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Better Cardiac Care measures for Aboriginal and Torres Strait Islander people

Eighth national report

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Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: eighth national report 2023

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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 (First Nations) people.

Five priority areas comprising 21 measures were developed to monitor the progress of the project. In this eighth national report, 12 measures in the earlier reports are updated and 5 new measures are included. New measures included for the first time are from the National Integrated Health Services Information (NIHSI) on ongoing preventive care and medication adherance for patients discharged from hospital with cardiac condtions (Measures 3.4, 4.1, 4.2, 4.3, 4.4). 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.

Key findings

Some progress has been made toward better cardiac care for First Nations people. The level of access for cardiac-related health services has improved. The proportion of First Nations people who received the recommended intervention and ongoing preventive care following hospitalisation for a severe heart attack has been increasing over time. The mortality rate from cardiac conditions is falling (Table 1).

But challenges remain in some areas:

- First Nations people are less likely than non-Indigenous Australians to receive the recommended intervention following hospitalisation for a severe heart attack.
- While the mortality rate from cardiovascular disease for First Nations people is falling, it is still much higher than non-Indigenous Australians.

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

No.	Measures	Key findings	Change over time[(b)]
Priority area 1: Early cardiovascular risk assessment and management			
1	1.1 Annual health assessments, 2021–22	24% of First Nations people had an MBS-subsidised health assessment	↑
2	1.2 CVD risk assessment, June 2023	35% of First Nations regular clients of Indigenous-specific 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 First Nations people 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 First Nations people without a circulatory condition who were at high risk of cardiac disease, were current smokers who saw a doctor, health professional or specialist in the previous 12 months and discussed quitting smoking.	n.a.
Priority area 2: Timely diagnosis of heart disease and heart failure			
4	2.1 Cardiac-related diagnostic services, 2021–22	61,561 First Nations people received one or more relevant cardiac-related diagnostic services (a rate of 7%).	◄►
5	2.2 Diagnostic services recieved within 30 days of referral	There is no available data to report on this measure yet.	n.a.
6	2.3 Suspected or confirmed cardiac disease case reviewed by a cardiologist, 2021–22	61,679 First Nations people had suspected/confirmed cases of cardiac disease, of which 25% were reviewed by a cardiologist.	n.a.
Priority area 3: Guideline-based therapy for ACS			
7	3.1 STEMI events treated by PCI, 2018–21	1,268 hospitalised events for STEMI were among First Nations people, with 72% of those treated by PCI.	↑
8	3.2 Patients with STEMI not provided reperfusion therapy	This measure has been removed based on expert advice.	n.a.
9	3.3 ACS events that included diagnostic angiography or definitive revascularisation, 2018–21	6,033 hospitalised events for ACS among people aged 18 and over were for First Nations people (5% of all events), of which 61% included at least one diagnostic angiography or definitive revascularisation procedure.	↑
10	3.4 ACS patients discharged from hospital on appropriate secondary prevention medicines, 2018–19	1,956 First Nations patients were discharged from hospital in 2018–19 with a principal diagnosis of ACS, of which 87% were on appropriate CVD medicines within 30 days of discharge from hospital.	n.a.
11	3.5 AMI in-hospital mortality rates, 2018–21	2.8% of hospitalisations for AMI among First Nations people aged 35 and over ended with death (123 deaths).	↓
Priority area 4: Optimisation of health status and provision of ongoing preventive care			
12	4.1 Primary health-care professional review within 12 months after discharge from hospital with a cardiac condition, 2018-19	97% of First Nations people were reviewed by a primary health-care professional within 12 months after discharge from hospital with a cardiac condition.	◄►
13	4.2 Chronic Disease Management services within 12 months after discharge from hospital with a cardiac condition, 2018-19	64% of First Nations people received Medicare Chronic Disease Management items within 12 months after discharge from hospital with a cardiac condition.	↑
14	4.3 Specialist physician review within 12 months after discharge from hospital with a cardiac condition, 2018-19	67% of First Nations people were reviewed by a specialist physician within 12 months after discharge from hospital with a cardiac condition.	↑
15	4.4 CHD patients discharged from hospital remaining on secondary prevention medications, 2018-19	76% of First Nations patients with coronary heart disease were remaining on their medication at 12 months post-discharge.	n.a.

(continued)

No.	Measures	Key findings	Change over time(b)
Priority area 5: Strengthening the diagnosis, notification and follow up of rheumatic heart disease			
16	5.1.1 Incidence of ARF, 2021	582 episodes of ARF were reported among First Nations people (a rate of 75 per 100,000 population).	↑
	5.1.2 New diagnoses of RHD, 2021	351 new RHD diagnoses were reported among First Nations people (a rate of 73 per 100,000 population).	↑
17	5.2 Recurrent ARF, 2021	Among all First Nations people prescribed BPG, there were 3.7 ARF recurrences per every 100 patient-years at risk.	◀▶
18	5.3 Treatment with BPG doses, 2021	4,816 First Nations people were prescribed BPG every 21 or 28 days. In 2021, 31% of these received 80% or more of their required doses.	↓
19	5.4 Echocardiogram in the previous 12 months for moderate or severe RHD	This measure was partially reported previously, but there is no new data to report on this measure yet.	n.a.
Summary measures: Hospitalisation and mortality			
20	6.1 Hospitalisations for cardiac conditions, 2018–21	37,516 First Nations hospitalisations were for cardiac conditions (a rate of 15 per 1,000 population).	n.a.
21	6.2.1 Deaths due to cardiac conditions, 2019–2021	1,797 First Nations people died from cardiac conditions (a rate of 79 per 100,000 population).	↓
	6.2.2 In-hospital deaths for cardiac-related hospitalisations, 2018–21	642 First Nations people who were admitted to hospital for cardiac conditions died in hospital (a rate of 25 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 or not able to be interpreted; ◀▶ no change; green arrow=positive change; red arrow= negative change

(a) All rates are crude and will differ from age-standardised rates presented elsewhere in the report. Comparable age-standardised results for First Nations people and non-Indigenous Australians are in Appendix C.

(b) Data for measures 3.4, 4.1, 4.2, 4.3, 4.4 are for New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory only. Data for measures 5.1.1, 5.1.2, 5.2, 5.3, 5.4 are for Queensand, 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.

(c) Change over time data refer to: 2006–07 to 2021–22 for measures 1.1 and 2.1; June 2017 to June 2023 for Measure 1.2; 2006–07 to 2020–21 for measures 3.1, 3.3 and 6.1; 2009–12 to 2018–21 for measures 3.5 and 6.2.2; 2017 to 2021 for measures 5.1.1. 5.1.2 and 5.2; and 2006 to 2021 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 (First Nations) people.

Cardiac conditions are more common among First Nations people than non-Indigenous Australians. The many reasons for this include 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 Aborignal 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 First Nations and other organisations, as well as from the Australian Government and jurisdictional health departments, attended the forum.

The project aims to reduce mortality and morbidity from cardiac conditions among First Nations people 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 First Nations people. 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 (RHD) – 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 7 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; AIHW 2016; AIHW 2018a; AIHW 2019; AIHW 2021a, 2021b; AIHW 2023). Table 1.1 summarises the data available for the 21 measures. Shaded in green are the 3 fully reported measures. Shaded in blue are the 15 partially reported measures that have been either modified to suit the data available or use proxy measures to enable reporting (6 measures), or because data could not be reported nationally (9 measures). Shaded in orange are the 2 measures not able to be reported. Shaded grey is 1 measure that has been removed based on expert advice.

Based on data availability, the previous annual reports covered 15 measures. This report, the eighth in the series, updates results for 12 previously reported measures, and 5 new measures are included. New measures included for the first time are from the National Integrated Health Services Information (NIHSI) on ongoing preventive care and medication adherence for patients discharged from hospital with cardiac condtions. These measures are described in Table 1.1 as 'partially available' because the NIHSI does not currently include data for all states and territories. Updated data are not available for Measure 1.3 on primary care practitioner follow up. Results shown for this measure 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 has not been able to 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).

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

- by age and sex
- by state and territory
- by remoteness area
- over time.

While some comparisons are made between First Nations people and non-Indigenous Australians, this report mainly focuses on crude differences within the First Nations population. This differs from previous BCC reports where age-standardised rates were presented comparing results for First Nations people and non-Indigenous Australians.

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 or projected resident population as at 30 June for the relevant reporting period for each measure, based on the 2016 Australian Bureau of Statistics (ABS) Census data (ABS 2019). Rates calculated for BCC reports before the 2020 report used populations based on the 2011 ABS Census data and, therefore, historical data in this report may differ from previously published results.

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

Throughout the report and supplementary tables, periods based on full calendar years (1 January to 31 December) are written as, for example, 2021 for one year. With 2 or more calendar years in the period, the first and final years are written in full. For example, 2019–2021 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, 2020–21 covers one financial year and 2018–21 covers 3 financial years (2018–19 to 2020–21).

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 about backcasting of population 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[(a)]
1.3 Proportion of people with risk factors for cardiac disease with evidence of primary care practitioner follow up	NATSIHS	Partially available periodically[(a)]
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[(a)]
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[(b)]
3.2 Proportion of people with STEMI not provided any reperfusion therapy		**Measure removed**
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[(c)]
3.4 Proportion of people diagnosed with ACS discharged from hospital on appropriate secondary prevention medicines	NIHSI	Partially available annually[(d)]
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[(c)]
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	NIHSI	Partially available annually[(d)]
4.2 Number and proportion of patients with cardiac disease who received follow-up Medicare items within 3 months of hospital discharge	NIHSI	Partially available annually[(d)]
4.3 Number and proportion of patients with cardiac disease reviewed by a specialist physician within 3 or 12 months of hospital discharge	NIHSI	Partially available annually[(d)]
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	NIHSI	Partially available annually[(d)]

(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		
5.1 Annual incidence of all Acute Rheumatic Fever (ARF) episodes	National RHD data collection	Partially available annually(d)
5.2 ARF episodes per 100 patient-years among people prescribed secondary prophylaxis **[revised indicator]**	National RHD data collection	Partially available annually(d)
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(d)
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; no new data to report
Summary measures: Hospitalisation and mortality		
6.1 Age-standardised rates of hospitalisation for a cardiac condition	NHMD	Available annually
6.2 Age-standardised rates of cardiac mortality	NMD/NHMD	Partially available annually(d)

🟩 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.

a. These measures are partially reported because they report proxy measures and the measures have been modified to suit the data available.

b. This measure is partially reported because data to report on treatment with fibrinolysis are not available yet and data are reported on hospital events, not 'people.'

c. These measures are partially reported because data are reported on hospital events, not 'people'; Data are also not available to report on timeframes specified.

d. These measures are partially reported because data are not yet available for all jurisdictions.

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; NIHSI = National Integrated Health Services Information; 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 and Aged Care 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 workshop 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 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.

In the 2020–21 financial year, the usefulness of the NIHSI was assessed to enable reporting of measures not previously achievable from unlinked data sources. Based on the findings from the preliminary analyses using NIHSI version 0.5 it was concluded that the NIHSI is a suitable data source for monitoring ongoing preventive care and medication adherence for patients discharged from hospital with cardiac conditions, and was recommended for use to enhance reporting on measures in the Better Cardiac Care for Aboriginal and Torres Strait Islander annual report that are not currently reported or are only partially reported. Since then, analyses have been updated using a newer version of NIHSI (version 2.0) that has data from six jurisdictions (NSW, ACT, Vic, Tas, Qld, SA) and data up to the 2019–20 financial year. These analyses using linked hospital data up to the 2018-19 financial year and 12 month follow-up of MBS and PBS data are reported for the first time in the current report.

In the 2022–23 financial year, investigations were undertaken to consider the feasibility of obtaining data on emergency treatment from ambulance services and the Royal Flying Doctor Services (RFDS) to provide information towards measure 3.1 (ii) (proportion of people with STEMI presenting within 12 hours and eligible to receive emergency reperfusion therarpy treated by fibrinolysis). Investigations revealed that while ambulance data has been used in some studies, including work done by the AIHW, this would be a time consuming, resource-intensive and potentially expensive process. Given it would likely provide only a small proportion of the data required for measure 3.1, this is not considered to be a cost-effective option and is not recommended for further investigation. Data from the RFDS may be incomplete as it is not clear whether data on treatment during retrieval (required for reporting measure 3.1) is recorded or can be obtained and used. Given the importance of the RFDS in responding to cardiac events in remote communities, this data source will continue to be followed up.

An exploration was also undertaken for potential sources of information for measure 4.4 on the use of over-the-counter, section 100 and ‘doctor’s bag’ medications that are currently not included in the PBS (proportion with CHD on secondary prevention medications at 3, 6, and 12 months post-discharge). While there are disparate limited sources of information on these various drugs, there is often no accompanying information on demographics (particularly Indigenous status), or the specific medical conditions that the drugs are required for. Hence they are not able to be used to report against measure 4.4.

Investigation of the My Health Record data or the Primary Health Care Data Asset could not be undertaken in this financial year as development of these data assets is still in progress. These datasets are expected to include comprehensive information on primary health care encounters, as well as ongoing treatment, and would potentially provide data for measures 1.2 (cardiovascular risk assessment), 2.2 (proportion referred for initial diagnosis who receive an appropriate test within 30 days) and 2.3 (proportion with suspected or confirmed cardiac disease reviewed by a cardiologist within the previous 12 months), as well as supporting information for some other measures. Discussions were held with the relevant data custodians and experts within AIHW, who advised that there is not yet sufficient detail about the expected content to be able to formulate recommendations as to whether further investigation would be warranted. Furthermore, both data sources are not expected to be available for use at least until 2025.

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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 First Nations people 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 and 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:

- 2021–22 Medicare Benefits Schedule (MBS) database for Measure 1.1 on health assessments
- AIHW June 2023 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 First Nations people who had an MBS-subsidised health assessment in the relevant financial year. Table B2 lists relevant MBS item numbers included in the measure.

All First Nations people 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 and Aged Care 2014). Included in this measure are 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. These are referred to as 'general' health assessments in this report and are included in this measure.

However, the main type of health assessment being measured is Item 715. Equivalent health assessments that may occur at private consultations using other MBS-subsidised or unsubsidised 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 First Nations people. 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 2021–22, nearly one-quarter of First Nations people – a crude rate of 24%, or 214,530 people – received a health assessment, 97% of which were Indigenous-specific MBS items.

Time trend

- Between 2006–07 and 2021–22, the proportion of First Nations people who had a health assessment rose from 4% to 24%, peaking at 30% in 2018–19. The proportion rose from 4% to 26% for females, and 4% to 22% 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.
- Since 2019–20 onwards, due to the impacts of the COVID-19 pandemic (AIHW 2020a), the overall numbers and proportion of those who had a health assessment has declined, ending the trend of increasing numbers of health checks over the previous years (AIHW 2021c).

Age and sex

In 2021–22:

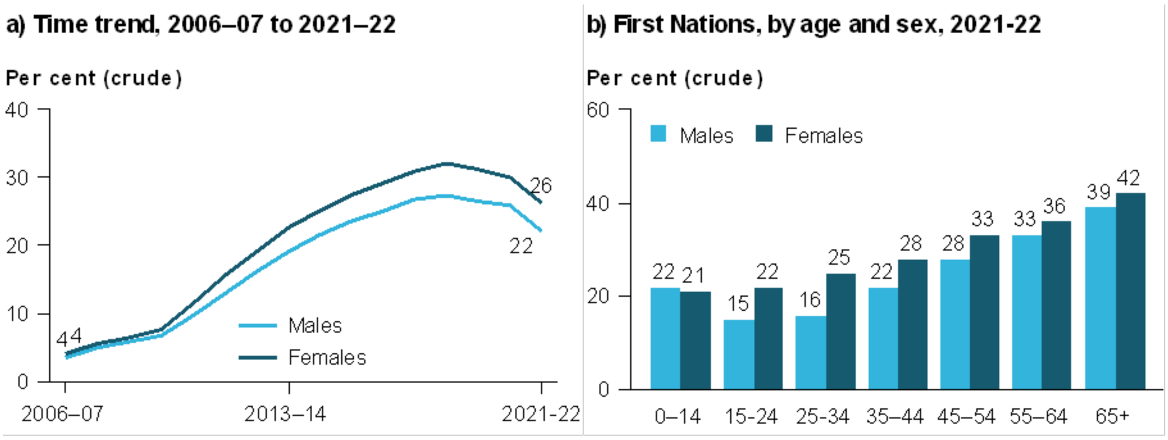
- less than one-quarter (22%) of First Nations children aged under 15 had a health assessment. Among First Nations people aged 15 and over, the proportion ranged from 19% among those aged 15–24 to 41% among those aged 65 and over
- a higher proportion of First Nations females than males had a health assessment among those aged 15 and over (Figure 1.1b).

State and territory and remoteness area

In 2021–22, the proportion of First Nations people who had a health assessment was:

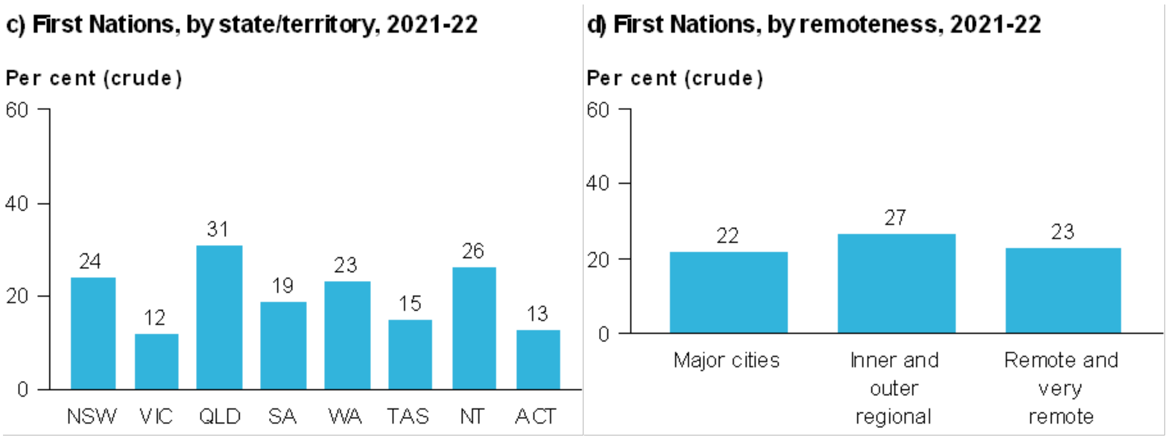
- highest in Queensland (31%), and lowest in Victoria (12%) (Figure 1.1c)
- highest in *Inner and outer regional* areas combined (27%), and lower in *Major cities* (22%) and *Remote and very remote* areas combined (23%) (Figure 1.1d).

Figure 1.1: Proportion of First Nations people who had an MBS health assessment, by various characteristics



a) Time trend, 2006–07 to 2021–22

b) First Nations, by age and sex, 2021-22



c) First Nations, by state/territory, 2021-22

d) First Nations, by remoteness, 2021-22

Notes

1. Data for these figures are available in online supplementary tables 1.1a to 1.1d.
2. 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.
3. Numbers and rates for the general health assessments data have been adjusted for Indigenous under-identification using weights derived by the AIHW from the Medicare Voluntary Indigenous Identifier database.
4. Estimates generated by the adjustment methodology for a given period will vary according to the point in time at which they are calculated. The adjustmet factors will be updated regularly to account for the ongoing change in the population coverage of the VII sample. Caution should be made when comparing to previous publications.

Source: AIHW analysis of Medicare data.

Measure 1.2: Cardiovascular disease risk assessment

This measure uses data from the nKPI collection. Data are reported on the number and proportion of First Nations 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), or low (less than 10% chance).

This indicator was collected for the first time in June 2017 and data up to June 2023 are now available to report. Data in previously published results may differ as data in this report have been revised to exclude services using clinical information systems (CIS) that do not capture all necessary data to calculate CVD risk. Also, organisations using the Primary Care Information System (predominantly the Northern Territory Government) are not included in these CVD risk assessment results (AIHW 2022a). Appendix A provides 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 2020b). However, a decision was subsequently made to suspend further updates to this indicator pending the expected release of the Heart Foundation's revised CVD risk guidelines and associated online risk calculaters. These guidlelines were released in 2023 and, from December 2023, reporting of data from this indicator has been suspended until revisions related to the release of these new guidelines can be made.

Why is this important?

Largely preventable, CVD is a leading cause of death among First Nations people (AIHW 2020c). 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 2023, 35% of First Nations regular clients aged 35–74 with a CVD risk assessment result recorded in the previous 24 months were classified as high risk, 7% as moderate risk and the remainder (58%) as low risk (Figure 1.2a).
- Between June 2017 and June 2023, the proportion of high-risk clients fluctuated between 34% and 36% (Figure 1.2a).

Age and sex

In June 2023:

- 20% of First Nations 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 (66%) for those aged 65–74 (Figure 1.2b).
- The proportion of low-risk clients was higher for First Nations women (62%) than men (52%). However, men were about twice as likely as women (11% compared with 5%) to be classified as being at moderate risk. A slightly higher proportion of men (37%) than women (33%) were classified as being at high risk (Figure 1.2c).

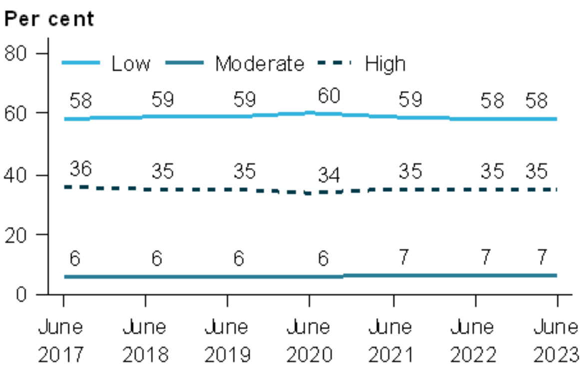
State and territory and remoteness area

In June 2023, the proportion of high-risk clients:

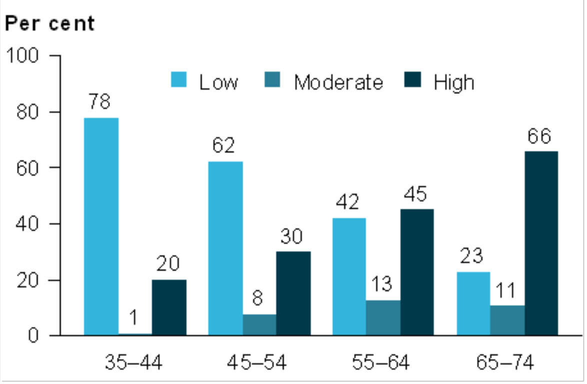
- was highest for First Nations clients in South Australia (41%) and lowest in New South Wales and Australian Capital Territory combined, and Victoria and Tasmania combined (22%) (Figure 1.2d)
- varied by remoteness, ranging from 25% in *Major cities and* Inner *regional* to over 40% in *Remote* and *Very remote* areas (Figure 1.2e).

Figure 1.2: First Nations 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

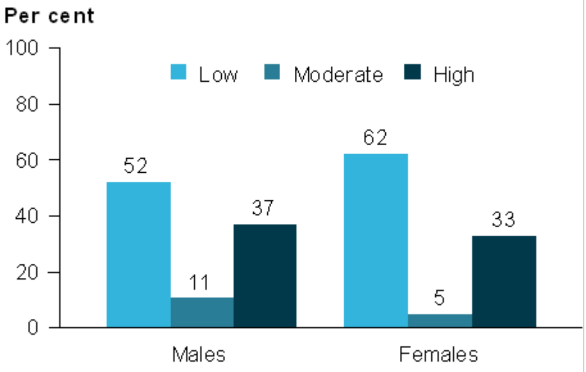
a) By CVD risk, June 2017–June 2023



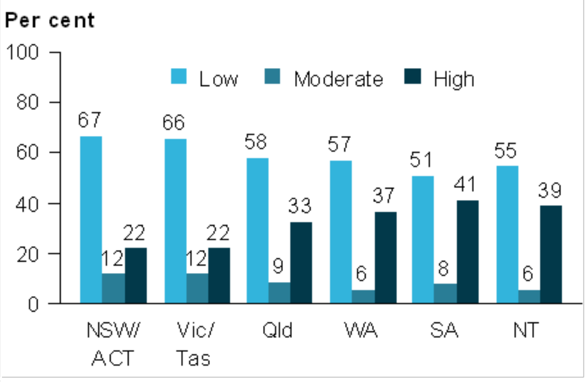
b) By age, June 2023



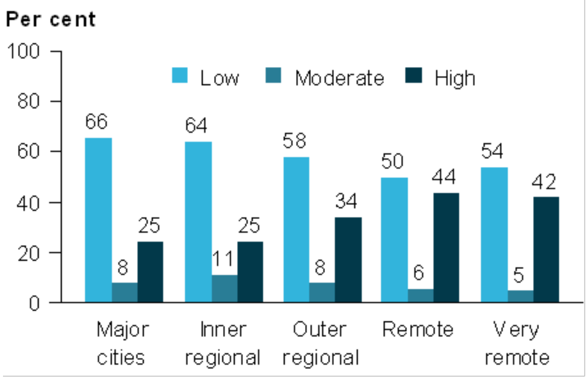
c) By sex, June 2023



d) By state/territory, June 2023



e) By remoteness, June 2023



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 First Nations people, 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 most 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 include data only from organisations with clinical information systems which capture all necessary 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 (S2.86, S2.87, S2.89) of the Aboriginal and Torres Strait Islander specific primary heath care: results from the OSR and nKPI collections.

Source: AIHW nKPI data collection.

Measure 1.3: Primary care practitioner follow-up

This measure uses data from the ABS 2018–19 NATSIHS. As newer data are not available to update this measure, results are the same as reported in the 2020 report onwards. Data are reported on the:

i. proportion of First Nations people 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 First Nations people aged 18 and over without a current and long-term circulatory condition, who were at high risk of cardiac disease and were current smokers, who saw a doctor, health professional or specialist in the previous 12 months and discussed quitting smoking.

The data provided are proxy measures for primary care practitioner follow up and 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

First Nations people were classified as being 'at high risk of cardiac disease' based on having one or more of the following: self-reported type 2 diabetes, self-reported hypertensive disease or measured high blood pressure (systolic or diastolic blood pressure >140/90 mmHg), self-reported high cholesterol, or current smoker (includes daily, at least weekly, or less than weekly).

Results: Blood pressure check

Overall

- In 2018–19, 88% of First Nations people 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:

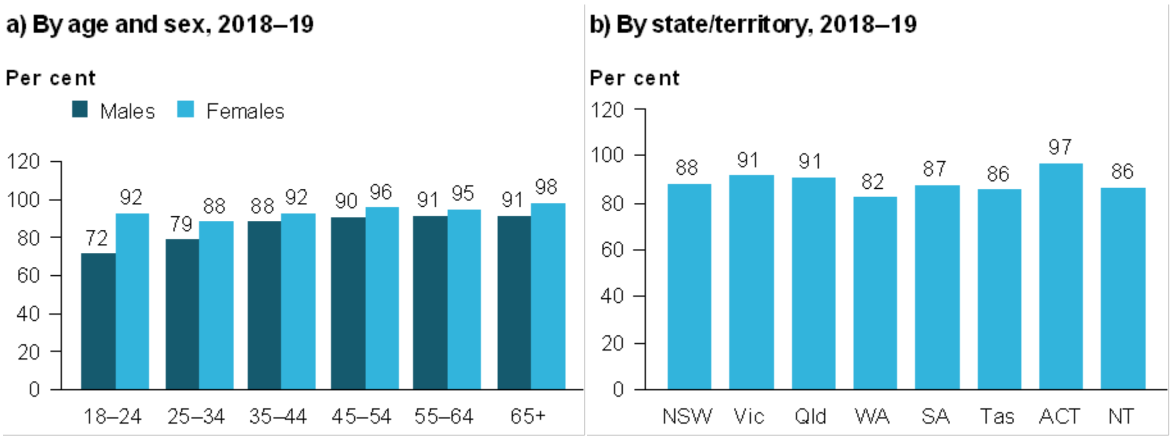
- the proportion of First Nations people at high risk of cardiac disease who had their blood pressure checked in the previous 2 years increased with age from 81% for those aged 18–24 to 95% for those aged 65 and over
- a higher proportion of First Nations women than men at high risk of cardiac disease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

State and territory and remoteness area

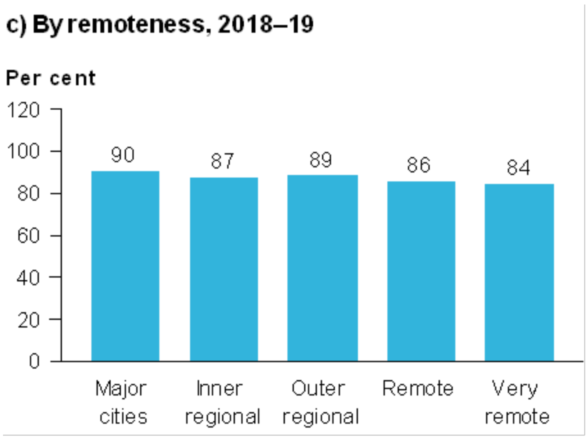
In 2018–19, the proportion of First Nations people at high risk of cardiac disease who had their blood pressure checked in the previous 2 years was:

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

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


a) By age and sex, 2018–19

b) By state/territory, 2018–19


c) By remoteness, 2018–19

Notes

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

Source: AIHW analysis of ABS 2018–19 NATSIHS.

Results: Discussed quitting smoking

Overall

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

Age and sex

In 2018–19:

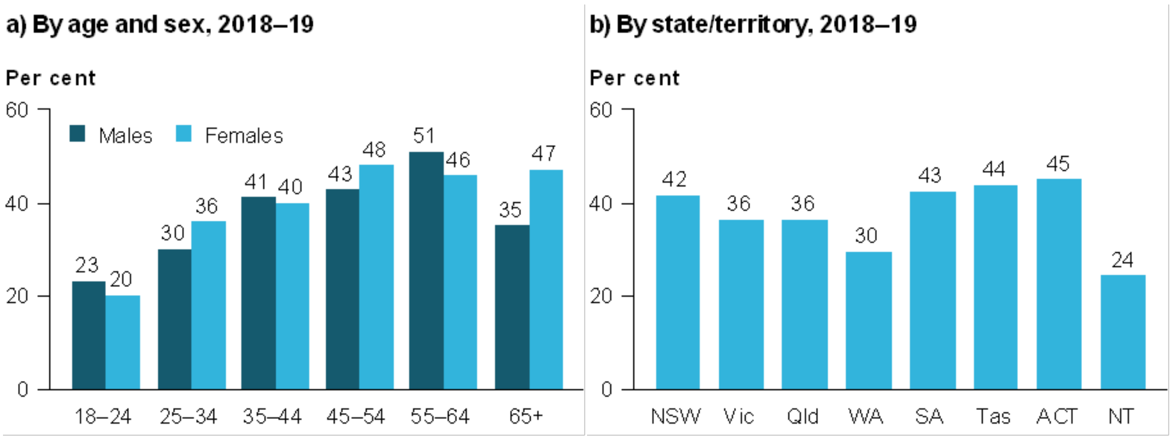
- the proportion of First Nations people at high risk of cardiac disease who discussed quitting smoking with their doctor, health professional or specialist in the previous 12 months increased with age from 21% for those aged 18–24 to 48% for those aged 55–64, decreasing to 41% for those aged 65 and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

State and territory and remoteness area

In 2018–19, the:

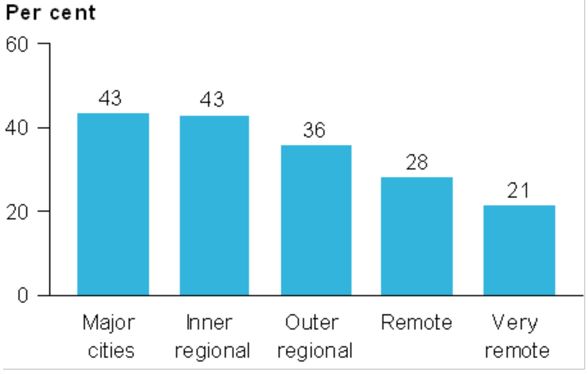
- Northern Territory had the lowest proportion of First Nations people at high risk of cardiac disease who discussed quitting smoking with their doctor, health professional or specialist in the previous 12 months (24%) (Figure 1.3.2b)
- proportion of First Nations people at high risk of cardiac disease who discussed quitting smoking with their doctor, health professional or specialist in the previous 12 months decreased with increasing 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 First Nations people without a current and long-term circulatory condition who were at high risk of cardiac disease and current smokers who saw a doctor, health professional or specialist in the previous 12 months and discussed quitting smoking


a) By age and sex, 2018–19

b) By state/territory, 2018–19

c) By remoteness, 2018–19



Notes

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

Source: AIHW analysis of ABS 2018–19 NATSIHS.

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

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

The 3 measures recommended for this priority area are:

- Measure 2.1 for cardiac-related diagnostic services
- Measure 2.2 for receipt of diagnostic services within 30 days of referral (data not available to report)
- Measure 2.3 for review by cardiologist of suspected or confirmed cardiac disease.

Updated data are available from the 2021–22 Medicare Benefits Schedule (MBS) database for the following measures:

- Measure 2.1 for cardiac-related diagnostic services
- Measure 2.3 for review by cardiologist of suspected or confirmed cardiac disease

Measure 2.1: Cardiac-related diagnostic services

This measure reports on the number and proportion of First Nations people who received one or more relevant cardiac-related diagnostic services in the relevant financial year.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. These additional items, obtained from the Cardiac Services Clinical Committee of the Medical Benefit Schedule Review Taskforce (Department of Health and Aged Care 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 – MBS items that include various kinds of electrocardiography, and pacemaker and defibrillator testing
- diagnostic imaging services – MBS items that include various kinds of echocardiography, computed tomography scans and angiography (Department of Health and Aged Care 2018).

Results

Overall

In 2021–22:

- 61,561 First Nations people (7%) received one or more relevant cardiac-related diagnostic service/s
- 50,634 First Nations people (6%) claimed for diagnostic procedures and investigations and 24,977 claimed for diagnostic imaging services (3%) (Figure 2.1a). Note that individuals may claim for services in more than one category
- The age-standardised proportions were similar for First Nations people and non-Indigenous Australians.

Time trend

- After accounting for differences in population age structure between 2006–07 and 2021–22, the age-standardised proportion of those with MBS claims for cardiac-related diagnostic items stayed stable around 8% to 9% for both First Nations people and non-Indigenous Australians (Figure 2.1b).

Age and sex

In 2021–22, the proportion of First Nations people who had MBS claims for cardiac-related diagnostic items:

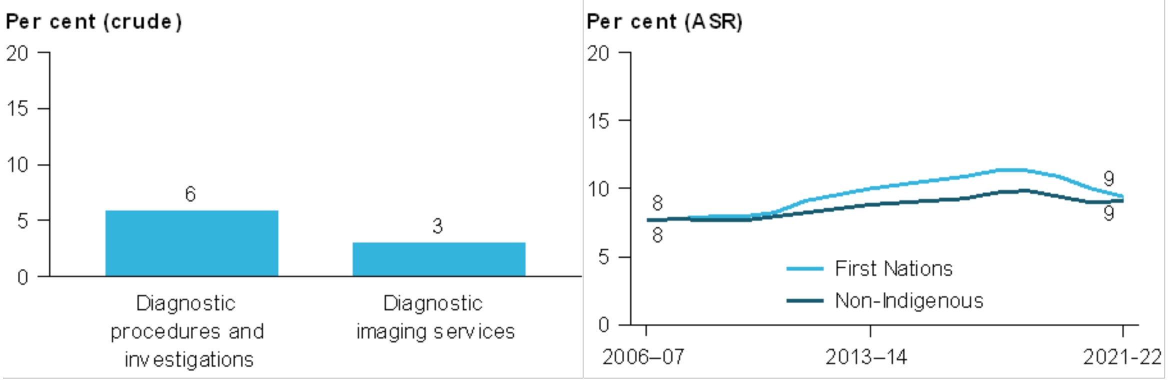
- increased with age, from 2% among those aged 0–14 to 22% among those aged 65 and over (Figure 2.1c)
- was slightly higher for First Nations females compared with First Nations males (8% versus 6%, respectively) (Figure 2.1d).

State and territory and remoteness area

In 2021–22, the proportion of First Nations people who had MBS claims for cardiac-related diagnostic items:

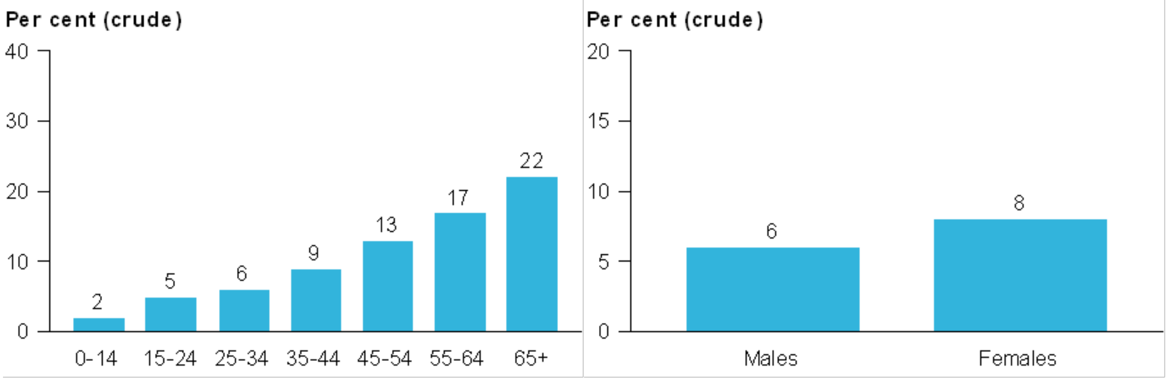
- was highest in the Northern Territory (10%) and ranged from 5% to 7% across the other states and territories (Figure 2.1e)
- was about 7% to 8% across all remoteness areas (Figure 2.1f).

Figure 2.1: Proportion of First Nations people who claimed cardiac-related Medicare Benefits Schedule diagnostic items, by various characteristics



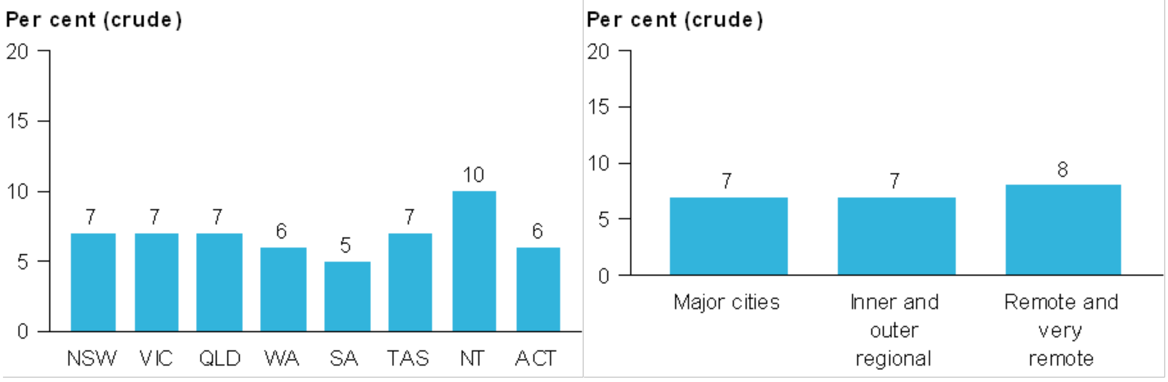
a) First Nations, by diagnostic type, 2021-22

b) Time trend, 2006–07 to 2021–22



c) First Nations, by age, 2021-22

d) First Nations, by sex, 2021-22



e) First Nations, by state/territory, 2021-22

f) First Nations, by remoteness, 2021-22

Notes:

1. Rates in Figure 2.1b are age-standardised rates (ASR) and account for differences in population age structure over this period. All other figures show crude 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 Indigenous under-identification using weights derived by the AIHW from the Medicare Voluntary Indigenous Identifier database.
5. Estimates generated by the adjustment methodology for a given period will vary according to the point in time at which they are calculated. The adjustmet factors will be updated regularly to account for the ongoing change in the population coverage of the VII sample. Caution should be made when comparing to previous publications.

Source: AIHW analysis of Medicare data.

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

This measure reports on the number and proportion of First Nations people with suspected or confirmed cardiac disease, reviewed by a cardiologist in the relevant financial year. Since the fourth annual report, this measure reported review by any specialist, not just a cardiologist, as the necessary MBS items for cardiologist review were not available in the MBS weighted Voluntary Indigenous Identifier database developed by the Department of Health and Aged Care. For this report, AIHW derived weights were applied to the MBS claims file and therefore it is possible to report on review by a cardiologist. Due to differences in methodology and definitions used in earlier reports, results should not be compared with previous reports.

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, particularly cardiologists, 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 First Nations people.

Results

Overall

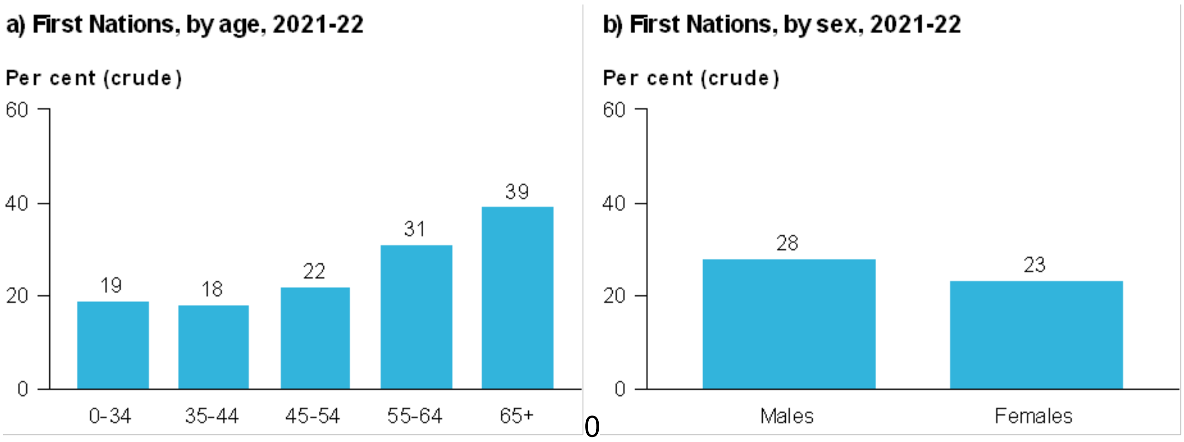
- In 2021–22, 61,679 First Nations people claimed MBS items suggesting suspected or confirmed cases of cardiac disease, of which 25% were reviewed by a cardiologist.
- After adjusting for differences in age and sex, First Nations people were less likely than non-Indigenous Australians to be reviewed by a cardiologist (rate ratio of 0.7).

Age and sex

In 2021–22, the proportion of First Nations people reviewed by a cardiologist:

- increased with age from 19% for those aged 0–34 to 39% for those aged 65 and over (Figure 2.3a)
- was higher for First Nations males (28%) compared with First Nations females (23%) (Figure 2.3b).

Figure 2.3: Proportion of First Nations people with suspected or confirmed cardiac disease who were reviewed by a cardiologist, by age and sex



Notes

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 Indigenous under-identification using weights derived by the AIHW from the Medicare Voluntary Indigenous Identifier database.

Source: AIHW analysis of Medicare data.

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

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

Data from the NHMD are about separations (see Glossary), not individuals. It is not possible to group associated hospitalisations for the same individual 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 (this measure has been removed)
- 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
- Measure 3.5 for AMI in-hospital mortality rates.

Updated data are available from the 2020–21 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.

New data are available from NIHSI version 2.0 for:

- Measure 3.4 on ACS patients discharged from hospital on appropriate secondary prevention medicines

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 whether PCI or fibrinolysis is provided 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 First Nations people, many of which are exacerbated by living in remote areas (Ilton et al. 2014).

Results

Overall

In 2018–19 to 2020–21 combined:

- 1,268 hospitalised STEMI events were among First Nations adults (4% of all hospitalised STEMI events), with 72% (crude rate) of those treated by PCI (Figure 3.1a)
- based on age-standardised proportions, First Nations adults were less likely than non-Indigenous adults to receive PCI (rate ratio of 0.9).

Age and sex

In 2018–19 to 2020–21 combined, the treatment of hospitalised STEMI events by PCI among First Nations adults was:

- lowest for the youngest (18–34, 62%) and oldest (65 and over, 62%) age groups, and highest for those aged 45–54 (77%) and 55-64 (74%) (Figure 3.1b)
- higher for men (73%) compared with women (69%) (Figure 3.1c).

Remoteness area

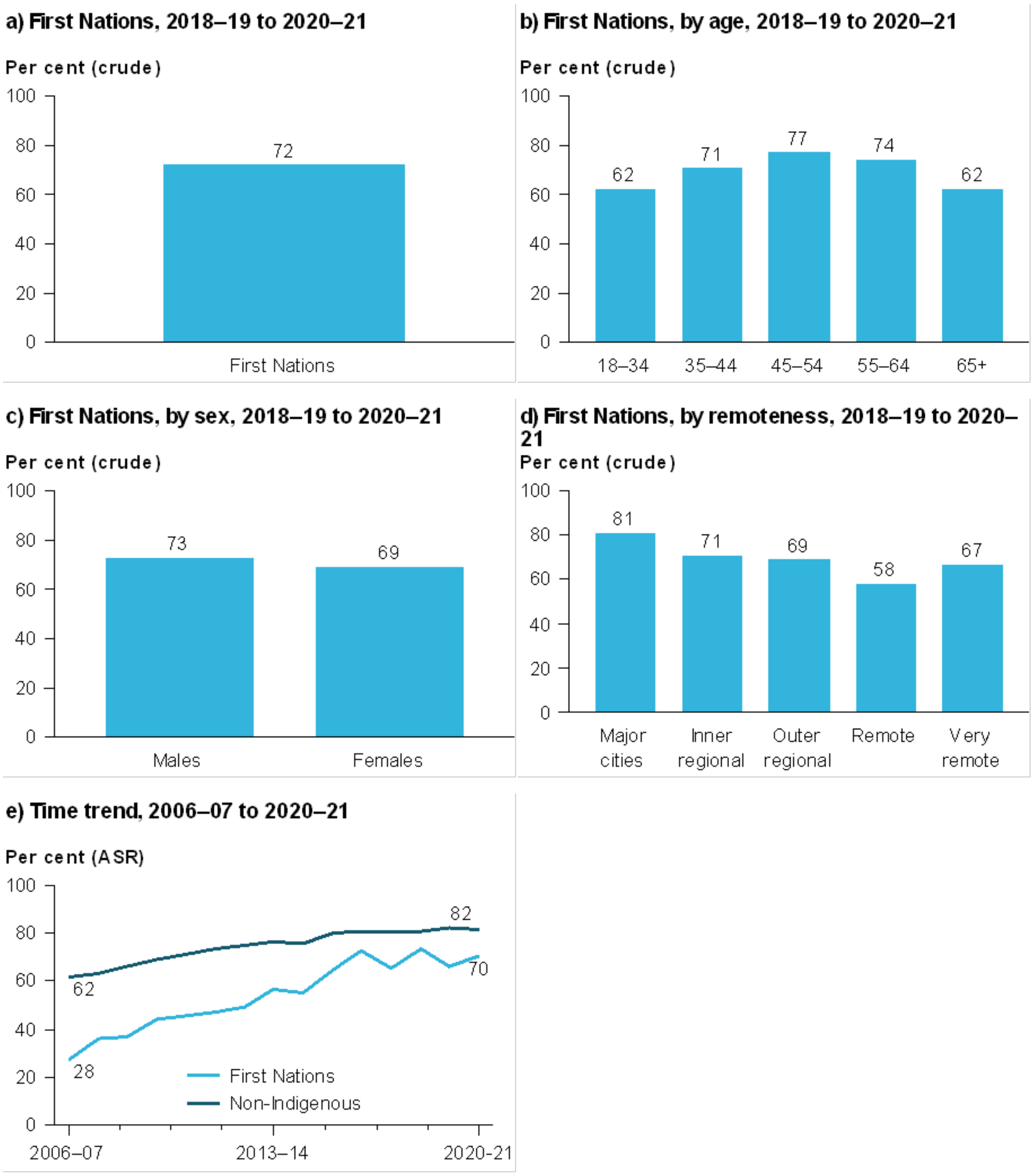
In 2018–19 to 2020–21 combined, the proportion of hospitalised STEMI events treated by PCI among First Nations adults:

- fell with increasing remoteness, from 81% in *Major cities* to 58% in *Remote* and 67% in *Very remote* areas (Figure 3.1d)
- resulted in the gap between First Nations adults and non-Indigenous adults being widest in *Very remote* areas.

Time trend

- After accounting for differences in population age structure between 2006–07 and 2020–21, 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 First Nations adults rose from 28% to 70%, and from 62% to 82% among non-Indigenous adults (Figure 3.1e).

Figure 3.1: Proportion of hospitalised events for STEMI among people aged 18 and over who were treated by percutaneous coronary intervention, by various characteristics



Notes

1. The time series analysis in Figure 3.1e 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 3.1e are age-standardised rates (ASR) and account for differences in population age structure over this period. All other figures show crude 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 First Nations people 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 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 and 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 First Nations people 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 First Nations people (Randall et al. 2013).

Results

Overall

In 2018–19 to 2020–21 combined:

- 6,033 hospitalised events for ACS among people aged 18 and over were for First Nations people (5% of all ACS events), of which 58% included diagnostic angiography, 35% received PCI, 4% had a CABG and 61% included at least one diagnostic angiography or definitive revascularisation procedure (Figure 3.3a)
- the age-standardised proportion of hospitalised ACS events among First Nations adults receiving a diagnostic angiography or a definitive revascularisation procedure was lower compared with non-Indigenous adults (rate ratio of 0.9).

Age and sex

In 2018–19 to 2020–21 combined:

- the proportion of First Nations hospitalised ACS events that included diagnostic angiography or a definitive revascularisation procedure was highest for the youngest age groups (18–34 and 35-44) at 71% and lowest for the oldest age group (65 and above) at 49% (Figure 3.3b)
- First Nations men had higher rates of diagnostic angiography or definitive revascularisation procedures compared with First Nations women (65% and 56%, respectively) (Figure 3.3c).

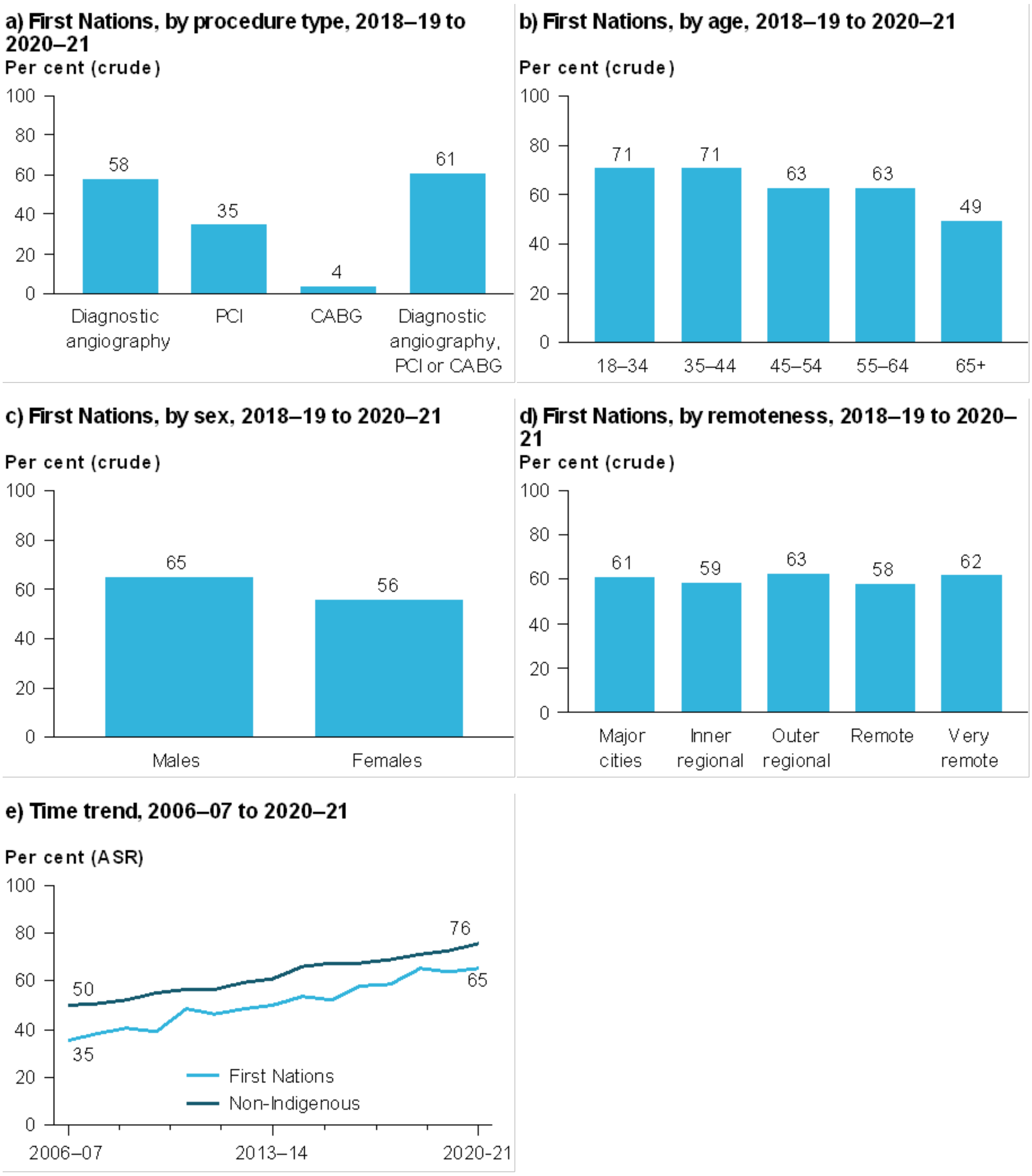
Remoteness area

- In 2018–19 to 2020–21 combined, the proportions of hospitalised ACS events for First Nations adults who received a diagnostic angiography or definitive revascularisation procedure showed no clear association with remoteness, but was lowest in *Remote* areas at 58% and highest in *Outer regional* areas at 63% (Figure 3.3d).

Time trend

- After accounting for differences in population age structure between 2006–07 and 2020–21, 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 First Nations adults that included a diagnostic angiography or definitive revascularisation procedure rose from 35% to 65%, compared with a rise from 50% to 76% among non-Indigenous adults (Figure 3.3e).

Figure 3.3: Proportion of hospitalised events among people aged 18 and over who received diagnostic angiography or definitive revascularisation procedure, by various characteristics



Notes

1. The time series analysis in Figure 3.3e 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 3.3e are age-standardised rates (ASR) and account for differences in population age structure over this period. All other figures show crude 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 First Nations people in the NHMD.

Source: AIHW NHMD.

Measure 3.4: ACS patients discharged from hospital on appropriate secondary prevention medicines

This measure reports on the number and proportion of First Nations patients discharged from hospital with a principal diagnosis of ACS on appropriate medicines for secondary prevention within 30 days of discharge. As per the data development plan, this measure is reported for the first time using data from NIHSI, which includes linked hospital and PBS data. Appendix A includes more details on NIHSI. This analysis is based on prescriptions filled and does not necessarily equate to adherence.

Anatomical Therapeutic Chemical classification (ATC) codes were used in this report to identify appropriate medicines for ACS patients. Medications in groups B01 and C01-C10, according to the ATC classification, are used for cardiovascular disease (see Appendix Table B5 for a list of medications).

Why is this important?

Secondary prevention medications have been shown to reduce the risk of another cardiovascular event for people with ACS (Chow 2019). There is evidence that there is a gap between the recommendation of the use of secondary prevention medications and the actual use of these medications after an ACS event (Chow 2019).

Results

Overall

In 2018–19, among 1,956 First Nations patients discharged from hospital with a principal diagnosis of ACS from New South Wales, Australian Capital Territory, Victoria, Tasmania, South Australia and Queensland, 87% (1,706 patients) were on appropriate CVD medicines within 30 days of discharge from the hospital (Figure 3.4a).

Age and sex

In 2018–19, the proportion of First Nations patients on appropriate CVD medicines within 30 days of discharge from hospital:

- was lowest among younger age groups of 0–34 and 35–44 at 70% and 81%, respectively. This proportion increased to 89% for those aged 55–64 and 92% for those aged 65 and above (Figure 3.4b)
- was similar for males (88%) and females (86%) (Figure 3.4c).

Remoteness areas

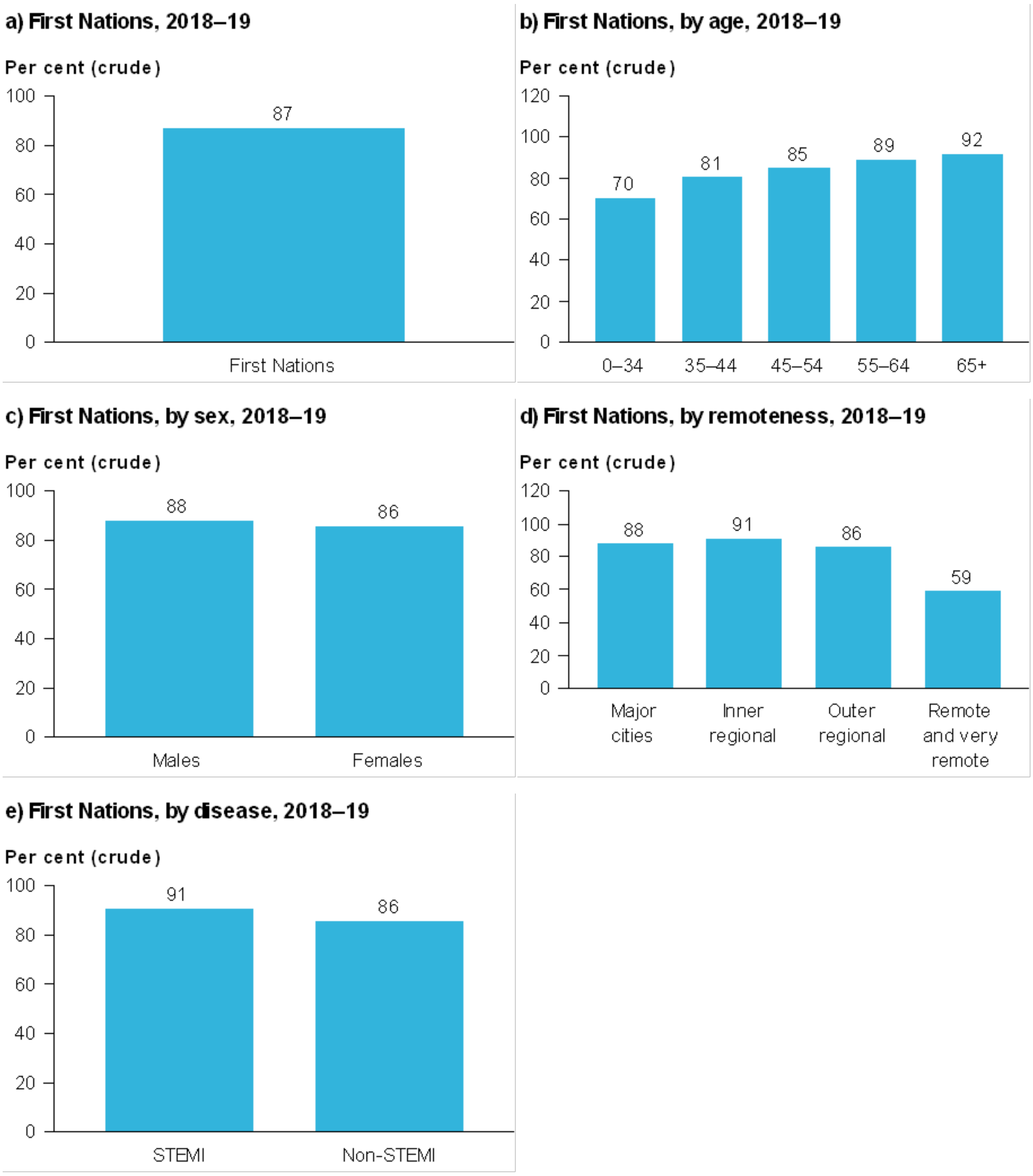
In 2018–19, the proportion of First Nations patients on appropriate CVD medicines within 30 days of discharge from hospital:

- was lowest among those discharged from hospitals in *Remote and very remote* areas combined (59%)
- was highest among those discharged from hospitals in *Inner regional* areas (91%) followed by *Major cities* (88%) (Figure 3.4d).

Disease type

In 2018–19, the proportion of First Nations patients on appropriate CVD medicines within 30 days of discharge from hospital was slightly higher for STEMI (91%) patients compared with non-STEMI (86%) patients (Figure 3.4e).

Figure 3.4: Proportion of First Nations patients with acute coronary syndrome (ACS) discharged from hospital in 2018-19 on appropriate CVD medicines within 30 days of discharge, by various characteristics



Notes

1. Data for these figures are for New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory combined. Data on hospitalisations for Western Australia and the Northern Territory are not currently available in the NIHSI.
2. STEMI includes ICD-10-AM codes in I21.0-I21.3, non-STEMI includes ICD-10-AM codes in all other ACS disease classifications.
3. Data for these figures are available in online supplementary tables 3.4a to 3.4e.

Source: AIHW NIHSI 2018-19, analysis of NIHSI

Measure 3.5: Acute myocardial infarction in-hospital mortality rates

This measure reports on the rate of separations for AMI among First Nations patients aged 35 and over that ended with death.

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 and Weeramanthri 2000; Tideman et al. 2014).

Results

Overall

In 2018–19 to 2020–21 combined:

- about 2.8% (crude rate) of hospitalisations for AMI among First Nations people aged 35 and over ended with death (123 deaths) (Figure 3.5a)
- the age-standardised in-hospital death rate was similar for First Nations adults and non-Indigenous adults.

Age and sex

In 2018–19 to 2020–21 combined:

- the in-hospital death rate was lowest for First Nations people aged 45–54 at 1.4%, and rose with increasing age to 5.5% for First Nations people aged 65 and above (Figure 3.5b)
- the in-hospital death rate was the same for First Nations men compared with First Nations women (2.8%) (Figure 3.5c).

Remoteness area

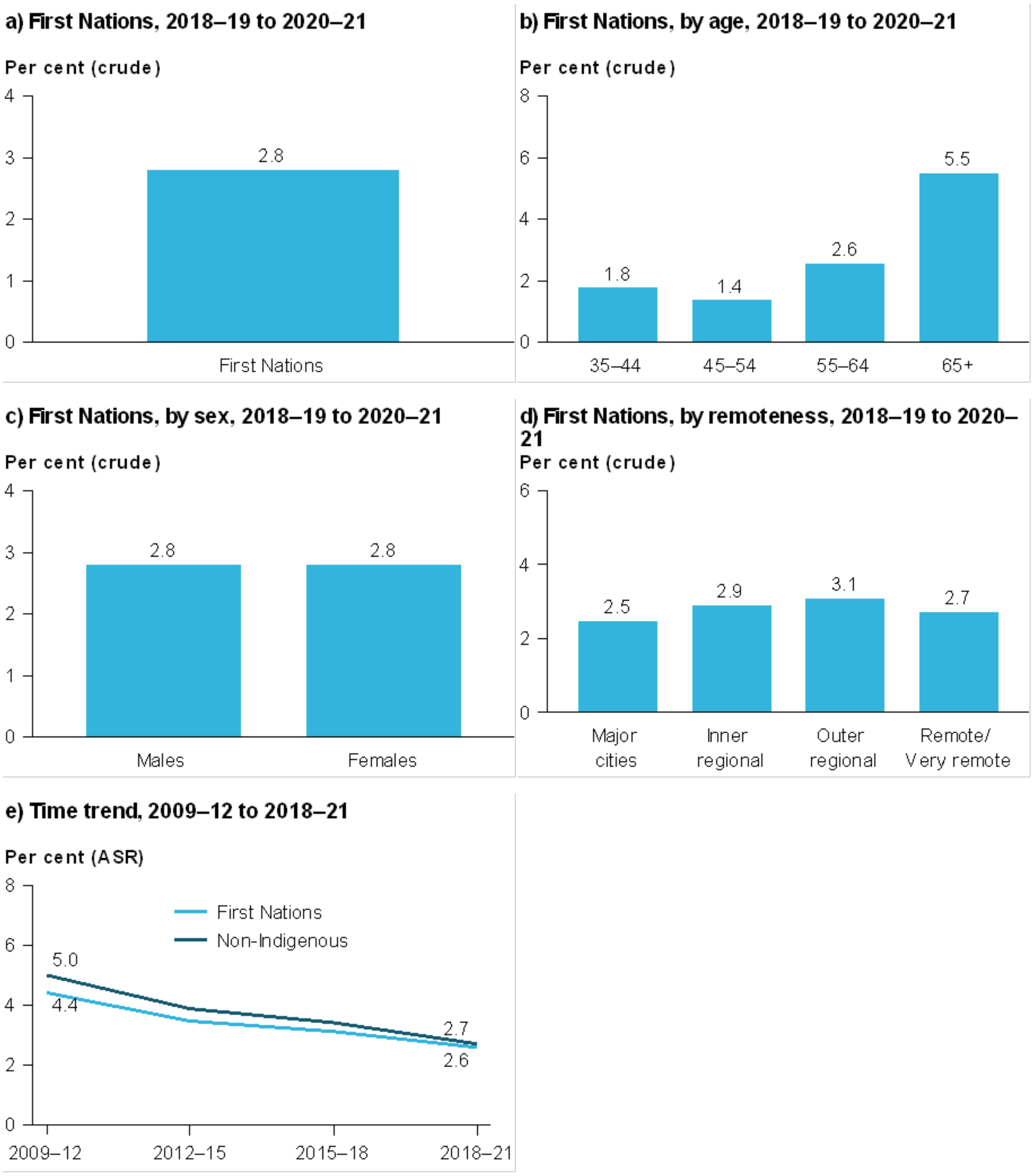
In 2018–19 to 2020–21 combined:

- the in-hospital death rate among First Nations adults was about 3% across all remoteness areas (ranging from 2.5% in *Major cities* to 3.1% in *Outer regional* areas) (Figure 3.5d).

Time trend

- After accounting for differences in population age structure between 2009–12 and 2018–21, in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined, the age-standardised in-hospital death rate fell from 4.4% to 2.6% for First Nations adults and 5.0% to 2.7% for non-Indigenous adults (Figure 3.5e).

Figure 3.5: Rate of hospitalised events for acute myocardial infarction among people aged 35 and over that ended with the death of the patient, by various characteristics



Notes

1. The time series analysis in Figure 3.5e 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 3.5e are age-standardised rates (ASR) and account for differences in population age structure over this period. All other figures show crude 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 First Nations people in the NHMD.

Source: AIHW NHMD.

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

Priority area 4 measures are based on the premise that all Aboriginal and Torres Strait Islander people with cardiac conditions should receive ongoing multidisciplinary primary health care and specialist physician follow up as required, to prevent further illness and 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
- Measure 4.2 for follow-up chronic disease management services after discharge from hospital
- Measure 4.3 for specialist physician review after discharge from hospital
- Measure 4.4 for patients with coronary heart disease (CHD) discharged on secondary prevention medications

New data from NIHSI version 2.0 are available to report on all 4 measures in this priority area. See Appendix A for more details on the NIHSI.

Measure 4.1: Review by a primary health-care professional after discharge from hospital with a cardiac condition

This measure reports on the number and proportion of patients discharged from hospital in New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory combined with a principal diagnosis of a cardiac condition who were reviewed by a primary health-care professional within 3 months and 12 months after discharge. Table B2 lists relevant MBS item numbers included in the measure.

As per the data development plan, this measure is reported for the first time using the NIHSI, which includes linked hospital and MBS data.

Why is this important?

Secondary prevention through review by a primary health-care professional soon after discharge and at regular intervals can be important for reducing the risk of readmission to hospital for a patient with a cardiac condition. For patients with coronary heart disease who had been discharged from hospital, follow up with a GP reduced the risk of emergency readmission by more than half (AIHW 2018c). Follow up has also been shown to reduce the risk of readmission for patients with heart failure (NHFA CSANZ Heart Failure Guidelines Working Group 2018).

Results

Overall

In 2018–19:

- 92% of First Nations patients were reviewed by a primary health-care professional within 3 months after discharge from hospital with a cardiac condition
- 97% of First Nations patients were reviewed by a primary health-care professional within 12 months after discharge from hospital with a cardiac condition (Figure 4.1a).

Age

In 2018–19:

- the proportion of First Nations patients who were reviewed by a primary health-care professional within 3 months after discharge from hospital with a cardiac condition rose with increasing age from around 76% in the 0–14 age group to around 95% in the 65+ age group
- the proportion of First Nations patients who were reviewed by a primary health-care professional within 12 months after discharge from hospital with a cardiac condition was lowest among people aged 15–24 at 92%, increasing to around 99% among those aged 55-64 (Figure 4.1b).

Sex

In 2018–19:

- the proportion of First Nations patients who were reviewed by a primary health-care professional within 3 months after discharge from hospital with a cardiac condition was 91% for males and 93% for females
- the proportion of First Nations patients who were reviewed by a primary health-care professional within 12 months after discharge from hospital with a cardiac condition was similar for males and females (97-98%) (Figure 4.1c).

Remoteness area

In 2018–19, the proportion of First Nations patients who were reviewed by a primary health-care professional after discharge from hospital with a cardiac condition:

- was lowest in patients discharged from hospitals in *Outer regional areas* (90%) and highest in *Inner regional areas* (94%) among those reviewed within 3 months
- was similar at around 97-98% in patients discharged from hospital in all remoteness areas among those reviewed within 12 months (Figure 4.1d).

Time trend

Between 2010–11 and 2018–19:

- the proportion of First Nations patients who were reviewed by a primary health-care professional within 3 months after discharge from hospital with a cardiac condition rose from 88% to 92%
- the proportion of First Nations patients who were reviewed by a primary health-care professional within 12 months after discharge from hospital with a cardiac condition remained stable at around 96% to 97% (Figure 4.1e).

Cardiac condition type

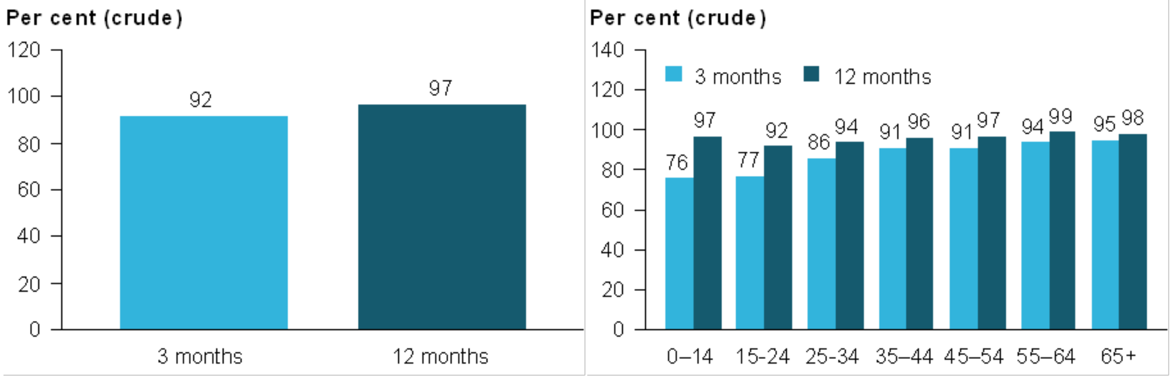
In 2018–19, the proportion of First Nations patients who were reviewed by a primary health-care professional after discharge from hospital:

- was lowest for patients with ARF/chronic RHD (81%) and highest for patients with angina pectoris, acute myocardial infarction and heart failure (all 94%) for follow-up within 3 months
- was similar across all condition types at 97-99% for First Nations patients with ARF/chronic RHD, acute myocardial infarction, heart failure, other ischaemic heart diseases and other forms of heart disease for follow-up within 12 months (results not shown).

Figure 4.1: Proportion of First Nations patients discharged from hospital in 2018–19 with a principal diagnosis of a cardiac condition who were reviewed by a primary health-care professional within 3 months and 12 months after discharge, by various characteristics

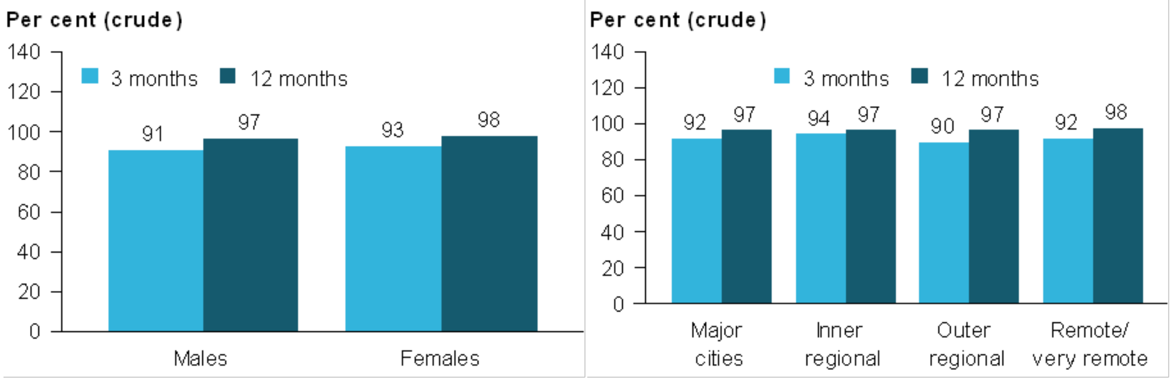
a) First Nations, 2018–19

b) First Nations, by age, 2018–19

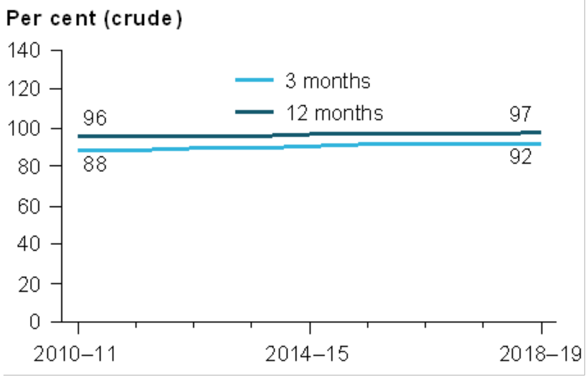


c) First Nations, by sex, 2018–19

d) First Nations, by remoteness, 2018–19



e) First Nations, time trend, 2010-11 to 2018–19



Notes

1. Data for these figures are for New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory combined. Data on hospitalisations for Western Australia and the Northern Territory are not currently available in the NIHSI.
2. Data for these figures are available in online supplementary tables 4.1a to 4.1e.

Source: AIHW NIHSI 2018-19, analysis of NIHSI

Measure 4.2: Chronic Disease Management services after discharge from hospital with a cardiac condition

This measure reports on the number and proportion of First Nations patients discharged from hospital in New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory combined with a principal diagnosis of a cardiac condition who received follow-up Medicare Chronic Disease Management (CDM) items within 3 months and 12 months after discharge.

Previously this measure was partially reported from the MBS database as a proxy measure of patients receiving relevant CDM items within 12 months of having a cardiac procedure (as captured through MBS claims). As per the data development plan, this measure is now reported for the first time using data from NIHSI, which includes linked hospital and MBS data.

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.

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:

- 39% of First Nations people received Medicare Chronic Disease Management items within 3 months after discharge from hospital with a cardiac condition
- 64% of First Nations people received Medicare Chronic Disease Management items within 12 months after discharge from hospital with a cardiac condition (Figure 4.2a).

Age

In 2018–19:

- the proportion of First Nations patients who received Medicare Chronic Disease Management items within 3 months and 12 months after discharge from hospital with a cardiac condition rose with increasing age (Figure 4.2b).

Sex

In 2018–19:

- the proportion of First Nations patients who received Medicare Chronic Disease Management items within 3 months after discharge from hospital with a cardiac condition was 36% for males and 41% for females
- the proportion of First Nations patients who received Medicare Chronic Disease Management items within 12 months after discharge from hospital with a cardiac condition was 62% for males and 67% for females (Figure 4.2c).

Remoteness area

In 2018–19, the proportion of First Nations patients who received Medicare Chronic Disease Management items after discharge from hospital with a cardiac condition:

- was lowest in patients discharged from hospitals in *Remote and very remote* areas (29%) and between 39-41% in other remoteness areas for follow-up within 3 months
- was lowest in patients discharged from hospitals in *Remote and very remote* areas (62%) and between 64-65% in other remoteness areas for follow-up within 12 months (Figure 4.2d).

Time trend

Between 2010–11 and 2018–19:

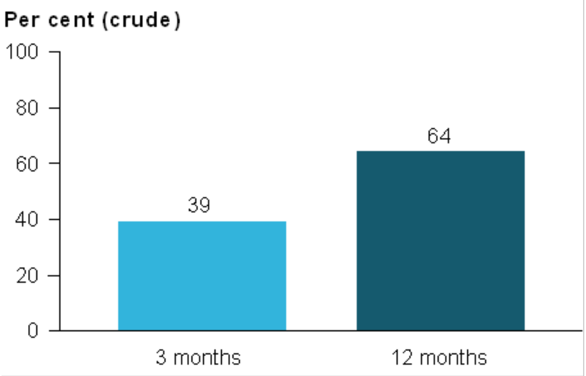
- the proportion of First Nations patients with a cardiac condition who received Medicare Chronic Disease Management items within 3 months after discharge from hospital rose from 20% to 39%
- the proportion of First Nations patients with a cardiac condition who received Medicare Chronic Disease Management items within 12 months after discharge from hospital rose from 42% to 64% (Figure 4.2e).

Cardiac condition type

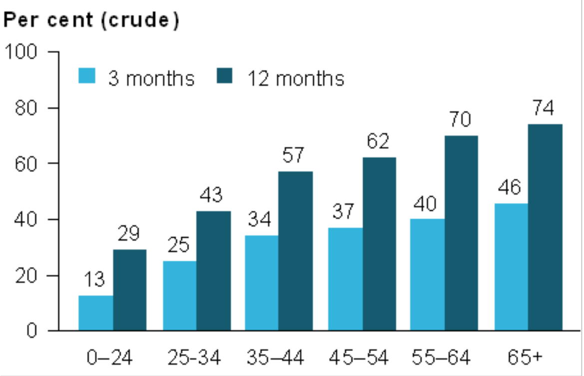
In 2018–19:

- the proportion of First Nations patients who received Medicare Chronic Disease Management items within 3 months after discharge from hospital with a cardiac condition was highest among patients with heart failure (47%) and lowest among patients with ARF/chronic RHD (27%)
- the proportion of First Nations patients who received Medicare Chronic Disease Management items within 12 months after discharge from hospital with a cardiac condition was highest among patients with heart failure (77%) and lowest among patients with ARF/chronic RHD (48%) (results not shown).

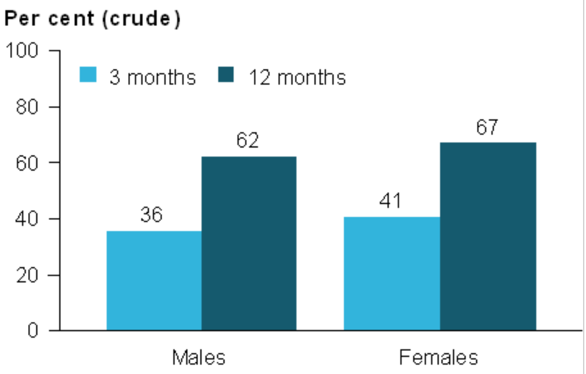
Figure 4.2: Proportion of First Nations patients discharged from hospital in 2018–19 with a cardiac condition who received Chronic Disease Management (CDM) services within 3 and 12 months of discharge, by various characteristics



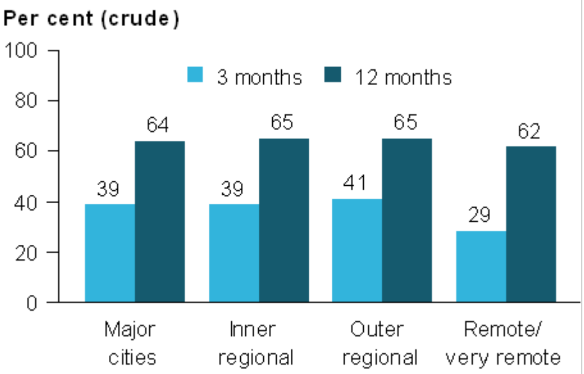
a) First Nations, 2018–19



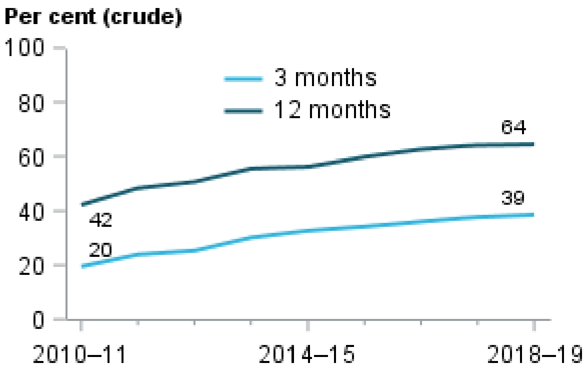
b) First Nations, by age, 2018–19



c) First Nations, by sex, 2018–19



d) First Nations, by remoteness, 2018–19



e) First Nations, time trend, 2010-11 to 2018–19

Notes

1. Data for these figures are for New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory combined. Data on hospitalisations for Western Australia and the Northern Territory are not available in the NIHSI version 2.
2. Data for these figures are available in online supplementary tables 4.2a to 4.2e.

Source: AIHW NIHSI 2018-19, analysis of NIHSI

Measure 4.3: Specialist physician review after discharge from hospital with a cardiac condition

This measure reports on the number and proportion of First Nations patients discharged from hospital in New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory combined with a principal diagnosis of a cardiac condition who were reviewed by a specialist physician within 3 months and 12 months after discharge.

Previously this measure was partially reported from the MBS database as a proxy measure of patients reviewed by a specialist physician within 12 months of having a cardiac procedure (as captured through MBS claims). As per the data development plan, this measure is now reported for the first time using data from NIHSI, which includes linked hospital and MBS data.

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

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:

- 46% of First Nations people were reviewed by a specialist physician within 3 months after discharge from hospital with a cardiac condition
- 67% of First Nations people were reviewed by a specialist physician within 12 months after discharge from hospital with a cardiac condition (Figure 4.2a).

Age

In 2018–19:

- the proportion of First Nations patients who were reviewed by a specialist physician within 3 months after discharge from hospital with a cardiac condition was highest for patients aged 65 and over (57%) and lowest for patients aged 15-24 and 25-34 (both 32%)
- the proportion of First Nations patients who were reviewed by a specialist physician within 12 months after discharge from hospital with a cardiac condition was highest for patients aged 0-14 and 65 and over (78-79%) and lowest for patients aged 15-24 (47%) (Figure 4.2b).

Sex

In 2018–19:

- the proportion of First Nations patients who were reviewed by a specialist physician within 3 months after discharge from hospital with a cardiac condition was 46% for both males and females
- the proportion of First Nations patients who were reviewed by a specialist physician within 12 months after discharge from hospital with a cardiac condition was 66% for males and 68% for females (Figure 4.3c).

Remoteness area

In 2018–19, the proportion of First Nations patients who were reviewed by a specialist physician after discharge from hospital with a cardiac condition:

- decreased with increasing remoteness of the hospital from 51% in *Major cities* to 31% in *Remote and very remote* areas combined for review within 3 months
- decreased with increasing remoteness of the hospital from 71% in *Major cities* to 55% in *Remote and very remote areas* combined for review within 12 months (Figure 4.3d).

Time trend

Between 2010–11 and 2018–19:

- the proportion of First Nations patients with a cardiac condition who were reviewed by a specialist physician within 3 months after discharge from hospital rose slightly from 44% in 2010-11 to 46% in 2018-19
- the proportion of First Nations patients with a cardiac condition who were reviewed by a specialist physician within 12 months after discharge from hospital rose from 63% in 2010-11 to 67% in 2018-19 (Figure 4.3e).

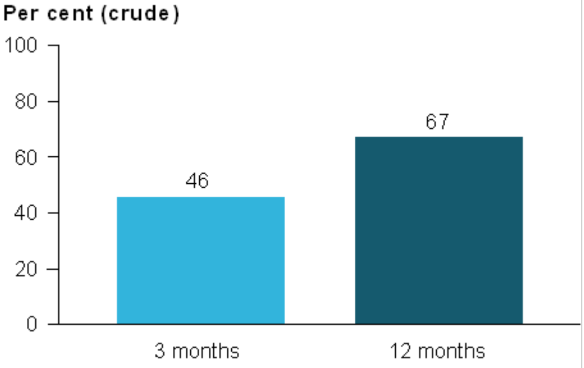
Cardiac condition type

In 2018–19, the proportion of First Nations patients who were reviewed by a specialist physician after discharge from hospital with a cardiac condition:

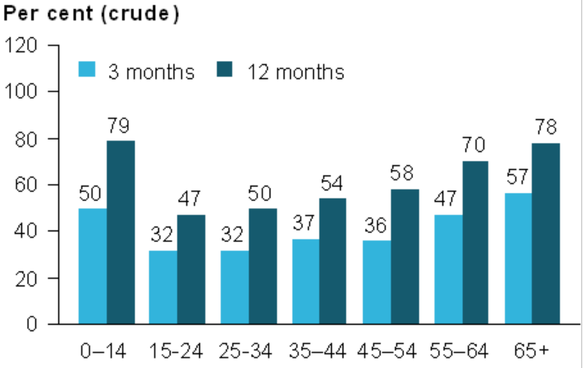
- was highest among patients with other ischaemic heart diseases (57%) and lowest among patients with hypertensive diseases (35%) for review within 3 months
- was highest among patients with other ischaemic heart diseases (76%) and lowest among patients with hypertensive diseases (60%) for review within 12 months (results not shown).

Figure 4.3: Proportion of First Nations patients discharged from hospital in 2018–19 with a cardiac condition who were reviewed by a specialist physician within 3 and 12 months of discharge, by various characteristics

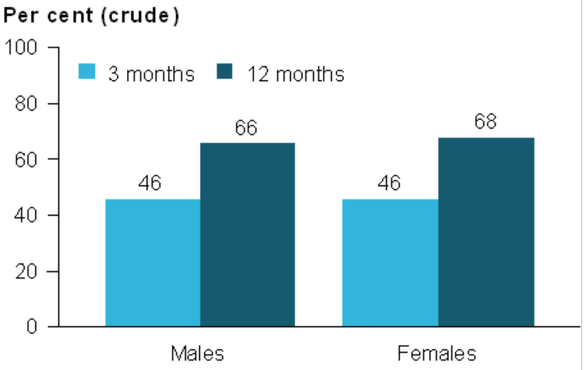
a) First Nations, 2018–19



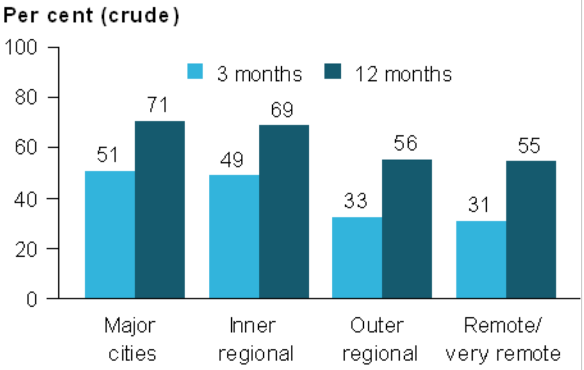
b) First Nations, by age, 2018–19



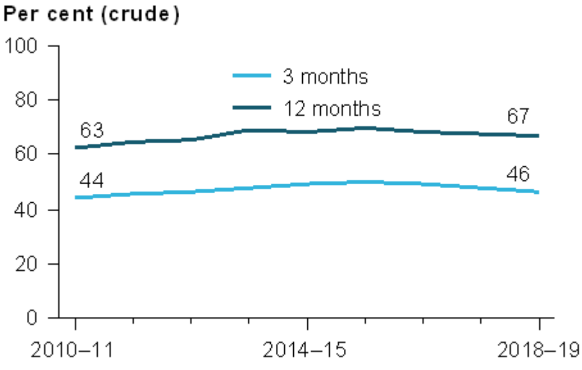
c) First Nations, by sex, 2018–19



d) First Nations, by remoteness, 2018–19



e) First Nations, time trend, 2010-11 to 2018–19



Notes

1. Data for these figures are for New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory combined. Data on hospitalisations for Western Australia and the Northern Territory are not yet available in NIHSI version 2.
2. Data for these figures are available in online supplementary tables 4.3a to 4.3e.

Source: AIHW NIHSI 2018-19, analysis of NIHSI

Measure 4.4: Patients with coronary heart disease discharged on secondary prevention medications

This measure reports on the number and proportion of First Nations patients discharged from hospital in New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory combined with a principal diagnosis of CHD on appropriate medicines for secondary prevention at 3, 6, and 12 months post-discharge.

As per the data development plan, this measure is reported for the first time using data from NIHSI, which includes linked hospital and PBS data. PBS claims data for medications only show that medicines were dispensed within these timeframes and do not indicate adherence to medication as prescribed. Some medications following discharge may only be for short-term use and the data shown do not include over-the-counter medications.

Anatomical Therapeutic Chemical classification (ATC) codes were used in this report to identify appropriate medicines for CHD patients. Medications in groups B01 and C01-C10, according to the ATC classification, are used for cardiovascular disease (see Appendix Table B5 for a list of medications).

Why is this important?

Cardiovascular secondary prevention medications can reduce the risk of future cardiovascular events occuring for people who had been hospitalised for CHD (AIHW 2022c). However, there is evidence that, despite this reduction of risk, secondary prevention medications are not being prescribed to or taken by all patients (AIHW 2022c).

Results

Overall

In 2018–19, of the First Nations patients discharged from hospital with CHD (excluding patients who died within the relevant timeframes),

- 87% (2606 out of 3008) were remaining on their medication at 3 months post-discharge
- 80% (2383 out of 2974) were remaining on their medication at 6 months post-discharge
- 76% (2202 out of 2913) were remaining on their medication at 12 months post-discharge (Figure 4.4a).

Age and sex

In 2018–19, the proportion of First Nations patients discharged from hospital with CHD who were remaining on their medication at 3, 6, and 12 months post-discharge:

- rose with increasing age from around 48–60% in the 0–34 age group to around 89–95% in those aged 65 and above (Figure 4.4b)
- was similar for males and females (Figure 4.4c).

Remoteness area

In 2018–19, the proportion of First Nations patients discharged from hospital with CHD who were remaining on their medication at 3, 6, and 12 months post-discharge:

- varied by remoteness area of the hospital, where the proportion was highest for patients discharged from hospitals in *Major cities* and *Inner regional* areas and lowest for patients discharged from hospitals in *Remote and very remote* areas combined (Figure 4.4d)

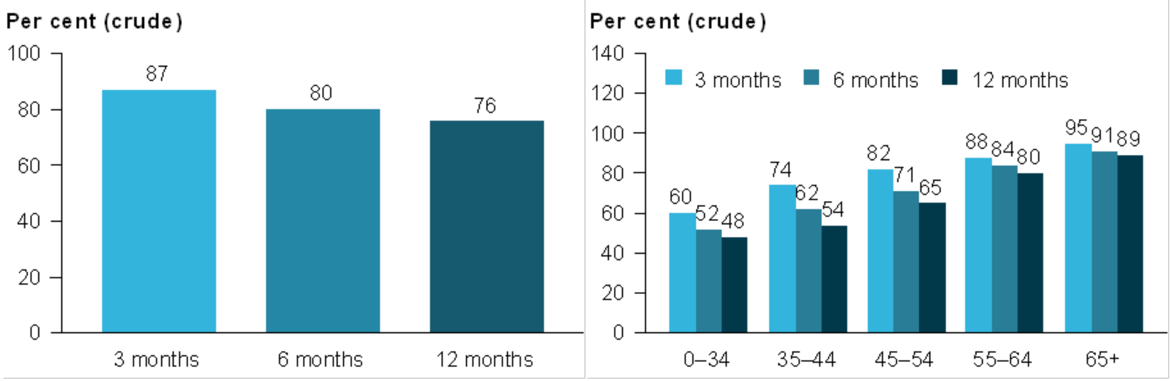
Disease type

- In 2018–19, the proportion of First Nations patients discharged from hospital with CHD who were remaining on their medication at 3, 6, and 12 months post-discharge was similar for STEMI and non-STEMI patients, with only a 2-4 percentage point difference between them (Figure 4.4e).

Figure 4.4: Proportion of First Nations patients discharged from hospital in 2018–19 with coronary heart disease (CHD) who were remaining on their medications at 3, 6 and 12 months post-discharge, by various characteristics

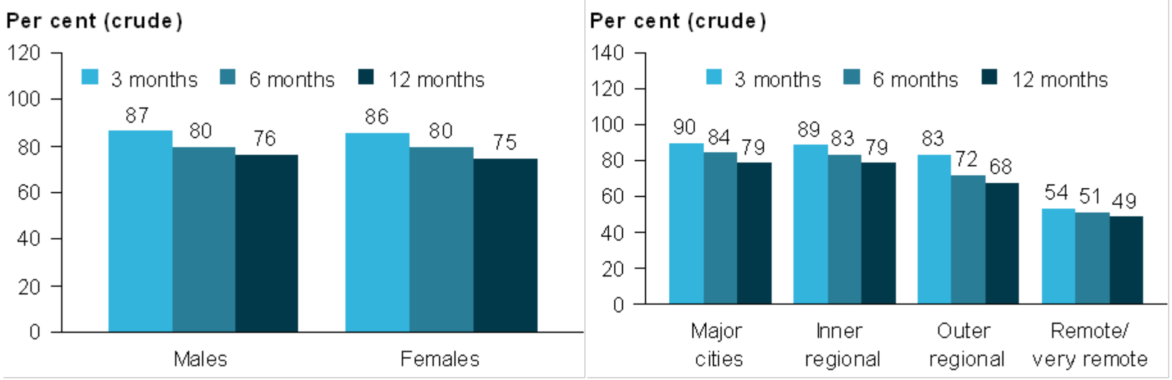
a) First Nations, 2018–19

b) First Nations, by age, 2018–19

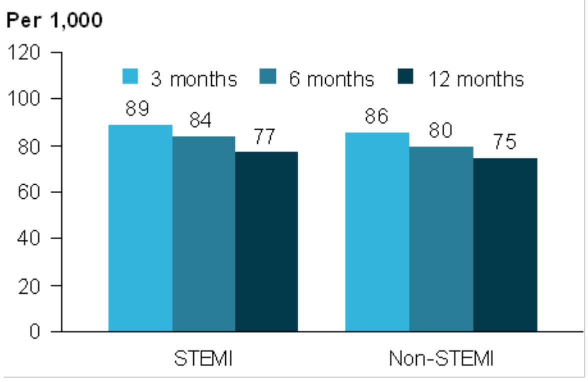


c) First Nations, by sex, 2018–19

d) First Nations, by remoteness, 2018–19



e) First Nations, by disease, 2018–19



1. Data for these figures are for New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory combined. Data on hospitalisations for Western Australia and the Northern Territory are not yet available in NIHSI version 2.0.
2. STEMI includes ICD-10-AM codes in I21.0-I21.3, non-STEMI includes ICD-10-AM codes in all other ACS disease classifications.
3. Data for these figures are available in online supplementary tables 4.4a to 4.4e.

Source: AIHW NIHSI 2018-19, analysis of NIHSI

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 acute rheumatic fever (ARF) and rheumatic heart disease (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 intramuscular injections of penicillin (benzathine benzylpenicillin G, or BPG), referred to as secondary prophylaxis
- All First Nations 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 for people with a history of ARF and/or RHD 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 (Measure 5.4) are therefore not provided in this report.

Previously, data for this section were separately supplied to the AIHW from individual state and territory 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 New South Wales, Queensland, Western Australia, South Australia and the Northern Territory (AIHW 2023). In this report, data from New South Wales are incorporated with figures from other jurisdictions for measure 5.1.1, but for other measures remain separate (and results are only presented in the text) as data from New South Wales are not comparable with other jurisditions. Details of the National RHD data collection are in Appendix A.

As some people with ARF and/or RHD move between states and territories, and because of the long-term nature of the disease and follow-up, the same ARF episode or RHD diagnosis 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 differ 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.

Why is this important?

ARF and RHD are preventable conditions, which disproportionately affect First Nations people. These conditions are in large part a consequence of disadvantage. ARF is the result of an autoimmune response to an untreated group A *streptococcus* (Strep A) bacterial infection (Parnaby and 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 First Nations people. 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 and 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 improving access to functional health hardware and improved living conditions such as reducing household overcrowding.

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 (Noonan 2020).

Results: Incidence of acute rhematic fever in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined

Overall

In 2021:

- 582 episodes of ARF were reported among First Nations people, a rate of 75 per 100,000 population

Time trend

- Between 2017 and 2021, the incidence of ARF among First Nations people rose from 66 to 75 per 100,000 population (Figure 5.1.1a). 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). It may also be due to the impacts of COVID-19 which has seen a corresponding decline in the adherence to secondary prophylaxis and consequentially an increase in ARF recurrences due to many barriers including difficulties attending health clinics.

Age and sex

In 2021, among First Nations people, the incidence rate of ARF:

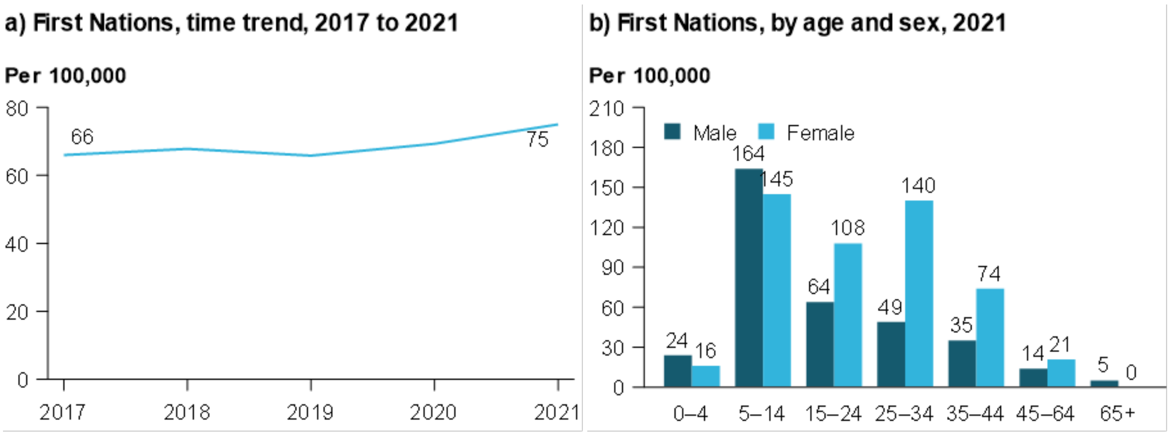
- was slightly higher for males in the 0–14 and 65 and over age groups, and considerably higher for females in all other age groups
- among females was highest for those aged 5–14 (145 per 100,000 population) and aged 25–34 (140 per 100,000 population) and subsequently declined with increasing age, to no cases in those aged 65 and over
- among males was highest for those aged 5–14 years (164 per 100,000 population) and then declined with increasing age, to 5.4 per 100,000 in those aged 65 and over (Figure 5.1.1b).

State and territory

In 2021:

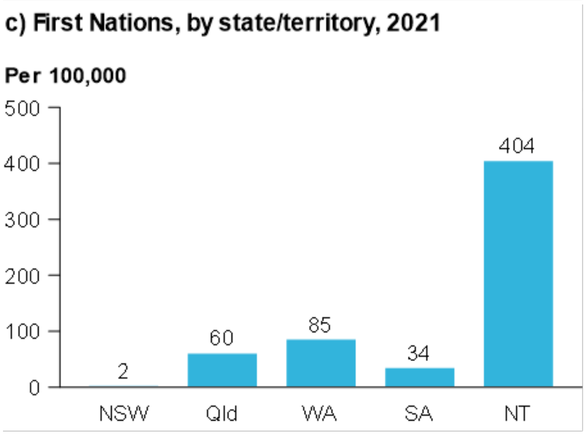
- The Northern Territory had the highest ARF incidence rate in First Nations people compared to the other jurisdictions, with a rate of 404 per 100,000
- New South Wales had the lowest ARF incidence rate in First Nations people compared to the other jurisdictions, with a rate of 2.4 per 100,000 (Figure 5.1.1c).

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



a) First Nations, time trend, 2017 to 2021

b) First Nations, by age and sex, 2021



c) First Nations, by state/territory, 2021

Notes

1. Data for these figures are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined.
2. Data for these figures are available in online supplementary tables 5.1.1a to 5.1.1c.
3. 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 2021:

- 351 new RHD diagnoses were reported among First Nations people, a rate of 73 per 100,000 population.

Time trend

- Between 2017 and 2021, the rate of new diagnoses of RHD among First Nations people rose from 68 to 73 per 100,000 population (Figure 5.1.2a). Like the rise in the incidence 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 also resulted in increasing numbers of people diagnosed with RHD.

Age and sex

In 2021, among First Nations people, the incidence rate of new RHD diagnoses was:

- higher among females compared with males for all age groups except for the 5–14 age group
- highest among males aged 5–14 (138 per 100,00) and females aged 15–24 (125 per 100,00) (Figure 5.1.2b).

State and territory

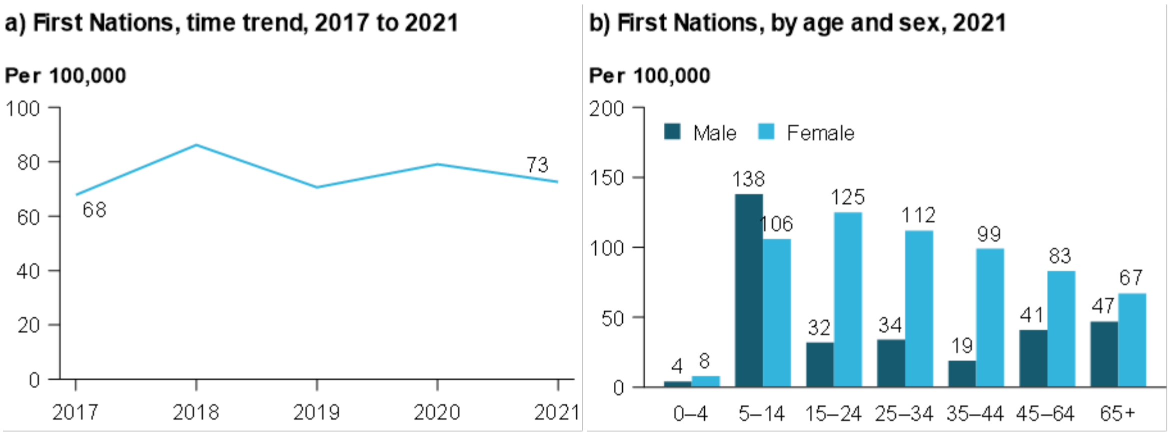
In 2021:

- The Northern Territory had the highest incidence rate of new RHD diagnoses in First Nations people compared to the other jurisdictions, with a rate of 199 per 100,000
- South Australia had the lowest incidence rate of new RHD diagnoses in First Nations people compared to the other jurisdictions, with a rate of 28 per 100,000 (Figure 5.1.2c).

New South Wales

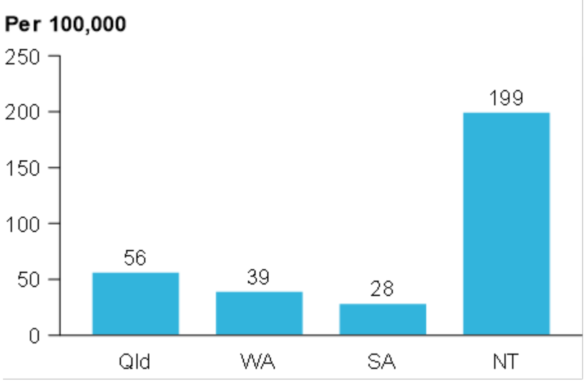
Due to incomparable data, New South Wales was analysed separately. In New South Wales, RHD is only notifiable in people aged under 35 at the time of diagnosis, though people diagnosed at older ages may be added to the register if desired. The RHD diagnosis rate for First Nations people in NSW in 2021 was 0.7 per 100,000 population. In NSW, most people diagnosed with RHD are non-Indigenous, with around 1 in 4 being Māori or Pacific Islander peoples.

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


a) First Nations, time trend, 2017 to 2021

b) First Nations, by age and sex, 2021

c) First Nations, by state/territory, 2021



Notes

1. Data for these figures are for Queensland, Western Australia, South Australia and the Northern Territory combined.
2. 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 number of recurrent ARF episodes among people prescribed secondary prophylaxis. Recurrence rates are calculated using the rate per 100 patient-years. This is the number of ARF recurrent events per 100 patient-years during the period that a person is prescribed prophylaxis and, therefore, at risk of ARF recurrence.

Previous editions of this report included the measure ‘proportion of all ARF episodes that were recurrent. However, this measure is not easy to interpret as primary and secondary prevention efforts will affect both the numerator and the denominator. The AIHW’s ARF/RHD annual report includes data 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 are at risk of having a recurrent episode (AIHW 2023). Changes to BCC measure 5.2 have been made to align with the AIHW’s ARF and RHD annual report and, from now on, data on ARF recurrences per 100 patient-years among those prescribed secondary prophylaxis will be presented as the main statistic for this measure.

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 2021, 28% of ARF episodes (163 of 575) diagnosed in First Nations people were recurrences.
- In 2021, among all First Nations people prescribed BPG there were 3.7 ARF recurrences for every 100 patient-years (Figure 5.2a).

Time trend

- From 2017 to 2021, the ARF recurrence rate per 100 patient-years among First Nations people prescribed BPG fluctuated between a high of 3.8 and a low of 3.2 (Figure 5.2a).

Age

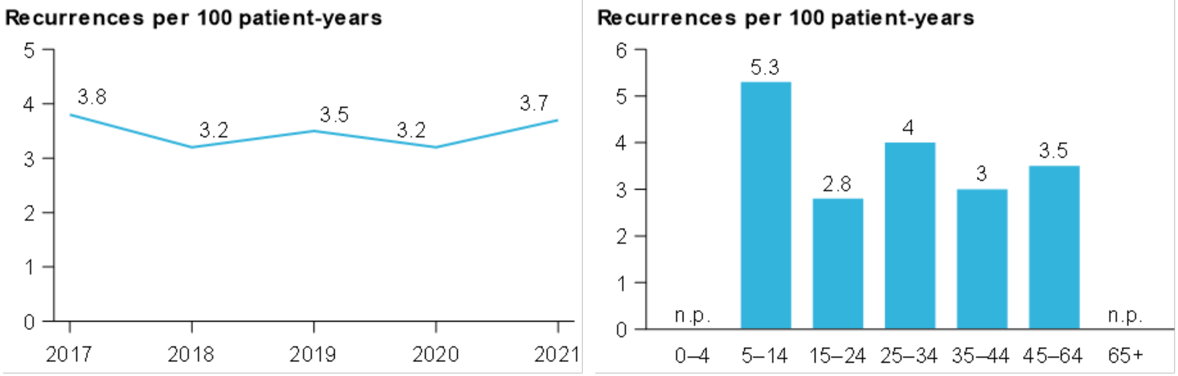
- In 2021, the rate of recurrences per 100 patient-years among First Nations people prescribed BPG fluctuated with age, from a high of 5.3 among those aged 5–14 to a low of 2.8 among those aged 15–24 (Figure 5.2b).

State and territory

In 2021:

- The Northern Territory had the highest recurrence rate per 100 patient-years in First Nations people, with 4.6 recurrences per 100 patient-years. South Australia had the lowest rate with 1.2 recurrences per 100 patient-years (Figure 5.2c).
- New South Wales is not comparable to other jurisdictions due to differences in capturing those prescribed BPG. Among those prescribed BPG, there were no recurrences.

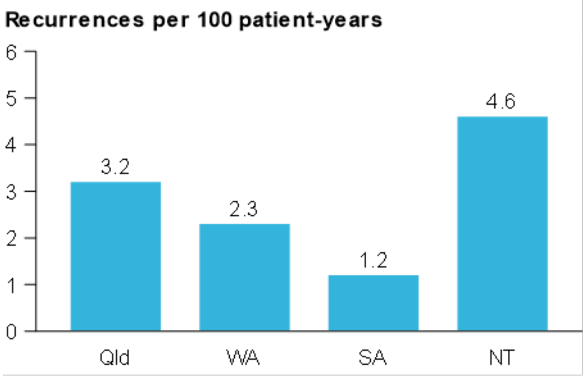
Figure 5.2: Recurrent acute rheumatic fever episodes, by various characteristics



a) First Nations, time trend, 2017 to 2021

b) First Nations, by age, 2021

c) First Nations, by state/territory, 2021



Notes

1. Data for these figures are for Queensland, Western Australia, South Australia and the Northern Territory combined
2. 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 benzathine benzylpenicillin G (BPG) given to patients prescribed preventive treatment in 2021. 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 2021.

Starting with the sixth (2021) 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 if they are allergic to penicillin (RHD Australia 2020).

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

Overall

In 2021:

- 4,816 First Nations people were eligible for inclusion in calculations about BPG delivery, of whom:
  - 18% (875) received 100% or more of their required doses
  - 13% (638) received 80% to 99%
  - 27% (1,319) received 50% to 79%
  - 31% (1,470) received 1% to 49%
  - 11% (514) had no doses recorded (Figure 5.3a).

Time trend

Between 2017 and 2021, among First Nations people prescribed BPG:

- the proportion who received at least 80% of recommended doses increased from 36% to 39%, but then decreased to 31% in 2021. This may be due to changes in care-seeking behaviour and health service delivery associated with the COVID-19 pandemic.
- the proportion who received no doses in a year fluctuated from a low of 9% in 2018 and 2019 to a high of 11% in 2021 (Figure 5.3a).

Age and sex

In 2021, among First Nations people prescribed BPG, adherence was:

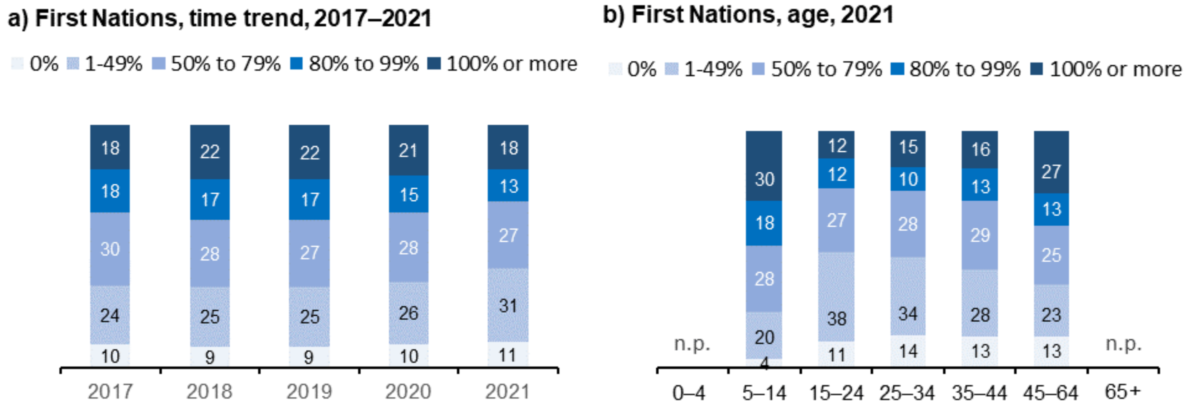
- highest among the 5–14 age group, with 48% (481 of 997) receiving at least 80% of their required doses
- lowest among the 15–24 age group, where only 24% (409 of 1,695) received at least 80% of their required doses (Figure 5.3b) There were too few people under 5 or 65 and over to draw conclusions regarding delivery levels in these age groups.
- Females (32%) had a higher delivery of at least 80% of doses than males (31%) (Figure 5.3c).

State and territory

In 2021:

- South Australia had the highest per cent of First Nations people receiving at least 80% of doses with 52%. Western Australia had the lowest per cent with 18% (Figure 5.3d).
- New South Wales is not comparable to other jurisdictions due to differences in capturing those prescribed BPG. There were 32 First Nations people prescribed BPG in NSW, of which 28% received at least 80% of their required doses.

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

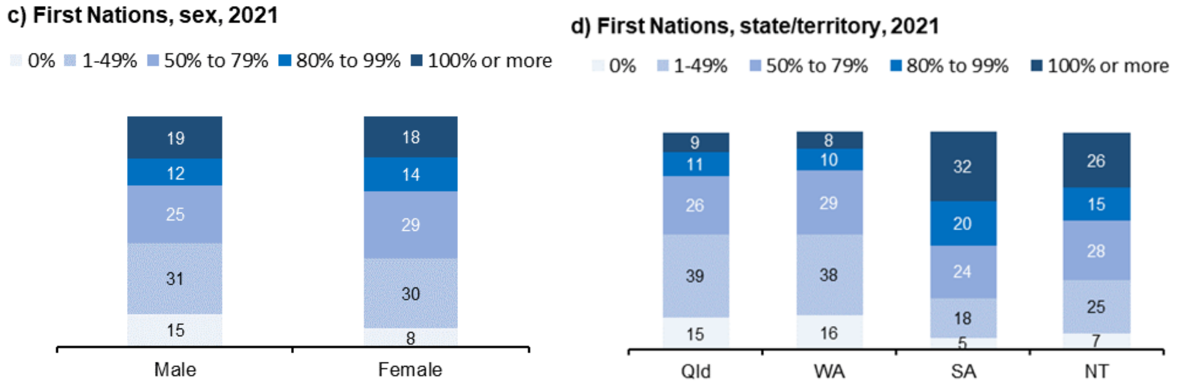


a) First Nations, time trend, 2017–2021

b) First Nations, age, 2021

c) First Nations, sex, 2021

d) First Nations, state/territory, 2021



Notes

1. Data for these figures are available in online supplementary tables 5.3a to 5.3d.
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 the relevant year, 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 data collection.

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 2018–19 to 2020–21 combined:

- 37,516 First Nations hospitalisations were for cardiac conditions, a crude rate of 15 per 1,000 population (Figure 6.1a).
- the age-standardised hospitalisation rate of cardiac conditions for First Nations people was about twice the rate for non-Indigenous Australians.

Age and sex

In 2018–19 to 2020–21 combined, hospitalisation rates for cardiac conditions:

- increased with age from 3 per 1,000 population for First Nations people aged 0–34 to 83 per 1,000 population for those aged 65 and over (Figure 6.1b)
- were similar for First Nations males and females at around 14–16 per 1,000 population (Figure 6.1c).

State and territory and remoteness area

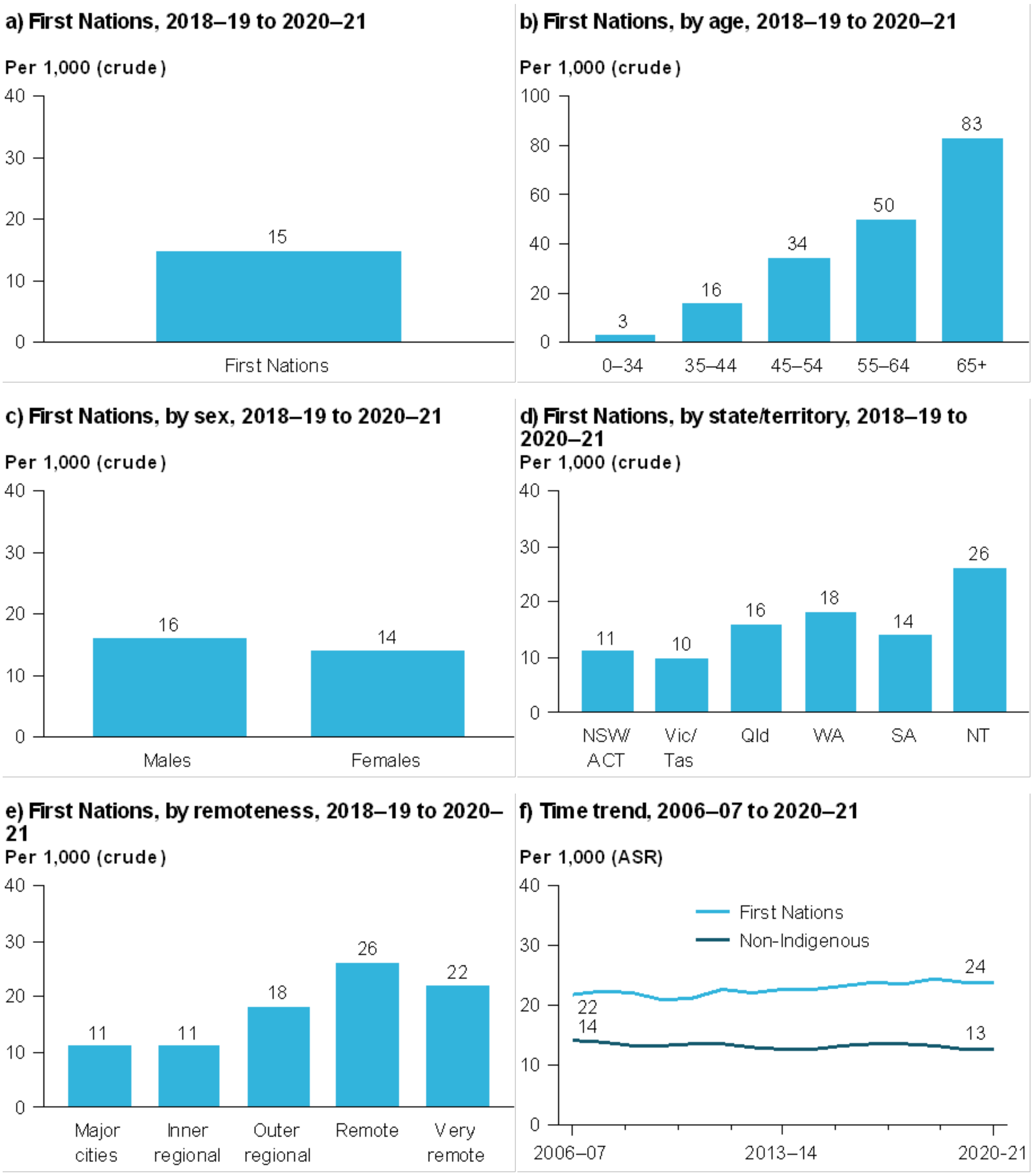
In 2018–19 to 2020–21 combined, the hospitalisation rate for cardiac conditions was highest for First Nations people in:

- the Northern Territory, at 26 per 1,000 population, and Western Australia at 18 per 1,000 population (Figure 6.1d)
- *Remote* areas, at 26 per 1,000 population, and *Very remote* areas at 22 per 1,000 population (Figure 6.1e).

Time trend

- After accounting for differences in population age structure between 2006–07 and 2020–21, 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 First Nations people, from 22 to 24 per 1,000 population, but remained relatively stable for non-Indigenous Australians at 13–14 per 1,000 population (Figure 6.1f).

Figure 6.1: Hospitalisation rate for cardiac conditions, by various characteristics



a) First Nations, 2018–19 to 2020–21

b) First Nations, by age, 2018–19 to 2020–21

c) First Nations, by sex, 2018–19 to 2020–21

d) First Nations, by state/territory, 2018–19 to 2020–21

e) First Nations, by remoteness, 2018–19 to 2020–21

f) Time trend, 2006–07 to 2020–21

Notes

1. The time series analysis in Figure 6.1f 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 6.1f are age-standardised rates (ASR) and account for differences in population age structure over this period. These may differ from crude rates shown in other figures.
3. Data for these figures are available in online supplementary tables 6.1a to 6.1f.
4. There is some under-identification of First Nations people 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 rate of cardiac mortality in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined, and the 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 2019–2021 combined:

- 1,797 First Nations people died from cardiac conditions, a crude rate of 79 per 100,000 population (Figure 6.2.1a)

Age and sex

In 2019–2021 combined, cardiac mortality rates were:

- increasing with increasing age from 6 per 100,000 population among First Nations people aged 0–34 to 703 per 100,000 among First Nations people aged 65 and over (Figure 6.2.1b)
- higher among First Nations males (92 per 100,000) compared with First Nations females (66 per 100,000) (Figure 6.2.1c).

State and territory

In 2019–2021 combined, cardiac mortality rates were:

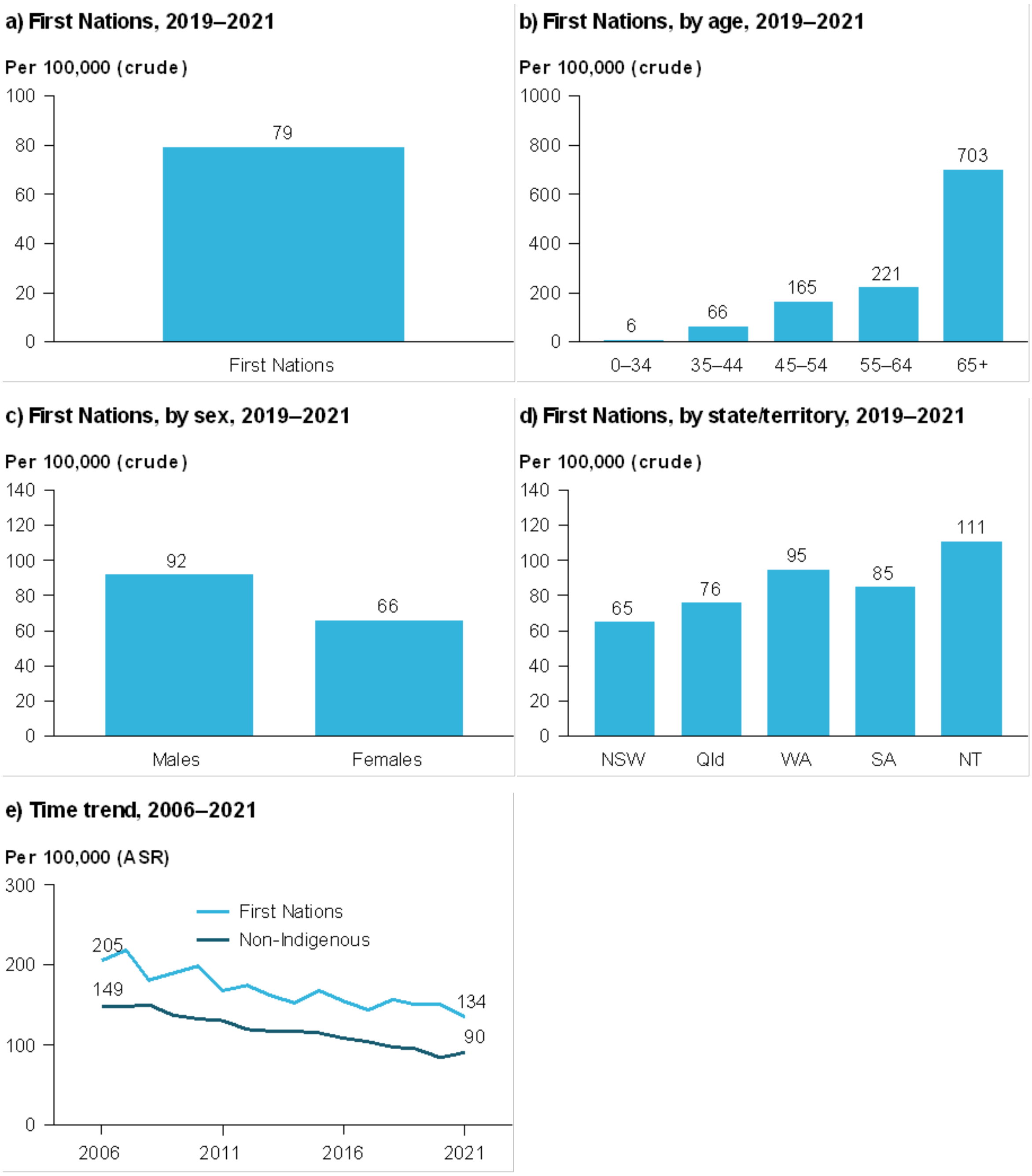
- highest among First Nations people in the Northern Territory at 111 per 100,000 population, followed by Western Australia at 95 per 100,000 population
- lowest among First Nations people in New South Wales at 65 per 100,000 population (Figure 6.2.1d).

Time trend

Between 2006 and 2021, after accounting for differences in population age structure the:

- age-standardised cardiac mortality rate fell by 35% for First Nations people, from 205 to 134 per 100,000 population, and 40% for non-Indigenous Australians, from 149 to 90 per 100,000 population (Figure 6.2.1e)
- rate ratios of deaths due to cardiac conditions between First Nations people and non-Indigenous Australians rose slightly between 2006 (1.4) and 2021 (1.5)
- rate difference between First Nations people and non-Indigenous Australians decreased from 56 in 2006 to 44 in 2021.

Figure 6.2.1: Cardiac mortality rate, by 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 6.2.1e are age-standardised rates (ASR) and account for differences in population age structure over this period. These may differ from crude rates shown in other figures.
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 First Nations deaths, and identification of First Nations 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 2018–19 to 2020–21 combined:

- 642 First Nations people admitted to hospital for cardiac conditions died in hospital, a crude rate of 25 per 100,000 population (Figure 6.2.2a)
- the age-standardised in-hospital death rate for First Nations people admitted for cardiac conditions was 1.8 times the rate for non-Indigenous Australians.

Age and sex

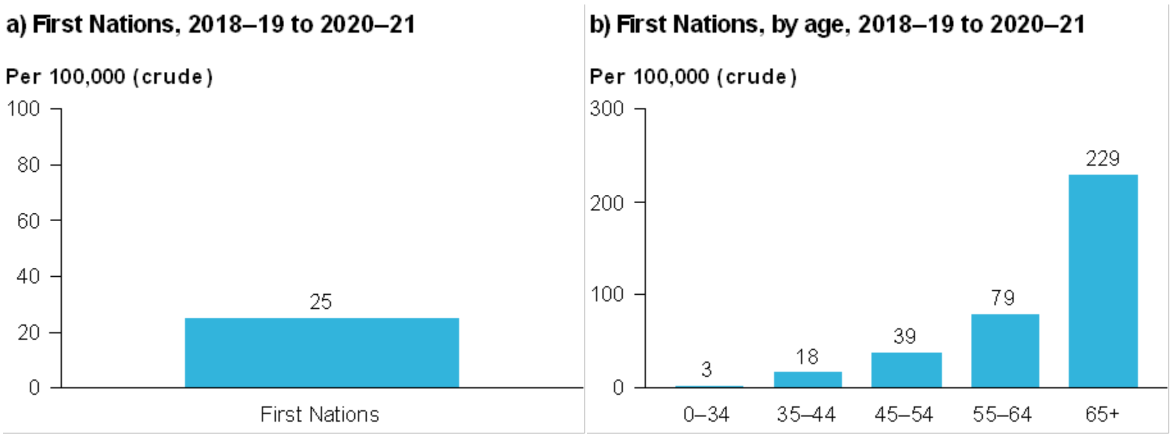
In 2018–19 to 2020–21 combined:

- in-hospital death rates rose with increasing age from 3 per 100,000 population for First Nations people aged 0–34 to 229 for those aged 65 and over (Figure 6.2.2b)
- in-hospital death rates were similar for First Nations males and females (25 per 100,000) (Figure 6.2.2c).

Time trend

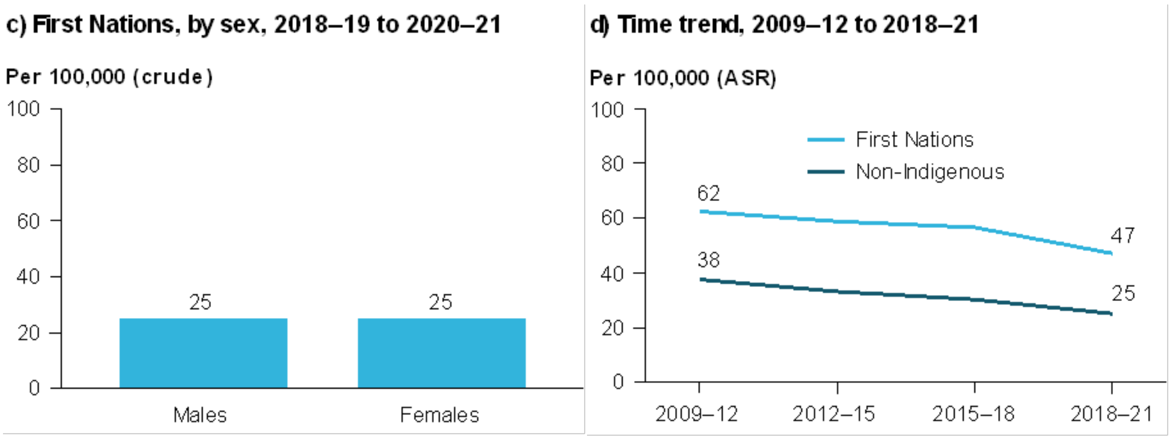
- After accounting for differences in population age structure between 2009–12 and 2018–21, in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined, the age-standardised rate of in-hospital deaths for patients admitted for cardiac conditions fell for First Nations people, from 62 to 47 per 100,000 population, and for non-Indigenous Australians from 38 to 25 per 100,000 (Figure 6.2.2d).

Figure 6.2.2: In-hospital mortality rate for people admitted for cardiac conditions, by various characteristics



a) First Nations, 2018–19 to 2020–21

b) First Nations, by age, 2018–19 to 2020–21



c) First Nations, by sex, 2018–19 to 2020–21

d) Time trend, 2009–12 to 2018–21

Notes

1. The time series analysis in Figure 6.2.2d 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 6.2.2d are age-standardised rates (ASR) and account for differences in population age structure over this period. These may differ from crude rates shown in other figures.
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 First Nations people 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 First Nations people 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 First Nations people 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 being of Aboriginal and/or Torres Strait Islander origin (ABS 2018b).

This change in the propensity of people to identify as Aboriginal and/or Torres Strait Islander 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 First Nations 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 First Nations people of all ages in non-remote and remote areas of Australia, including discrete First Nations 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 Aboriginal and Torres Strait Islander 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 Aged Care 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 claims file 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. Analyses are based on the date of services.

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. This information is updated from time-to-time to correct errors and record changing mail addresses.

Indigenous identification

People accessing Medicare-funded services may choose to identify to Services Australia as being of Aboriginal and/or Torres Strait Islander descent. This information is provided on a voluntary basis, and is referred to as the Voluntary Indigenous Identifier or VII. Enrolling on the VII is not a requirement for accessing Indigenous-specific Medicare services, but helps with understanding use of services by Aboriginal and Torres Strait Islander people and evaluating and improving health policies and programs (Medicare Voluntary Indigenous Identifier - Services Australia). Not all Aboriginal and Torres Strait Islander people have identified in the VII. The incomplete coverage of the VII means that Medicare data generated using the VII enrolments alone do not represent actual Medicare use by all First Nations people.

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

Table A1: Estimated proportion of First Nations people 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 and Aged Care analysis of MBS and ABS Indigenous population data.

The AIHW, in consultation with the Department, has developed a scale-up methodology for estimating use of Medicare services by First Nations people (ABS 2011, 2012b). The methodology compensates for the incompleteness of VII coverage by adjusting VII data based on its level of coverage compared with the total estimated Aboriginal and Torres Strait Islander population. The scale-up enables the non-VII population to be taken into account when estimating use of Medicare-funded services by First Nations people. Prior to the current edition of this report the scale-up factors were calculated by the Department. For this report they have been calculated by AIHW, however the estimates obtained are consistent with those produced previously by the Department.

Adjustment factors were developed by comparing the number of people enrolled on the VII with the estimated Aboriginal and Torres Strait Islander 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 Aboriginal and Torres Strait Islander population enrolled on the VII.*

To derive the estimates of MBS service use among First Nations people, the number of VII 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 First Nations estimates from the total number of people for whom the relevant MBS items were claimed.

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 First Nations people are eligible to receive such health assessments, it is assumed that everyone who receives one is a First Nations person.

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 VII database.

Health assessments for First Nations and non-Indigenous Australians

Data about the receipt of health assessments among First Nations 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 First Nations 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 First Nations, 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 April 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 2017–18 onwards were classified using the ABS 2016 Australians Statistical Geography Standard (ASGS) Remoteness Structure.

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 First Nations people in the NHMD, but NHMD data for all states and territories are considered to have adequate identification from 2010–11 (AIHW 2013).

An AIHW study in 2011–12 found that the 'true' number of hospitalisations nationally for First Nations people 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 First Nations 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 First Nations people 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 First Nations people (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 First Nations people.

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 First Nations people 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 First Nations and non-Indigenous rates.

In 2018–19 to 2020–21 combined, Indigenous status was not stated for about 774,579 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 procedure 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 reflects 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, 2018–19 to 2020–21

	Measure 3.1[(a)] (crude[(c)] %)		Measure 3.3[(b)] (crude[(c)] %)	
	First Nations	Non-Indigenous[(d)]	First Nations	Non-Indigenous[(d)]
NSW/ACT	77.0	79.6	69.1	68.3
Vic/Tas	79.8	79.6	60.1	66.9
Qld	68.8	73.0	57.6	58.4
WA	71.0	84.4	59.7	64.7
SA	75.0	79.1	65.1	68.3
NT	59.9	67.4	55.7	61.3

(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) Age-standardised rates are not presented due to small numbers in some age groups for both the First Nations and non-Indigenous population producing unreliable statistics.

(d) 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 Integrated Health Services Information (NIHSI)

The National Integrated Health Services Information (NIHSI) is a person-focused, de-identified analytical asset that allows for a range of research and analysis on many aspects of population health through access to standardised, integrated health administrative datasets. The NIHSI is the only enduring linked data asset that includes linked hospital data including admitted patient care services (APC), emergency department services and outpatient services in public hospital for NSW, Vic, Qld, SA, Tas and the ACT. The NIHSI includes various national Commonwealth government datasets, including the Pharmaceutical Benefits Scheme (PBS), Medicare Benefits Schedule data (MBS), Repatriation Pharmaceutical Benefits Scheme data (RPBS), Residential Aged Care Services (RAC) data and National Deaths Index (NDI) data. The NIHSI version 2.0 contains data from 2010–11 until 2019–20.

This report used APC, MBS, PBS, NDI and Patient Demography file within NIHSI version 2.0.

Admitted Patient Care (APC) data

The APC data within NIHSI version 2.0 include public and private hospital admitted patient episode data drawn from the National Hospital Morbidity Databases (NHMD). The data provision comprises unit record level data extract for records from all public hospitals of NSW, Vic, Qld, SA, Tas, ACT from 2010–11 to 2019–20 financial years. Private hospitals data includes Qld, ACT and Vic with different years of data depending on the jurisdiction.

Hospitalisations with a care type of Newborn (without qualified days), and records for Hospital boarders and Posthumous organ procurement, and patients who died during hospitalisation episode were excluded from the analyses for all measures based on APC data.

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

APC data presented by remoteness area from the NIHSI are based on the location of the hospital. The APC data for 2018–19 were classified according to the Australian Statistical Geographical Standard 2016. In this report, data for people discharged from hospitals in remote and very remote areas were combined due to small numbers.

Medicare Benefits Schedule (MBS) data and the Pharmaceutical Benefits Scheme (PBS)/Repatriation Pharmaceutical Benefits Scheme (RPBS) data

The MBS data within NIHSI version 2.0 include MBS claims data drawn from the MBS database. It contains unit record level data extracted for all MBS services with a date of service between 1 July 2010 and 30 June 2020 and processed up to and including 31 January 2021.

The 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 Aged Care and administered by Service Australia.

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.

The PBS data within the NIHSI version 2.0 contains unit record level data extract for all PBS/RPBS prescriptions supplied between 1 July 2010 and 30 June 2020, and processed by the Department of Health and Aged Care. The PBS/RPBS claims and under co-payment data are drawn from the PBS database maintained by the Department.

National Death Index (NDI) data

The National Death Index (NDI) is a Commonwealth database that contains records of deaths registered in Australia since 1980. Data comes from Registrars of Births, Deaths and Marriages in each jurisdiction, the National Coronial Information System and the Australian Bureau of Statistics. NDI records are supplemented with cause of death information using a once-off data linkage with the National Mortality Database (NMD). This enhancement enables research that requires both fact of death (whether a person died) and cause of death (what a person died from).

The NDI within NIHSI version 2.0 include records from 1 July 2010 to 31 December 2020. Cause of death data for late 2020 is incomplete.

Patient Demography data

The Patient Demography data contains demographics for person-level records for persons with a linked service event record in one or more of the content table (APC, ED, NAP, MBS, PBS, RAC and NDI).

Demographic information

Sex in Patient Demography data is extracted from MBS/PBS or from RAC or NDI if not available in MBS/PBS dataset.

Age in Patient Demography data is recorded as age (in years) at the date of first reported linked event (event zero). It is calculated based on MBS/PBS date of birth or date of birth/age data from RAC, NDI or hospitals data where it is not available in MBS/PBS data.

Indigenous identification

The identification of First Nations people in the Patient Demography data is calculated based on the hospitals collection available in the NIHSI. If a person is ever identified as Aboriginal or Torres Strait Islander in any hospitalisation record, the person is identified as a First Nations person.

In this report, the identification of First Nations people in Patient Demography data is used for analyses because it can identify more First Nations people and included less missing data compared with the identification in APC data.

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 First Nations 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 2023 reporting period, data were collected from 233 primary health-care organisations that receive funding from the Department of Health and Aged Care to provide primary health-care services, mainly to First Nations people.

The nKPIs collect information in June and December on a set of process-of-care and health-outcome indicators for First Nations people organised under 3 domains. The domains are maternal and child health, preventive health, and chronic disease management. Reporting 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 First Nations people, 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 2022a).

Absolute cardiovascular risk calculators embedded in most clinical information systems do not capture all the data needed to apply the full NVDPA risk assessment algorithm (Agostino et al. 2020). For PI21, data are included only from organisations with clinical information systems which capture all the necessary data.

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 deaths from cardiac conditions each year among First Nations people, mortality data for the most recent period are presented for 2019, 2020 and 2021 to allow for the reporting of data by age and sex.

For this report, data on deaths registered in:

- 2018 and earlier are based on the final version of cause of death data
- 2019 are based on the revised version and subject to further revision by the ABS
- 2020 and 2021 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. For more detail, refer to Technical note: Victorian additional registrations and time series adjustments in Causes of death, Australia methodology, 2019.

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 https://www.abs.gov.au/methodologies/deaths-australia-methodology and https://www.abs.gov.au/methodologies/causes-death-australia-methodology.

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 First Nations people in mortality data as some deceased First Nations people are not reported as Aboriginal and Torres Strait Islander 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 First Nations 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 First Nations people 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. Registered deaths where Indigenous status was not stated were excluded from 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 support:

(a) improved clinical care, including delivery of and adherence to secondary prophylaxis antibiotics
(b) provision of education and training for health-care providers, individuals, families and communities
(c) collection and provision of 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) maintenance of a dedicated state-wide patient register and recall system for ARF and RHD.

In Western Australia, South Australia and the Northern Territory, the ARF/RHD control programs are funded by the Australian Government Department of Health and Aged Care. In Queensland, the ARF/RHD control program is funded by both the Australian Government Department of Health and Aged Care and the Queensland Government.

Although an RHD control program and register also operates in New South Wales, this program is not currently covered under the Rheumatic Fever Strategy. The New South Wales register was established by the state government in 2016, with ARF and RHD becoming notifiable in the state in 2015, and RHD being notificable only in persons aged under 35. Information on ARF and RHD diagnoses is based on notification data. Information on secondary prophylaxis is only collected for patients that consent to have this information recorded on the register.

Data about ARF and RHD diagnoses are not currently 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.

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 additional 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.

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 data used in this report are from the National RHD data collection, which is hosted and managed by the AIHW by collating and cleaning data from the ARF and RHD registers in the 5 jurisdictions to remove any duplications. Data in the collection are updated over time as the jurisdictional programs undertake data cleaning and quality improvement activity, so numbers in this report may not match those in previous reports. Some data from New South Wales are incorporated with figures from other jurisdictions and some will remain separate, depending on the comparability between jurisdictions. New South Wales data were provided directly to the AIHW from the state's RHD register.

Calculations of ARF recurrences per 100 patient-years

ARF recurrence rate per 100 patient-years is the number of ARF recurrent events per 100 patient-years during the period that a person is prescribed prophylaxis and, therefore, at risk of ARF recurrence. The time prescribed prophylaxis is used to determine time at risk of ARF recurrence because a person is prescribed prophylaxis if they have been previously diagnosed with ARF and/or RHD and could therefore have an ARF recurrence. The numerator is the number of recurrences. The denominator of the rate is calculated by adding the time prescribed prophylaxis of all patients, where each patient's exposure time is defined as days spent in a pre-determined time period (that is, a year), ended only by events such as death or the end of the prescription period. The rate is then divided by the total number of days per year to get the value for each patient-year and then multiplied by 100.

Aboriginal and Torres Strait Islander population

The size of the Aboriginal and Torres Strait Islander population varies substantially by state and territory. To provide context for the state and territory data shown in this report, population estimates for 2021 are shown in Table A5.

In 2021, the Aboriginal and Torres Strait Islander population ranged from about 8,531 in the Australian Capital Territory to 291,732 in New South Wales.

The proportion of the population who are First Nations people also varies by state and territory. In 2021, it ranged from 1% in Victoria to about 32% in the Northern Territory (Table A5).

Table A5: Australian population, by Indigenous status and state and territory, 2021

State and territory	First Nations(a)	Non-Indigenous(b)	Total	% First Nations
NSW	291,732	7,897,534	8,189,266	3.6
Vic	65,308	6,583,851	6,649,159	1.0
Qld	247,178	4,973,992	5,221,170	4.7
WA	110,222	2,571,411	2,681,633	4.1
SA	46,527	1,726,716	1,773,243	2.6
Tas	30,249	462,196	492,445	6.1
ACT	8,531	398,255	406,786	2.1
NT	78,281	168,057	246,338	31.8
Australia(c)	**878,998**	**24,860,258**	**25,739,256**	**3.4**

(a) Population counts for First Nations people are projections based on ABS medium-level growth assumptions (Series B).

(b) Population counts for non-Indigenous Australians were derived by subtracting the First Nations 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 First Nations people who received an MBS health assessment within a 12-month period.	Crude rate: Numerator ÷ Denominator x 100	Number of First Nations people who had an MBS Health Assessment within the financial year.	First Nations 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 First Nations regular clients of First Nations primary health-care organisations, aged 35–74 and with no known history of CVD, who have had an absolute CVD risk assessment recorded within the previous 24 months and whose CVD risk was categorised as high, moderate or low.	Crude rate: Numerator ÷ Denominator x 100	Number of First Nations 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 First Nations 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 First Nations people without a current and long-term circulatory condition who were at high risk of cardiac disease who had their blood pressure checked in the previous 2 years.	Crude rate: Numerator ÷ Denominator x 100	Number of First Nations people 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 First Nations people without a current and long-term circulatory condition who were at high risk of cardiac disease.	NATSIHS
1.3.2	Proportion of First Nations people 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: Numerator ÷ Denominator x 100	Number of First Nations people 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 First Nations people 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 relevant financial year.	Crude rate: Numerator ÷ Denominator x 100 ASR was used in figure 2.1b	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 cardiologist in the relevant financial year.	Crude rate: Numerator ÷ Denominator x 100	Number of people who received relevant Medicare-listed, cardiac-related diagnostic or therapeutic items (as listed in Table B2) who also received specialist review items (as listed in Table B2) claimed in the financial year.	Number of people who had relevant Medicare-listed, cardiac-related diagnostic or therapeutic items (as listed in Table B2) claimed in the financial year.	MBS data
3.1	Proportion of hospitalised events for STEMI among people aged 18 and over who were treated by PCI within the period of care.(b)	Crude rate: Numerator ÷ Denominator x 100 ASR was used in figure 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: Numerator ÷ Denominator x 100 ASR was used in figure 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
3.4	Proportion of patients discharged from hospital with a principal diagnosis of ACS on appropriate medicines for secondary prevention.	Crude rate: Numerator ÷ Denominator x 100	Number of patients discharged from hospital with a principal diagnosis of ACS who have subsequently had appropriate medicines for secondary prevention dispensed under the PBS or RPBS on discharge or within 30 days of discharge.	Total number of patients discharged from hospital with a principal diagnosis of ACS.	Patient Demography file, APC and PBS within NIHSI

(continued)

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

No.	Description	Calculation	Numerator	Denominator	Data sources
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: Numerator ÷ Denominator x 100 ASR was used in figure 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
4.1	Proportion of patients discharged from hospital with a principal diagnosis of cardiac condition who reviewed by a primary health-care professional within 3 months and within 12 months after discharge	Crude rate: Numerator ÷ Denominator x 100	Number of patients discharged from hospital with a principal diagnosis of cardiac condition who had reviewed by a primary health-care professional within 3 months or within 12 months of discharge.	Total number of patients discharged from hospital with a principal diagnosis of cardiac condition, excluding the number of patients who died before reviewed by a primary health-care professional within 3 months or within 12 months of discharge.	Patient Demography file, APC, MBS, NDI within NIHSI
4.2	Proportion of patients discharged from hospital with a principal diagnosis of cardiac condition who received Medicare Chronic Disease Management (CDM) items within 3 months and within 12 months after discharge	Crude rate: Numerator ÷ Denominator x 100	Number of patients discharged from hospital with a principal diagnosis of cardiac condition who had received Medicare Chronic Disease Management (CDM) items within 3 months or within 12 months of discharge.	Total number of patients discharged from hospital with a principal diagnosis of cardiac condition, excluding the number of patients who died before received Medicare Chronic Disease Management (CDM) items within 3 months or within 12 months of discharge.	Patient Demography file, APC, MBS, NDI within NIHSI
4.3	Proportion of patients discharged from hospital with a principal diagnosis of cardiac condition who reviewed by a specialist physician within 3 months and within 12 months after discharge	Crude rate: Numerator ÷ Denominator x 100	Number of patients discharged from hospital with a principal diagnosis of cardiac condition who had reviewed by a specialist physician within 3 months or within 12 months of discharge.	Total number of patients discharged from hospital with a principal diagnosis of cardiac condition, excluding the number of patients who died before reviewed by a specialist physician within 3 months or within 12 months of discharge.	Patient Demography file, APC, MBS, NDI within NIHSI
4.4	Proportion of First Nations patients discharged from hospital with a principal diagnosis of CHD on appropriate medicines for secondary prevention at 3, 6 and 12 months	Crude rate: Numerator ÷ Denominator x 100	Number of patients discharged from hospital with a principal diagnosis of CHD on appropriate medicines for secondary prevention at 3, 6, and 12 months post-discharge.	Total number of patients discharged from hospital with a principal diagnosis of CHD.	Patient Demography file, APC, PBS, NDI within NIHSI

(continued)

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

No.	Description	Calculation	Numerator	Denominator	Data sources
5.1.1	Incidence (first known and recurrent) of ARF.	Crude rate: Numerator ÷ Denominator x 100,000	Number of first known and recurrent episodes of ARF in the calendar year. .	Population as at 30 June.	National RHD data collection; ABS population data
5.1.2	New diagnoses of RHD.	Crude rate: 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: 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: 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
6.1	Cardiac morbidity – rates of hospitalisation for a cardiac condition.	Crude rate: Numerator ÷ Denominator x 1,000 ASR was used in figure 6.1f	Number of hospitalisations with a principal diagnosis of cardiac condition, and a care type not equal to 'newborn – unqualified days only' or 'organ procurement – posthumous' or 'hospital boarder'.	Population at the middle of the financial year, calculated from the average of the populations as at 30 June at the beginning and end of the financial year.	NHMD and ABS population data
6.2.1	Cardiac mortality – rates of cardiac mortality.	Crude rate: Numerator ÷ Denominator x100,000 ASR was used in figure 6.2.1e	Number of deaths where a cardiac condition (as listed in Table B4) is the underlying cause of death in the calendar year. Numerator data are reported for NSW, Qld, WA, SA and the NT.	Population as at 30 June. Denominator data are reported for NSW, Qld, WA, SA and the NT.	NMD and ABS population data
6.2.2	Cardiac mortality – in-hospital deaths for cardiac-related hospitalisations.	Crude rate: Numerator ÷ Denominator x 100,000 ASR was used in figure 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 2018 and earlier are based on the final version of cause of death. Deaths registered in 2019 are based on the revised version. Deaths registered in 2020 and 2021 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/BTOS 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)]	11700–11731	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)]	55113–55146, 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.
Primary health-care professionals	BTOS 0101, 0101, 0103, 0110	Non referred GP/Vocationally Registered GP, enhanced primary care, practice nurse items and other attendances.
GP management plan[(a)]	721, 92024, 92068 229, 92055, 92099	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 230, 92056, 92100	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 233, 92059, 92103	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 231, 232, 92057, 92101, 92058, 92102	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), 11th 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), 11th 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

Table B5: List of ATC groups for cardiovascular disease

ATC Code	ATC2 code	Condition
B		Blood and blood forming organs
	B01	Antithrombotic agents
C		Cardiovascular system
	C01	Cardiac therapy
	C02	Antihypertensive
	C03	Diuretics
	C04	Peripheral vasodilators
	C05	Vasoprotectives
	C07	Beta-blocking agents
	C08	Calcium channel blockers
	C09	Renin-angiotensin system agents
	C10	Lipid-modifying agents

Notes: Medicines in ATC2 codes C04 (Peripheral vasodilators) and C05 (vasoprotectives) were not prescribed for any of the First Nations patients included in the sample for this study

Appendix C: Summary results, by measure

Table C1: Summary results, including numerator and denominator data, for the Better Cardiac Care measures

	First Nations				Non-Indigenous			
Measures (unit applicable to rates)	**Numerator**	**Denominator**	**Crude rate**	**ASR**	**Numerator**	**Denominator**	**Crude rate**	**ASR**
1.1 Annual health assessments, 2021–22 (%)	214,530	855,698	24.2	. .	. .	. .	. .	. .
1.2 Cardiovascular disease risk assessment, June 2023, high risk (%)	3,952	11,449	34.5	. .	. .	. .	. .	. .
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, 2021–22 (%)	61,561	887,632	6.9	9.3	2,650,319	25,345,509	10.5	9.1
2.3 Suspected or confirmed cardiac disease case review by a specialist, 2021–22 (%)	15,484	61,679	25.1	22.9	1,104,370	2,657,471	41.6	30.8
3.1 STEMI events treated by PCI, 2018–21 (%)	906	1,268	71.5	69.9	21,728	27,634	78.6	81.6
3.3 ACS events that included diagnostic angiography or definitive revascularisation, 2018–21 (%)	3.682	6,033	61.0	65.3	78,226	119,624	65.4	73.4
3.4 ACS patients discharged from hospital on appropriate CVD medicines, 2018-21 (%)	1706	1956	87.2	. .	. .	. .	. .	. .
3.5 AMI in-hospital mortality rates, 2018–21 (%)	123	4,382	2.8	2.6	3,970	91,638	4.3	2.8
4.1 Primary health-care professional review after hospital discharge with a cardiac condition diagnosis within 12 months, 2018-19 (%)	6400	6577	97.3	. .	169377	173582	97.6	. .
4.2 Patients who received CDM services after hospital discharge with a cardiac condition within 12 months, 2018-19 (%)	4091	6349	64.4	. .	93663	165327	56.7	. .
4.3 Specialist physician review after hospital discharge with a cardiac condition within 12 months, 2018-19 (%)	4281	6370	67.2	. .	139079	168455	82.6	. .
4.4 CHD patients remaining on medications 12 months after hospital discharge, 2018-19 (%)	2202	2913	75.6	. .	. .	. .	. .	. .
5.1.1 Incidence of ARF, 2021 (number per 100,000)	582	776,061	75.0	n.a.	. .	. .	. .	. .
5.1.2 New diagnoses of RHD, 2021 (number per 100,000)	351	483,492	72.6	n.a.	. .	. .	. .	. .
5.2 Recurrent ARF, 2021 (%)	163	575	28.3	n.a.	. .	. .	. .	. .
5.3 Treatment with BPG doses, 2021, more than 80% of doses (%)	1,513	4,816	31.4	n.a.	. .	. .	. .	. .
6.1 Hospitalisations for cardiac conditions, 2018–21 (number per 1,000)	37,516	2,561,935	14.6	23.8	1,180,546	73,760,932	16.0	12.9
6.2.1 Deaths from cardiac conditions, 2019–2021 (number per 100,000)	1,797	2,278,477	78.9	144.7	61,226	51,659,512	118.5	89.6
6.2.2 In-hospital deaths for cardiac conditions, 2018–21 (number per 100,000)	642	2,561,935	25.1	45.8	23,939	73,760,932	32.5	25.2

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.

Notes

1. Data for measures 5.1.1 and 6.2.1 are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory only, data for measures 5.1.2, 5.2 and 5.3 are for 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.

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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	National Integrated Health Services Information
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
PBS	Pharmaceutical Benefits Schedule
Qld	Queensland
RHD	rheumatic heart disease
SA	South Australia
STEMI	ST-segment-elevation myocardial infarction
Strep A	Group 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 'First Nations people'.

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).

First Nations people: 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 First Nations people 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 First Nations people 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 First Nations population
3. rate ratio greater than 1 indicates the rate is higher in the First Nations 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) *3303.0 – Causes of death, Australia, 2010: Technical Note 3: Retrospective Deaths by Causes of Death, Queensland, 2010*, ABS, Australian Government, accessed 28 January 2016. https://www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/3303.0Technical%20Note32010?opendocument&tabname=Notes&prodno=3303.0&issue=2010&num=&view=

ABS (2015) *3303.0 – Causes of death, Australia, 2013*, ABS, Australian Government. https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/3303.0~2013~Main%20Features~Leading%20Causes%20of%20Death~10001

ABS (2018a) *Estimates of Aboriginal and Torres Strait Islander Australians*, ABS, Australian Government, accessed 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*, ABS, Australian Government, accessed 6 November 2020. Census of Population and Housing: Understanding the Increase in Aboriginal and Torres Strait Islander Counts, 2016 | Australian Bureau of Statistics (abs.gov.au)

ABS (2019) *Estimates and Projections, Aboriginal and Torres Strait Islander Australians*, ABS, Australian Government, accessed 6 November 2020. https://www.abs.gov.au/statistics/people/aboriginal-and-torres-strait-islander-peoples/estimates-and-projections-aboriginal-and-torres-strait-islander-australians/latest-release

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

ACSQHC (Australian Commission on Safety and Quality in Health Care) (2019) *Acute Coronary Syndromes Clinical Care Standard*, ACSQHC. https://www.safetyandquality.gov.au/our-work/clinical-care-standards/acute-coronary-syndromes-clinical-care-standard

AIHW (Australian Institute of Health and Welfare) (2010) 'Indigenous identification in hospital separations data: quality report', *Health services series 35*, catalogue number HSE 85, AIHW, Australian Government. https://www.aihw.gov.au/reports/hospitals/indigenous-identification-hospital-separations/contents/table-of-contents

AIHW (2013) *Indigenous identification in hospital separations data: quality report*, catalogue number IHW 90, AIHW, Australian Government. https://www.aihw.gov.au/reports/indigenous-australians/indigenous-identification-in-hospital-separations/summary

AIHW (2014*) Acute coronary syndrome: validation of the method used to monitor incidence in Australia*, catalogue number CVD 68, AIHW, Australian Government. https://www.aihw.gov.au/reports/heart-stroke-vascular-disease/acute-coronary-syndrome-validation-of-the-method/contents/summary

AIHW (2015a) *Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: first national report 2015*, catalogue number IWH 156, AIHW, Australian Government. https://www.aihw.gov.au/reports/indigenous-australians/better-cardiac-care-measures-for-aboriginal-and-to/summary

AIHW (2015b) ‘Cardiovascular disease, diabetes and chronic kidney disease – Australian facts: Aboriginal and Torres Strait Islander people 2015’, *Cardiovascular, diabetes and chronic kidney disease series 5*, catalogue number CDK 5, AIHW, Australian Government. https://www.aihw.gov.au/reports/heart-stroke-vascular-disease/cardiovascular-diabetes-chronic-kidney-indigenous/summary

AIHW (2015c) *The health and welfare of Australia’s Aboriginal and Torres Strait Islander peoples: 2015*, catalogue number IHW 147, AIHW, Australian Government. https://www.aihw.gov.au/reports/indigenous-health-welfare/indigenous-health-welfare-2015/contents/table-of-contents

AIHW (2016) *Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: second national report 2016*, catalogue number IHW 169, AIHW, Australian Government. https://www.aihw.gov.au/reports/indigenous-australians/better-cardiac-care-measures-2016/contents/table-of-contents

AIHW (2018a) *Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: third national report 2017*, catalogue number IHW 197, AIHW, Australian Government. https://www.aihw.gov.au/reports/indigenous-australians/better-cardiac-care-measures-2017/summary

AIHW (2018b) *National Key Performance Indicators for Aboriginal and Torres Strait Islander primary health care: results for 2017*, catalogue number IHW 200, AIHW, Australian Government. https://www.aihw.gov.au/reports/indigenous-australians/nkpis-indigenous-australians-health-care-2017/summary

AIHW (7 December 2018) *Regular visits to a GP reduce risk of hospitalisation and death following heart attack* [media release], AIHW, Australian Government, accessed 13 September 2023. https://www.aihw.gov.au/news-media/media-releases/2018/december/regular-visits-to-a-gp-reduce-risk-of-hospitalisat

AIHW (2019) *Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: fourth national report 2018-19*, catalogue number IHW 223, AIHW, Australian Government. https://www.aihw.gov.au/reports/indigenous-australians/better-cardiac-care-measures-18-19/summary

AIHW (2020a) *Tracking progress against the Implementation Plan goals for the Aboriginal and Torres Strait Islander Health Plan 2013–2023*, catalogue number IHW 201, AIHW, Australian Government, accessed 20 July 2021. https://www.aihw.gov.au/reports/indigenous-australians/tracking-progress-against-ipg-2013-2023/contents/summary

AIHW (2020b) *Review of the two national Indigenous specific primary health care datasets: The Online Services Report and the national Key Performance Indicators*, AIHW, Australian Government. Review of the two national Indigenous specific primary health care datasets: The Online Services Report and the national Key Performance Indicators , Summary - Australian Institute of Health and Welfare (aihw.gov.au)

AIHW (2020c) *Aboriginal and Torres Strait Islander Health Performance Framework – Summary report 2020*, catalogue number IHPF 2, AIHW, Australian Government. https://www.indigenoushpf.gov.au/publications/hpf-summary-2020

AIHW (2021a) *Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: fifth national report 2020*, catalogue number IHW 246, AIHW, Australian Government. https://www.aihw.gov.au/reports/indigenous-australians/better-cardiac-care-measures-for-indigenous-people/summary

AIHW (2021b) *Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: sixth national report 2021*, catalogue number IHW 263, AIHW, Australian

Government. https://www.aihw.gov.au/reports/indigenous-australians/better-cardiac-care-measures-2021/summary

AIHW (2021c) *Indigenous health checks and follow-ups*, catalogue number IHW 209, AIHW, Australian Government, accessed 20 July 2021. Indigenous health checks and follow-ups, About - Australian Institute of Health and Welfare (aihw.gov.au)

AIHW (2022a) *Aboriginal and Torres Strait Islander specific primary health care: results from the nKPI and OSR collections*, catalogue number IHW 227, AIHW, Australian Government. https://www.aihw.gov.au/reports/indigenous-australians/indigenous-primary-health-care-results-osr-nkpi/contents/about

AIHW (2022b) *Acute rheumatic fever and rheumatic heart disease in Australia, 2016-2020*, catalogue number CVD 95, AIHW, Australian Government.

AIHW (2022c) *Medication use for secondary prevention after coronary heart disease hospitalisation: Patient pathways using linked data*, catalogue number CVD 98, AIHW, Australian Government. https://www.aihw.gov.au/reports/heart-stroke-vascular-diseases/use-of-medications-for-secondary-prevention/contents/summary

AIHW (2023) *Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: seventh national report 2022 (data update),* catalogue number IHW 274, AIHW, Australian Government. https://www.aihw.gov.au/reports/indigenous-australians/better-cardiac-care-measures-indigenous-2022/contents/about

Agostino, JW, Wong D, Paige E, et al. (2020). 'Cardiovascular disease risk assessment for Aboriginal and Torres Strait Islander adults aged under 35 years: a consensus statement', *The Medical Journal of Australia,* 212(9):422-427, doi:10.5694/mja2.50529

Aroney C, Aylward P, Kelly A, Chew D and Clune E (on behalf of the Acute Coronary Syndrome Guidelines Working Group) (2006) 'Guidelines for the management of acute coronary syndromes 2006', *The Medical Journal of Australia*, 184(8):S2–S9, doi:10.5694/j.1326-5377.2006.tb00304.x.

Better Cardiac Care Forum (BCCF) (2014) (unpublished) *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 and 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(2):126–141, doi:10.1016/j.hlc.2014.09.021.

Chew DP, Scott IA, Cullen L, French JK, Briffa TG, Tideman PA, Woodruffe S, Kerr A, Branagan M and Aylward PEG (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', *The Medical Journal of Australia*, 205(3):128–133, doi:10.5694/mja16.00368.

Chow CK, Brieger D, Ryan M, Kangaharan N, Hyun KK and Briffa T (2019) 'Secondary prevention therapies in acute coronary syndrome and relation to outcomes: observational study', *Heart Asia*, 11(1):e011122, doi:10.1136/heartasia-2018-011122.

Clark R, Coffee N, Turner D, Eckert KA, van Gaans D Wilkinson D, Stewart S and Tonkin AM (on behalf of the Cardiac ARIA Project Group) (2012) 'Application of Geographic Modeling Techniques to Quantify Spatial Access to Health Services Before and After an Acute Cardiac

Event: The Cardiac Accessibility and Remoteness Index for Australia (ARIA) Project', *Circulation*, 125(16):2006–2014, doi:10.1161/CIRCULATIONAHA.111.083394.

Coffey PM, Ralph AP and Krause VL (2018) 'The role of social determinants of health in the 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, doi:10.1371/journal.pntd.0006577.

Department of Health and Aged Care (2014) *MBS Health Assessments Items 701, 703, 705, 707 and 715*, Department of Health and Aged Care website, accessed 1 February 2016. https://www1.health.gov.au/internet/main/publishing.nsf/Content/mbsprimarycare_mbsitem_general_factsheet

Department of Health and Aged Care (2018) *Medicare Benefits Schedule Review Taskforce Endorsed Final Report from the Cardiac Services Clinical Committee*, Department of Health and Aged Care, Australian Government, accessed 11 December 2023. Final Report from the Cardiac Services Clinical Committee (health.gov.au)

Department of Health and Aged Care (2018) *Medicare Benefits Schedule Book—Category 2: operating from 1 February 2018*, Department of Health and Aged Care, Australian Government.

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

Ilton MK, Walsh WF, Brown ADH, Tideman PA, Zeltz CJ and 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', *The Medical Journal of Australia*, 200(11):639–643, doi: 10.5694/mja12.11175.

Jaine R, Baker M and Venugopal K (2011) 'Acute rheumatic fever associated with household crowding in a developed country', *The Pediatric Infectious Disease Journal*, 30(4):315–319, doi:10.1097/INF.0b013e3181fbd85b.

Lopez D, Katzenellenbogen JM, Sanfilippo FM, Woods JA, Hobbs MST, Knuiman MW, Briffa TG, Thompson PL and Thompson SC (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), doi: 10.1186/1471-2261-14-58.

NACCHO (National Aboriginal Community Controlled Health Organisation) and The RACGP (Royal Australian College of General Practitioners) (2018) *National guide to a preventative health assessment for Aboriginal and Torres Strait Islander people: Third edition*, RACGP. https://www.racgp.org.au/clinical-resources/clinical-guidelines/key-racgp-guidelines/view-all-racgp-guidelines/national-guide

NHFA (National Heart Foundation of Australia) (2010) *Secondary prevention of cardiovascular disease*, NHFA.

NHFA and 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(9):895–951, doi:10.1016/j.hlc.2016.06.789.

NHFA CSANZ Heart Failure Guidelines Working Group (2018) 'National Heart Foundation of Australia and Cardiac Society of Australia and New Zealand: Guidelines for the Prevention, Detection, and Management of Heart Failure in Australia 2018’, *Heart, Lung and Circulation*, 27(10):1123-1208, doi:10.1016/j.hlc.2018.06.1042.

Noonan S (2020) *Primordial Prevention and Social Determinants of Health?*, RHD Australia website, accessed 10 December 2020. https://www.rhdaustralia.org.au/can-acute-rheumatic-fever-and-rheumatic-heart-disease-be-prevented

Ong MA and Weeramanthri TS (2000) ‘Delay times and management of acute myocardial infarction in Indigenous and non-Indigenous people in the Northern Territory’, *The Medical Journal of Australia*, 173(4):201–204, doi: 10.5694/j.1326-5377.2000.tb125601.x.

Parnaby MG and Carapetis JR (2010) ‘Rheumatic fever in Indigenous Australian children’, *Journal of Paediatrics and Child Health*, 46(9):527–533, doi:10.1111/j.1440-1754.2010.01841.x.

Randall DA, Jorm LR, Lujic S, O’Loughlin AJ, Eades SJ and Leyland AH (2013) ‘Disparities in Revascularization Rates After Acute Myocardial Infarction Between Aboriginal and Non-Aboriginal People in Australia’, *Circulation*, 127:811–819, doi: 10.1161/CIRCULATIONAHA.112.000566.

Rheumatic Heart Disease Australia (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 edition)*, RHD Australia.

Sims SA, Colquhoun S, Wyber R and Carapetis JR (2016) ‘Global disease burden of Group A Streptococcus’, in Ferratti JJ, Stevens DL and Fischetti VA (eds) *Streptococcus pyogenes: basic biology to clinical manifestations*, University of Oklahoma Health Sciences Centre, Oklahoma City. https://www.ncbi.nlm.nih.gov/books/NBK333415/

Tideman PA, Tirimacco R, Senior DP, Setchell JJ, Huynh LT, Tavella R, Aylward PEG and Chew DPB (2014) ‘Impact of a regionalised clinical cardiac support network on mortality among rural patients with myocardial infarction’, *The Medical Journal of Australia*, 200(3):157–160, doi:10.5694/mja13.10645.

Wyber R and Carapetis J (2015) ‘Evolution, evidence and effect of secondary prophylaxis against rheumatic fever’, *Journal of the Practice of Cardiovascular Sciences*, 1(1):9–14, doi:10.4103/2395-5414.157554.

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This is the eighth national report on the 21 Better Cardiac Care measures for Aboriginal and Torres Strait Islander people, with updated data available to report for 17 measures. The level of access for cardiac-related health services is improving for First Nations people. While the mortality rate from cardiac conditions is falling among First Nations people, it is still higher than among non-Indigenous Australians.

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