame of proposed options and workshop outcomes by priority area is in Appendix D of the fifth national 2020 BCC report.

Future reports are expected to incorporate major revisions based on workshop recommendations. 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 yet to be fully reported, are underway. Investigation of the NIHSI AA on measures that required data linkage between the MBS and hospital data explored differences among Indigenous and non-Indigenous Australians in ongoing preventive care use (based on relevant MBS items) for patients discharged from hospital with a cardiac condition. Preliminary analyses results showed that NIHSI AA would be a suitable data source and that differences by age, sex, jurisdiction, remoteness area, cardiac condition type, and over time could be presented for Indigenous and non-Indigenous Australians.

# 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
- improve 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
- lifestyle modification advice appropriate to their cardiovascular risk level, as per current guidelines (NACCHO & RACGP 2018).

The 3 measures recommended for this priority area are:

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

Updated data are available from the:

- 2019–20 Medicare Benefits Schedule (MBS) weighted Voluntary Indigenous Identifier database for Measure 1.1 on health assessments
- AIHW June 2020 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

Updated data are not available for Measure 1.3 on primary care practitioner follow up. Results shown are therefore the same as in the 2020 report from the ABS 2018–19 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS).

## 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.

All Indigenous Australians are eligible for an annual Indigenous-specific health assessment, listed as Item 715 or Item 228 on the MBS. Also included in this measure are the temporary telehealth health checks provided under Indigenous-specific MBS items 92004, 92016, 92011 and 92023, introduced in March 2020 as part of the Australian Government's COVID-19 response. 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, 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). These are referred to as 'general' health assessments in this report. Indigenous Australians who received a general health assessment are also included in this measure.

New to this measure is the inclusion of MBS heart health check items 699 and 177, introduced from 1 April 2019. These allow general practitioners (GPs) and other medical pracititioners to conduct comprehensive heart health assessments. They include assessment of CVD risk, identification of physical and or lifestyle-related risks, and implementation of a preventive health-care plan to improve cardiovascular health.

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 GP services are not included.

### 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.

### Results

#### Overall

- In 2019–20, nearly one-third of Indigenous Australians – a crude rate of 29%, or 246,367 people – received a health assessment, 97% of which were Indigenous-specific MBS items.

#### Time trend

- Between 2004–05 and 2019–20, the age-standardised proportion of Indigenous Australians who had a health assessment rose from 3% to 31%. The proportion rose from 3% to 34% for females, and 3% to 29% for males (Figure 1.1a).
- From 2009–10, a marked increase in those who had a health assessment occurred, coinciding with the introduction of the Australian Government's Indigenous Chronic Disease Package.
- From 2018–19 to 2019–20, due to the impacts of the COVID-19 pandemic (AIHW 2020a), the overall age-standardised proportion of those who had a health assessment fell by 1 percentage point, from 32% to 31%, ending the trend of increasing numbers of health checks over the previous years (AIHW 2021b).

### Age and sex

In 2019–20:

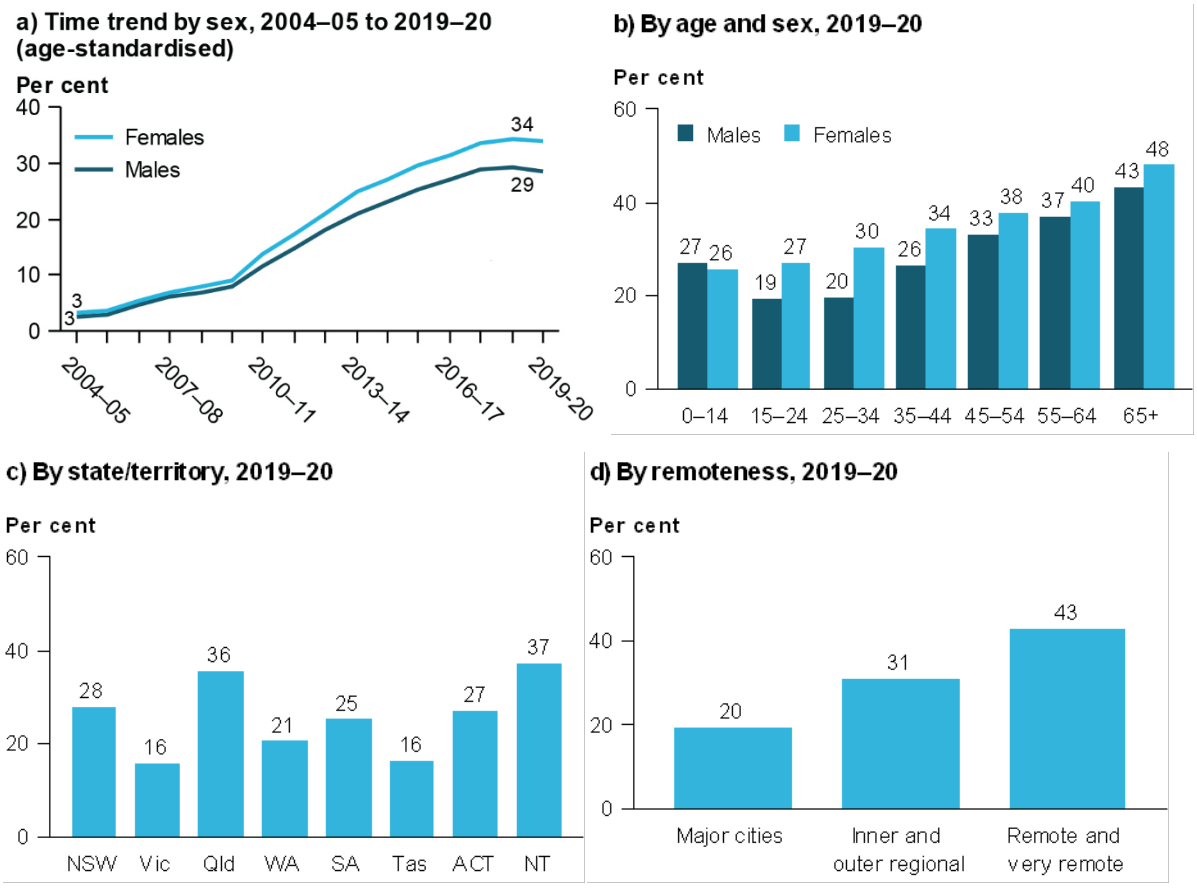
- more than one-quarter (27%) of Indigenous children aged under 15 had a health assessment. Among Indigenous Australians aged 15 and over, the proportion ranged from 23% among those aged 15–24 to 46% among those aged 65 and over
- a higher proportion of Indigenous females than males had a health assessment among those aged 15 and over (Figure 1.1b).

### State and territory and remoteness area

In 2019–20, the proportion of Indigenous Australians who had a health assessment was:

- highest in the Northern Territory (37%), and lowest in Victoria and Tasmania (16%) (Figure 1.1c)
- highest in *Remote and very remote* areas combined (43%), 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**




*Notes*

1. Rates in Figure 1.1a are age standardised. All other figures show crude rates.
2. Data for these figures are available in online supplementary tables 1.1a to 1.1d.
3. Indigenous-specific health assessment items 715 and 228 are combined with other 'general' health assessments items and heart health assessment items 699 and 177 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 the period of processing. As such, results for MBS items 715 and 228 are not directly comparable with MBS items 715 and 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 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 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 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 CVD who had an absolute CVD risk assessment recorded within the 24 months up to the Census date as high (greater than 15% chance of a cardiovascular event in the next 5 years), moderate (10% to 15% chance), low (less than 10% chance).

This indicator was collected for the first time in June 2017. Now, 7 data points – June 2017, December 2017, June 2018, December 2018, June 2019, December 2019, June 2020 – are available to report. Data for previous periods may differ from published results as data in this report have been revised to exclude services using Clinical Information Systems that do not capture all 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 2021). Footnotes to Figure 1.2 and Appendix A provide more information on the nKPI data collection.

In 2018, the AIHW undertook a comprehensive review of the nKPI data collection. Enhancements being considered for this CVD risk assessment indicator are to expand the age range to cover ages 30–74 so the indicator would be more in line with recommended practices and redress the fact that younger adults are missed in the current indicator (AIHW 2020c).

### Why is this important?

Largely preventable, CVD is a leading cause of death among Indigenous Australians (AIHW 2020d). 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 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 risk assessment should account for multiple risk factors together, not separately (AIHW 2018b).

### Results

#### Overall

- As at June 2020, Indigenous regular clients aged 35–74 with a CVD risk assessment result recorded in the previous 24 months were classified as high risk (34%), moderate risk (6%) or low risk (60%) (Figure 1.2a).
- Between June 2017 and June 2020, the proportion of high-risk clients fell by 2 percentage points from 36% to 34% (Figure 1.2a).

#### Age and sex

In June 2020:

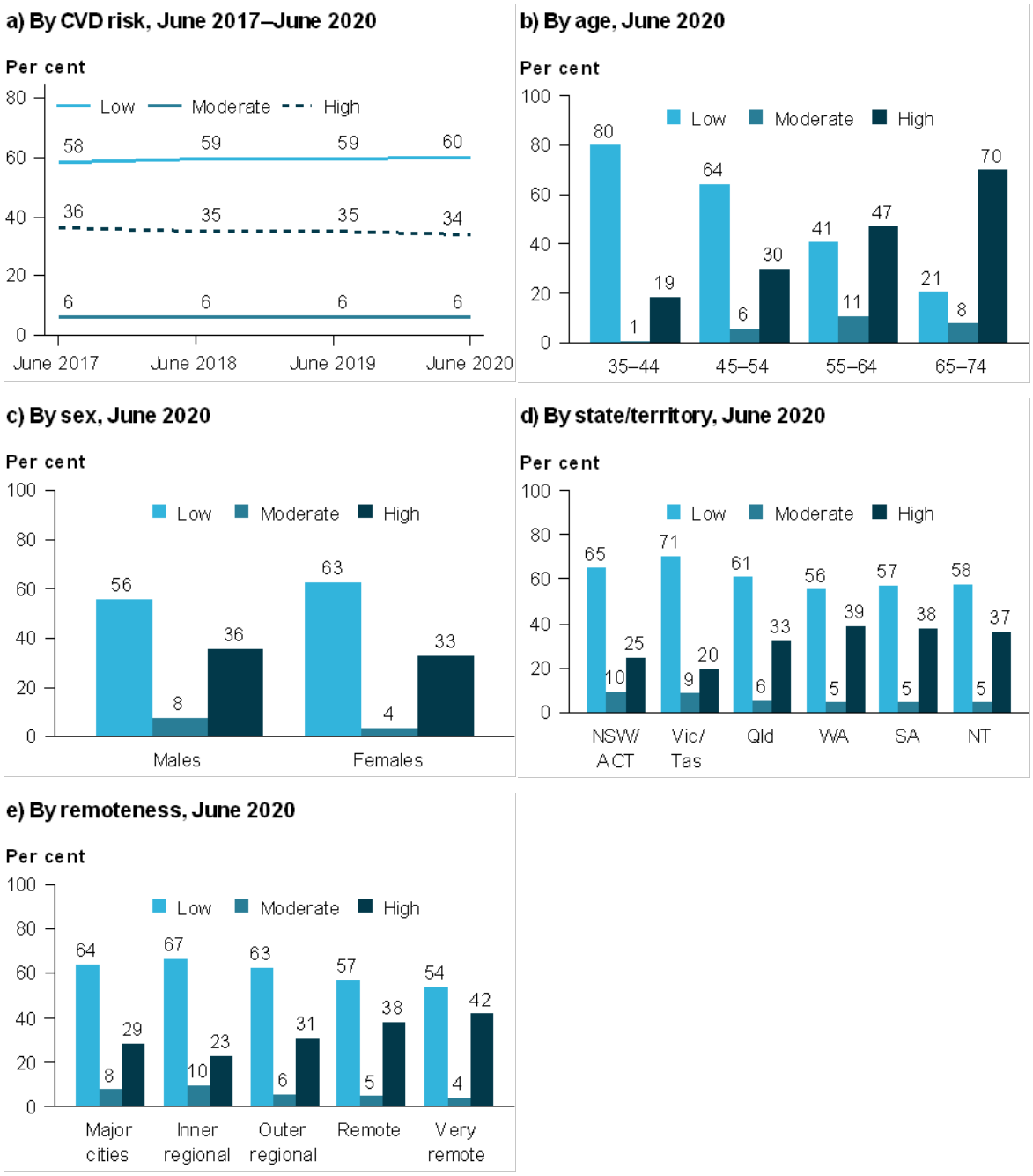
- 19% of Indigenous regular clients aged 35–44 with a CVD risk assessment result recorded in the previous 24 months were classified as high risk. The proportion was higher (70%) for those aged 65–74 (Figure 1.2b).
- The proportion of low-risk clients was higher for Indigenous women (63%) than Indigenous men (56%). 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 (36%) than women (33%) were classified as being at high risk (Figure 1.2c).

#### State and territory and remoteness area

In June 2020, the proportion of high-risk clients:

- was highest for Indigenous clients in Western Australia (39%) and lowest in Victoria and Tasmania combined (20%) (Figure 1.2d)
- rose with increasing remoteness from 29% in *Major cities* to 42% in *Very remote* areas (Figure 1.2e).

**Figure 1.2: Indigenous clients aged 35–74 who had a CVD risk assessment result recorded in the previous 24 months, by cardiovascular diseases risk level and various characteristics**




*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 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 published data.
3. Data for these figures are available in online supplementary tables 1.2a to 1.2e and in supplementary data tables – Preventative health indicators (S2.103, S2.104, S2.106) of the Indigenous primary heath care: results from the nKPI and OSR collections.

*Source:* AIHW nKPI data collection.

## Measure 1.3: Primary care practitioner follow-up

This measure uses data from the ABS 2018–19 NATSIHS. As newer data are not available to update this measure, results are the same as in the 2020 report. 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 or 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 were updated for the first time in the 2020 report. The first annual report used the 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 one or more of: 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 weekly, or less than weekly).

### Results: Blood pressure check

#### Overall

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

#### Age and sex

In 2018–19:

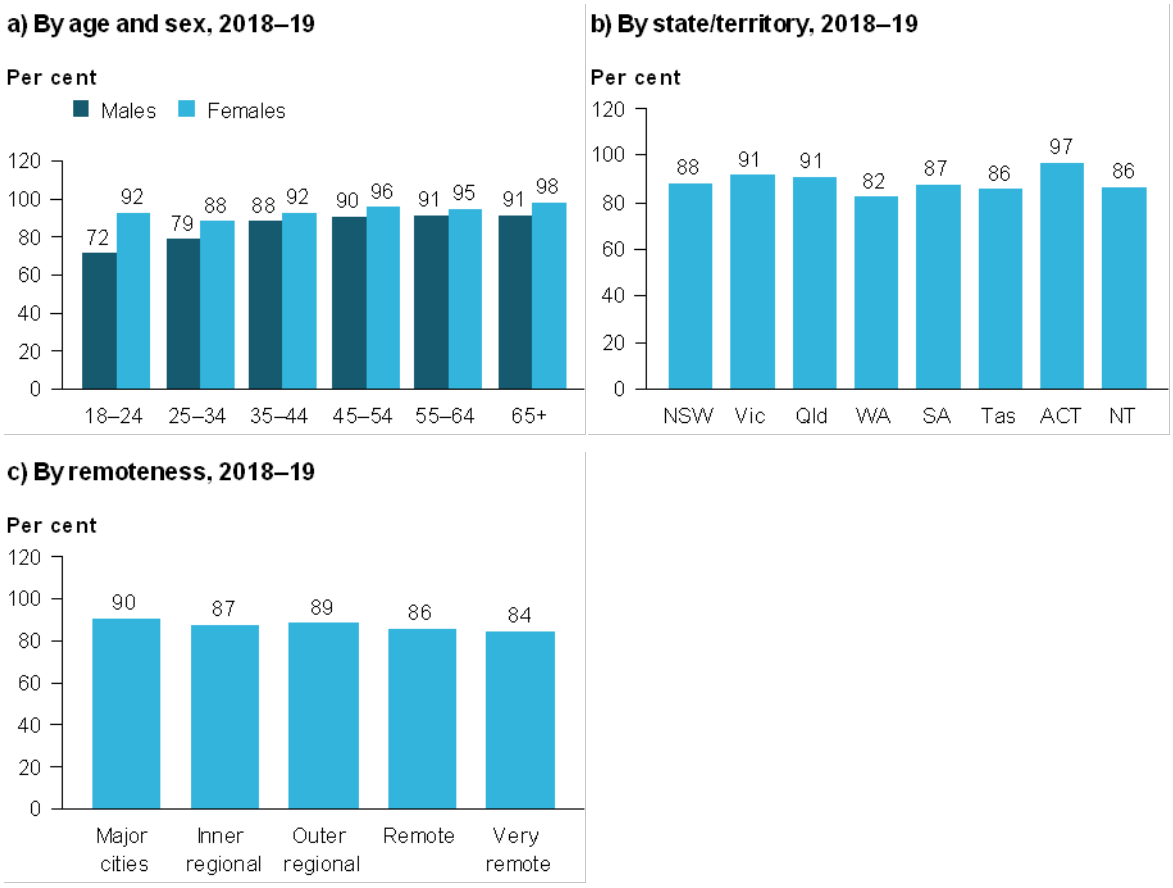
- the proportion of Indigenous Australians at high risk of cardiac disease who had their blood pressure checked in the previous 2 years increased with age from 81% for those aged 18–24 to 95% for those aged 65 and over
- a higher proportion of Indigenous women than men at high risk of cardiac disease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

#### State and 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)
- *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**




*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; other diseases of circulatory system; symptoms and signs involving the circulatory system.
3. Comprises people who reported having one or more of: 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; 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 or health professional or specialist in the previous 12 months discussed quitting smoking.

### Age and sex

In 2018–19:

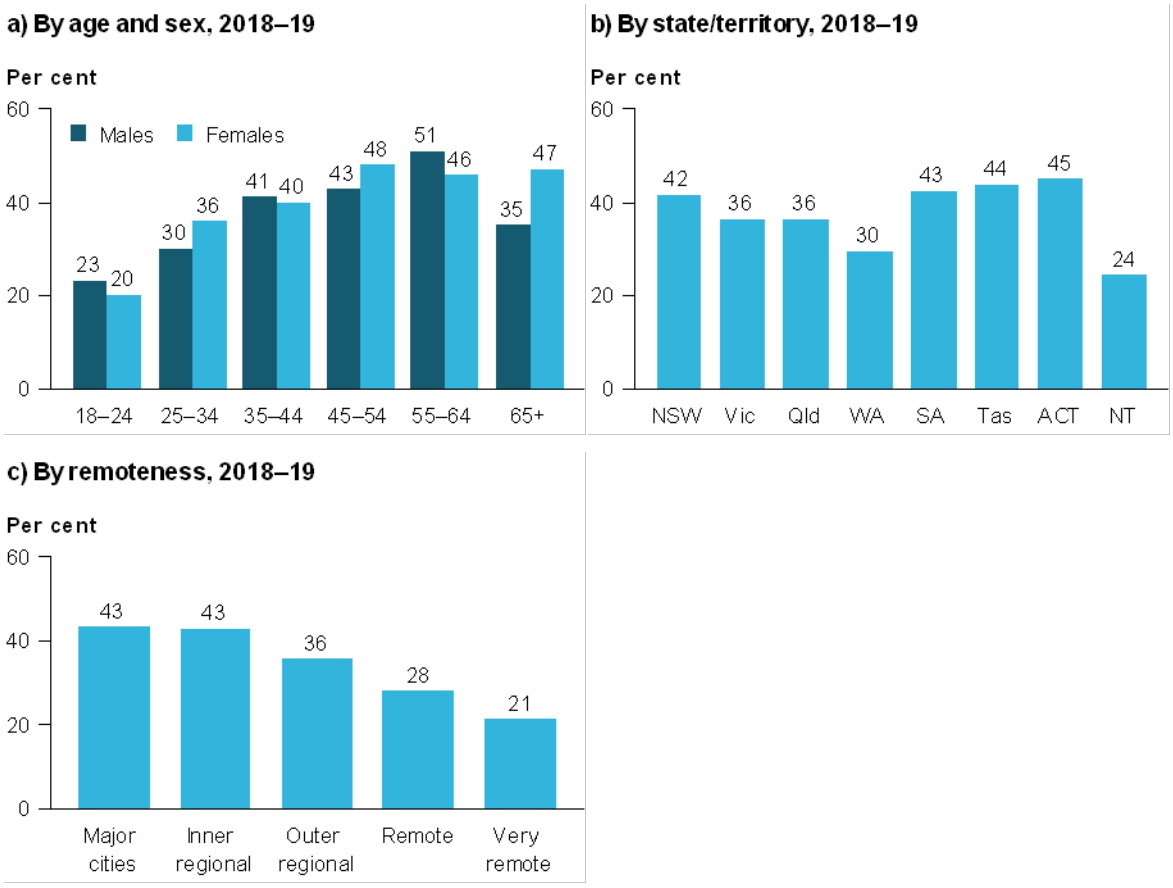
- the proportion of Indigenous Australians at high risk of cardiac disease who discussed quitting smoking with their doctor or health professional or specialist in the previous 12 months increased with age from 21% for those aged 18–24 to 48% for those aged 55–64, decreasing to 41% for those aged 65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

### State and 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 or health professional or specialist in the previous 12 months (24%) (Figure 1.3.2b)
- proportion of Indigenous Australians at high risk of cardiac disease who discussed quitting smoking with their doctor or 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 current smokers who saw a doctor or health professional or specialist in the previous 12 months and discussed quitting smoking**




*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; other diseases of circulatory system; symptoms and signs involving the circulatory system.
3. Comprises people who reported having one or more of: 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; current smoker (includes daily, at least once a week or current smoker less than weekly).

*Source:* AIHW analysis of ABS 2018–19 NATSIHS.

[This page is intentionally left blank]

# 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 2019–20 MBS weighted Voluntary Indigenous Identifier database for:

- Measure 2.1 on cardiac-related diagnostic services
- Measure 2.3 on specialist review of suspected or 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 one or more relevant cardiac-related diagnostic services in the previous 12 months.Table B2 lists relevant MBS item numbers included. Additional MBS items in Measure 2.1 – first reported on in the third national report – are also included. This means that results are not comparable with those in 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 more accurately capture the status of cardiac-related diagnoses.

### 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 2019–20:

- 63,672 Indigenous Australians (age-standardised proportion of 10%) received one or more relevant cardiac-related diagnostic service, compared with 2,630,152 (age-standardised proportion of 9%) non-Indigenous Australians
- 56,322 Indigenous Australians (age-standardised proportion of 9%) claimed for diagnostic procedures and investigations and 22,663 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 one category.

#### Time trend

- Between 2004–05 and 2019–20, the age-standardised proportion of those with MBS claims for cardiac-related diagnostic items rose from 7% to 10% for Indigenous Australians and from 7% to 9% for non-Indigenous Australians (Figure 2.1b).

#### Age and sex

In 2019–20, the proportion of Indigenous Australians who had MBS claims for cardiac-related diagnostic items:

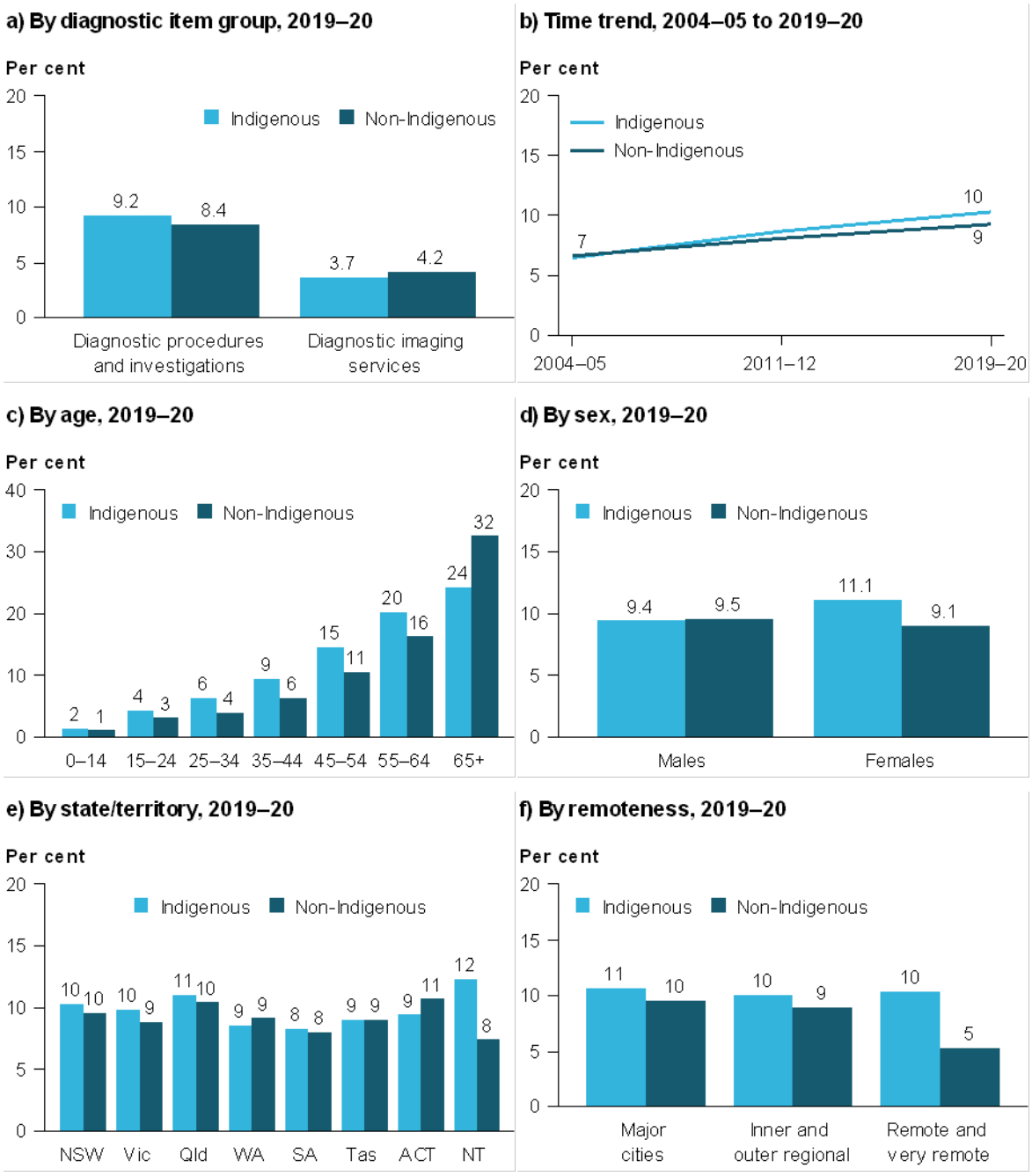
- increased with age, from 2% among those aged 0–14 to 24% among those aged 65 and over. It was higher than that for non-Indigenous Australians in all age groups, except for those aged 65 and over, where proportions were higher for non-Indigenous Australians (Figure 2.1c)
- was similar for Indigenous 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 and territory and remoteness area

In 2019–20, 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 10% to 11% across all remoteness areas among Indigenous Australians (figures 2.1e and 2.1f)
- were about 1.5 to 2 times higher among Indigenous Australians living in the Northern Territory and *Remote and very remote* areas combined than among non-Indigenous Australians (figures 2.1e and 2.1f).

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




*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 2.1a–2.1f.
3 The MBS data reflect billing practices and not necessarily services provided. For example, MBS data do not generally capture equivalent services provided by jurisdictional-funded primary health care or public hospitals.
4. Numbers and rates have been adjusted for under-identification in the Medicare 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. Since the fourth annual report, this measure reports reviews by any specialist, not just a cardiologist, as the case in the third annual report. This is because 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, including relevant telehealth items introduced since March 2020 as part of the Australian Government's COVID-19 response.

### 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

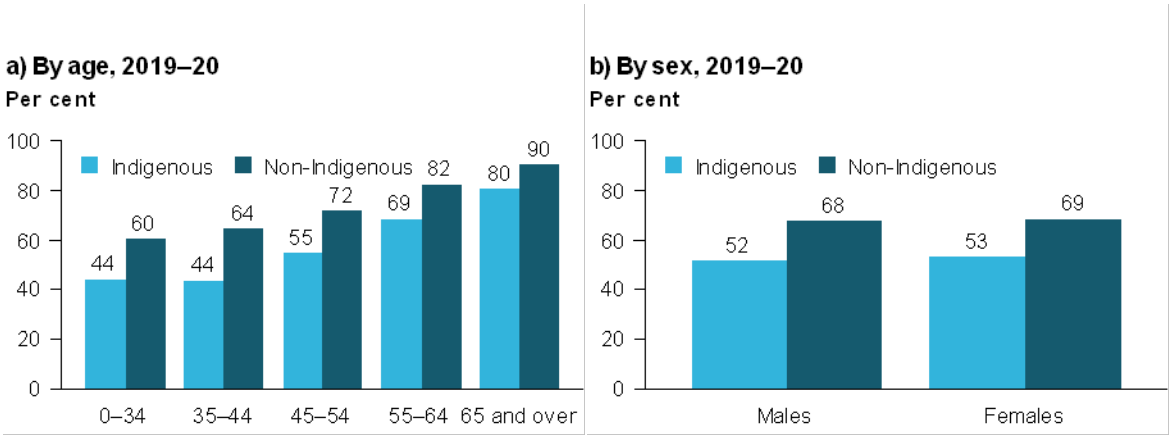
- In 2019–20, 100,990 Indigenous Australians and 5,226,117 non-Indigenous Australians had suspected or confirmed cases of cardiac disease, of which 53% and 68% (age-standardised proportions) respectively were reviewed by a specialist.

#### Age and sex

In 2019–20, the proportion of Australians reviewed by a specialist:

- increased with age, for Indigenous Australians, from 44% in those aged 0–34 to 80% in those aged 65 and over, and non-Indigenous Australians, 60% to 90% equivalently (Figure 2.3a)
- was similar for Indigenous and non-Indigenous males and females (Figure 2.3b).

**Figure 2.3: Age-specific and age-standardised proportion of people with suspected or 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 online supplementary tables 2.3a–2.3b.
3. The MBS data reflect billing practices and not necessarily 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 Voluntary Indigenous Identifier database.

*Source:* AIHW analysis of Medicare data.

[This page is intentionally left blank]

# 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 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 one year, both would be counted. Likewise, if a person had 2 ACS events in a year but 3 separations due to a transfer to another hospital, only 2 separations would be counted. Appendix A has more 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 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 discharged 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 2018–19 NHMD for:

- Measure 3.1 on STEMI events treated by PCI
- Measure 3.3 on ACS events that included diagnostic angiography or revascularisation
- 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 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 a PCI is not available within recommended time frames, a medicine that dissolves blood clots (fibrinolysis) should be offered (ACSQHC 2019).

A major factor in choosing PCI as treatment over fibrinolysis is timing. This includes 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 2016–17 to 2018–19 combined:

- 1,092 hospitalised events were for STEMI among Indigenous adults (4% of all hospitalised STEMI events), with 72% (crude rate) of those treated by PCI
- based on age-standardised proportions, 71% of hospitalised STEMI events among Indigenous adults were treated by PCI, compared with 81% for non-Indigenous adults (rate ratio of 0.9) (Figure 3.1a).

#### Time trend

- Between 2006–07 and 2018–19, in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined, the age-standardised proportion of hospitalised STEMI events treated by PCI among Indigenous adults rose from 28% to 74%, and from 62% to 81% among non-Indigenous adults (Figure 3.1b).

#### Age and sex

In 2016–17 to 2018–19 combined, the treatment of hospitalised STEMI events by PCI was:

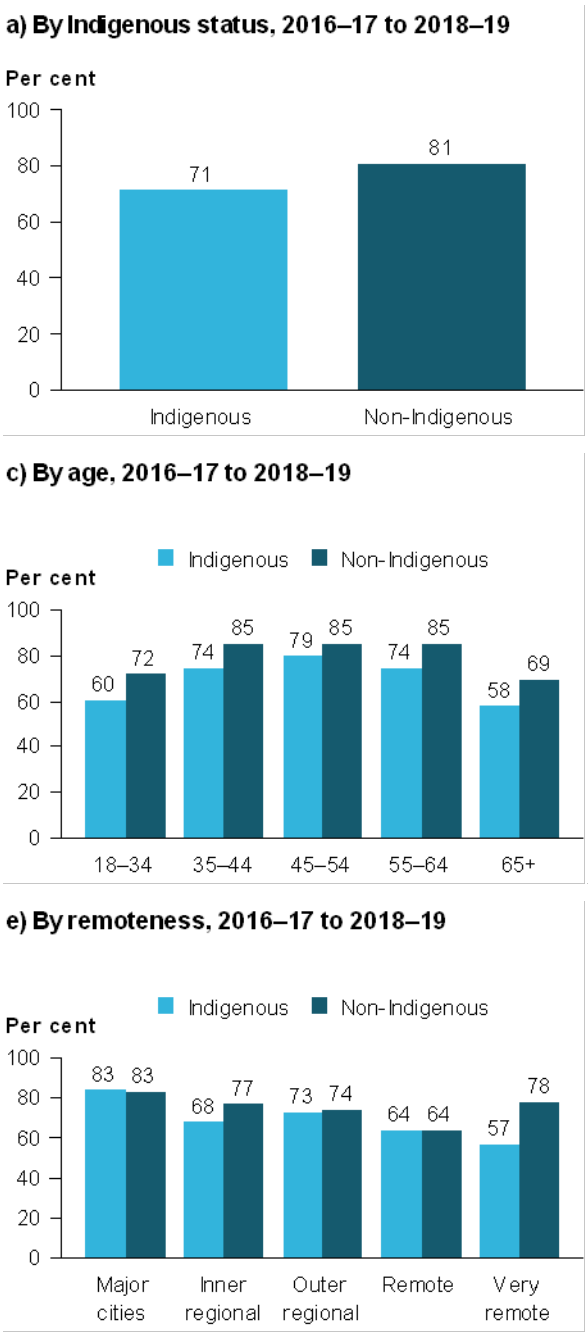
- lower for Indigenous adults than non-Indigenous adults across all age groups (Figure 3.1c)
- lowest for those aged 65 and over, regardless of Indigenous status (Figure 3.1c)
- higher for men compared with women among Indigenous and non-Indigenous Australians (Figure 3.1d).

#### Remoteness area

In 2016–17 to 2018–19 combined, the age-standardised proportion of hospitalised STEMI events treated by PCI:

- fell with increasing remoteness from 83% in *Major cities* to 57% 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 percutaneous coronary intervention, by Indigenous status and various characteristics**




*Notes*

1. The time series analysis 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 online supplementary 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 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 a higher burden of comorbid conditions for Indigenous Australians (Randall et al. 2013).

### Results

#### Overall

In 2016–17 to 2018–19 combined:

- 5,881 hospitalised events for ACS among people aged 18 and over were for Indigenous Australians (5% of all ACS events), of which 56% (crude rate) included diagnostic angiography (32% PCI; 4% CABG) and 58% at least one 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 61%, compared with 70% for non-Indigenous adults (rate ratio of 0.9) (Figure 3.3a).

#### Time trend

- Between 2006–07 and 2018–19, in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined, the age-standardised proportion of hospitalisations for ACS events among Indigenous adults that included a diagnostic angiography or definitive revascularisation procedure rose from 35% to 66%, compared with a rise from 50% to 71% among non-Indigenous adults (Figure 3.3b).

#### Age and sex

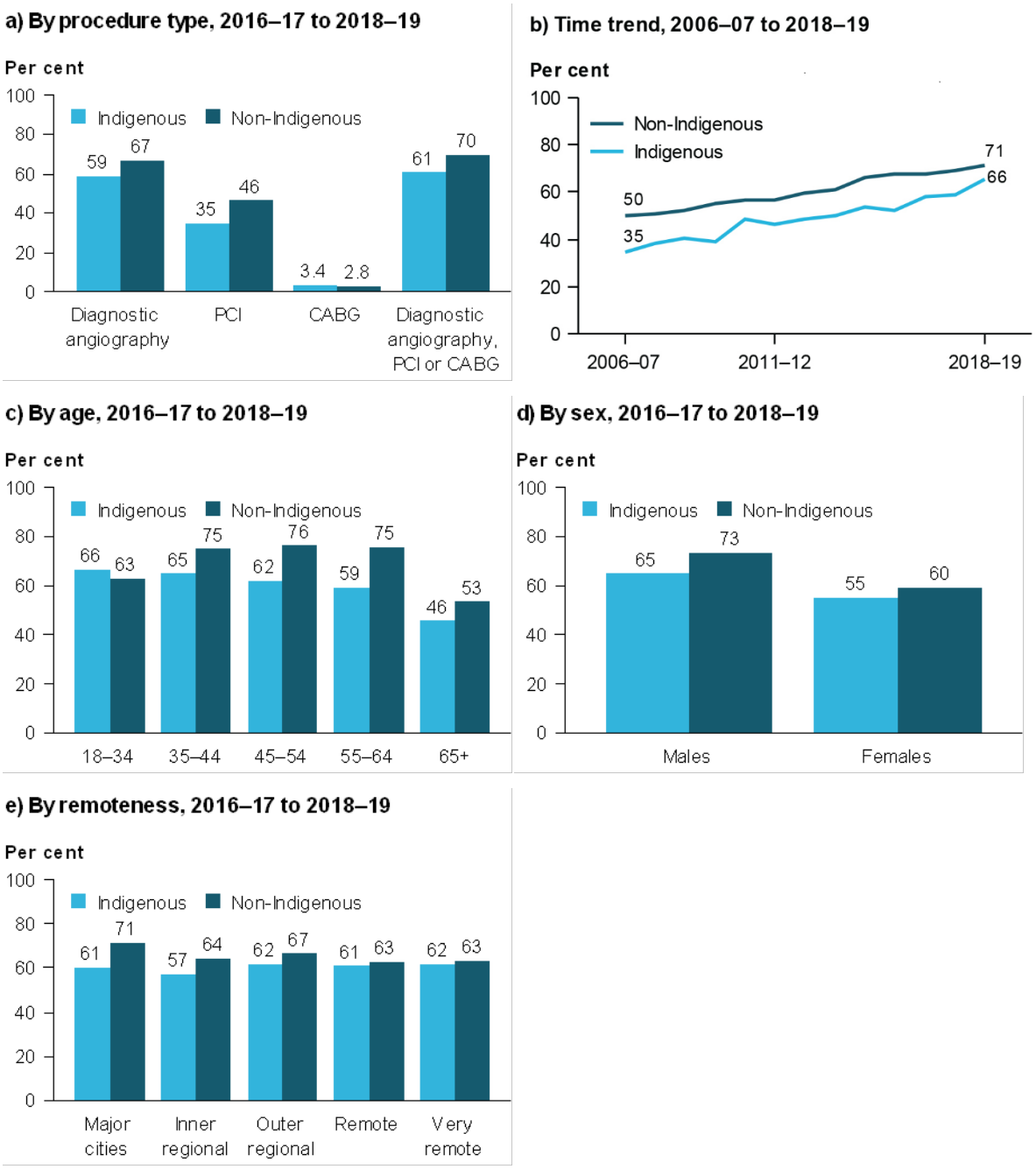
In 2016–17 to 2018–19 combined:

- except for in the 18–34 age group, 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 other age groups (Figure 3.3c)
- men had higher rates of diagnostic angiography or definitive revascularisation procedures compared with women among Indigenous and non-Indigenous adults (Figure 3.3d).

#### Remoteness area

- In 2016–17 to 2018–19 combined, the age-standardised proportions of hospitalised ACS events for Indigenous adults who received a diagnostic angiography or definitive revascularisation procedure were lower than that for non-Indigenous adults in all remoteness areas, although the gap between Indigenous and non-Indigenous adults narrows with increasing remoteness (Figure 3.3e).

**Figure 3.3: Age-standardised and age-specific proportion of hospitalised events among people aged 18 and over who had acute coronary syndrome and were treated by percutaneous coronary intervention and/or coronary artery bypass graft, by Indigenous status and various characteristics**




*Notes*

1. The time series analysis 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 online supplementary 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 the short and long term (Ong & Weeramanthri 2000; Tideman et al. 2014).

### Results

#### Overall

In 2016–17 to 2018–19 combined:

- about 3% (crude rate) of hospitalisations for AMI among Indigenous Australians aged 35 and over ended with death (126 deaths)
- the age-standardised in-hospital death rate was about 3% for Indigenous and non-Indigenous adults (Figure 3.5a).

#### Time trend

- Between 2007–10 and 2016–19, in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined, the age-standardised in-hospital death rate fell among Indigenous adults, from 4% to 3%, and non-Indigenous adults, from 5% to 2% (Figure 3.5b).

#### Age and sex

In 2016–17 to 2018–19 combined:

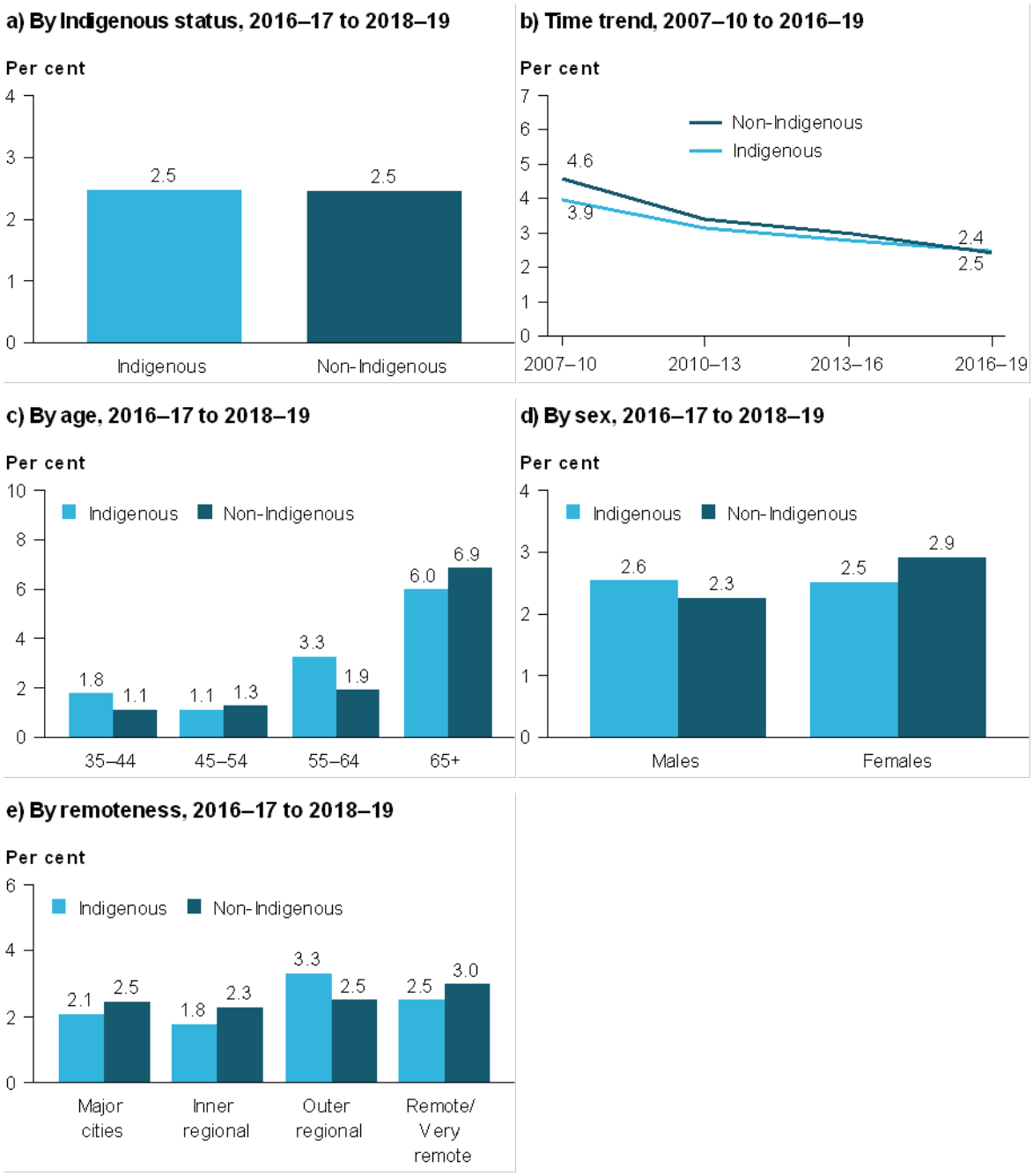
- Indigenous Australians aged 35–44 and 55–64 had slightly higher in-hospital death rates than non-Indigenous Australians of the same age. In-hospital death rates were similar for Indigenous and non-Indigenous Australians aged 45–54 and slightly higher for non-Indigenous Australians aged 65 and over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

#### Remoteness area

In 2016–17 to 2018–19 combined:

- the age-standardised in-hospital death rate among Indigenous adults was about 2% to 3% across all remoteness areas (ranging from 2% in *Major cities* and *Inner regional* areas to 3% in *Outer regional* areas and *Remote and very remote* areas combined). Rates among non-Indigenous adults were similar (Figure 3.5e).

**Figure 3.5: Age-standardised and age-specific rate of hospitalised events for acute myocardial infarction 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 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 online supplementary 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.

[This page is intentionally left blank]

# 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 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 2019–20 MBS data and weighted Voluntary Indigenous Identifier database for measures 4.2 and 4.3 to calculate follow-up services and/or specialist physician review within 12 months of a cardiovascular therapeutic procedure that occurred in 2018–19.

## 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 arrangements, GP management plans, allied health services items, and practice nurse services. Table B2 contains a full list of items including relevant telehealth items introduced since March 2020 as part of the Australian Government's COVID-19 response.

This measure could not be fully reported. To do so would require data linkage between the MBS and hospital data. A linked dataset, the National Integrated Health Services Information Analysis Asset (NIHSI AA), which includes hospital and MBS data, has been established but includes data for certain jurisdictions only. 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 includes a broad variety of multidisciplinary interventions and disease management, such as team care arrangements and GP management plans. It 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 2018–19:

- 1,199 Indigenous Australians and 119,177 non-Indigenous Australians made an MBS claim for a cardiovascular therapeutic procedure
- about 68% of Indigenous Australians and 52% of non-Indigenous Australians made an MBS claim for follow-up services within 12 months after a cardiovascular therapeutic procedure.

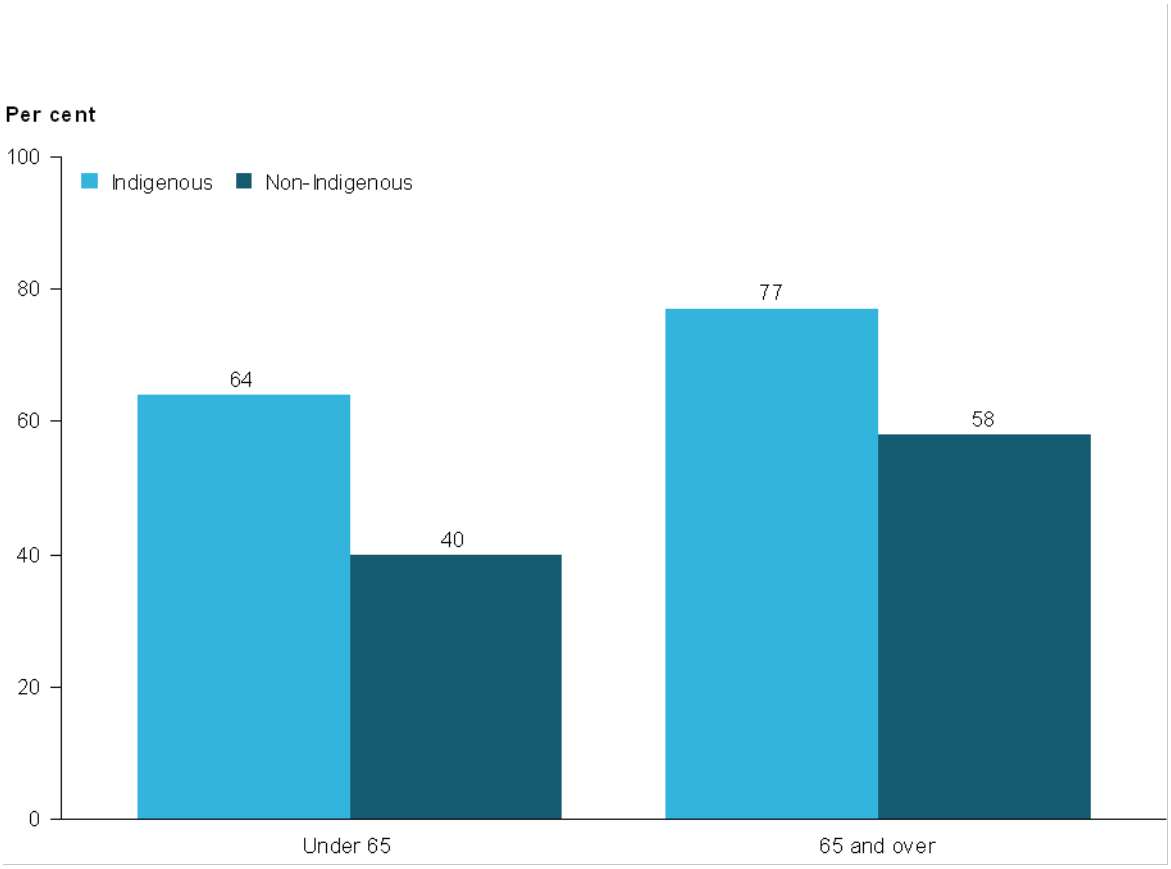
#### Age

In 2018–19:

- about 64% 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 Australians aged 65 and over, the proportions were 77% for Indigenous Australians and 58% 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 Medicare Benefits Schedule services within 12 months of a cardiovascular therapeutic procedure in 2018–19, by Indigenous status and age**




*Notes*

1. Rates in this figure are crude.
2. Data for this figure are available in online supplementary Table 4.2.
3. The MBS data reflect claiming practices, not necessarily services provided.
4. As some MBS items used to identify people with a cardiac condition are diagnostic, not all people with these items would have cardiac conditions (some 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 reviewed by a specialist physician within 12 months of a cardiovascular therapeutic procedure (as captured through MBS claims).

Table B2 contains a full list of items, including relevant telehealth items, introduced since March 2020 as part of the Australian Government's COVID-19 response.

This measure could not be fully reported. To do so would require data linkage between the MBS and hospital data. A linked dataset, the NIHSI AA, which includes hospital and MBS data, has been established but includes data for certain jurisdictions only. 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 2018–19:

- 1,199 Indigenous Australians and 119,177 non-Indigenous Australians made an MBS claim for a cardiovascular therapeutic procedure
- 89% of Indigenous Australians and 97% of non-Indigenous Australians made an MBS claim for specialist services within 12 months after a cardiovascular therapeutic procedure.

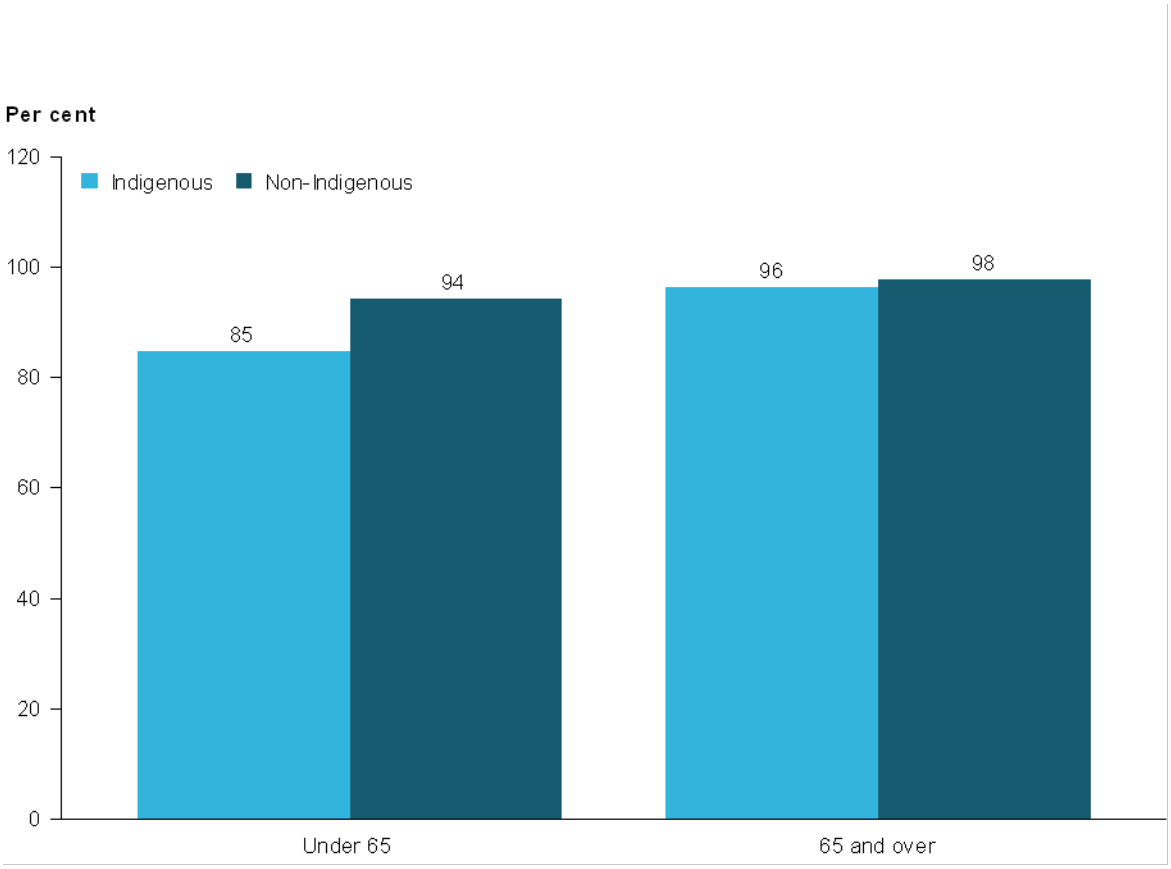
#### Age

In 2018–19:

- 85% of Indigenous Australians and 94% 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 Australians aged 65 and over, the proportions were 96% 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 2018–19, by Indigenous status and age**




*Notes*

1. Rates in this figure are crude.
2. Data for this figure are available in online supplementary Table 4.3.
3. The MBS data reflect claiming practices, and not necessarily services provided.
4. As some MBS items used to identify people with a cardiac condition are diagnostic, not all people with these items would have cardiac conditions (some 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.

[This page is intentionally left blank]

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

Priority area 5 measures are based on the premise that:

- new cases of ARF and RHD should be reported to a central register to help track patients and ensure ongoing care. In most states and territories with RHD control programs, reporting is a legal requirement
- recurrent ARF and worsening of RHD can be prevented through the delivery of regular instramuscular injections of penicillin, referred to as secondary prophylaxis
- all Aboriginal and Torres Strait Islander people suspected to have ARF or RHD should receive an echocardiogram as early as possible.

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 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. Data on echocardiograms performed on RHD cases (Measure 5.4) are therefore not provided in this report.

Previously, data for this section were separately supplied to the AIHW from individual state-based RHD registers. 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 2021d). Although data from the New South Wales RHD Register are also provided to the AIHW, these are not comparable with data from the other jurisdictions. Details of the National RHD data collection are 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 and/or RHD move between states and territories, and because of the long-term nature of the disease and followup, 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. Historical data in the national collection are also updated over time to incorporate new information included on jurisdictional registers.

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

## 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 disproportionately affect Indigenous Australians. These conditions are in large part a consequence of Indigenous disadvantage. ARF is the result of an autoimmune response to an untreated group A streptococcus (Strep A) bacterial infection (Parnaby & Carapetis 2010). ARF causes acute illness during which permanent damage to the heart valves can occur. This is known as RHD and it can result from one or multiple ARF episodes. Diagnosing ARF is difficult because it relies on clinical decisions and various diagnostic tools and tests. RHD is a chronic condition and diagnosis can sometimes occur years after the onset of valve damage. It 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 such as working toilets, showers and taps (Coffey et al. 2018; Jaine et al. 2011; Sims et al. 2016; Wyber & Carapetis 2015).

Several opportunities exist 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 acute rhematic fever in Queensland, Western Australia, South Australia and the Northern Territory combined

#### Overall

In 2019:

- 463 episodes of ARF were reported among Indigenous Australians, a rate of 102 per 100,000 population
- 13 ARF episodes were reported among non-Indigenous Australians, a rate of 0.1 per 100,000 population (Figure 5.1.1a).

#### Time trend

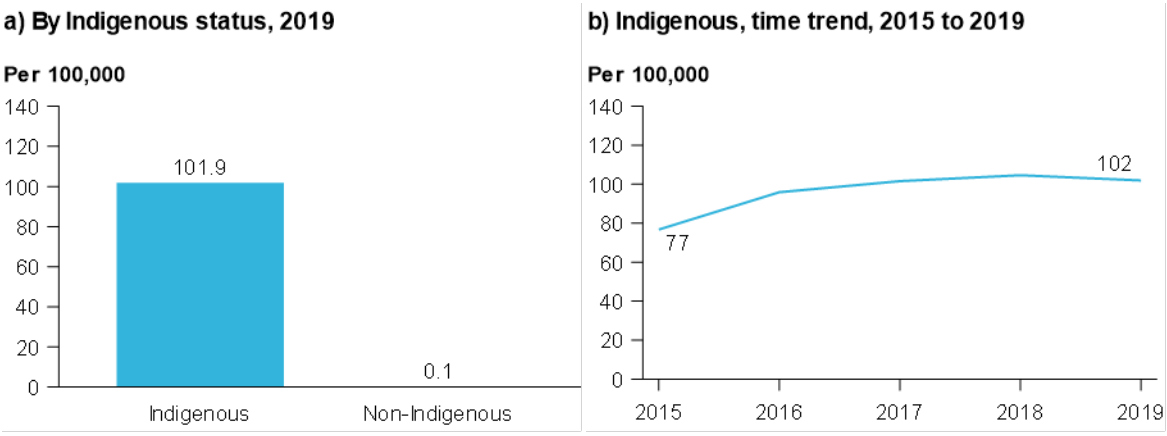
- Between 2015 and 2019, the incidence of ARF among Indigenous Australians rose from 77 to 102 per 100,000 population (Figure 5.1.1b). The reason for this rise is unclear, but it could be due to factors such as increased community and primary health-care awareness, and new legislation in some jurisdictions mandating notification of diagnoses that increased notification of people with ARF in recent years (see Table A4 in Appendix A).

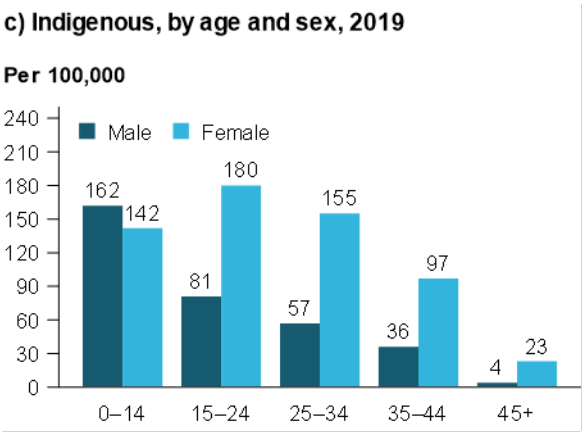
### Age and sex

In 2019 among Indigenous Australians, the incidence rate of ARF was:

- higher for females in all age groups except 0–14 years
- highest among females aged 15–24 (180 per 100,000 population) and subsequently declined with increasing age to 23 in those aged 45 and over
- highest among males aged 0–14 years (162 per 100,000 population) and then declined with increasing age to 4 in those aged 45 and over (Figure 5.1.1c).

**Figure 5.1.1: Incidence of acute rheumatic fever, by various characteristics**




*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 Indigenous and non-Indigenous populations.
3. Data for these figures are available in online supplementary tables 5.1.1a to 5.1.1c.
4. Incidence includes first-known ARF episodes, recurrent episodes and all confirmation statuses (definite, probable and possible).

*Source:* AIHW analysis of the National RHD data collection.

## Results: New diagnoses of rheumatic heart disease in Queensland, Western Australia, South Australia and the Northern Territory combined

### Overall

In 2019:

- 284 new RHD diagnoses were reported among Indigenous Australians, a rate of 62.5 per 100,000 population
- 114 new RHD diagnoses were reported among non-Indigenous Australians, a rate of 1.3 per 100,000 population (Figure 5.1.2a).

### Time trend

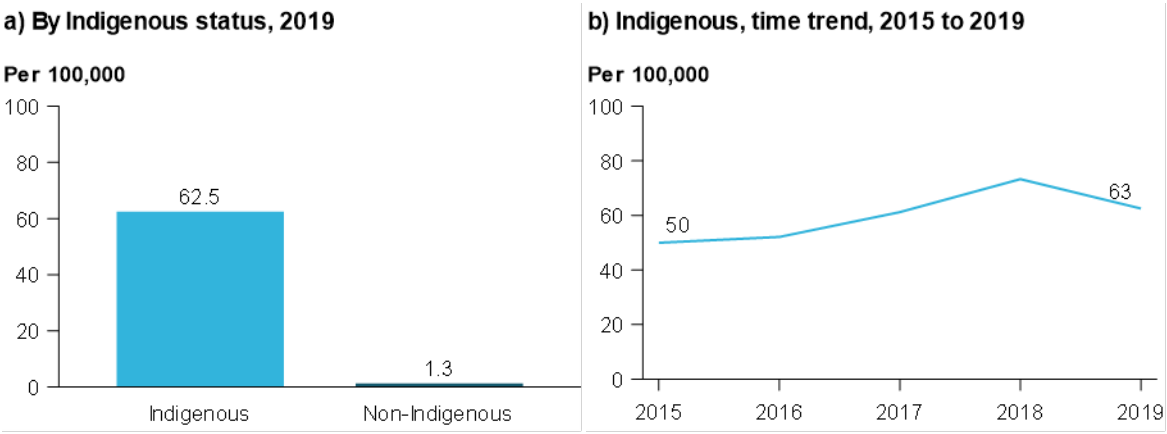
- Between 2015 and 2019, new diagnoses of RHD among Indigenous Australians rose from 50 to 63 per 100,000 population (Figure 5.1.2b). Like the rise in the incidence rate of ARF, the increase in new diagnoses of RHD could be due to better awareness and increased notification of people with RHD in recent years. In some jurisdictions, screening activities are also resulting in increasing numbers of people diagnosed with RHD.

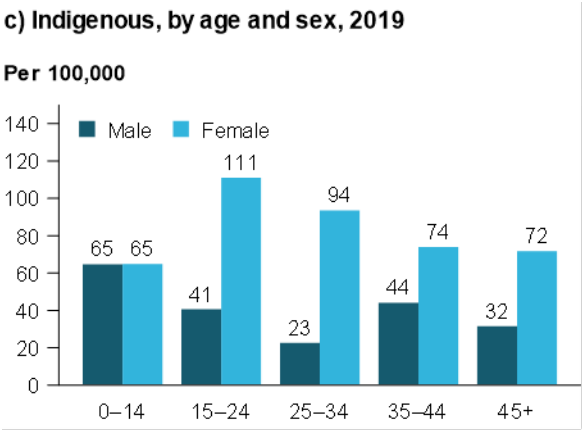
### Age and sex

In 2019 among Indigenous Australians the incidence rate of new RHD diagnoses was highest among:

- males aged 0–14 (65 per 100,000 population) and lowest among males 25–34 (23 per 100,000)
- females aged 15–24 (111 per 100,000 population) and lowest among females 0–14 (65 per 100,000) (Figure 5.1.2c).

**Figure 5.1.2: New diagnoses of rheumatic heart disease, by various characteristics**




*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 Indigenous and non-Indigenous populations.
3. Data for these figures are available in online supplementary 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 2015–2019 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 2021d). Changes to this measure to align with the AIHW's ARF and RHD annual report are being considered.

### Why is this important?

Preventive penicillin treatment for people who have had an ARF episode aims 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 to 28 days for between 5 and 10 years after the most recent ARF episode (RHD Australia 2020). Trends in the number of recurrent ARF episodes among people prescribed secondary prophylaxis may be used to monitor the effectiveness of the delivery of secondary prophylaxis.

### Results: Recurrence of acute rheumatic fever in Queensland, Western Australia, South Australia and the Northern Territory combined

#### Overall

- In 2018–2019 combined, 29% of ARF episodes (270 of 937) diagnosed in Indigenous Australians were recurrences, and 8% (less than 5) in non-Indigenous Australians (Figure 5.2a).
- In 2019, among all Australians prescribed BPG there were 3.2 ARF recurrences for every 100 patient-years at risk (AIHW 2021d).

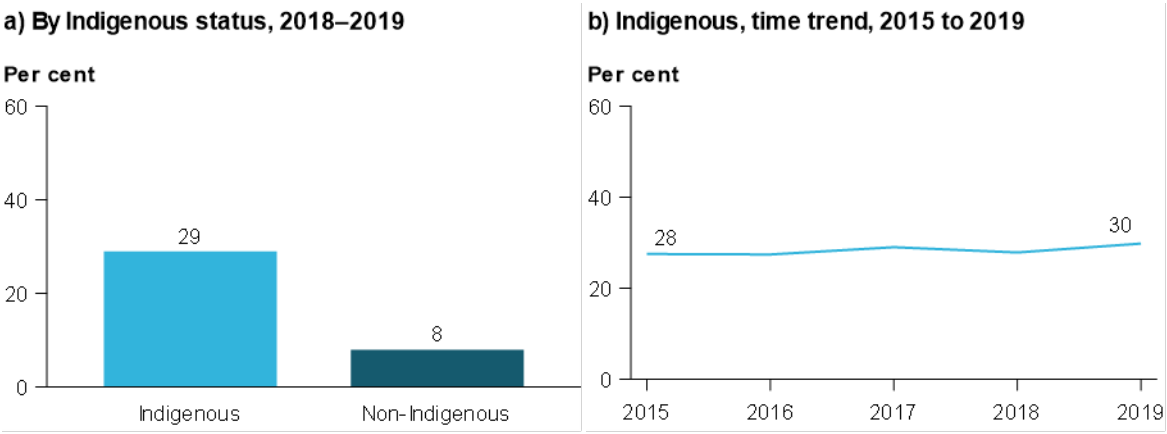
#### Time trend

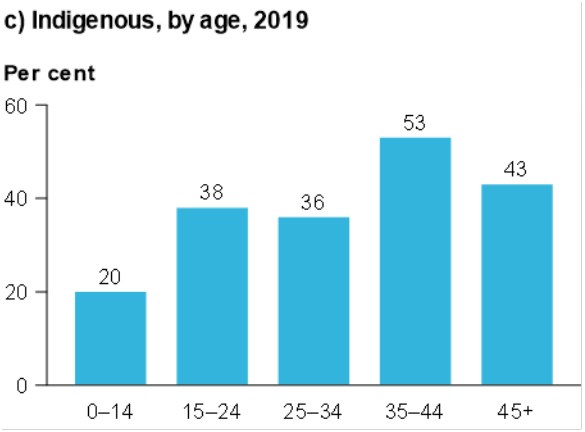
- Between 2015 and 2019, the proportion of recurrent ARF episodes among Indigenous Australians increased slightly from 28% to 30% (Figure 5.2b).
- From 2016 to 2019, the ARF recurrence rate per 100 patient-years among Indigenous Australians prescribed BPG decreased from 3.8 to 3.4. The recurrence rate for 2015 was excluded due to data quality issues (AIHW 2021d).

#### Age

- In 2019, the proportion of recurrent ARF episodes among Indigenous Australians rose with increasing age. It was lowest among those aged 14 and under (20%) and highest among those aged 35–44 (53%) (Figure 5.2c).
- When the length of exposure to risk was taken into account, the rate of recurrences per 100 patient-years among all Australians prescribed BPG in 2019 generally decreased with age, from 4.9 among those aged 5–14 to 2.4 among those aged 45 and over (AIHW 2021d). This indicates that younger age groups have higher risks to ARF recurrences than do older age groups.

**Figure 5.2: Proportion of recurrent acute rheumatic fever episodes, by various characteristics**




*Notes*

1. Data for these figures are for Queensland, Western Australia, South Australia and the Northern Territory combined.
2. Two years of data (2018–2019) are combined to calculate the proportion of ARF epidsodes that were recurrent in Figure 5.2a because of the small number of recurrent cases among non-Indigenous Australians.
3. While Figure 5.2c shows that the proportion of recurrent ARF episodes among Indigenous Australians rose with increasing age, when the length of exposure to risk is taken into account, the rate of recurrences per 100 patient-years among all Australians prescribed BPG in 2019 generally decreased with age (AIHW 2021d).
4. Data for these figures are available in online supplementary tables 5.2a to 5.2c.

*Source:* AIHW analysis of the National RHD data collection.

## Measure 5.3: Preventive treatment with benzathine benzylpenicillin G

This measure presents the number and proportion of required doses of BPG given to patients prescribed preventive treatment in 2019. This is known as secondary prophylaxis.

The number of people prescribed BPG differs from that in previous reports as more stringent inclusion criteria were used for the analysis. For inclusion in the analysis, people had to be prescribed a schedule of intramuscular BPG on a 21-day or a 28-day regimen in 2019.

Starting with this sixth report, to highlight the cohort of patients who did not receive any doses and those who received all recommended doses, new adherence categories have been calculated: 0%, 1% to 49%, 50% to 79%, 80% to 99%, and 100% or more of the required doses. If someone is on treatment for a year, they should have at least 13 (or 17 if prescribed 3-weekly prophylaxis) doses delivered. Some people may have received more than 13 (or 17) doses resulting in an adherence of more than 100%. These people are included in the group who received 100% or more of 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 to 4 weeks. 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 may require BPG at a different frequency, or use of alternative antibiotics (RHD Australia 2020).

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

#### Overall

In 2019:

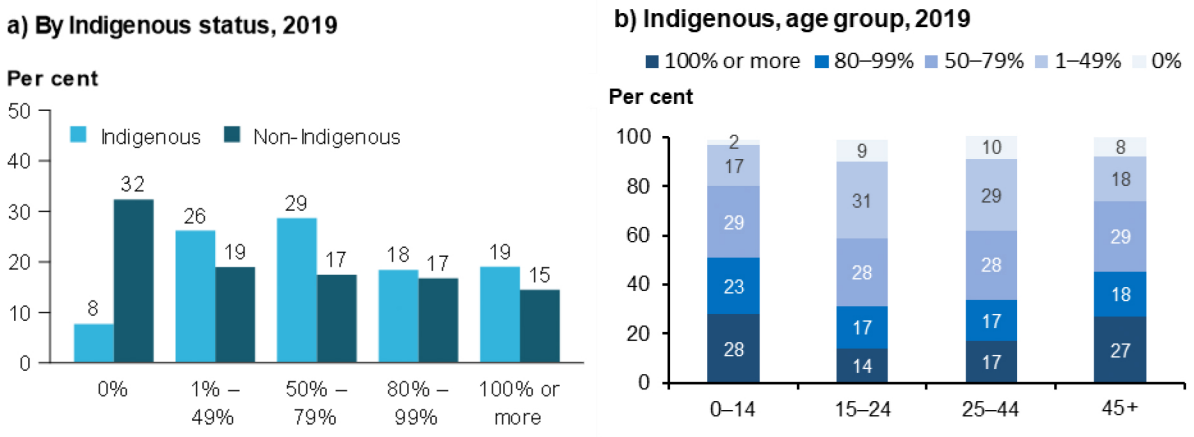
- 4,109 Indigenous Australians were eligible for inclusion in calculations about BPG delivery, of whom:
  - 19% (783) received 100% or more of required doses
  - 18% (755) received 80% to 99%
  - 29% (1,177) received 50% to 79%
  - 26% (1,077) received 1% to 49%
  - 8% (317) received 0% (Figure 5.3a)
- 269 non-Indigenous Australians were prescribed BPG, of whom 84 (31%) received 80% or more of their required BPG doses (Figure 5.3a).

#### Age

Among Indigenous Australians prescribed BPG, adherence was:

- highest among the 0–14 age group, with 51% (460 of 893) receiving at least 80% of required doses (Figure 5.3b)
- lowest among the 15–24 age group, where only 31% (469 of 1,477) received at least 80% of required doses (Figure 5.3b).

**Figure 5.3: Proportion of required benzathine benzylpenicillin G (BPG) doses received, by people with acute rheumatic fever and/or rheumatic heart disease on a 21-day or 28-day BPG regime**




*Notes*

1. Data for these figures are available in online supplementary tables 5.3a and 5.3b.
2. Data are from Queensland, Western Australia, South Australia and the Northern Territory combined.
3. This analysis includes people prescribed BPG for the whole of 2019, as well as those on BPG for part of the year only.
4. People on BPG can have more than 13 doses in one year if prescribed 28-day prophylaxis or more than 17 doses if prescribed 21-day prophylaxis. Therefore, 100% of doses is defined as 100% or more of doses.

*Source:* AIHW analysis of the National RHD.

[This page is intentionally left blank]

# 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. They 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, not a count of individuals. This is because 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 2016–17 to 2018–19 combined:

- 34,970 Indigenous hospitalisations were for cardiac conditions, a crude rate of 14 per 1,000 population
- the age-standardised hospitalisation rate of cardiac conditions for Indigenous Australians, at 24 per 1,000 population, was about twice the rate for non-Indigenous Australians at 13 per 1,000 population (Figure 6.1a).

#### Time trend

- Between 2006–07 and 2018–19, in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined, age-standardised hospitalisation rates for cardiac conditions increased slightly for Indigenous Australians, at 22 to 24 per 1,000 population, but remained relatively stable for non-Indigenous Australians at 13 to 14 per 1,000 population (Figure 6.1b).

#### Age and sex

In 2016–17 to 2018–19 combined, hospitalisation rates for cardiac conditions:

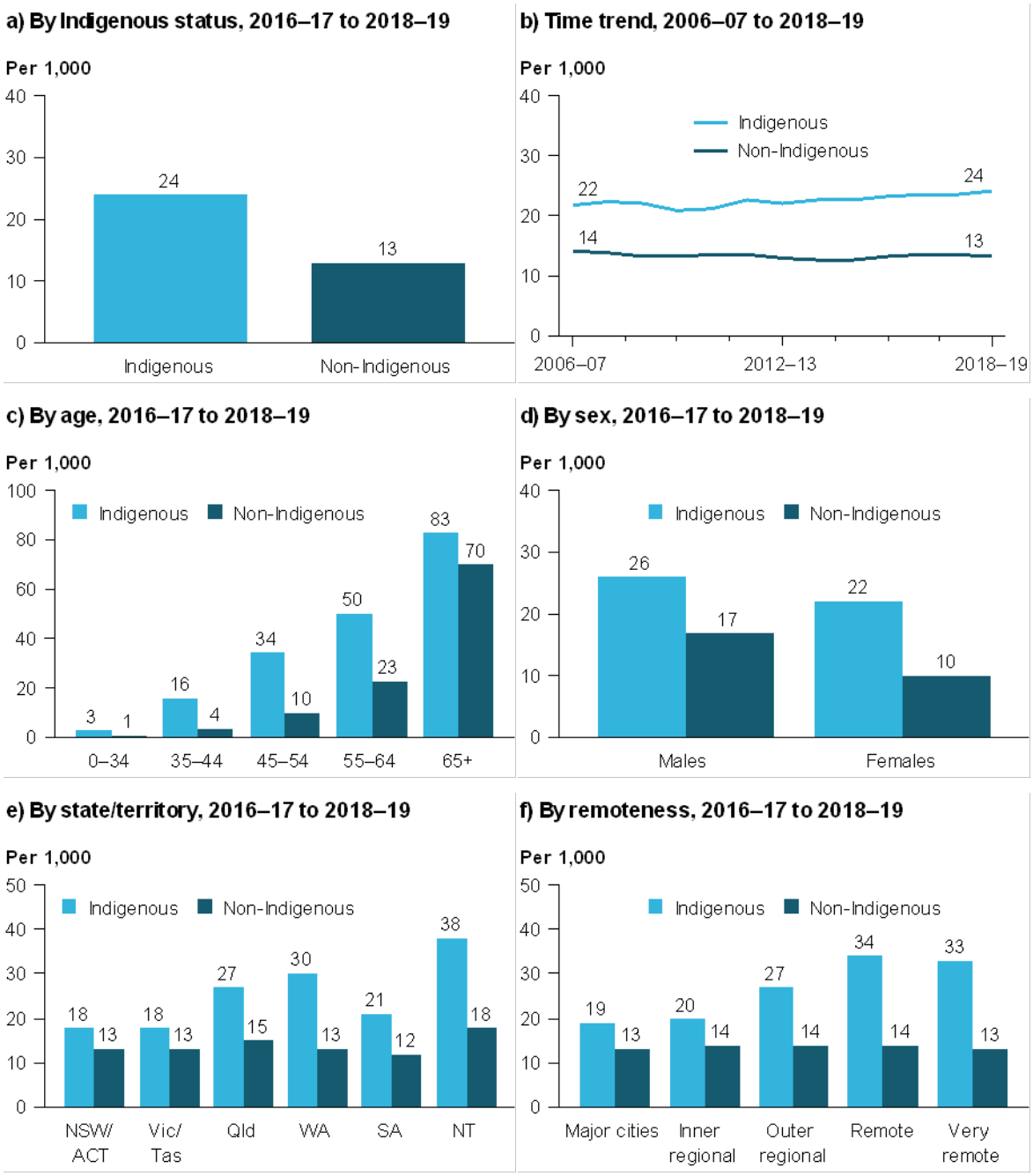
- increased with age for Indigenous and non-Indigenous Australians, but Indigenous Australians had higher rates of hospitalisation than non-Indigenous Australians, especially among younger age groups (Figure 6.1c)
- were higher for males than females, with a greater difference among non-Indigenous than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

#### State and territory and remoteness area

In 2016–17 to 2018–19 combined, the age-standardised hospitalisation rate for cardiac conditions was highest for Indigenous Australians in:

- the Northern Territory, at 38 per 1,000 population, and Western Australia at 30 per 1,000 population. In each case, it was more than double the rate of non-Indigenous Australians (Figure 6.1e)
- *Remote* areas, at 34 per 1,000 population, and *Very remote* areas at 33 per 1,000 population. 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**




*Notes*

1. The time series analysis 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 (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 online supplementary 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 or hospitalised cardiac events. Some hospitalisations would not have been associated with diagnoses that represent coronary events, and/or 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 in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined, 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 2017–2019 combined:

- 1,702 Indigenous Australians died from cardiac conditions, a crude rate of 77 per 100,000 population
- the age-standardised death rate due to cardiac conditions for Indigenous Australians (149 per 100,000 population) was about 1.5 times that for non-Indigenous Australians (98 per 100,000) (Figure 6.2.1a).

#### Time trend

Between 2006 and 2019, the:

- age-standardised cardiac mortality rate fell by about 28% for Indigenous Australians, from 205 to 148 per 100,000 population, and about 38% for non-Indigenous Australians,from 149 to 93 per 100,000 population (Figure 6.2.1b)
- rate ratios of deaths due to cardiac conditions between Indigenous and non-Indigenous Australians rose slightly between 2006 (1.4) and 2019 (1.6)
- rate difference between Indigenous and non-Indigenous Australians fell slightly from 56 in 2006 to 54 in 2019.

#### Age and sex

In 2017–2019 combined, cardiac mortality rates were:

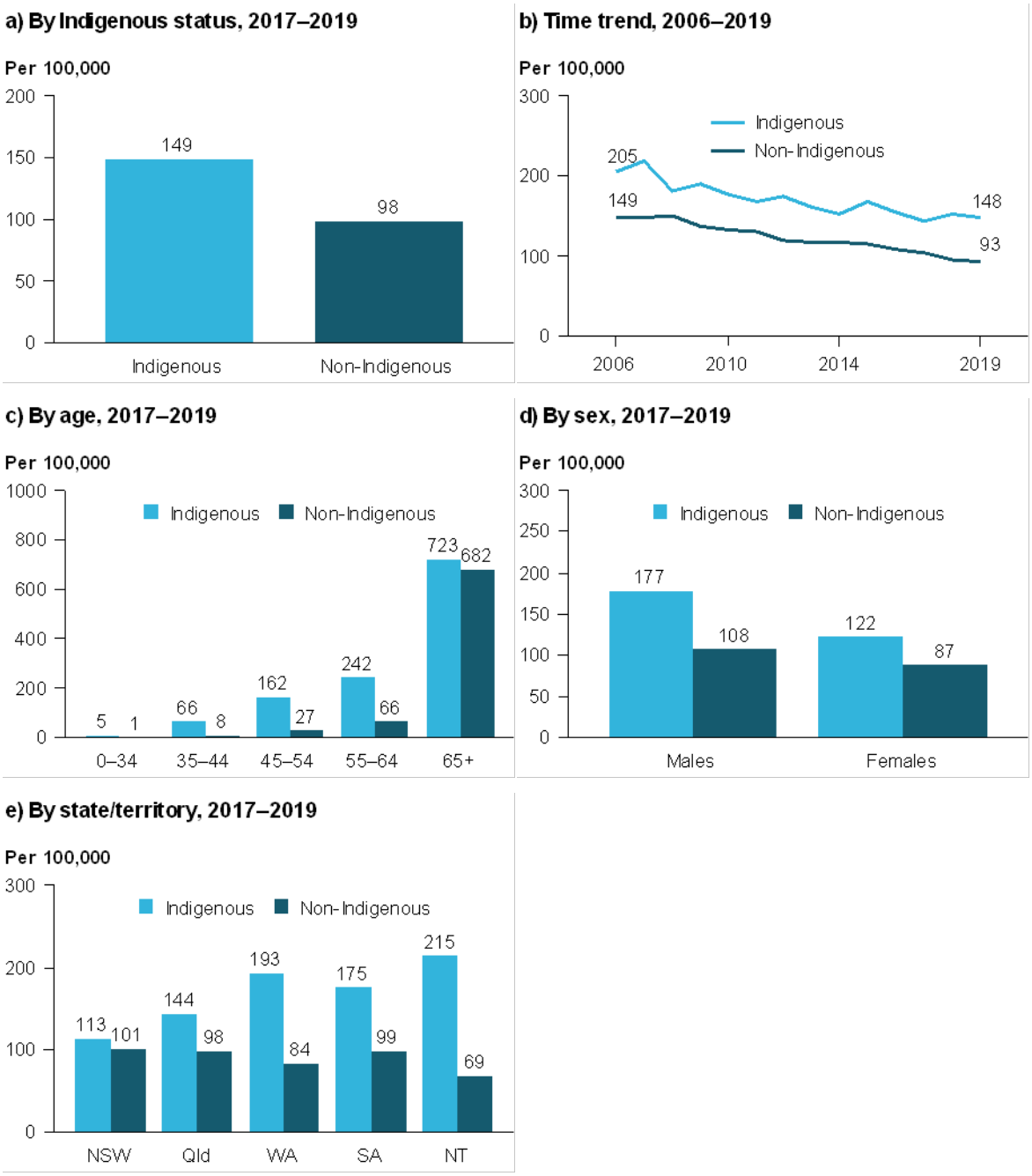
- higher among Indigenous Australians than non-Indigenous Australians in all age groups, with rate ratios being most pronounced in those aged 35–44 (about 8 times as high for Indigenous Australians as for non-Indigenous Australians) (Figure 6.2.1c)
- higher among males in Indigenous and non-Indigenous Australians (Figure 6.2.1d).

#### State and territory

In 2017–2019 combined, age-standardised cardiac mortality rates were:

- highest among Indigenous Australians in the Northern Territory at 215 per 100,000 population, followed by Western Australia at 193 per 100,000 population
- about 3 times as high for Indigenous Australians as for non-Indigenous Australians in the Northern Territory (a rate ratio of 3.1), 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**




*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 online supplementary tables 6.2.1a to 6.2.1e.
4. Mortality data are reported for 5 jurisdictions only (NSW, Qld, WA, SA and the NT). 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 2016–17 to 2018–19 combined:

- 667 Indigenous Australians admitted to hospital for cardiac conditions died in hospital, a crude rate of 27 per 100,000 population
- the age-standardised in-hospital death rate for Indigenous Australians admitted for cardiac conditions, at 51 per 100,000 population, was about twice the rate for non-Indigenous Australians at 29 per 100,000 (Figure 6.2.2a).

### Time trend

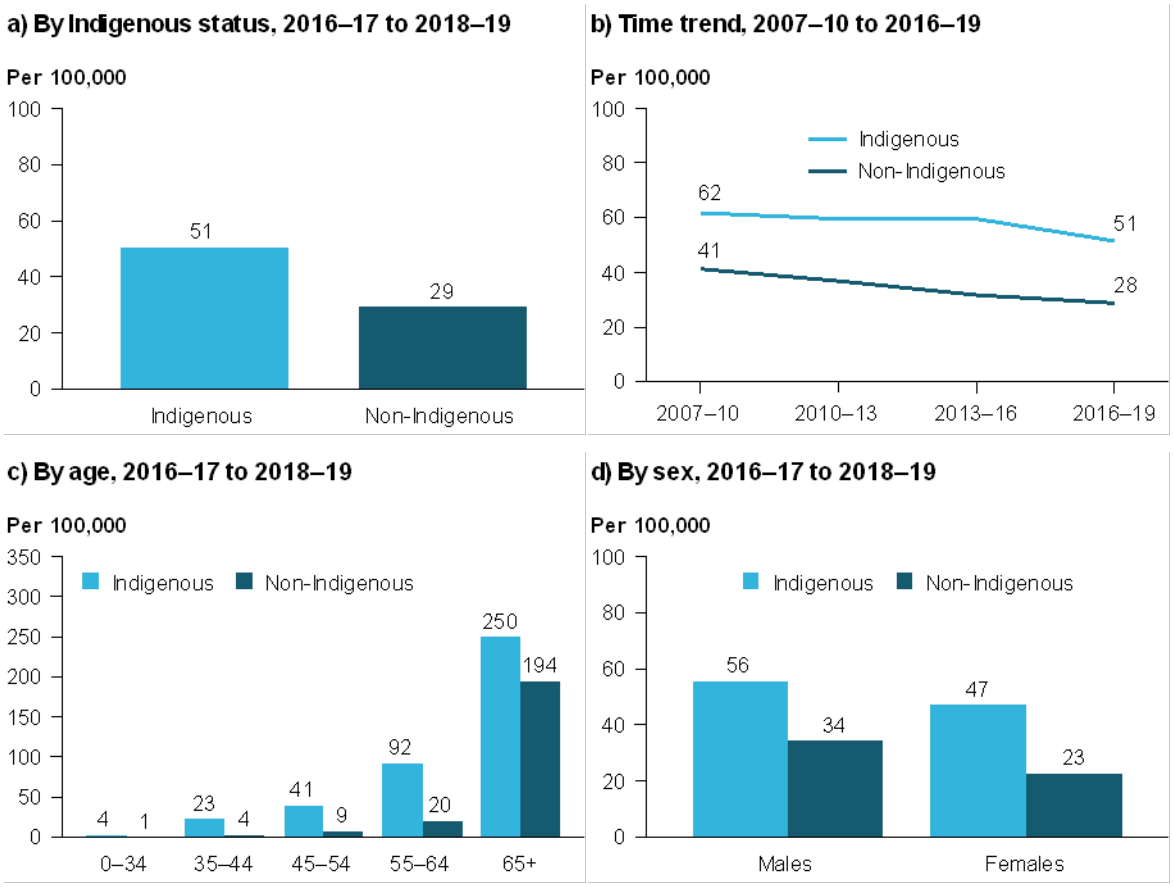
- Between 2007–10 and 2016–19, in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined, the age-standardised rate of in-hospital deaths for patients admitted for cardiac conditions fell for Indigenous Australians, from 62 to 51 per 100,000 population, and for non-Indigenous Australians from 41 to 28 per 100,000 (Figure 6.2.2b).

### Age and sex

In 2016–17 to 2018–19 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 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**




*Notes*

1. The time series analysis 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 online supplementary 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. It also provides notes about 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 were used as the basis for the population estimates used to calculate rates for this report. Data indicate that the number of Indigenous Australians has increased considerably over various periods since 1971. Increases were particularly large 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 at 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 survey sample was designed to be representative of Indigenous people. Previous surveys were 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. The sample included 10,579 people from these households. The population benchmark that the survey results were weighted to meet was 814,013. This was the projected Indigenous population at 31 December 2018, excluding persons in non-private dwellings.

More information on the survey methodology and data quality statement are available on the ABS website at 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 they had discussed any lifestyle issues with a General Practitioner (GP) or 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, 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) through 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 by 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 Medicare Benefits Schedule 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* (Cth), prevents salaried health providers funded by government from claiming payments from Medicare under the Act. This includes Australian Government as well as 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 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 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 enrolled in Medicare and eligible to receive services is in the Medicare Enrolment File held by Services Australia, the program's administrator. 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 are 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 an enrolment form or a tick-box on a Medicare enrolment form. Both methods indicate that identifying as Indigenous is optional.

As at March 2016, an estimated 65% of the Indigenous population had identified as being Indigenous 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 Item 228 health assessments (Measure 1.1). As only Indigenous Australians are eligible to receive such health assessments, it is assumed that everyone who receives one is Indigenous.

Numbers and rates for other MBS data,on services that can be claimed irrespective of an individual's Indigenous status, have been adjusted for under-identification in the Medicare 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 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. This is 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:

> *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. As part of the Australian Government's COVID-19 response, temporary telehealth health checks provided under Indigenous-specific MBS items 92004, 92016, 92011 and 92023 were introduced in March 2020.

The 4 time-based MBS health assessment items are:

- 701 (brief)
- 703 (standard)
- 705 (long)
- 707 (prolonged).

Medical practitioners may select one of these items to provide a health assessment service to a member of any target group 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, 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-Medicare Benefits Schedule 715 and 228) Medicare Benefits Schedule 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 |

On 1 Aprill 2019, interim heart health check items 699 and 177 were introduced in the MBS. These allow GPs and other medical pracititioners to conduct comprehensive heart health assessments, including assessment of CVD risk, identification of physical and or lifestyle-related risks, and implementation of a preventive health-care plan to improve cardiovascular health. The items fund

one heart health check per patient in a 12-month period, if other health assessments have not been claimed in that period. These interim items will be reviewed and evaluated over the next 2 years to help inform their effectiveness and any future improvements.

### Estimate of people with a cardiac condition from Medicare Benefits Schedule data

Since MBS data do not include information about whether people have a cardiac condition, this estimate was based on people who had claimed one or more 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 (some tests would have been negative).

## National Hospital Morbidity Database

Data about hospitalisations were extracted from the AIHW National Hospital Morbidity Database (NHMD), 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 measures, with details provided in relevant sections of this 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 and 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 (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. These are 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. These are 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 Indigenous Australians (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 2016–17 to 2018–19 combined, Indigenous status was not stated for about 738,509 hospitalisations, 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 STEMI events in one 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 NMD with results from linked hospitalisation and deaths data from New South Wales and Western Australia (AIHW 2014).

Limitations were noted as part of the analyses:

- Some hospitalisations ending in transfer did not have a subsequent hospitalisation recorded. Patients, for example, could have been transferred interstate.
- Some hospitalisations did not have a principal diagnosis of acute myocardial infarction (AMI) or unstable angina. In Western Australia, the most common principal diagnosis in the subsequent hospitalisation was rehabilitation. 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 not confirmed.

Further, the validity of this method has not been established for calculating procedures rates. A notable limitation is that, among events that involved multiple hospitalisations, if a relevant procedure was provided in an earlier hospitalisation but not in the last one, 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, based on New South Wales data, apply to other states and territories.

## State and 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).

This 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 a larger, more urban hospital for treatment.

Because of these differences  across states and territories, interpreting differences in jurisdictional data for measures 3.1 and 3.3 must be done with caution. As a result, those data were not included in Chapter 2. Table A3 provides results for these measures by 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 and territory, 2016–17 to 2018–19**

| State and territory | Measure 3.1[(a)] (%) | | | Measure 3.3[(b)] (%) | | |
|---|---|---|---|---|---|---|
| | Indigenous crude rate | Age-standardised rate | | Indigenous crude rate | Age-standardised rate | |
| | | Indigenous | Non-Indigenous[(c)] | | Indigenous | Non-Indigenous[(c)] |
| NSW/ACT | 74.6 | 67.8 | 78.4 | 60.5 | 60.9 | 65.9 |
| Vic/Tas | 79.8 | 73.9 | 81.7 | 58.5 | 72.3 | 72.0 |
| Qld | 67.2 | 64.2 | 68.4 | 53.9 | 59.9 | 59.3 |
| WA | 74.9 | 70.7 | 82.9 | 62.1 | 67.6 | 74.5 |
| SA | 83.1 | 84.6 | 78.8 | 58.7 | 60.0 | 75.7 |
| NT | 66.4 | 60.5 | 76.2 | 55.9 | 53.6 | 53.4 |

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

(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 (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 primary health-care organisations required to report against the nKPIs. A regular client is defined as a person with an active medical record. This 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 regular 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.
- Variations may exist 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 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 2020 reporting period, data were collected from 220 primary health-care organisations that receive funding from the Department of Health to provide primary health-care services, mainly to Indigenous Australians.

The nKPIs collect information in June and December on a set of 15 process-of-care and 9 health-outcome indicators for Indigenous Australians organised under 3 domains. The domains are 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 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 2021c).

# National Mortality Database

Mortality data are extracted from the AIHW NMD, which contains information about all deaths registered in Australia since 1964. Deaths are certified by a medical practitioner or a coroner and registered by the Registry of Births, Deaths and Marriages in each state and territory. The ABS codes the cause of death, using the International Statistical Classification of Diseases and Related Health Problems (ICD-10), 10th Revision. 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 2016, 2017 and 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 are by reference year. Registration year before 2007 is equivalent to reference year from 2007.

For this report, data on deaths registered in:

- 2017 and earlier are based on the final version of cause of death data
- 2018 are based on the revised version and subject to further revision by the ABS
- 2019 are based on the preliminary version and 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.Technical note 3 in ABS 2012 has more detail.

These data have been adjusted for Victorian additional death registrations in 2019. Due to the adjustment, totals do not equal the sum of their components. For more detail, refer to Technical note: Victorian additional registrations and time series adjustments in Causes of death, Australia, 2019 (ABS Cat. no. 3303.0).

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

The data quality statements underpinning the NMD are 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 based on the state or territory of usual residence. These are New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.

Although the identification of Indigenous Australians in deaths data are 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. 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 (RFS), the Australian Government provides funding to support rheumatic heart disease (RHD) control programs in 4 jurisdictions. These are Queensland, Western Australia, South Australia and the Northern Territory.

The programs are funded to:

(a) improve clinical care, including delivery of and adherence to secondary prophylaxis antibiotics

(b) provide education and training for health-care providers, individuals, families and communities

(c) collect and provide agreed data annually to the AIHW for national monitoring and reporting of acute rheumatic fever (ARF) and RHD, as well as measuring program effectiveness in detecting and managing ARF and RHD

(d) 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 and 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. The numbers, data quality and completeness in the RHD registers are therefore 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 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 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 ARF/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 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 2019 are shown in Table A5.

In 2019, the Indigenous population ranged from 8,109 in the Australian Capital Territory to about 281,107 in New South Wales.

The proportion of the population who are Indigenous also varies by state and territory. In 2019, it ranged from less than 1% in Victoria to 32% in the Northern Territory (Table A5).

**Table A5: Australian population, by Indigenous status and state and territory, 2019**

| State and territory | Indigenous[(a)] | Non-Indigenous[(b)] | Total | % Indigenous |
|---|---|---|---|---|
| NSW | 281,107 | 7,806,272 | 8,087,379 | 3.5 |
| Vic | 62,074 | 6,534,806 | 6,596,880 | 0.9 |
| Qld | 235,962 | 4,857,922 | 5,093,884 | 4.6 |
| WA | 106,939 | 2,516,320 | 2,623,259 | 4.1 |
| SA | 44,981 | 1,707,700 | 1,752,681 | 2.6 |
| Tas | 29,519 | 459,990 | 489,509 | 6.0 |
| ACT | 8,109 | 395,340 | 403,449 | 2.0 |
| NT | 77,605 | 168,538 | 246,143 | 31.5 |
| **Australia[(c)]** | **847,190** | **24,518,555** | **25,365,745** | **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:<br>Numerator ÷ Denominator x 100<br>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:<br>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:<br>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 or health professional or specialist in the previous 12 months and discussed quitting smoking. | Crude rate:<br>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 or 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:<br>Numerator ÷ Denominator x 100<br>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 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:<br>Numerator ÷ Denominator x 100<br>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:<br>Numerator ÷ Denominator x 100<br>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 (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 ACS 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:<br>Numerator ÷ Denominator x 100<br>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 (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 AMI who died in hospital, by Indigenous status. | Crude rate:<br>Numerator ÷ Denominator x 100<br>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 (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:<br>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:<br>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 rate:<br>Numerator ÷ Denominator x 100,000 | Number of first known and recurrent episodes of ARF in the calendar year.<br>. | Population as at 30 June. | National RHD data collection; ABS population data |
| 5.1.2 | New diagnoses of RHD. | Crude rate:<br>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 rate:<br>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 21-day or 28-day BPG regime. | Crude rate:<br>Numerator ÷ Denominator x 100 | Number of people on the ARF/RHD program who received 0%, 1% to 49% 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 21-day or 28-day BPG regime. | 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<br>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:<br>Numerator ÷ Denominator x100,000<br>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.<br>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:<br>Numerator ÷ Denominator x 100,000<br>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 |

*Notes*

(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 2017 and earlier are based on the final version of cause of death. Deaths registered in 2018 are based on the revised version. Deaths registered in 2019 are based on the preliminary version. Revised and preliminary versions are subject to further revision by the ABS.

**Table B2: Medicare Benefits Schedule items**

| MBS item group | MBS item number | Description |
|---|---|---|
| MBS health assessment items[a] | 228, 700–714, 715, 716–719, 92004, 92016, 92011, 92023, 699, 177 | Indigenous-specific health assessment, including telehealth health checks, general health assessments and heart health assessments, 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[a] | 721, 92024, 92068 | Preparation of a GP management plan by a medical practitioner (including a GP, but not a specialist/consultant physician). |
| Team care arrangements[a] | 723, 92025, 92069 | Preparation of team care arrangement by a medical practitioner (including a GP, but not a specialist/consultant physician). |
| Allied health services[a] | 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, 93000, 93013, 93048, 93061 | 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[a] | 10997, 93201, 93203 | 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[a] | 732, 92028, 92072 | 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[a] | 729, 731, 92026, 92070, 92027, 92071 | Contribution to a multidisciplinary care plan by a medical practitioner (including a GP but not a specialist or consultant physician). |
| Specialist review[a] | Group A3 services items (99, 104–109, 113, 91822,91832, 91823, 91833) and A4 services items (110, 112, 116, 119, 122, 128, 131–133, 91824, 91834, 91825, 91835, 91826, 91836, 92422, 92431, 92423, 92432) | Professional attendance on a patient by a consultant physician practising in his or her speciality. |

(a) Temporary telehealth items introduced from March 2020 as part of the Australian Government's COVID-19 response have been included in these item groups.

(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 left and 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 Better Cardiac Care measures**

| | Indigenous | | | | Non-Indigenous | | | |
|---|---|---|---|---|---|---|---|---|
| **Measures (unit applicable to rates)** | **Numerator** | **Denominator** | **Crude rate** | **ASR** | **Numerator** | **Denominator** | **Crude rate** | **ASR** |
| 1.1 Annual health assessments, 2019–20 (%) | 246,367 | 855,698 | 28.8 | . . | . . | . . | . . | . . |
| 1.2 Cardiovascular disease risk assessment, June 2020, high risk (%) | 4,867 | 14,197 | 34.3 | . . | . . | . . | . . | . . |
| 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, 2019–20 (%) | 63,672 | 855,698 | 7.4 | 10.3 | 2,630,154 | 24,670,695 | 10.7 | 9.3 |
| 2.3 Suspected or confirmed cardiac disease case review by a specialist, 2019–20 (%) | 59,458 | 100,990 | 58.9 | 52.6 | 4,306,258 | 5,226,117 | 82.4 | 68.3 |
| 3.1 STEMI events treated by PCI, 2016–19 (%) | 790 | 1,092 | 72.3 | 71.1 | 20,457 | 26,557 | 77.0 | 81.1 |
| 3.3 ACS events that included diagnostic angiography or definitive revascularisation, 2016–19 (%) | 3,408 | 5,881 | 57.9 | 61.2 | 75,277 | 121,910 | 61.7 | 69.6 |
| 3.5 AMI in-hospital mortality rates, 2016–19 (%) | 126 | 4,114 | 3.1 | 2.5 | 4,401 | 89,887 | 4.9 | 2.5 |
| 4.2 Follow-up after receiving a cardiovascular therapeutic procedure in 2018–19 (%) | 820 | 1,199 | 68.4 | n.a. | 62,271 | 119,177 | 52.2 | n.a. |
| 4.3 Specialist physician review after a cardiovascular therapeutic procedure in 2018–19 (%) | 1065 | 1,199 | 88.8 | n.a. | 115,314 | 119,177 | 96.8 | n.a. |
| 5.1.1 Incidence of ARF, 2019 (number per 100,000) | 463 | 454,198 | 101.9 | n.a. | 13 | 9,153,806 | 0.1 | n.a. |
| 5.1.2 New diagnoses of RHD, 2019 (number per 100,000) | 284 | 454,198 | 62.5 | n.a. | 114 | 9,153,806 | 1.3 | n.a. |
| 5.2 Recurrent ARF, 2018–2019 (%) | 270 | 937 | 28.8 | n.a. | * | * | 7.9 | n.a. |
| 5.3 Treatment with BPG doses, 2019, more than 100% of doses (%) | 783 | 4,109 | 19.1 | n.a. | 39 | 269 | 14.5 | n.a. |
| 6.1 Hospitalisations for cardiac conditions, 2016–19 (number per 1,000) | 34,970 | 2,467,576 | 14.2 | 23.8 | 1,163,978 | 71,895,299 | 16.2 | 13.4 |
| 6.2.1 Deaths from cardiac conditions, 2017–2019 (number per 100,000) | 1,702 | 2,196,859 | 77.5 | 149.0 | 62,725 | 50.515,043 | 124.2 | 97.7 |
| 6.2.2 In-hospital deaths for cardiac conditions, 2016–19 (number per 100,000) | 667 | 2,467,576 | 27.0 | 51.1 | 25,446 | 71,895,299 | 35.4 | 28.5 |

ACS=acute coronary syndrome; ARF=acute rheumatic fever; ASR = Age-standardised rate; AMI=acute myocardial infarction; BPG=benzathine benzylpeniciilin G; RHD=rheumatic heart disease; STEMI=ST-Segment-elevation myocardial infarction

*number supressed due to small number of cases.

*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 sources used.

# Acknowledgments

This report was prepared by Bina Gubhaju with assistance from Caitlin Currie, Ruth Penm, Bin Tong and Daisy Wang at the Australian Institute of Health and Welfare (AIHW).
The authors would also like to acknowledge valuable contributions and comments provided by other colleagues at the AIHW. Fadwa Al-Yaman and Tracy Dixon provided advice and guidance on this report.

The AIHW would like to thank the data providers, including the Australian and state and territory health departments, and the Northern Territory, Queensland, Western Australia and South Australia rheumatic heart disease registers.

The Department of Health funded this report, and members of its Indigenous Health Division are gratefully acknowledged for their comments.

# Abbreviations

| | |
|---|---|
| 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 benzylpenicillin 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 |
| NACCHO | National Aboriginal Community Controlled Health Organisation |
| NATSIHS | National Aboriginal and Torres Strait Islander Health Survey |
| NHMD | National Hospital Morbidity Database |
| NIHSI AA | National Integrated Health Services Information Analysis Asset |
| nKPI | National Key Performance Indicators |

| | |
|---|---|
| NMD | National Mortality Database |
| NSW | New South Wales |
| NT | Northern Territory |
| NVDPA | National Vascular Disease Prevention Alliance |
| PCI | percutaneous coronary intervention |
| Qld | Queensland |
| RHD | rheumatic heart disease |
| SA | South Australia |
| STEMI | ST-segment-elevation myocardial infarction |
| STREP A | A streptococcus |
| Tas | Tasmania |
| Vic | Victoria |
| WA | Western Australia |

# Symbols

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

# Glossary

**Aboriginal and Torres Strait Islander:** 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):** 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):** Term commonly used to mean a heart attack, but more correctly refers only to heart attacks that have caused some death of heart muscle.

**acute rheumatic fever (ARF):** Acute, serious disease that affects mainly children and young adults. It can damage the heart valves, heart muscle and its lining, joints and brain. It is brought on by a reaction to a throat infection by a particular bacterium.

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

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

**care type:** 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:

1. acute care
2. rehabilitation care
3. palliative care
4. geriatric evaluation and management
5. psychogeriatric care
6. maintenance care
7. newborn care
8. other admitted patient care (where the principal clinical intent does not meet the criteria for any other category).

**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:** Procedure used to increase coronary artery blood flow (such as percutaneous coronary intervention and coronary artery bypass graft).

**diagnostic angiography:** 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:** 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):** Episode of care for an admitted patient. It 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:** Term used interchangeably with Aboriginal and Torres Strait Islander people in this report.

**mode of separation:** 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:** 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:** Syndrome encompassing 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:** 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):** Surgical procedure used to restore blood flow to blocked coronary arteries. Two types are used: coronary angioplasty without stent; coronary stenting.

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

**procedure:** 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:** Literal, or absolute, gap between 2 population rates. For this report, calculated as the rate for Indigenous Australians minus the rate for non-Indigenous Australians.

**rate ratio:** Expression of the relative difference between populations by taking scale into account. For this report, calculated as the rate for Indigenous Australians divided by the rate for non-Indigenous Australians. It is interpreted as follows:

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

**rheumatic heart disease (RHD):** Chronic disease from damaged heart valves caused by earlier attacks of acute rheumatic fever.

**separation:** See 'hospitalisation'.

**ST-segment-elevation myocardial infarction (STEMI):** 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'.

# References


ABS (Australian Bureau of Statistics) 2012. Causes of death, Australia, 2010. Technical note 3: retrospective deaths by causes of death, Queensland, 2010. ABS cat. no. 3303.0. Canberra: ABS. Viewed 28 January 2016, www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/3303.0Technical%20Note32010?opendocument&tabname=Notes&prodno=3303.0&issue=2010&num=&view=

ABS 2015. Causes of death, Australia, 2013. ABS cat. no. 3303.0. Canberra: ABS.

ABS 2018a. Estimates of Aboriginal and Torres Strait Islander Australians. Canberra: ABS. Viewed 6 November 2020, https://www.abs.gov.au/statistics/people/aboriginal-and-torres-strait-islander-peoples/estimates-aboriginal-and-torres-strait-islander-australians/latest-release#data-download

ABS 2018b. Census of Population and Housing: understanding the increase in Aboriginal and Torres Strait Islander counts, 2011–2016. Canberra: ABS. Viewed 6 November 2020, https://www.abs.gov.au/statistics/people/aboriginal-and-torres-strait-islander-peoples/census-population-and-housing-understanding-increase-aboriginal-and-torres-strait-islander-counts/latest-release

ABS 2019. Estimates and Projections, Aboriginal and Torres Strait Islander Australians, 2006 to 2031. Canberra: ABS. Viewed 6 November 2020.

ACCD (Australian Consortium for Classification Development) 2015. The Australian Classifications of Health Interventions (ACHI). 9th edn. Tabular list of interventions, and Alphabetic Index of Interventions. Adelaide: Independent Hospital Pricing Authority.

ACSQHC (Australian Commission on Safety and Quality in Health Care) 2019. Acute Coronary Syndromes Clinical Care Standard. Sydney: ACSQHC.

AIHW (Australian Institute of Health and Welfare) 2010. Indigenous identification in hospital separations data: quality report. Health services series no. 35. Cat. no. HSE 85. Canberra: AIHW.

AIHW 2013. Indigenous identification in hospital separations data: quality report. Cat. no. IHW 90. Canberra: AIHW.

AIHW 2014. Acute coronary syndrome: validation of the method used to monitor incidence in Australia. A working paper using linked hospitalisation and deaths data from Western Australia and New South Wales. Cat. no. CVD 68. Canberra: AIHW.

AIHW 2015a. Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: first national report 2015. Cat. no. IWH 156. Canberra: AIHW.

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

AIHW 2015c. The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples 2015. Cat. no. IHW 147. Canberra: AIHW.

AIHW 2016. Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: second national report 2016. Cat. no. IHW 169. Canberra: AIHW.

AIHW 2018a. Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: third national report 2017. Cat no. IHW 197. Canberra: AIHW.

AIHW 2018b. National Key Performance Indicators for Aboriginal and Torres Strait Islander primary health care: results for 2017. Cat no. IHW 200. Canberra: AIHW.

AIHW 2019. Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: fourth national report 2018–19. Cat no. IHW 223. Canberra: AIHW.

AIHW 2020a. Tracking progress against the Implementation goals for the Aboriginal and Torres Strait Islander Health Plan 2013–2023. Cat no. IHW 201. Canberra: AIHW. Viewed 20 July 2021.

AIHW 2020c. Review of the two national Indigenous specific primary health care datasets: the Online Services Report and the national Key Performance Indicators. Canberra: AIHW.

AIHW 2020d. Aboriginal and Torres Strait Islander Health Performance Framework 2020 Summary report. Cat no. IHPF 2. Canberra: AIHW.

AIHW 2021a. Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: fifth national report 2020. Cat no. IHW 246. Canberra: AIHW.

AIHW 2021b. Indigenous health checks and follow-ups. Cat no. IHW 209. Canberra: AIHW. Viewed 20 July 2021.

AIHW 2021c. Aboriginal and Torres Strait Islander-specific primary health care: results from the OSR and nKPI collection. Web report. Cat no: IHW 227. Canberra: AIHW, https://www.aihw.gov.au/reports/indigenous-australians/indigenous-primary-health-care-results-osr-nkpi/overview/summary

AIHW 2021d. Acute rheumatic fever and rheumatic heart disease in Australia, 2015–2019. Cat no. CVD 90. Canberra. AIHW, Acute rheumatic fever and rheumatic heart disease in Australia, 2015–2019, About - Australian Institute of Health and Welfare (aihw.gov.au)

Aroney C, Aylward P, Kelly A, Chew D & Clune E (on behalf of the Acute Coronary Syndrome Guidelines Working Group) 2006. Guidelines for the management of acute coronary syndromes 2006. Medical Journal of Australia 184:S2–S9.

BCCF (Better Cardiac Care Forum) 2014. National recommendations for Better Cardiac Care for Aboriginal and Torres Strait Islander people: post-forum report. Unpublished paper prepared for the Australian Health Ministers' Advisory Council meeting, Canberra, June.

Brown A, O'Shea R, Mott K, McBride K, Lawson T & Jennings G (on behalf of the ESSENCE Steering Committee) 2015. Essential Service Standards for Equitable National Cardiovascular Care for Aboriginal and Torres Strait Islander people. Heart, Lung and Circulation 24: 126–41.

Chew DP, Scott IA, Cullen L, French JK, Briffa TG, Tideman PA et al. 2016. National Heart Foundation of Australia and Cardiac Society of Australia and New Zealand: Australian clinical guidelines for the management of acute coronary syndromes 2016. Medical Journal of Australia 205:128–33.

Clark R, Coffee N, Turner D, Eckert K, van Gaans A, Wilkinson D et al. 2012. Application of geographic modeling techniques to quantify spatial access to health services before and after an acute cardiac event: the Cardiac ARIA Project. Circulation 125:2006–14.

Coffey P, Ralph A & Krause V 2018. The role of social determinants of health in risk and prevention of group A streptococcal infection, acute rheumatic fever and rheumatic heart disease: a systematic review. PLoS Neglected Tropical Diseases 12(6):e0006577, https://doi.org/10.1371/journal.pntd.0006577

Department of Health 2014. MBS health assessments items 701, 703, 705, 707 and 715. Canberra: Department of Health. Viewed 1 February 2016, www.health.gov.au/internet/main/publishing.nsf/Content/mbsprimarycare_mbsitem_general_factsheet

Department of Health 2017. Cardiac Services Clinical Committee of the Medicare Benefits Schedule Review Taskforce. Canberra: Department of Health. Viewed 15 January 2018, www.health.gov.au/internet/main/publishing.nsf/Content/MBSR-committees-cardiac

Department of Health 2018. Medicare Benefits Schedule Book—Category 2: operating from 1 February 2018. Canberra: Department of Health.

Health Insurance Act 1973. No. 42 of 1974. Section 19(2). Canberra: Commonwealth of Australia. Viewed 17 June 2016, www.legislation.gov.au/Details/C2016C00590/Html/Text#_Toc452725323

Ilton M, Walsh W, Brown A, Tideman P, Zeltz C & Wilson J 2014. A framework for overcoming disparities in management of acute coronary syndromes in the Australian Aboriginal and Torres Strait Islander population. A consensus statement from the National Heart Foundation of Australia. Medical Journal of Australia 200:639–43.

Jaine R, Baker M & Venugopal K 2011. Acute rheumatic fever associated with household crowding in a developed country. The Pediatric Infectious Disease Journal 30(4):315–19.

Lopez D, Katzenellenbogen J, Sanfilippo F, Woods J, Hobbs M, Knuiman M et al. 2014. Transfers to metropolitan hospitals and coronary angiography for rural Aboriginal and non-Aboriginal patients with acute ischaemic heart disease in Western Australia. BMC Cardiovascular Disorders 14:58.

NACCHO (National Aboriginal Community Controlled Health Organisation) & RACGP (Royal Australian College of General Practitioners) 2018. National guide to a preventive health assessment for Aboriginal and Torres Strait Islander people. 3rd edn. East Melbourne, Victoria: RACGP.

NHFA (National Heart Foundation of Australia) 2010. Secondary prevention of cardiovascular disease. Canberra: NHFA.

NHFA & CSANZ (Cardiac Society of Australia and New Zealand) 2016. National Heart Foundation of Australia & Cardiac Society of Australia and New Zealand: Australian clinical guidelines for the management of acute coronary syndromes 2016. Heart, Lung and Circulation 25:895–951.

Noonan S. 2020. Can acute rheumatic fever and rheumatic heart disease be prevented? Darwin: RHD Australia. Viewed 10 December 2020, https://www.rhdaustralia.org.au/can-acute-rheumatic-fever-and-rheumatic-heart-disease-be-prevented

Ong M & Weeramanthri T 2000. Delay times and management of acute myocardial infarction in Indigenous and non-Indigenous people in the Northern Territory. Medical Journal of Australia 17:201–4.

Parnaby M & Carapetis J 2010. Rheumatic fever in Indigenous Australian children. Journal of Paediatrics and Child Health 46:526–33.

Randall D, Jorm L, Lujic S, O'Loughlin A, Eades S & Leyland A 2013. Disparities in revascularization rates after acute myocardial infarction between Aboriginal and non-Aboriginal people in Australia: clinical perspective. Circulation 127:811–19.

RHD Australia (ARF/RHD writing group) 2020. The 2020 Australian guideline for prevention, diagnosis and management of acute rheumatic fever and rheumatic heart disease (3rd edn). Northern Territory: RHD Australia, Menzies School of Health Research.

Sims SA, Colquhoun S, Wyber R, Carapetis JR 2016. Global disease burden of Group A Streptococcus. In: Ferratti JJ, Stevens DL, Fischetti VA (eds). Streptococcus pyogenes: basic biology to clinical manifestations. Oklahoma City: University of Oklahoma Health Sciences Centre.

Tideman P, Tirimacco R, Senior D, Setchell J, Huynh L, Tavella R et al. 2014. Impact of a regionalised clinical cardiac support network on mortality among rural patients with myocardial infarction. Medical Journal of Australia 200:157–60.

Wyber R & Carapetis J 2015. Evolution, evidence and effect of secondary prophylaxis against rheumatic fever. Journal of Practice of Cardiovascular Sciences 1(1):9–14.

# List of tables

# List of figures

# Report editions

This report, *Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: sixth national report 2021*, is part of an annual series. The 5 earlier editions can be downloaded for free from the Australian Institute of Health and Welfare (AIHW) website at https://www.aihw.gov.au/reports/indigenous-australians/better-cardiac-care-measures-18-19/contents/table-of-contents

# Related material

The following 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 2021. Acute rheumatic fever and rheumatic heart disease in Australia, 2015–2019. Cat no. CVD 90. Canberra. AIHW, Acute rheumatic fever and rheumatic heart disease in Australia, 2015–2019, About - Australian Institute of Health and Welfare (aihw.gov.au)

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 sixth national report on the 21 Better Cardiac Care measures for Aboriginal and Torres Strait Islander people, with updated data available for 14 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.

aihw.gov.au

AIHW

Stronger evidence,
better decisions,
improved health and welfare