Better Cardiac Care measures for Aboriginal and Torres Strait Islander people

Third national report 2017

AIHW

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2017

The Australian Institute of Health and Welfare is a major national agency whose purpose is to create authoritative and accessible information and statistics that inform decisions and improve the health and welfare of all Australians.

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

Contents

Acknowledgements

Abbreviations

AATSIHS	Australian Aboriginal and Torres Strait Islander Health Survey
ABS	Australian Bureau of Statistics
ACHI	Australian Classification of Health Interventions
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
CABG	coronary artery bypass graft
GP	general practitioner
MBS	Medicare Benefits Schedule
NHMD	National Hospital Morbidity Database
NMD	National Mortality Database
NSW	New South Wales
NT	Northern Territory
PCI	percutaneous coronary intervention
Qld	Queensland
RHD	rheumatic heart disease
RHDR	rheumatic heart disease register
SA	South Australia
STEMI	ST-segment-elevation myocardial infarction
Tas	Tasmania
Vic	Victoria
WA	Western Australia

Symbols

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

Summary

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

A set of 21 measures were developed to monitor the progress of the project. Data are available to report on 14 of the measures. This report is the third national report in which data were updated and/or modified for 11 measures that were reported in previous reports. In addition, it provides new data for 3 other measures.

Key findings

Some progress has been made toward better cardiac care for Indigenous Australians—the level of access for cardiac-related health services is improving, and the mortality rate from cardiac conditions is falling among the Indigenous population.

But there are still challenges in some areas—the incidence and recurrent rates of acute rheumatic fever among Indigenous Australians were much higher than among non-Indigenous Australians, and while the mortality rate from cardiovascular disease is falling, it is still much higher among Indigenous Australians than non-Indigenous Australians.

Access for cardiac-related health services has improved

Between 2004–05 and 2015–16, the age-standardised proportion of Indigenous males who received a health assessment under the Medicare Benefits Schedule rose from about 2% to 24%, while for females it rose from about 2% to 27% (see Measure 1.1, Figure 1.1 for more information).

Between 2004–05 and 2015–16, the age-standardised proportion of Indigenous Australians who claimed cardiac-related diagnostic items under the Medicare Benefits Schedule rose from 7% to 10%, similar to the pattern among non-Indigenous Australians (see Measure 2.1, Figure 2.1 for more information).

Between 2004–05 and 2015–16, the age-standardised proportion of Indigenous Australians hospitalised for a severe heart attack who were treated by recommended intervention (percutaneous coronary intervention) rose from 26% to 65% (see Measure 3.1, Figure 3.1 for more information).
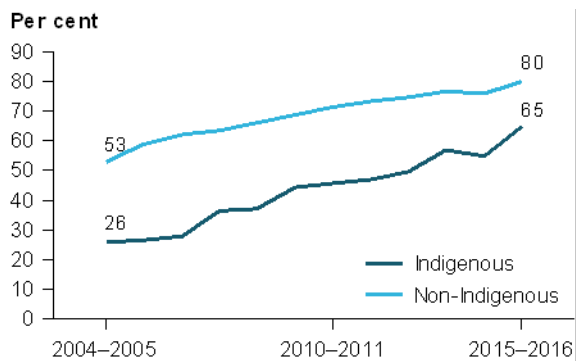
Between 2004–05 and 2015–16, the age-standardised proportion of Indigenous Australians hospitalised for acute coronary syndrome events who received recommended diagnostic procedures or treatment (diagnostic angiography or a definitive revascularisation procedure) rose from 32% to 52% (see Measure 3.3, Figure 3.3 for more information).

Per cent

Per cent
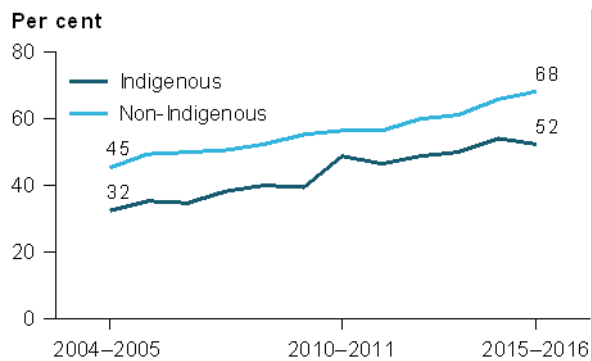
The mortality rate of cardiac conditions has fallen

Between 2004–07 and 2013–16, the age-standardised in-hospital mortality rate for Indigenous patients admitted for a heart attack fell from 71 to 62 per 100,000 population. But in 2013–16, it was still twice the rate for non-Indigenous Australians (see Measure 6.2, Figure 6.2.2 for more information).
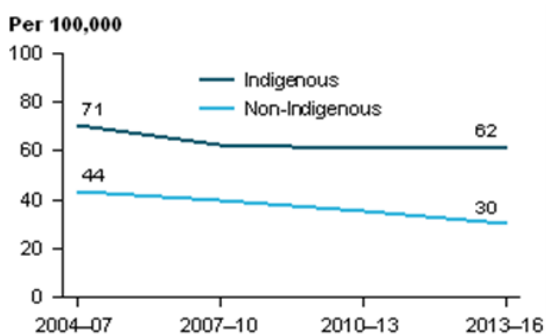
Between 1998 and 2015, the mortality rate due to cardiac conditions for Indigenous Australians fell by 41%, from 305 to 180 per 100,000 population. But in 2015, it was still 1.5 times the rate for non-Indigenous Australians (see Measure 6.2, Figure 6.2.1 for more information).

Per 100,000

Per 100,000
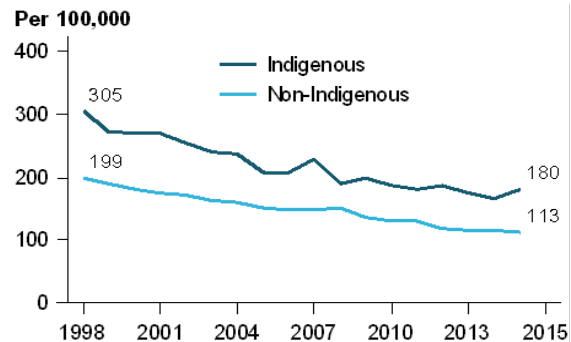
The gap between Indigenous and non-Indigenous Australians is still wide

In 2015–16, Indigenous Australians with a suspected or confirmed cardiac condition were less likely to use specialist services than non-Indigenous Australians (see Measure 2.3, Figure 2.3 for more information).
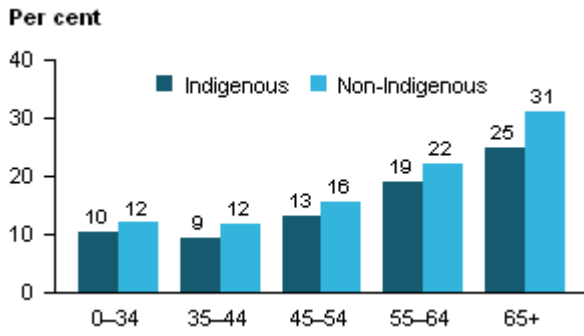
In 2015–16, Indigenous Australians were less likely than non-Indigenous Australians to be reviewed by a specialist after a cardiac related procedure, for those aged under 65 (76% compared with 92%) and over 65
(93% compared with 97%) (see Measure 4.3, Figure 4.3 for more information).
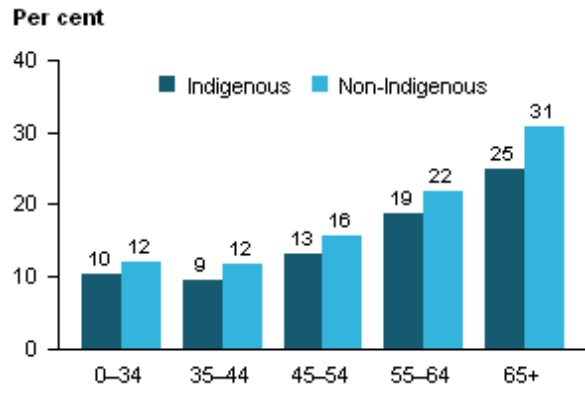
In 2015–16, Indigenous Australians were almost twice as likely as non-Indigenous Australians to be hospitalised for cardiac conditions (see Measure 6.1, Figure 6.1 for more information).
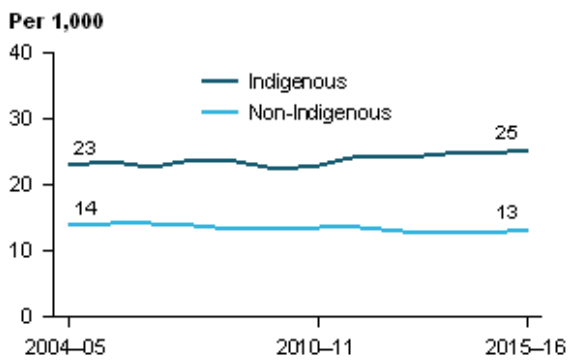
In 2013–14 to 2015–16, Indigenous adults (59%) were less likely than non-Indigenous adults (78%) to be treated with percutaneous coronary intervention after a severe heart attack (see Measure 3.1, Figure 3.1 for more information).
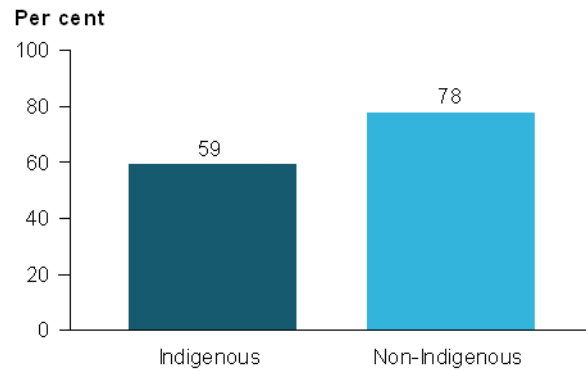
In 2016, the incidence rate and recurrence rate of acute rheumatic fever were much higher among Indigenous Australians than other Australians in Queensland, Western Australia, South Australia, and the Northern Territory combined (where data were available).

The incidence rate of acute rheumatic fever among Indigenous Australians was 87 per 100,000 population, compared with 0.3 per 100,000 for other Australians (see Measure 5.1, Figure 5.1.1 for more information).
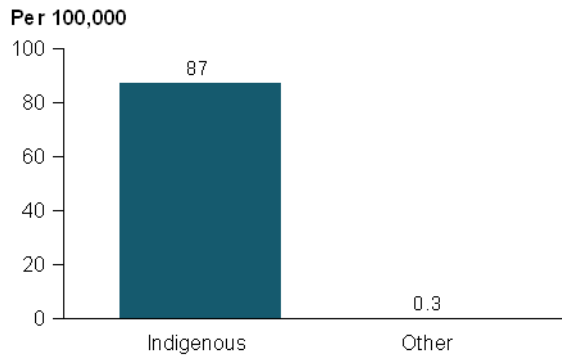
The recurrence rate of acute rheumatic fever was 28% among Indigenous Australians, compared with 18% among other Australians (see Measure 5.2, Figure 5.2 for more information).

Per 100,000

	Indigenous	Other
	87	0.3

Per cent

	Indigenous	Other
	28	18
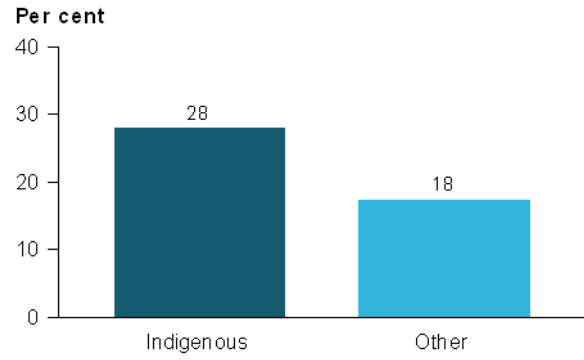
1   Introduction

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

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

Better Cardiac Care project

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

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

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

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

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

The 5 priority areas are:

- primary preventive care—early cardiovascular risk assessment and management
- clinical suspicion of disease—timely diagnosis of heart disease and heart failure
- acute episode—guideline-based therapy for acute coronary syndrome
- ongoing care—optimisation of health status and provision of ongoing preventive care
- rheumatic heart disease—strengthening the diagnosis, notification, and follow-up of RHD.

A set of 21 Better Cardiac Care measures (Table 1.1) were also developed to track the implementation and monitoring of the priority areas and associated actions (BCCF 2014).

Reporting on the Better Cardiac Care measures

Since 2015, the Australian Institute of Health and Welfare (AIHW) has published 2 annual reports on the Better Cardiac Care measures (AIHW 2015a AIHW 2016). Table 1.1 provides a summary of the data available for the 21 measures, including 14 reported measures (shaded in blue or green), and 7 not reported measures (shaded in orange).

Based on data availability, the previous 2 publications reported on 12 measures. This report—the third in the series—provides updated results for 11 previously reported measures (some methods have been modified), and results for 3 new measures (2.3, 4.3, and 5.4).

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

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

Appendix A provides specifications for the data sources used, and Appendix B provides technical specifications for the reported measures, including information on relevant classification codes (tables B1–B4).

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>.

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		Not available
1.3 Proportion of people with risk factors for cardiac disease with evidence of primary care practitioner follow-up	AATSIHS	No new data for update
Priority area 2: Timely diagnosis of heart disease and heart failure		
2.1 Number and proportion of people who claimed relevant MBS diagnostic items in the previous 12 months	MBS	Available annually
2.2 Number and proportion of people who received diagnostic services within 30 days of referral		Not available
2.3 Number and proportion of people with suspected/confirmed cardiac disease reviewed by a cardiologist in the previous 12 months	MBS	Partially available annually
Priority area 3: Guideline-based therapy for acute coronary syndrome		
3.1 Number and proportion of people with ST-segment-elevation myocardial infarction: (i) treated by primary percutaneous coronary intervention; (ii) treated with fibrinolysis	NHMD	Partially available annually
3.2 Proportion of people with ST-segment-elevation myocardial infarction who were not provided any reperfusion therapy		Not available

Measure	Data source	Data availablility
3.3 Proportion of people with acute coronary syndrome who received a diagnostic angiography or definitive revascularisation procedure within the index admission/within 30 days	NHMD	Available annually
3.4 Proportion of people diagnosed with acute coronary syndrome discharged from hospital on appropriate secondary prevention medicines		Not available
3.5 In-hospital, 30-day and 12-month mortality rates for people admitted to hospital with a primary diagnosis of acute myocardial infarction	MBS	Available annually
Priority area 4: Optimisation of health status and provision of ongoing preventative care		
4.1 Number and proportion of patients reviewed by a primary health-care professional within 1 week of discharge from hospital		Not available
4.2 Number and proportion of patients with cardiac disease who received follow-up Medicare items within 3 months of hospital discharge	MBS	Partially available annually
4.3 Number and proportion of patients with cardiac disease reviewed by a specialist physician within 3 or 12 months of discharge	MBS	Partially available annually
4.4 Number and proportion of patients with coronary heart disease discharged on prevention medications and remaining on it at 3, 6, and 12 months		Not available
Priority area 5: Strengthen the diagnosis, notification and follow-up of rheumatic heart disease		
5.1 Annual incidence of all acute rheumatic fever episodes	RHDRs	Partially available annually
5.2 Proportion of all acute rheumatic fever episodes that were recurrent	RHDRs	Partially available annually
5.3 Median proportion of scheduled benzathine penicillin G doses given to patients with confirmed acute rheumatic fever or rheumatic heart disease in the previous 12 months	RHDRs	Partially available annually
5.4 Proportion of people with moderate or severe rheumatic heart diease who received an echocardiogram in the previous 12 months	RHDRs	Partially available annually
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	Available annually

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

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

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

AATSIHS = Australian Aboriginal and Torres Strait Islander Health Survey; MBS = Medicare Benefits Schedule; NHMD = National Hospital Morbidity Database; NMD = National Mortality Database; RHDRs = rheumatic heart disease registers.

Source: BCCF 2014.

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2 Results

Priority area 1: Early cardiovascular risk assessment and management

Priority area 1 of the Better Cardiac Care project is *early cardiovascular risk assessment and management*. This is based on the premise that all Aboriginal and Torres Strait Islander people with no known cardiac disease should receive:

- an annual cardiovascular risk assessment
- appropriate management and follow-up for identified cardiac disease risk factors
- lifestyle modification advice appropriate to their cardiovascular risk level, as per current guidelines (NACCHO & RACGP 2012).

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

Three measures were agreed upon within this priority area, and updated data are available for measure 1.1 on health assessments.

The data for measure 1.2 are expected to become available for the next report, which will be provided based on the AIHW data collection on the national key performance indicators for Aboriginal and Torres Strait Islander primary health care.

Measure 1.1: Annual health assessments

This measure reports on the number and proportion of Indigenous Australians who had a Medicare Benefits Schedule (MBS) health assessment in the previous 12 months (Table B.2 in Appendix B contains the list of relevant MBS item numbers included in the measure).

Why is it important?

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

All Indigenous Australians are eligible for an annual health assessment, which is listed as item 715 on the MBS.This comprehensive health asessement covers a wide variety of risk factors related to cardiac disease and other chronic diseases, including medical history, nutrition, physical activity, smoking and alcohol intake, living conditions, and body mass index, although it is not a specific cardiovascular risk assessment. People within specified target groups may also be eligible for other types of MBS health assessments (Department of Health 2014), which are referred to as 'general' health assessments in this report.

Results

Overall:

- In 2015–16, more than one-quarter of Indigenous Australians (27%, or an estimated 199,400 people) received a health assessment—about 26% received an MBS item 715 health assessment, and about 1% received a general health assessment (Figure 1.1a).

Time trend:

- Between 2004–05 and 2015–16, the age-standardised proportion of Indigenous Australians who had an MBS health assessment rose from 2% to 27% for females, and from 2% to 24% for males (Figure 1.1b).
- From 2014–15 to 2015–16, the overall proportion rose by 3 percentage points.
- A marked increase occurred from 2010–11, coinciding with the introduction of the Australian Government's Indigenous Chronic Disease Package.

Sex and age:

In 2015–16:

- more Indigenous females than males had an MBS health assessment (Figure 1.1b)
- about one-quarter (25%) of Indigenous children aged under 15 had an MBS health assessment. Among Indigenous Australians aged 15 and over, the proportion rose from 21% among those aged 15–24 to 38% among those aged 65 and over (Figure 1.1c).

State/territory and remoteness area:

In 2015–16, the proportion of Indigenous Australians who had an MBS health assessment was:

- highest in Queensland (33%), and lowest in Tasmania (9%) (Figure 1.1d)
- highest in *Inner/Outer regional* areas combined (29%), and lowest in *Major cities* (21%) (Figure 1.1e).

a) By MBS claim type, 2015–16

Per cent

- MBS item 715: 26
- MBS general items: 1

b) Health assessment, time trend by sex, 2004–05 to 2015–16

Per cent

- Males
- Females

2004–05: 2
2015–16: Females 27, Males 24

c) By age and sex, 2015–16

Per cent

- Males
- Females

Age	Males	Females
0–14	26	25
15–24	17	24
25–34	19	27
35–44	25	30
45–54	29	34
55–64	33	38
65+	36	40

d) By State/Territory, 2015–16

Per cent

NSW	Vic	Qld	WA	SA	Tas	ACT	NT
24	16	33	25	19	9	22	31

e) By remoteness area, 2015–16

Per cent

- Major cities: 21
- Inner / outer regional: 29
- Remote / very remote: 28

Notes

1. Rates in figures 1.1a, 1.1b, and 1.1e are age-standardised; all other figures show crude rates.

2. Data for these figures are available in the online supplementary tables (1.1a to 1.1e).

3. The MBS data reflect billing practices, and not necessarily the services provided.

4. The general health assessments data were adjusted for Indigenous under-identification. General health assessments for non-Indigenous Australians are not directly comparable with Indigenous-specific health assessments.

Source: AIHW analysis of MBS data.

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

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

Priority area 2 of the Better Cardiac Care project is *timely diagnosis of heart disease and heart failure.*

This is based on the premise that all Aboriginal and Torres Strait Islander people suspected of having heart disease or heart failure should receive appropriate initial diagnostic services (such as stress testing or coronary angiography for ischaemic heart disease, or echocardiography for heart failure and rheumatic heart disease) as close to the patient's home as possible, within acceptable timeframes according to the level of risk and the patient's condition (BCCF 2014).

Of the 3 measures recommended for this priority area, data are available for:

- measure 2.1 for Medicare-listed diagnostic items
- measure 2.3 for cardiologist review of suspected/confirmed cardiac disease.

Measure 2.1: Cardiac-related diagnosis

This measure reports on the number and proportion of Indigenous Australians who had 1 or more relevant cardiac-related MBS diagnostic item claims in the previous 12 months, compared with non-Indigenous Australians (Table B.2 in Appendix B contains the list of relevant MBS item numbers included in the measure).The current report includes additional MBS items within measure 2.1, compared with the second national report (AIHW 2016); as such the results are not comparable. Additional MBS items were used to more accurately capture the status of cardiac-related diagnoses, and were obtained from the Cardiac Services Clinical Committee of the Medical Benefit Schedule Review Taskforce (Department of Health 2017).

Why is it important?

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

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

Results

Overall:

In 2015–16:

- 64,909 MBS claims for cardiac-related diagnostic items were made for Indigenous patients (age-standardised proportion of 13.2%), compared with 3,178,327 claims for non-Indigenous patients (proportion of 12.1%).
- 45,932 claims for diagnostic procedures and investigations (age-standardised proportion of 9.3%), and 18,977 claims for diagnostic imaging services (age-standardised proportion of 3.9%) were made for Indigenous patients—both proportions were slightly higher than for non-Indigenous Australians (Figure 2.1a).

Time trend:

- Between 2004–05 and 2015–16, the age-standardised proportion of Indigenous Australians who had cardiac-related diagnostic items MBS claims rose from 6.8% to 10.4%, with a similar pattern for non-Indigenous Australians (rising from 6.9% to 9.1%) (Figure 2.1b).

Sex and age:

In 2015–16, the proportion of Indigenous Australians who had MBS claims for cardiac-related diagnostic items:

- rose with increasing age, with the lowest proportion among those aged under 25. It was slightly higher than that of non-Indigenous Australians in all age groups, except for those aged 65 and over, where proportions were higher among non-Indigenous Australians (Figure 2.1c)
- was lower overall than that of non-Indigenous Australians, for men and women, with Indigenous women having slightly higher proportions than Indigenous men (Figure 2.1d).

State/territory and remoteness area:

In 2015–16, the proportions of MBS claims for cardiac-related diagnostic items:

- ranged from 3% to 13% across states and territories, and from 7% to 8% across remoteness areas among Indigenous Australians (figures 2.1e and 2.1f)
- were lower among Indigenous Australians living in *Major cities* and *Inner/Outer regional* areas combined than their non-Indigenous counterparts (Figure 2.1f).

Notes

1. Rates in figures 2.1a and 2.1b are age-standardised; all other figures show crude rates.

2. Data for these figures are available in the online supplementary tables (2.1a to 2.1f).

3. The MBS data reflect billing practices, and not necessarily the services provided. For example, MBS data do not generally capture equivalent services provided by jurisdictional-funded primary health care or by public hospitals.

4. The MBS data were adjusted for Indigenous under-identification.

Source: AIHW analysis of MBS data.

Figure 2.1: Proportion of people who claimed cardiac-related MBS diagnostic items, by Indigenous status and various characteristics

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

This measure reports on the number and proportion of people with suspected or confirmed cardiac disease reviewed by a cardiologist in the previous 12 months. 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 B.2 in Appendix B contains the list of relevant MBS item numbers included in the measure).

Why is it important?

Cardiologists play a critical role in diagnosing and providing treatment for people with cardiac diease. Improving the level of access to cardiologist services is very important to improve timeliness and accuracy of the diagnosis of cardiac diseases, especially for Indigenous Australians.

Results

Overall:

- In 2015–16, an estimated 82,971 Indigenous Australians, and 2,860,640 non-Indigenous Australians had suspected/confirmed cases of cardiac disease, of which 14% and 23%, respectively, were reviewed by a cardiologist.

Sex and age:

In 2015–16:

- the proportion of people who received a cardiologist review increased with age, for both Indigenous Australians (from 10% in those aged 0–34 to 25% in those aged 65 and over) and non-Indigenous Australians (from 12% to 31%) (Figure 2.3a)

- there were more cardiologist reviews among males than females, for both Indigenous and non-Indigenous Australians (Figure 2.3b).
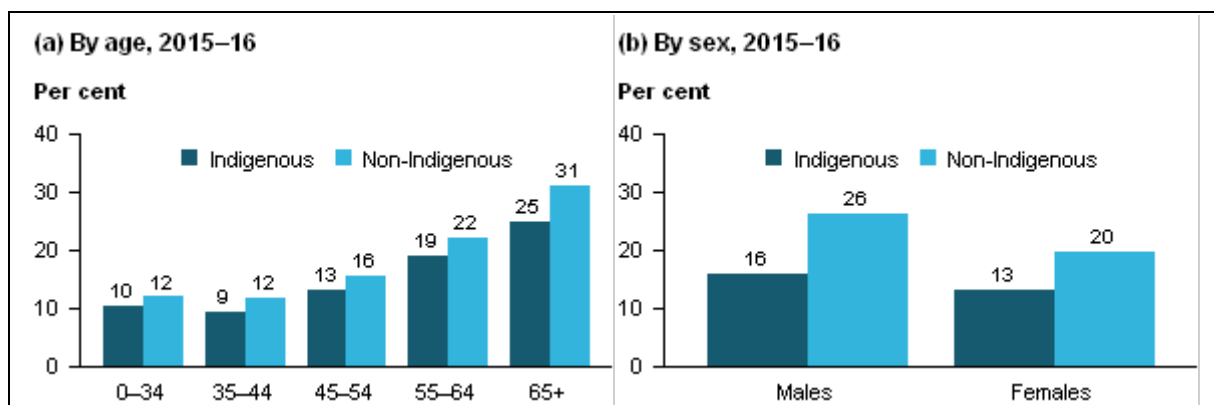
Notes

1. Rates in figures 2.3a and 2.3b are crude.

2. Data for these figures are available in the online supplementary tables (2.3a to 2.3b).

3. The MBS data reflect billing practices, and not necessarily the services provided.

4. The MBS data were adjusted for Indigenous under-identification.

Source: AIHW analysis of MBS data.

Figure 2.3: Proportion of people with suspected/confirmed cardiac disease who were reviewed by a cardiologist, by Indigenous status, age, and sex, 2015–16

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

Priority area 3 of the Better Cardiac Care project is *guideline-based therapy for acute coronary syndrome* (ACS). This is based on the premise that all Aboriginal and Torres Strait Islander people with ACS should receive guideline-based therapy (BCCF 2014). ACS is a broad spectrum of acute clinical presentations, ranging from unstable angina to acute myocardial infarction.

Data from the National Hospital Morbidity Database (NHMD) are about separations (not individuals), and it is not possible to group associated hospitalisations together without data linkage. Priority area 3 measures exclude hospitalisations ending in a transfer to another acute hospital to reduce double counting of people with an ACS who were transferred to another hospital. As such, only the 'last' hospitalisation for each ACS event is generally counted. However, separate hospitalisations without transfers are counted separately; for example, if a person had 2 ACS events in 1 year, both would be counted. Likewise, if a person had 2 ACS events in a year but had 3 separations due to a transer to another hsopital, then only 2 seperation would be counted (see Appendix A for further details; tables B.3 and B.4 in Appendix B contain classification codes used for these measures).

Of the 5 measures recommended for this priority area, data are available for:

- measure 3.1 for ST-segment-elevation myocardial infarction events treated by percutaneous coronary intervention

- measure 3.3 for acute coronary syndrome events that included diagnostic angiography or definitive revascularisation

- measure 3.5 for acute myocardial infarction in-hospital mortality rates.

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

This measure reports on the number and proportion of hospitalised events where percutaneous coronary intervention (PCI; a procedure to restore blood flow to a blocked coronary artery) was provided to patients aged 18 and over for ST-segment-elevation myocardial infarction (STEMI; a severe heart attack).

Why is it important?

When a person has a heart attack where the artery supplying an area of the heart muscle is blocked, where clinically appropriate, a PCI should be offered. In general, if access to PCI is not available within recommended timeframes, a blood clot-dissolving medicine (fibrinolysis) should be offered (ACSQHC 2014).

A major factor in the choice of PCI as treatment (over fibrinolysis) is timing, including time delays in seeking medical help, transportation, and receiving PCI (Aroney et al. 2006). A broad variety of cultural and systemic factors are thought to contribute to delays in treatment among Indigenous Australians, many of which are exacerbated by remoteness area (Ilton et al. 2014).

Results

Overall:

During 2013–14 to 2015–16:

- there were 1,018 hospitalised events for STEMI among Indigenous Australians (4% of all hospitalised STEMI events), with 61% of those treated by PCI
- based on age-standardised proportions, 59% of hospitalised STEMI events among Indigenous adults were treated by PCI, compared with 78% of such events for non-Indigenous adults (rate ratio of 0.8) (Figure 3.1a).

Time trend:

- Between 2004–05 and 2015–16, the age-standardised proportion of hospitalised STEMI events treated by PCI among Indigenous adults rose from 26% to 65%, and from 53% to 80% among non-Indigenous adults (Figure 3.1b).

Sex and age:

During 2013–14 to 2015–16, the treatment of hospitalised STEMI events by PCI:

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

Remoteness area:

During 2013–14 to 2015–16, the age-standardised proportion of hospitalised STEMI events treated by PCI:

- fell with increasing remoteness (from 83% in *Major cities* to 37% in *Very remote* areas for Indigenous Australians)
- resulted in the gap between Indigenous and non-Indigenous adults being widest in *Very remote* areas (Figure 3.1e).

a) By Indigenous status, 2013–14 to 2015–16

Per cent

Indigenous: 59
Non-Indigenous: 78

b) Time trend, 2004–05 to 2015–16

Per cent

Indigenous: 26 (2004–2005) → 65 (2015–2016)
Non-Indigenous: 53 (2004–2005) → 80 (2015–2016)

Legend: Indigenous, Non-Indigenous

c) By age, 2013–14 to 2015–16

Per cent

Legend: Indigenous, Non-Indigenous

Age	Indigenous	Non-Indigenous
18–34	62	74
35–44	56	82
45–54	65	83
55–64	65	82
65+	49	63

d) By sex, 2013–14 to 2015–16

Per cent

Legend: Indigenous, Non-Indigenous

Sex	Indigenous	Non-Indigenous
Males	60	77
Females	62	61

e) By remoteness, 2013–14 to 2015–16

Per cent

Legend: Indigenous, Non-Indigenous

Remoteness	Indigenous	Non-Indigenous
Major cities	83	81
Inner regional	58	74
Outer regional	62	66
Remote	54	58
Very remote	37	72

Notes

1. The time series analysis shown in Figure 3.1b is for New South Wales, Victoria, Queensland, Western Australia, South Australia, and the Northern Territory combined. The analyses shown in the other figures include data for all jurisdictions (see Appendix A).

2. Rates in figures 3.1c and 3.1d are crude; all other figures show age-standardised rates.

3. Data for these figures are available in the online supplementary tables (3.1a to 3.1e).

4. The NHMD includes data on hospitalisations and not people, so the number of people is an estimate only. Hospitalisations ending in transfer to another acute hospital were excluded, so that only the 'last' hospitalisation episode is counted. PCIs are also performed in a non-admitted patient setting, but these are not captured in the NHMD.

5. There is some under-identification of Indigenous Australians in the NHMD. Eligibility for reperfusion therapy cannot be determined using NHMD data.

Source: AIHW NHMD.

Figure 3.1: Proportion of hospitalised events for STEMI among people aged 18 and over who were treated by PCI, by Indigenous status and various characteristics

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

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

Why is it important?

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

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

Results

Overall:

During 2013–14 to 2015–16:

- 5,664 hospitalised events for ACS among people aged 18 and over were for Indigenous Australians (4% of all ACS events), of which 49% included diagnostic angiography (25% PCI; 3% CABG), and 51% included at least 1 diagnostic angiography or definitive revascularisation procedure

- the age-standardised proportion of hospitalised ACS events among Indigenous adults receiving a diagnostic angiography and/or a definitive revascularisation procedure was 52%, compared with 65% for non-Indigenous adults (rate ratio of 0.8) (Figure 3.3a).

Time trend:

- Between 2004–05 and 2015–16, the age-standardised proportion of hospitalisations for ACS events among Indigenous Australians that included either a diagnostic angiography or a definitive revascularisation procedure rose from 32% to 52%, compared with a rise from 45% to 68% among non-Indigenous adults (Figure 3.3b).

Sex and age:

During 2013–14 to 2015–16:

- the proportion of hospitalised ACS events that included diagnostic angiography or a definitive revascularisation procedure was lower for Indigenous Australians than non-Indigenous Australians in all age groups (Figure 3.3c)

- non-Indigenous men had higher rates of diagnostic angiography or definitive revascularisation procedures than their Indigenous counterparts, but rates were similar for women from both populations (Figure 3.3d).

Remoteness area:

- During 2013–14 to 2015–16, among all remoteness areas, the age-standardised proportions of hospitalised ACS events for Indigenous adults who received a diagnostic angiography or a definitive revascularisation procedure were lower than that for non-Indigenous adults, although proportions in *Remote* areas were similar (Figure 3.3e).

a) By procedure type, 2013–14 to 2015–16

Per cent

	Indigenous	Non-Indigenous
Diagnostic angiography	51	63
PCI	25	43
CABG	3	3
Diagnostic angiography, PCI or CABG	52	65

b) Time trend, 2004–05 to 2015–16

Per cent

Indigenous: 32 → 52
Non-Indigenous: 45 → 68

c) By age, 2013–14 to 2015–16

Per Cent

	Indigenous	Non-Indigenous
18–34	56	65
35–44	54	71
45–54	57	72
55–64	51	71
65+	40	47

d) By sex, 2013–14 to 2015–16

Per cent

	Indigenous	Non-Indigenous
Males	56	62
Females	45	45

e) By remoteness, 2013–14 to 2015–16

Per cent

	Indigenous	Non-Indigenous
Major cities	54	68
Inner regional	48	58
Outer regional	49	62
Remote	57	59
Very remote	54	59

Notes

1. The time series analysis shown in Figure 3.3b is for New South Wales, Victoria, Queensland, Western Australia, South Australia, and the Northern Territory combined. The analyses shown in the other figures include data for all jurisdictions (see Appendix A).

2. Rates in figures 3.3c and 3.3d are crude; all other figures show age-standardised rates.

3. Data for these figures are available in the online supplementary tables (3.3a to 3.3e).

4. The NHMD includes data on hospitalisations, so the number of people is an estimate only. Hospitalisations ending in transfer to another acute hospital were excluded. The proportion of ACS patients who receive angiography or revascularisation might be underestimated. PCIs are also performed in a non-admitted patient setting, but these are not captured in the NHMD.

5. There is some under-identification of Indigenous Australians in the NHMD.

Source: AIHW NHMD.

Figure 3.3: Proportion of hospitalised events among Australian adults who had ACS and were treated by PCI and/or CABG, by Indigenous status and various characteristics

Measure 3.5: Acute myocardial infarction in-hospital mortality rates

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

Why is it important?

AMI refers to a heart attack that has caused the death of some heart muscle. Improvements in treatment for people with AMI reduce the mortality rate over both the short and long term (Ong & Weeramanthri 2000; Tideman et al. 2014).

Results

Overall:

During 2013–14 to 2015–16:

- about 4% hospitalisations for AMI among Indigenous Australians aged 35 and over ended with death (130 deaths)
- the age-standardised in-hospital death rate was similar (3%) for Indigenous Australians and non-Indigenous Australians, with a rate ratio of 0.9 (Figure 3.5a).

Time trend:

- Between 2004–07 and 2013–16, the age-standardised in-hospital death rate due to AMI fell among both Indigenous Australians (from 6% to 3%) and non-Indigenous Australians (5% to 3%) (Figure 3.5b).

Sex and age:

During 2013–14 to 2015–16:

- Indigenous Australians had higher in-hospital death rates than non-Indigenous Australians across all age groups, except for those aged over 65 (Figure 3.5c)
- the in-hospital death rate due to AMI was higher for non-Indigenous men and women than for their Indigenous counterparts (Figure 3.5d).

Remoteness area:

During 2013–14 to 2015–16:

- the age-standardised in-hospital death rate due to AMI among Indigenous Australians ranged from 2% in *Outer regional* areas to 3% in *Inner regional* areas
- compared with non-Indigenous Australians, age-standardised rates were lower for Indigenous Australians in *Major cities*, *Outer regional*, and *Remote/Very remote* areas, and were higher in *Inner regional* areas (Figure 3.5e).
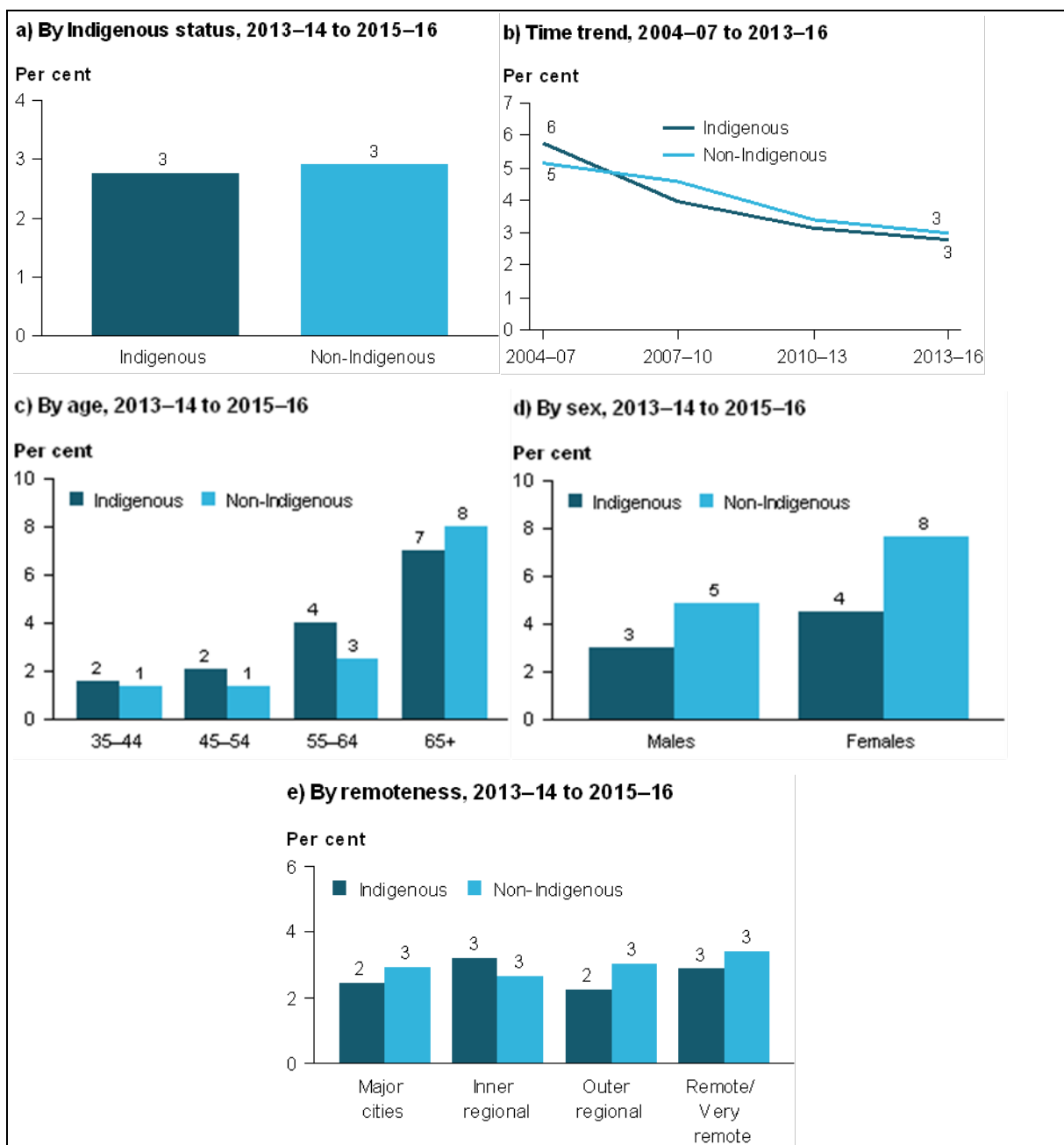
a) By Indigenous status, 2013–14 to 2015–16

b) Time trend, 2004–07 to 2013–16

c) By age, 2013–14 to 2015–16

d) By sex, 2013–14 to 2015–16

e) By remoteness, 2013–14 to 2015–16

Notes

1. Data for these figures are for New South Wales, Victoria, Queensland, Western Australia, South Australia, and the Northern Territory combined.

2. Rates in figures 3.5c and 3.5d are crude; all other figures show age-standardised rates.

3. Data for these figures are available in the 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.

5. While the indicator refers to proportions of people, the data presented for this indicator are based on proportions for hospitalisations. Hospitalisations ending in transfer to another acute hospital were excluded.

6. There is some under-identification of Indigenous Australians in the NHMD.

Source: AIHW NHMD.

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 Indigenous status and various characteristics

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

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

Of the 4 measures recommended for this priority area, MBS data are available for:

- measure 4.2 for follow-up after receiving a cardiovascular therapeutic procedure
- measure 4.3 for specialist physician review after a cardiovascular therapeutic procedure.

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

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

MBS follow-up items include team care arrangement, general practitioner (GP) management plans, allied health services items, and practice nurse services (Table B.2 in Appendix B contains a full list of items).

This measure could not be fully reported, because the data linkage between MBS and hospital data was not permitted at the time this report was developed. Information for this measure was partially available from the MBS database.

The definition in this report differs from previous reports, which was previously reported as the 'number and proportion of patients with a cardiac condition who received the following MBS chronic disease management items: team care arrangement, general practitioner management plan, and allied health services items'. This change was made to better reflect the purpose of the agreed measure.

Why is it important?

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

Results

Overall:

In 2015–16:

- an estimated 1,122 Indigenous Australians and 111,661 non-Indigenous Australians made an MBS claim for a cardiovascular therapeutic procedure
- about 62% of Indigenous Australians and 36% of non-Indigenous Australians aged under 65 made an MBS claim for follow-up services within 12 months after a cardiovascular therapeutic procedure. Among those aged 65 and over, the proportions were 68% for Indigenous Australians and 52% for non-Indigenous Australians
- Indigenous Australians in both age groups were more likely to make such claims than non-Indigenous Australians.

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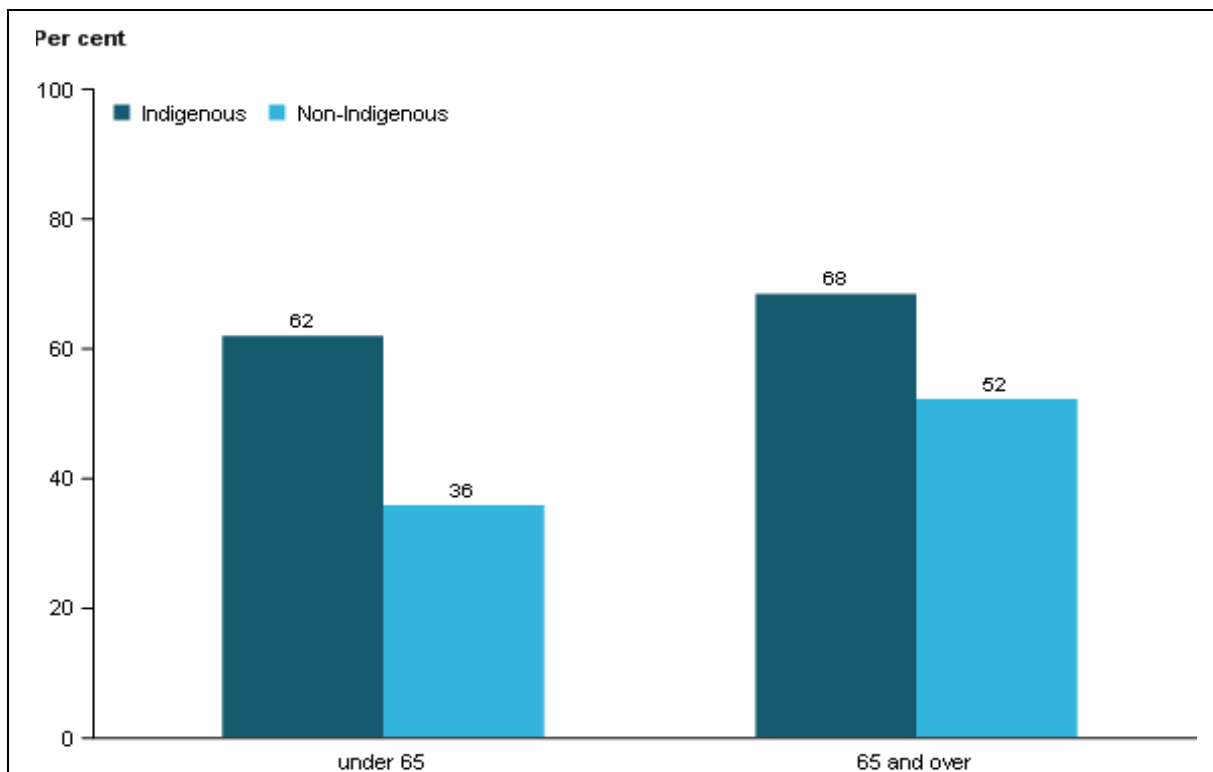
Notes

1. Rates in this figure are crude.

2. Data for this figure are available in the online supplementary tables (4.2).

3. The MBS data reflect claiming practices, and not necessarily services provided.

4. The MBS data were adjusted for Indigenous under-identification.

5. As some of the MBS items used to identify people with a cardiac condition are diagnostic, not all people with these items would have cardiac conditions (as some of the tests would have been negative).

Source: AIHW analysis of MBS data.

Figure 4.2: Follow-up MBS services within 12 months after a cardiac procedure, by Indigenous status and age, 2015–16

Measure 4.3: Specialist physician review after a cardiovascular therapeutic procedure

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

This measure could not be fully reported, because the data linkage between MBS and hospital data was not permitted at the time this report was developed. Information for this measure was partially available from the MBS database.

Why is it 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 cardiovascular disease mortality and morbidity, and improves quality of life.

Results

Overall:

In 2015–16:

- an estimated 1,122 Indigenous and 111,661 non-Indigenous Australians made an MBS claim for cardiovascular therapeutic procedures
- about 76% of Indigenous Australians and 92% of non-Indigenous Australians aged under 65 made an MBS claim for specialist services within 12 months after a cardiovascular therapeutic procedure
- among those aged 65 and over, the proportions were 93% for Indigenous Australians and 97% for non-Indigenous Australians
- Indigenous Australians in both age groups were less likely to make such claims than non-Indigenous Australians.

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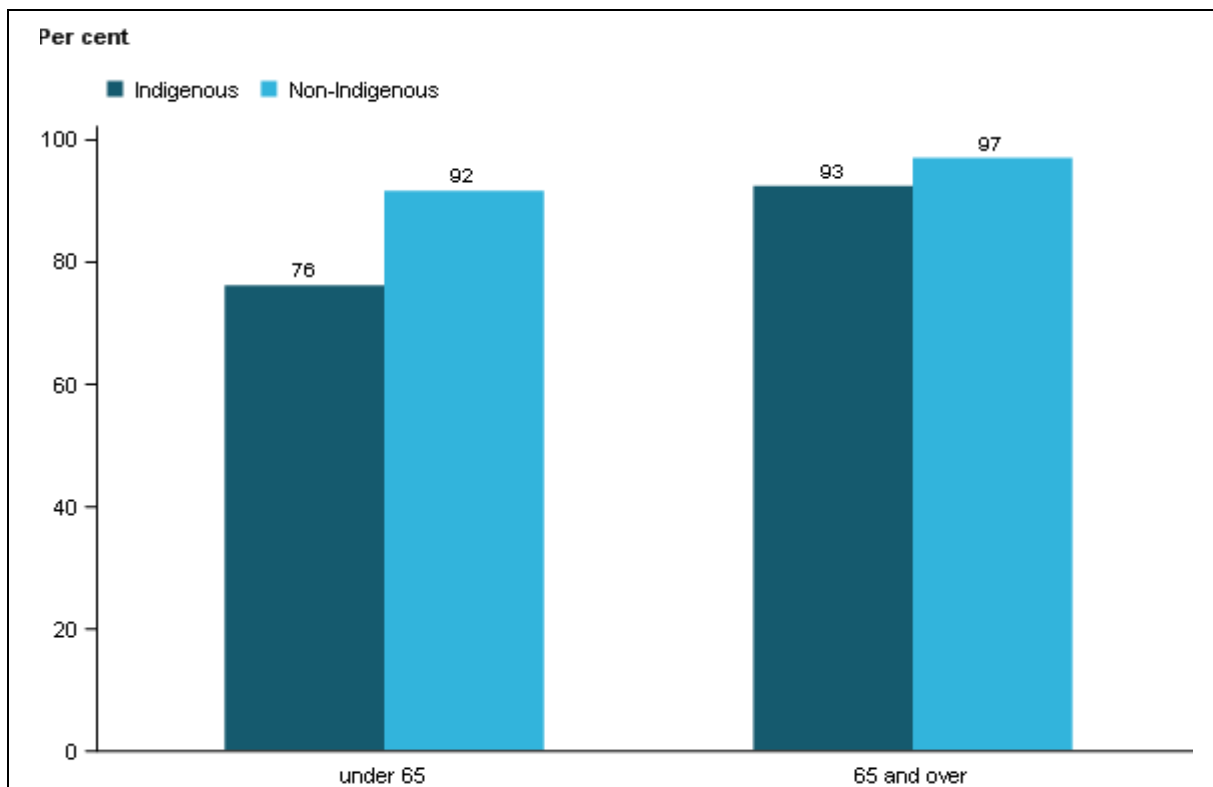
Notes

1. Rates in this figure are crude.
2. Data for this figure are available in the online supplementary table (4.3).
3. The MBS data reflect claiming practices, and not necessarily services provided.
4. The MBS data were adjusted for Indigenous under-identification.

Source: AIHW analysis of MBS data.

Figure 4.3: Proportion of people who were reviewed by a specialist physician within 12 months after a cardiovascular therapeutic procedure, by Indigenous status and age, 2015–16

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

Priority area 5 of the Better Cardiac Care project is *strengthening the diagnosis, notification and follow-up of rheumatic heart disease (RHD)* (BCCF 2014). This is based on the premise that:

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

There is no diagnostic pathology test for ARF; instead, its diagnosis is based on a clinical decision (RHD Australia et al. 2012). The clinical manifestation of ARF is non-specific and can be atypical, with delays in both presentation and referral of patients. As a result, ARF can often go undetected in the acute stage, leading to ongoing complications and lifelong morbidity.

Of the 4 measures recommended for this priority area, data are available from RHD registers in Queensland, Western Australia, South Australia, and the Northern Territory for:

- measure 5.1 for the annual incidence of ARF and RHD
- measure 5.2 for recurrent ARF
- measure 5.3 for treatment with benzathine penicillin G doses
- measure 5.4 for echocardiograms among patients with severe or moderate RHD.

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

This measure reports on the incidence (new episodes) of ARF, and new registrations of RHD.

Crude rates are shown, as age-standardised rates could not be calculated due to small numbers among the other Australians population.

Why is it important?

ARF is the result of an autoimmune response to a group A streptococcus bacterial infection (Parnaby & Carapetis 2010). It can cause permanent damage to the heart muscle and heart valves, which is known as RHD. There is no diagnostic laboratory test for ARF, so its diagnosis is based on a clinical decision. The clinical appearances of ARF are non-specific and can be atypical in Aboriginal and Torres Strait Islander people, so many cases go undetected.

While it is very rarely seen among non-Indigenous Australians, it is common among Indigenous Australians, and is emblematic of Indigenous disadvantage. ARF and RHD have been linked to socioeconomic disadvantage, and, in particular, household overcrowding (Jaine et al. 2011; RHD Australia et al. 2012). Indigenous Australians are more likely than non-Indigenous Australians to be living in overcrowded households, especially those with lower household incomes (AHMAC 2017).

Primary prevention of RHD involves reducing the onset of group A streptococcus infections, and effectively treating the infections to prevent ARF from developing (RHD Australia et al. 2012).

Results

Incidence of acute rheumatic fever in Queensland, Western Australia, South Australia, and the Northern Territory combined

Overall:

In 2016:

- 372 cases of ARF were reported for Indigenous Australians (a rate of 87 per 100,000 population)
- 25 ARF cases were reported for other Australians (a rate of 0.3 per 100,000 population) (Figure 5.1.1a).

Time trend:

- Between 2013 and 2016, the incidence of ARF among Indigenous Australians rose from 53 to 87 per 100,000 population (Figure 5.1.1b). The reason for this rise is unclear, but it is likely due to better reporting and registration of ARF in recent years.

Age:

- In 2016, the incidence rate of ARF was highest among the youngest age group (0–14), and fell proportionally with age (was lowest among those aged over 45) (Figure 5.1.1c).

a) By Indigenous status, 2016

Per 100,000

87 Indigenous
0.3 Other

b) Indigenous, time trend, 2013 to 2016

Per 100,000

53 (2013)
87 (2016)

c) Indigenous, by age, 2016

Per 100,000

134 (0–14)
114 (15–24)
82 (25–34)
50 (35–44)
7 (45+)

Notes

1. Data for these figures are for Queensland, Western Australia, South Australia, and the Northern Territory combined.
2. Rates in these figures are crude.
3. Data for these figures are available in the online supplementary tables (5.1.1a to 5.1.1c).
4. See Glossary for the definition of 'other Australians'.

Sources: AIHW analysis of Queensland, Western Australia, South Australia, and Northern Territory rheumatic heart disease register data.

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

New registrations of rheumatic heart disease Queensland, Western Australia, South Australia and the Northern Territory combined

Overall:

In 2016:

- 262 cases of new RHD registrations were reported for Indigenous Australians (a rate of 61 per 100,000 population)
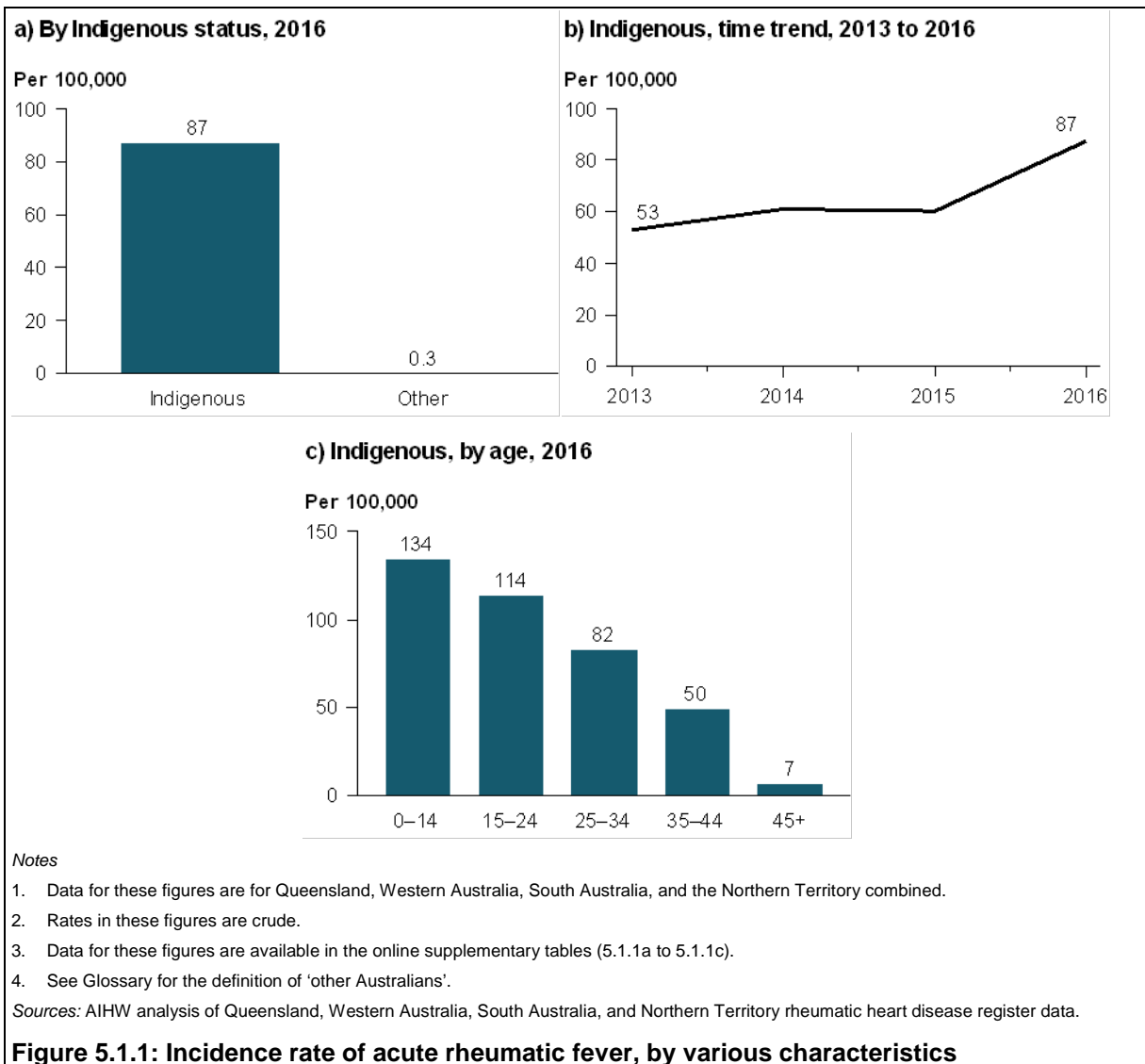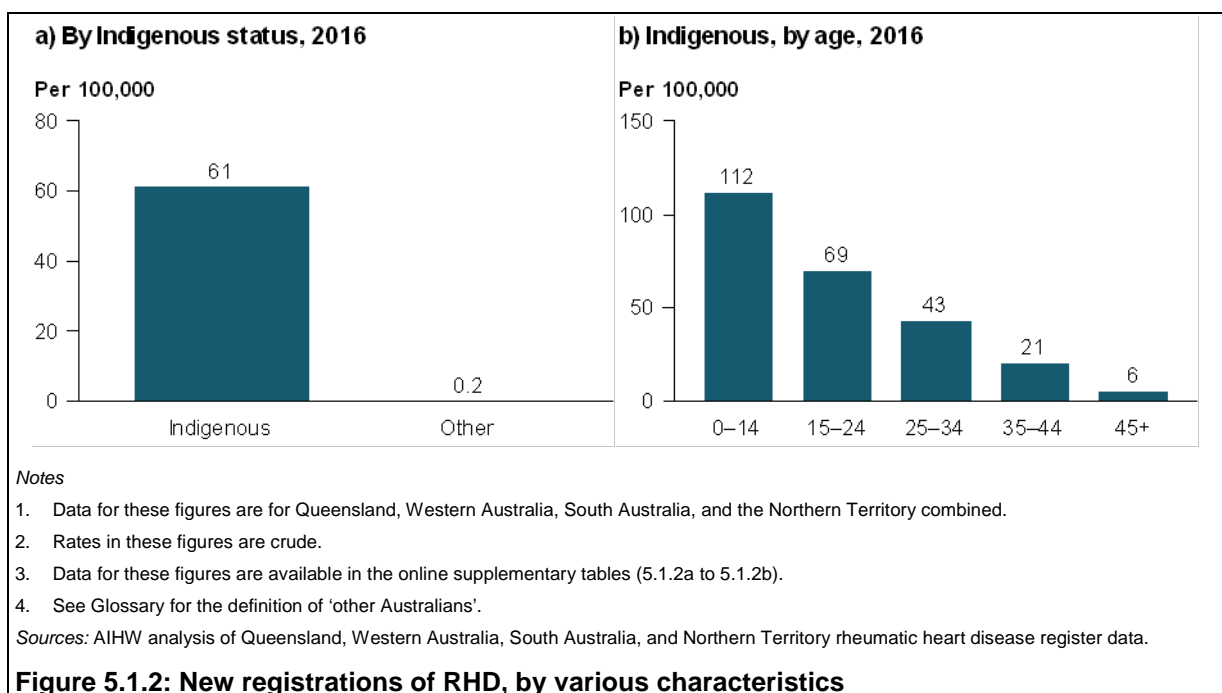- 21 new episodes were reported for other Australians (a rate of 0.2 per 100,000 population) (Figure 5.1.2a).

Age:

- In 2016, the incidence rate of new RHD registrations was highest among the youngest age group (0–14), and decreased proportionally with age (was lowest among those aged over 45) (Figure 5.1.2b).

Notes

1. Data for these figures are for Queensland, Western Australia, South Australia, and the Northern Territory combined.

2. Rates in these figures are crude.

3. Data for these figures are available in the online supplementary tables (5.1.2a to 5.1.2b).

4. See Glossary for the definition of 'other Australians'.

Sources: AIHW analysis of Queensland, Western Australia, South Australia, and Northern Territory rheumatic heart disease register data.

Figure 5.1.2: New registrations of RHD, by various characteristics

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Measure 5.2: Recurrent acute rheumatic fever

This measure reports on the proportion of all ARF episodes that were recurrent (more than 1 incidence of ARF).

Crude rates are shown, as age-standardised rates could not be calculated due to small numbers of episodes among the other Australians population.

Why is it important?

The treatment of ARF aims to prevent disease recurrence and the development of RHD, and involves prolonged use of antibiotics (RHD Australia et al. 2012). Tracking recurrent ARF trends acts as an indicator of the success of this treatment.

Results

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

Overall:

- In 2015–2016, the proportion of recurrent ARF cases was 28% for Indigenous Australians, and 18% for other Australians (Figure 5.2a).

Time trend:

- Between 2012 and 2016, the proportion of recurrent ARF cases among Indigenous Australians rose from 25% to 30% (data from South Australia were available from 2013, and were included in this analysis) (Figure 5.2b).

Age:

- In 2015–2016, the proportion of recurrent ARF rose with increasing age—it was lowest among people aged 14 and under (18%), and highest among those aged 35 and over (51%) (Figure 5.2c).

a) By Indigenous status, 2015–2016

b) Indigenous, time trend, 2010–2016

c) Indigenous, by age, 2015–2016
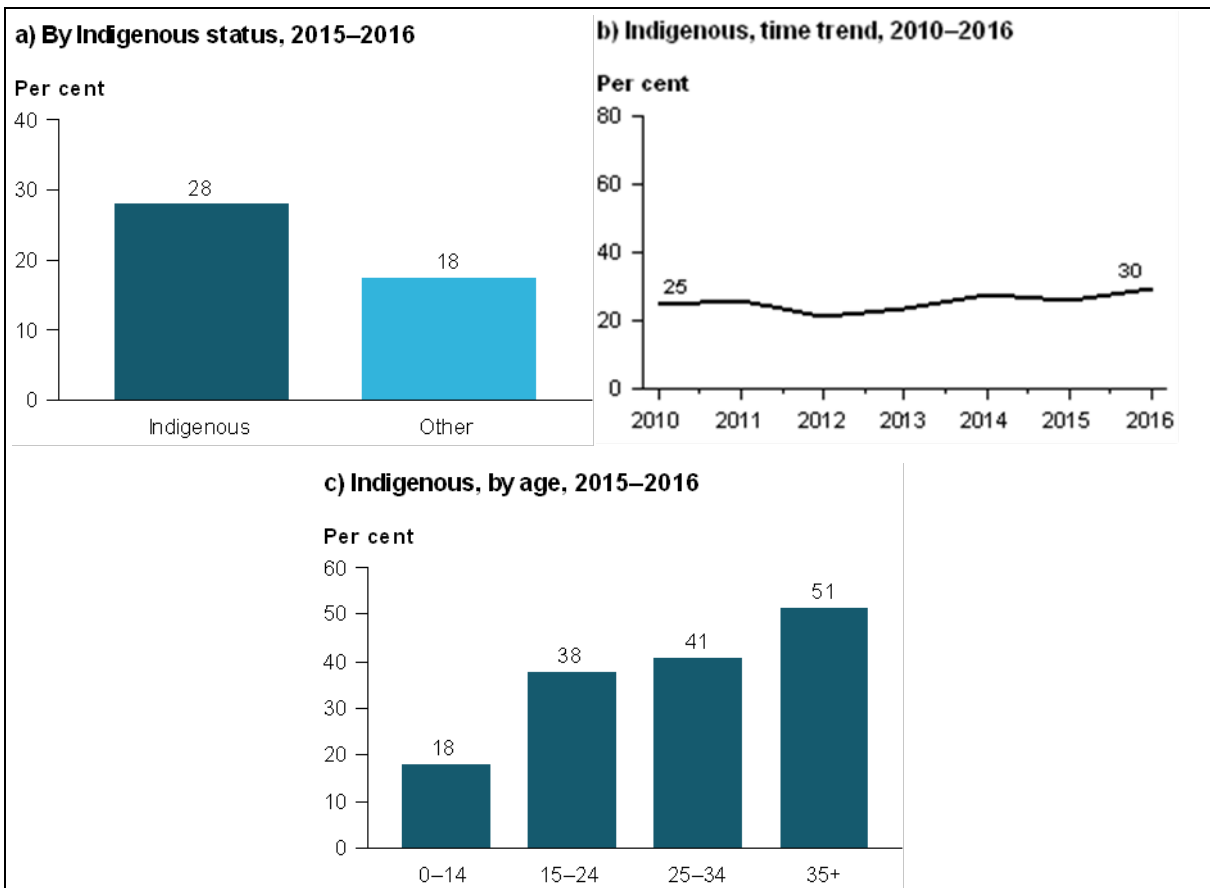
Notes

1. Data for figures 5.2a and 5.2c are for Queensland, Western Australia, South Australia and the Northern Territory combined.

2. Data for Figure 5.2b is for Queensland, Western Australia and the Northern Territory for all years, and for South Australia from 2013.

3. Rates in these figures are crude.

4. Data for these figures are available in the online supplementary tables (5.2a to 5.2b).

5. See Glossary for the definition of 'other Australians'.

Sources: AIHW analysis of Queensland, Western Australia, South Australia and Northern Territory rheumatic heart disease register data.

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

Measure 5.3: Treatment with benzathine penicillin G

This measure presents on the number and proportion of required doses of benzathine penicillin G given to patients on an ARF/RHD program in the previous 12 months.

Why is it 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 et al. 2012).

The current Australian guidelines state that the program should include injections of benzathine penicillin G every 3–4 weeks, and that treatment should continue for a minimum of 10 years, or until the age of 21 (whichever is longer). People with moderate RHD should continue treatment up to age 35, and those with severe RHD should continue up to age 40 (or longer).
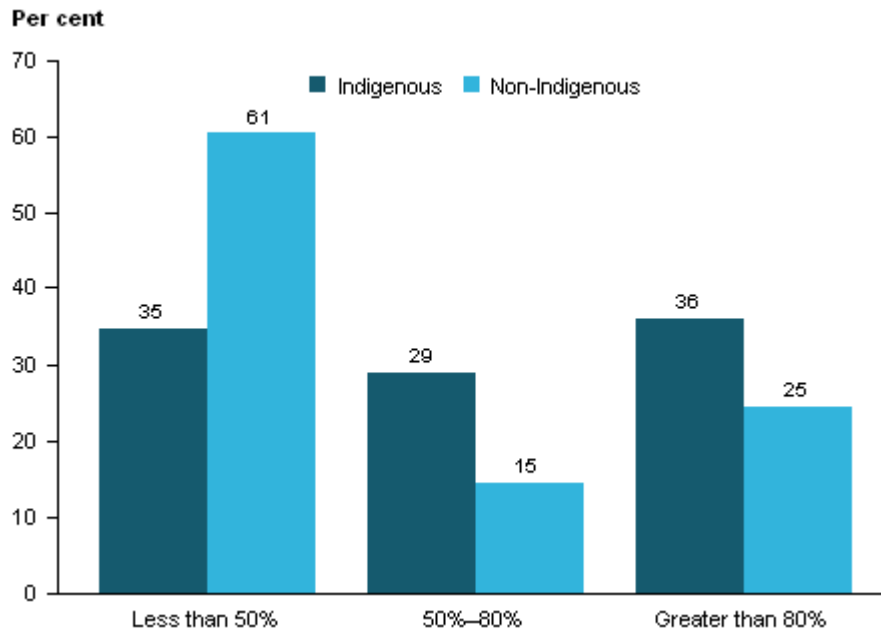
Results

Treatment with benzathine penicillin G in Queensland, Western Australia, South Australia and the Northern Territory combined

Overall:

In 2016:

- 3,381 Indigenous Australians and 142 non-Indigenous Australians were on an ARF/RHD program, of whom, in the previous 12 months:
    - 35% received less than 50% of required benzathine penicillin G doses
    - 29% received 50%–80% of required doses
    - 36% received more than 80% of required doses (Figure 5.3).
- Indigenous Australians were more likely than non-Indigenous Australians to adhere to the recommended treatment protocol, with 36% of Indigenous Australians receiving more than 80% of required doses, compared with 25% of non-Indigenous Australians (Figure 5.3).

Notes

1. Data for this figure are available in the online supplementary table (5.3).

2. Data are from Queensland, Western Australia, South Australia, and the Northern Territory combined.

Sources: AIHW analysis of Queensland, Western Australia, South Australia, and the Northern Territory rheumatic heart disease register data.

Figure 5.3: Proportion of required benzathine penicillin G doses received by people on an ARF/RHD program in the previous 12 months, by Indigenous status, 2016

Measure 5.4: Echocardiograms among patients with severe or moderate rheumatic heart disease

This measure reports on the number and proportion of people with moderate or severe RHD who received an echocardiogram in the previous 12 months.

Why is it important?

Echocardiography is an effective way to diagnose RHD, even in resource-poor settings (Marijon et al. 2007, Roberts et al. 2017).

RHD is almost entirely preventable, so early detection is essential, and can greatly reduce the prevalence of the disease (Remenyi et al. 2013).
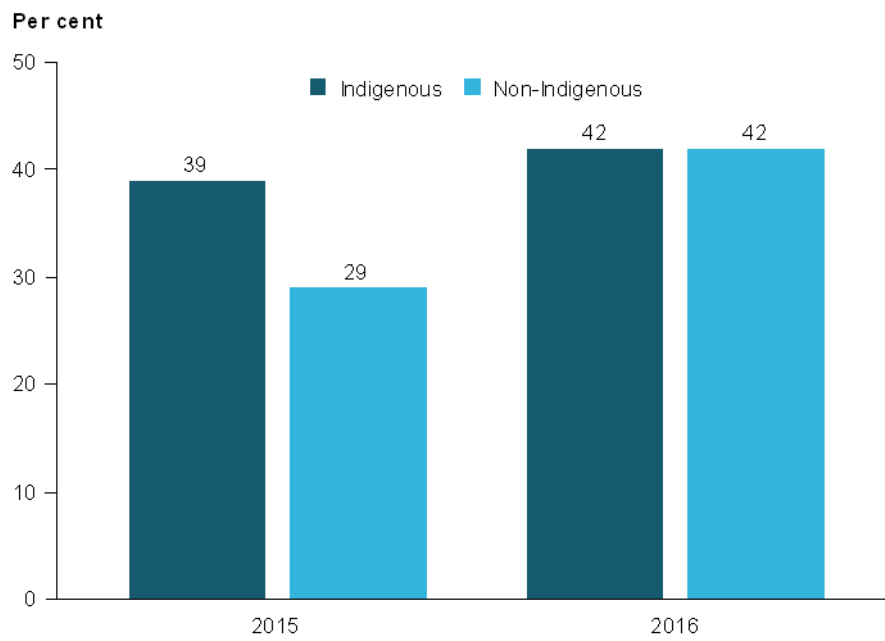
Results

Echocardiograms provided in Queensland, Western Australia, and South Australia combined

Overall:

- In 2015, of the 734 Indigenous Australians and 58 non-Indigenous Australians who had moderate or severe RHD, 39% and 29% had an echocardiogram, respectively, in the previous 12 months.
- In 2016, of the 871 Indigenous Australians and 92 non-Indigenous Australians who had moderate or severe RHD, 42% had an echocardiogram for both populations (Figure 5.4).

Figure 5.4: Proportion of people with moderate or severe rheumatic heart disease who received an echocardiogram, 2015–2016

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Summary measures: hospitalisation and mortality

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

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

The measures can be reported using existing data collections (NHMD and NMD).

Hospitalisation results in Measure 6.1 are a count of *hospitalisations* for cardiac conditions, and not a count of individuals, as some hospitalisations could represent transfers for ongoing care, or hospitalisations of 1 individual at different times during the year.

The full range of cardiac conditions diagnosis codes were 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 it important?

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

Results

Overall:

During 2013–14 to 2015–16:

- there were 30,232 Indigenous hospitalisations for cardiac conditions—a crude rate of 14 per 1,000 population
- the age-standardised hospitalisation rate of cardiac conditions for Indigenous Australians (25 per 1,000 population) was nearly twice the rate for non-Indigenous Australians (13 per 1,000 population) (Figure 6.1a).

Time trend:

- Between 2004–05 and 2015–16, age-standardised hospitalisation rates for cardiac conditions remained relatively stable for both Indigenous Australians (23–25 per 1,000 population) and non-Indigenous Australians (14–13 per 1,000 population) (Figure 6.1b).
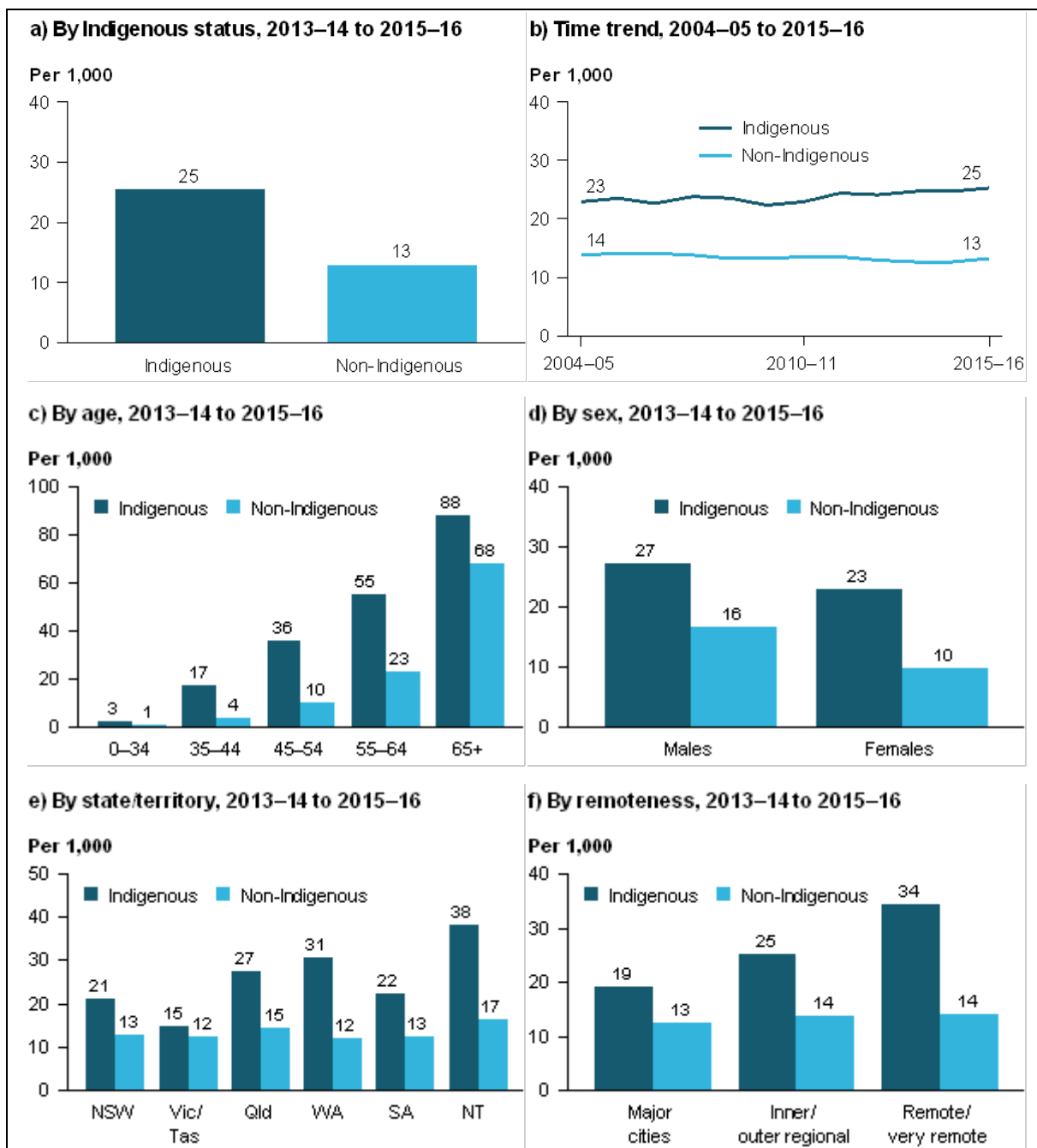
Sex and age:

In 2015–16, hospitalisation rates for cardiac conditions:

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

State/territory and remoteness area:

In 2013–14 to 2015–16, the age-standardised hospitalisation rate for cardiac conditions:

- was highest for Indigenous Australians in the Northern Territory (38 per 1,000 population) and Western Australia (31 per 1,000), where it was more than double that of non-Indigenous Australians (Figure 6.1e)
- was highest for Indigenous Australians in *Remote/Very remote* areas combined (34 per 1,000), where it was 2.4 times the rate of non-Indigenous Australians (Figure 6.1f).

a) By Indigenous status, 2013–14 to 2015–16

b) Time trend, 2004–05 to 2015–16

c) By age, 2013–14 to 2015–16

d) By sex, 2013–14 to 2015–16

e) By state/territory, 2013–14 to 2015–16

f) By remoteness, 2013–14 to 2015–16

Notes

1. Data for Figure 6.1b are for New South Wales, Victoria, Queensland, Western Australia, South Australia, and the Northern Territory combined. Data for the other figures are for all jurisdictions.

2. Rates in figures 6.1c and 6.1d are crude; all other figures show age-standardised rates.

3. Data for these figures are available in the online supplementary tables (6.1a to 6.1f).

4. There is some under-identification of Indigenous Australians in the NHMD.

5. This is a count of hospitalisations, not of people hospitalised with cardiac conditions, nor of hospitalised cardiac events. Some hospitalisations would not have been associated with diagnoses that represent 'coronary events', and/or they would represent transfers for ongoing care. This should be interpreted in the context of pre- and post-hospital care arrangements.

Source: AIHW NHMD.

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

Measure 6.2: Deaths due to cardiac conditions

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

Why is it important?

The mortality rate for cardiac conditions provides a broad indicator of the effectiveness of early risk assessment and preventative 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 2013–2015, in New South Wales, Queensland, Western Australia, South Australia, and the Northern Territory combined:

- 1,541 Indigenous Australians died from cardiac conditions, or 82 per 100,000 population
- the age-standardised death rate due to cardiac conditions for Indigenous Australians (174 per 100,000 population) was 1.5 times that for non-Indigenous Australians (115 per 100,000 population) (Figure 6.2.1a).

Time trend:

Between 1998 and 2015:

- the age-standardised cardiac mortality rate fell by 41% for Indigenous Australians (from 305 to 180 per 100,000 population)
- the rate for non-Indigenous Australians fell by 43% (Figure 6.2.1b)
- rate ratios between Indigenous and non-Indigenous Australians were similar (1.5 in 1998 and 1.6 in 2013)
- the rate difference between Indigenous and non-Indigenous Australians fell by 36%.
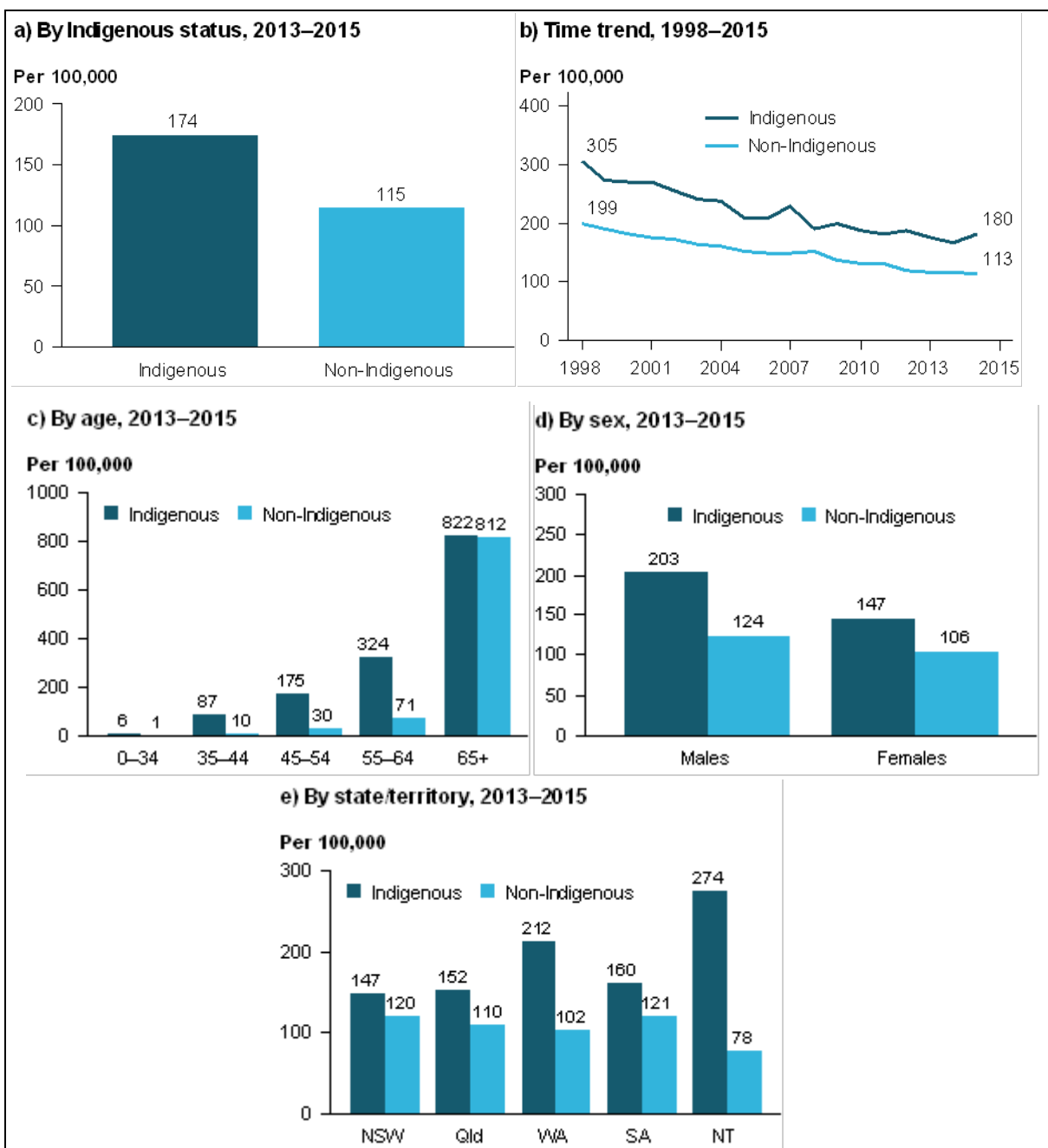
Sex and age:

In 2013–2015, cardiac mortality rates were:

- similar for Indigenous and non-Indigenous Australians aged 65 and over (Figure 6.2.1c)
- higher among Indigenous Australians than non-Indigenous Australians in the other age groups, with rate ratios being most pronounced in those aged 35–44 (almost 9 times as high for Indigenous Australians as for non-Indigenous Australians) (Figure 6.2.1c)
- higher among Indigenous Australians in both sexes, compared with non-Indigenous Australians (Figure 6.2.1d).

State/territory:

In 2013–2015, age standardised cardiac mortality rates were:

- highest among Indigenous Australians in the Northern Territory (274 per 100,000 population) followed by Western Australia (212 per 100,000)
- more than 3 times as high for Indigenous Australians as for non-Indigenous Australians in the Northern Territory (a rate ratio of 3.5), and twice as high in Western Australia (a rate ratio 2.1) (Figure 6.2.1e).

a) By Indigenous status, 2013–2015

Per 100,000

- Indigenous: 174
- Non-Indigenous: 115

b) Time trend, 1998–2015

Per 100,000

- Indigenous: 305 → 180
- Non-Indigenous: 199 → 113

c) By age, 2013–2015

Per 100,000

Age	Indigenous	Non-Indigenous
0–34	6	1
35–44	87	10
45–54	175	30
55–64	324	71
65+	822	812

d) By sex, 2013–2015

Per 100,000

Sex	Indigenous	Non-Indigenous
Males	203	124
Females	147	106

e) By state/territory, 2013–2015

Per 100,000

State	Indigenous	Non-Indigenous
NSW	147	120
Qld	152	110
WA	212	102
SA	160	121
NT	274	78

Notes

1. Data for these figures are for New South Wales, Queensland, Western Australia, South Australia, and the Northern Territory combined.

2. Rates in figures 6.2.1c and 6.2.1d are crude; all other figures show age-standardised rates.

3. Data for these figures are available in the online supplementary tables (6.2.1a to 6.2.1e).

4. Mortality data are reported for 5 jurisdictions only (New South Wales, Queensland, Western Australia, South Australia, and the Northern Territory). The other jurisdictions have a small number of Indigenous deaths, and identification of Indigenous deaths in their death registration systems is relatively poor, making data less reliable.

Source: AIHW NMD.

Figure 6.2.1: Cardiac mortality rate, by Indigenous status and various characteristics

6.2.2 In-hospital deaths for cardiac conditions

Overall:

During 2013–14 to 2015–16:

- 691 Indigenous Australians who were admitted to hospital for cardiac conditions died in hospital—a crude rate of 32 per 100,000 population
- the age-standardised in-hospital death rate for Indigenous Australians admitted for cardiac conditions (64 per 100,000 population) was twice the rate of non-Indigenous Australians (32 per 100,000 population) (Figure 6.2.2a).
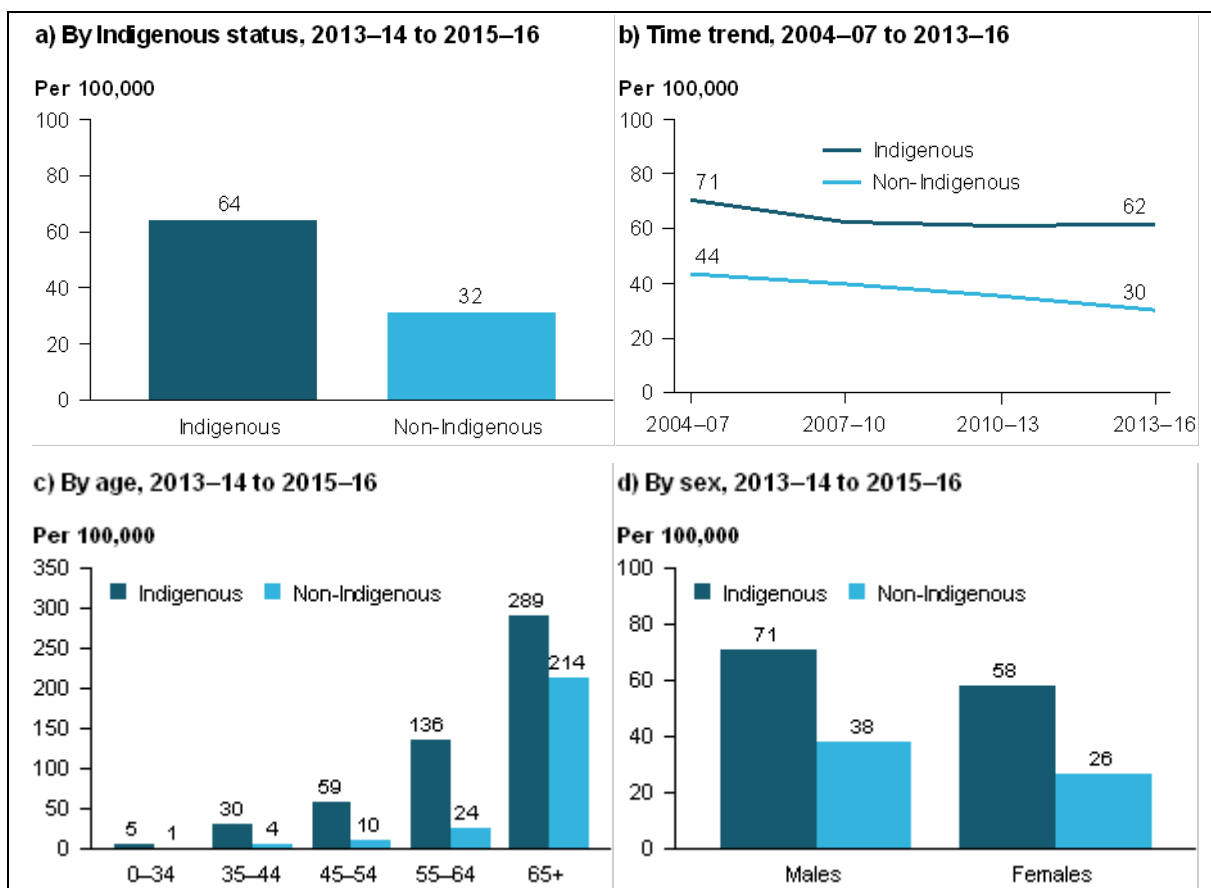
Time trend:

- Between 2004–07 and 2013–16, the age-standardised rate of in-hospital deaths for patients admitted for cardiac conditions fell for both Indigenous Australians (from 71 to 62 per 100,000) and non-Indigenous Australians (from 44 to 30 per 100,000) (Figure 6.2.2b).

Sex and age:

During 2013–14 to 2015–16:

- among all age groups, Indigenous Australians had higher crude in-hospital death rates than non-Indigenous Australians (Figure 6.2.2c)
- for both men and women, in-hospital death rates for Indigenous Australians were higher than those for non-Indigenous Australians (Figure 6.2.2d).

a) By Indigenous status, 2013–14 to 2015–16

b) Time trend, 2004–07 to 2013–16

c) By age, 2013–14 to 2015–16

d) By sex, 2013–14 to 2015–16

Notes

1. Data for these figures are for New South Wales, Victoria, Queensland, Western Australia, South Australia, and the Northern Territory combined.

2. Rates in figures 6.2.2c and 6.2.2d are crude; all other figures show age-standardised rates.

3. Data for these figures are available in the 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.

6. 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, but this still does not address multiple hospitalisations of an individual in a single reporting period. As a result, the denominator includes all episodes of hospitalisations for cardiac conditions, including multiple episodes for the same person, while the numerator is a single event associated with 1 of the hospital episodes in the denominator.

7. There is some under-identification of Indigenous Australians in the NHMD.

Source: AIHW NHMD.

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

Appendix A: Data sources

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

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

Data from the Australian Bureau of Statistics (ABS) Census of Population and Housing—which were used as the basis for the population estimates used in the calculation of rates for this report—indicate that the number of Indigenous Australians has increased considerably over the past 2 decades, with a particularly large increase between 2006 and 2011 (ABS 2013).

This increase was beyond what could be expected based on population growth, with about 30% of the increase related to non-demographic factors such as improvements in Census coverage, a decrease in the number of records with unknown Indigenous status, and an increased likelihood that individuals identified themselves and their children as Indigenous.

This 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.

Medicare Benefits Schedule data

The MBS is a listing of Medicare services that are subsidised by the Australian Government. It is part of the Medicare Program that is managed by the Department of Health and administered by the Department of Human Services.

Through the Medicare Program, all Australian residents and certain categories of visitors to Australia are entitled to benefits for medical and hospital services. These benefits are 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.

In addition, Medicare enrolment application forms are lodged by people wishing to enrol with Medicare. Information from these forms is entered directly into the Medicare database, which is held by the Department of Health.

The MBS data presented in this report were provided by the Department of Health, with further analysis of those data done by the AIHW (for example, deriving rates).

The data are based on the date of processing of claims.

Data presented by state and territory or remoteness area are based on the address information recorded in the patient's Medicare record. Data presented by remoteness area were classified according to the Australian Standard Geographical Classification.

While the data have been used to measure the level of specific activities, changes in the use of an MBS item over time can reflect changes in billing and claiming practices, or the introduction of new items, and not necessarily changes in health care provided.

Coverage of MBS data

MBS data reflect MBS claims and not necessarily all the services that are received. A person may be provided with equivalent care from a health-care provider who is not eligible to bill Medicare. Legislation (specifically Section 19(2) of the *Health Insurance Act 1973*) prevents

salaried health providers funded by government from claiming payments from Medicare (Health Insurance Act 1973), including federal, state, and local governments, as well as authorities established by a law of the Commonwealth, a state, or a territory.

This is to ensure the government only pays once for each health-care service provided. Examples of entities that are ordinarily not eligible to claim to Medicare include state or territory-funded primary health-care services and public hospitals.

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

Indigenous identification

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

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

Table A1: Estimated proportion of Indigenous Australians enrolled on 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 the calculation of these proportions are projections for 30 June 2015, and are based on 2011 Census data.

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

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

For the other MBS data (on services that can be claimed irrespective of the Indigenous status of the individual), information from the Voluntary Indigenous Identifier is used.

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

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

The adjustment factors for each subgroup were calculated as follows:

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

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

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

Health assessments for Indigenous and non-Indigenous Australians

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

All Aboriginal and Torres Strait Islander people, regardless of age, are eligible for an MBS item 715 Indigenous-specific health assessment. These assessments are generally available annually, with a minimum time allowed between such assessments of 9 months.

There are other 'general' health assessment MBS items, including items 701, 703, 705 and 707. All Australians (including non-Indigenous and Indigenous Australians) are eligible to receive such assessments, but only if they meet specific criteria. These assessments are often available less frequently than the Indigenous-specific health assessment (Table A2).

Table A2: Target group and frequency of service for other (non-MBS 715) MBS health assessments[a]

Target group	Frequency of service
A Healthy Kids Check for children aged 3–4, who have received or who are receiving their 4-year-old immunisation	Once only per lifetime to an eligible patient
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

(a) There are 4 time-based MBS health assessment items for brief (item 701), standard (item 703), long (item 705), and prolonged (item 707) consultations. Medical practitioners may select 1 of these items to provide a health assessment service to a member of any of the target groups listed in this table. 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.

There are 4 time-based MBS health assessment items—items 701 (brief), 703 (standard), 705 (long), and 707 (prolonged). Medical practitioners may select 1 of these MBS health assessment items to provide a health assessment service to a member of any of the target groups listed in this table. The item that is selected depends on the time taken to complete the health assessment (and is unrelated to the target group).

Estimate of people with a cardiac condition from MBS data

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

National Hospital Morbidity Database

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

Information on the characteristics, diagnoses and care of admitted patients in public and private hospitals is provided annually to the AIHW by state and territory health departments. Data are based on financial years.

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 of the measures that are based on NHMD data. Further exclusions and inclusions apply to the analyses for some of the measures, with details provided in the relevant sections of the report.

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

NHMD data presented by state/territory and remoteness area in this report are based on the patient's place of usual residence. For analyses by state and territory, data for Tasmania were combined with those for Victoria due to small numbers.

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

A data quality statement for the NHMD is available at <http://meteor.aihw.gov.au/content/index.phtml/itemId/611030>.

Indigenous identification

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

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

Some analyses in this report include NHMD data for years before 2010–11 (analyses for Measures 3.5 and 6.2.2, as well as the time series comparisons for the other measures based on NHMD data). Those analyses are limited to data for the 6 jurisdictions that were assessed by the AIHW as having adequate identification of Indigenous Australians from 2004–05 onwards (New South Wales, Victoria, Queensland, Western Australia, South Australia, and public hospitals in the Northern Territory) (AIHW 2010). These 6 jurisdictions represent about 95% of the Australian Indigenous population (AIHW 2015c).

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

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

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

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

In 2011–14, there were about 618,000 hospitalisations for which Indigenous status was not stated, representing 2% of all hospitalisations in that period. For hospitals in Western Australia, records with an unknown Indigenous status are reported as non-Indigenous, so are included in the 'non-Indigenous' data in these analyses.

Estimation of hospitalised episodes for priority area 3 measures

To reduce double counting of people with an ACS who were transferred to another hospital for further diagnosis or treatment, the analyses for priority area 3 (guideline-based therapy for acute coronary syndrome) 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 purposefully includes non-contiguous hospitalisations. For example, if a person had 2 STEMI events in 1 year, both would be counted.

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

The following limitations were noted as part of these analyses:

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

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

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

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

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

State/territory comparisons for priority area 3 measures

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

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

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

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

Table A3: Results for measures 3.1 and 3.3, by state/territory, 2011–14

| State/territory | Measure 3.1[a] (number per 10,000) | | | Measure 3.3[b] (number per 10,000) | | |
| | Crude rate | Age-standardised rate | | Crude rate | Age-standardised rate | |
		Indigenous	Non-Indigenous[c]		Indigenous	Non-Indigenous[c]
NSW	59.6	54.1	74.8	47.8	47.6	63.2
Vic/Tas	68.1	57.4	78.9	55.0	54.9	71.2
Qld	66.6	71.9	75.1	46.5	47.0	53.3
WA	66.1	70.8	79.8	60.3	65.0	76.1
SA	75.4	76.4	72.5	56.1	60.3	72.9
NT	29.1	28.1	55.9	49.0	50.3	62.4

(a) The proportion of hospitalised events for STEMI among people aged 18 and over that were treated by 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 CABG).

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

Notes

1. Data are for people aged 18 and over who usually live in New South Wales, Victoria, Queensland, Western Australia, South Australia, Tasmania, or the Northern Territory. Data for the Australian Capital Territory were not available for these measures.

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 in Appendix B for classification codes used for these measures.

Source: AIHW NHMD.

National Mortality Database

Mortality data presented in this report were extracted from the AIHW NMD. These data are provided to the AIHW by the Registrars of Births, Deaths and Marriages in each state and territory, and by the ABS for codes for cause(s) of death (assigned by the National Coronial Information System).

Due to the relatively small number of Indigenous deaths from cardiac conditions each year, mortality data for the most recent period are presented for the 5-year period 2009–2013 to allow for the reporting of data by age and sex.

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

For this report, data on deaths registered in:

• 2011 and earlier are based on the final version of cause of death data

• 2012 are based on revised versions, and are subject to further revision by the ABS

• 2013 are based on preliminary versions, and are subject to further revision by the ABS.

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

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

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

Indigenous identification

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

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

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

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

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

Rheumatic heart disease registers data

Data for the priority area 5 (strengthening the diagnosis, notification, and follow-up of RHD) measures are drawn from rheumatic heart disease registers in Queensland, Western Australia, South Australia, and the Northern Territory, where ARF is a notifiable disease, and register and control programs have been established.

The available data about the incidence of ARF includes confirmed episodes for South Australia and the Northern Territory, and both confirmed and probable episodes for Queensland and Western Australia.

All rates of ARF shown in this report are crude, as the necessary data to calculate age-standardised rates are not available due to small numbers, particularly for non-Indigenous Australians.

Indigenous population

The size of the Indigenous population varies substantially by state and territory. To provide context for the state and territory data shown in this report, population estimates for 2016 are shown in Table A4.

In 2016, the Indigenous population ranged from 7,100 in the Australian Capital Territory to about 223,000 in New South Wales.

The proportion of the population who are Indigenous also varies by state and territory. In 2016, it ranged from less than 1% in Victoria to 30% in the Northern Territory.

Table A4: Australian population, by Indigenous status and state/territory, 2016

State/territory	Indigenous[a]	Non-Indigenous[b]	Total	% Indigenous
NSW	229,951	7,495,933	7,725,884	3.0
Vic	53,663	6,014,379	6,068,042	0.9
Qld	213,160	4,631,313	4,844,473	4.4
WA	97,681	2,519,491	2,617,172	3.7
SA	41,515	1,666,668	1,708,183	2.4
Tas	27,052	492,076	519,128	5.2
ACT	7,103	389,038	396,141	1.8
NT	74,543	170,337	244,880	30.4
Australia	**744,956**	**23,382,203**	**24,127,159**	**3.1**

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

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

Note: Estimates and projections are as at 30 June 2014, and are based on 2011 Census data.

Sources: AIHW analysis of ABS 2014, 2015.

Appendix B: Technical specifications

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

No.	Description	Calculation	Numerator	Denominator	Data Sources
1.1	Proportion of Indigenous Australians who received an MBS health assessment within a 12-month period.	Crude rate: Numerator ÷ Denominator x 100 Age-standardised rates (ASR)[a] were used in the calculation.	Number of people who had an MBS Health Assessment (item 715) billed to the MBS within 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
2.1	Proportion of people who had relevant Medicare-listed cardiac-related diagnostic items claimed in the previous 12 months.	Crude rate: Numerator ÷ Denominator x 100 ASR was used in figures 2.1a and 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 previous 12 months.	Crude rate: Numerator ÷ Denominator x 100	Number of people who received relevant Medicare-listed cardiac-related diagnostic or therapeutic item (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 by Indigenous status.	Crude rate: Numerator ÷ Denominator x 100 ASR was used in figures 3.1a, 3.1b, and 3.1e.	Number of hospitalisations with a principal diagnosis of STEMI (as listed in Table B4), a care type of 'acute care', urgency of admission of 'emergency', and a separation mode of 'not transferred to another acute hospital', with a procedure code related to PCI (as listed in Table B3).	Number of hospitalisations with a principal diagnosis of STEMI (as listed in Table B4), a care type of 'acute care', urgency of admission of 'emergency', and a separation mode not equal to 'transferred to another acute hospital'.	NHMD

(continued)

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

No.	Description	Calculation	Numerator	Denominator	Data Sources
3.3	Proportion of hospitalised events for acute coronary syndrome among people aged 18 and over that included diagnostic angiography and/or a definitive revascularisation procedure (PCI or CABG) within the period of care.[b]	Crude rate: Numerator ÷ Denominator x 100 ASR was used in figures 3.3a, 3.3b, and 3.3e.	Number of hospitalisations with a principal diagnosis of STEMI, non-ST-segment-elevation acute coronary syndrome, 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 acute coronary syndrome, unspecified AMI or unstable angina (as listed in Table B4), a care type of 'acute care', urgency of admission of 'emergency', and a separation mode not equal to 'transferred to another acute hospital'.	NHMD
3.5	Proportion of people aged 35 and over, admitted to hospital with a principal diagnosis of acute myocardial infarction who died in hospital, by Indigenous status.	Crude rate: Numerator ÷ Denominator x 100 ASR was used in figures 3.5a, 3.5b, and 3.5e.	Number of hospitalisations with a principal diagnosis of AMI (as listed in Table B4), a care type of 'acute care', urgency of admission of 'emergency', and a separation mode of 'died'.	Number of hospitalisations with a principal diagnosis of AMI (as listed in Table B4), a care type of 'acute care', urgency of admission of 'emergency', and a separation mode not equal to 'transferred to another acute hospital'.	NHMD
4.2	Number and proportion of patients with a cardiac condition who received a follow-up service within 12 months of having a cardiac procedure.	Crude rate: Numerator ÷ Denominator x 100	Number of people who had relevant Medicare-listed cardiac-related therapeutic items (as listed in Table B2), and received Medicare-listed follow-up services including a GP management plan, team care arrangement, allied health service, practice nurse monitoring and support, review of a GP management plan and team care arrangement, and contribution to a multidisciplinary care plan (as listed in Table B2) claimed in the financial year.	Number of people who had relevant Medicare-listed cardiac-related therapeutic items (as listed in Table B2) claimed in the financial year.	MBS data
4.3	Number and proportion of patients with a cardiac condition who were reviewed by a specialist physician within 12 months of having a cardiac procedure.	Crude rate: Numerator ÷ Denominator x 100	Number of people who had relevant Medicare-listed cardiac-related therapeutic items (as listed in Table B2), and received a Medicare-listed specialist review (as listed in Table B2) claimed in the financial year.	Number of people who had relevant Medicare-listed cardiac-related therapeutic items (as listed in Table B2) claimed in the financial year.	MBS data
5.1	(i) Incidence (new episodes) of acute rheumatic fever. (ii) New registrations of rheumatic heart disease, by Indigenous status.	Crude rates: Numerator ÷ Denominator x 100,000	(i) Number of new episodes of ARF in the calendar year. (ii) Number of new registrations of RHD in the calendar year.	Population at 30 June.	Qld, WA, SA, and NT RHDR data; ABS population data

(continued)

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

No.	Description	Calculation	Numerator	Denominator	Data Sources
5.2	Proportion of all acute rheumatic fever episodes that were recurrent.	Crude rates: Numerator ÷ Denominator x 100	Number of recurrent cases for ARF in the calendar year.	Number of new and recurrent cases of ARF in the calendar year.	Qld, WA, SA, and NT RHDR data
5.3	Percentage of required doses of benzathine penicillin G received in the previous 12 months among people on an ARF/RHD program.	Crude rates: Numerator ÷ Denominator x 100	Number of people on the ARF/RHD program who received less than 50%, 50% to 80% or greater than 80% of required does in the previous 12 months.	Number of people on the ARF/RHD program.	Qld, WA, SA, and NT RHDR data
5.4	Proportion of people with moderate or severe rheumatic heart disease who received an echocardiogram in the previous 12 months.	Crude rates: Numerator ÷ Denominator x 100	Number of people who had moderate or severe RHD who received an echocardiogram in the calendar year.	Number of people with moderate or severe RHD.	Qld, WA, and SA RHDR data
6.1	Cardiac morbidity—age-standardised rates of hospitalisation for a cardiac condition.	Crude rate: Numerator ÷ Denominator x 1,000 ASR was used in figures 6.1a, 6.1b, 6.1e, and 6.1f.	Number of hospitalisations with a principal diagnosis of cardiac condition, and a care type not equal to 'newborn—unqualified days only' or 'organ procurement—posthumous', or 'hospital boarder'.	Population at the middle of the financial year, calculated from the average of the populations at 30 June at the beginning and end of the financial year.	NHMD and ABS population data
6.2.1	Cardiac mortality—age-standardised rates of cardiac mortality.	Crude rate: Numerator ÷Denominator x100,000 ASR was used in figures 6.2.1a, 6.2.1b, and 6.2.1e.	Number of deaths where a cardiac condition (as listed in Table B4) is the underlying cause of death in the calendar year (based on year of registration of death). Numerator data are reported for NSW, Qld, WA, SA, and the NT.	Population at 30 June. Denominator data are reported for NSW, Qld, WA, SA, and the NT.	NHMD and ABS population data
6.2.2	Cardiac mortality—age-standardised rates of cardiac mortality.	Crude rate: Numerator ÷Denominator x 100,000. ASR was used in figures 6.2.2a and 6.2.2b.	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 at 30 June at the beginning and end of the financial year.	NHMD and ABS population data

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

Table B2: MBS items

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

(a) Only MBS item 715 was used to create figures 1.1b, 1.1c, 1.1d, and 1.1e. MBS items 700–714 and 716–719 were classified as 'MBS general items' in Figure 1.1a.

(b) 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 in this report.

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

Table B3: Australian Classification of Health Interventions (ACHI), 9th 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
Diagnostic angiography	38215-00	Coronary angiography
	38218-00	Coronary angiography with left heart catheterisation
	38218-01	Coronary angiography with right heart catheterisation
	38218-02	Coronary angiography with right heart catheterisation
CABG	38300-01	Open transluminal balloon angioplasty of 1 coronary artery
	38303-01	Open transluminal balloon angioplasty of 2 or more coronary 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
	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
	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

(continued)

Table B3 (continued): Australian Classification of Health Interventions (ACHI), 9th edition procedure codes

Procedure	ACHI code	Description
	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
	38505-00	Open coronary endarterectomy
	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 2016.

Table B4: International Statistical Classification of Diseases and Related Health Problems, 10th revision, Australian modification codes

Code	Condition
I21.0, I21.1, I21.2, I21.3	STEMI
I21.4	Non-ST-segment-elevation acute coronary syndrome
I21.9	AMI
I210.0	Unstable angina
I00–I52	Cardiac conditions including ARF, chronic RHDs, hypertensive diseases, ischaemic heart diseases, pulmonary heart disease, diseases of pulmonary circulation, and other forms of heart disease

Appendix C: Summary results, by measure

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

Measures (unit applicable to rates)	Indigenous				Non-Indigenous			
	Numerator	Denominator	Crude rate	ASR	Numerator	Denominator	Crude rate	ASR
1.1 Annual health assessments—Indigenous specific (Item 715), 2015–16 (%)	190,714	729,048	26.2	26.2	. .	. .	. .	. .
2.1 Cardiac-related diagnosis, 2015–16 (%)	64,909	737,002	8.8	10.4	3,178,328	23,221,247	13.7	9.1
2.3 Suspected or confirmed cardiac disease case review by a cardiologist, 2015–16 (%)	11,825	82,971	14.3	n.a.	843,920	3,704,560	22.8	n.a.
3.1 STEMI events treated by PCI, 2013–2016 (%)	618	1,018	60.7	59.2	17,562	24,099	72.9	78.1
3.3 ACS events that included diagnostic angiography or definitive revascularisation, 2013–2016 (%)	2,895	5,664	51.1	52.4	68,388	122,340	55.9	65.3
3.5 AMI in-hospital mortality rates, 2013–2016 (%)	130	3,592	3.6	2.8	4,873	84,184	5.8	2.9
4.2 Follow-up after receiving a cardiovascular therapeutic procedure, 2015–16 (%)	714	1,122	63.6	n.a.	52,147	111,661	46.7	n.a.
4.3 Specialist physician review after a cardiovascular therapeutic procedure, 2015–16 (%)	909	1,122	81.1	n.a.	106,374	111,661	95.3	n.a.
5.1.1 Incidence of ARF, 2016 (number per 100,000)	372	426,899	87.1	n.a.	25	8,987,809	0.3	n.a.
5.1.2 New registrations of RHD, 2016 (number per 100,000)	262	426,899	61.4	n.a.	21	8,987,809	0.2	n.a.
5.2 Recurrent ARF, 2015–2016 (%)	175	624	28.0	n.a.	7	41	17.5	n.a.
5.3 Treatment with benzathine penicillin G doses, 2016 (more than 80%of doses)	1,224	3,381	36.2	n.a.	35	142	24.6	n.a.
5.4 Electrocardiography among patients with severe or moderate RHD, 2016 (%)	363	871	41.7	n.a.	39	92	42.4	n.a.
6.1 Hospitalisations for cardiac conditions, 2013–2016 (number per 1,000)	30,232	2,164,407	13.9	25.3	1,044,363	68,707,882	15.2	13.0
6.2.1 Deaths from cardiac conditions, 2013–2015 (number per 100,000)	1,541	1,889,708	81.5	173.7	66,022	48,249,666	136.8	114.8
6.2.2 In-hospital deaths for cardiac conditions, 2013–14 to 2015–16 (number per 100,000)	691	2,164,407	31.9	64.0	25,953	68,707,882	37.8	31.7

Notes

1. Data for measure 3.1 are for all jurisdictions, except the Australian Capital Territory. Data for measures 3.5 and 6.2.2 are for New South Wales, Victoria, Queensland, Western Australia, South Australia, and the Northern Territory. Data for measures 5.1.1, 5.1.2, and 5.2 are for Queensland, Western Australia, South Australia, and the Northern Territory. Data for measures 5.3 and 5.4 are for Queensland, South Australia, and the Northern Territory. Data for measure 6.2.1 are for New South Wales, Queensland, Western Australia, South Australia, and the Northern Territory. Data for other measures are for all states and territories.

2. For measures 5.1 and 5.2, the comparison group is 'other Australians' (see Glossary).

3. See Appendix B for detailed technical specifications for these measures, including the data source(s) used.

Glossary

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

acute coronary syndrome (ACS): an acute myocardial infarction (**heart attack**) and unstable angina when a patient first presents as clinical emergencies with chest pain or other features.

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

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

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

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

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

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

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

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

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

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

hospitalisation (separation): an episode of care for an **admitted patient**, which can be a total hospital stay (from admission to discharge, transfer, or death) or a portion of a hospital stay beginning or ending in a change of **care type** (for example, from acute care to palliative care).

Indigenous: used interchangeably with **Aboriginal and Torres Strait Islander** 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: 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: encompasses both unstable angina (pressure in the chest while at rest or doing light physical activity) and non-ST-segment-elevation myocardial infarction (the less severe type of heart attack). See also **ST-segment-elevation myocardial infarction**.

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

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

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

procedure: a clinical intervention that is surgical in nature, carries a procedural risk, carries an anaesthetic risk, requires specialised training, and/or requires special facilities or equipment available only in an acute care setting (METeOR identifier: 514040).

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

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

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

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

separation: see **hospitalisation**.

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

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Related publications

This report, *Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: third national report 2017*, is part of a series of reports. Earlier editions can be downloaded from <www.aihw.gov.au/reports/indigenous-australians/better-cardiac-care-measures-2016/contents/summary>.

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

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

- AIHW 2013. Rheumatic heart disease and acute rheumatic fever in Australia 1996–2012. Cat. no. CVD 60. Canberra: AIHW.

These reports can be downloaded from <www.aihw.gov.au/publications>. The website also includes information on ordering printed copies.
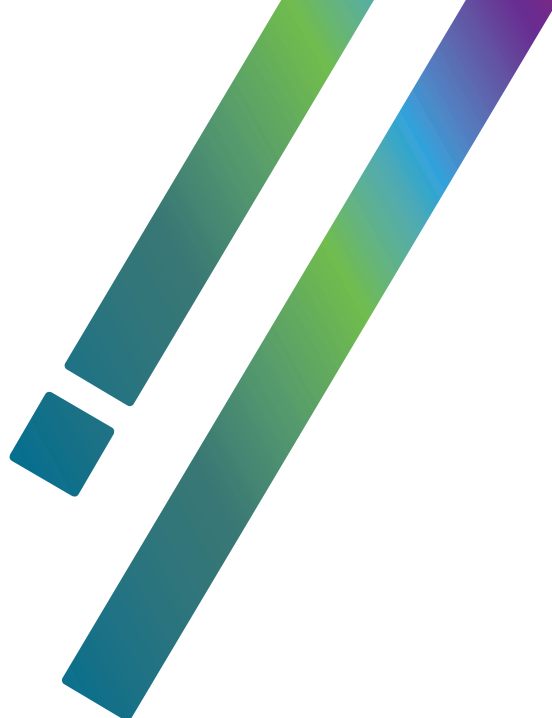
This is the third national report on the 21 Better Cardiac Care measures for Aboriginal and Torres Strait Islander people, with updated data available to report on 14 measures. It shows that while the mortality rate from cardiac conditions is falling among Indigenous Australians, it is still much higher than among non-Indigenous Australians. And while access to cardiac-related health services is improving the incidence and recurrent rates of acute rheumatic fever among Indigenous Australians continue to be much higher than in non-Indigenous Australians.

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Stronger evidence,
better decisions,
improved health and welfare