



**Australian Government**

**Australian Institute of  
Health and Welfare**

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

**Second national report 2016**





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*Authoritative information and statistics  
to promote better health and wellbeing*

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Australian Institute of Health and Welfare  
Canberra

Cat. no. IHW 169

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### **Australian Institute of Health and Welfare**

Director

Mr Barry Sandison

Any enquiries relating to copyright or comments on this publication should be directed to:

Digital and Media Communications Unit

Australian Institute of Health and Welfare

GPO Box 570

Canberra ACT 2601

Tel: (02) 6244 1000

Email: [info@aihw.gov.au](mailto:info@aihw.gov.au)

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- members of 3 committees under the auspices of the Australian Health Ministers' Advisory Council (AHMAC), namely:
  - the National Aboriginal and Torres Strait Islander Health Standing Committee (NATSIHSC)
  - the National Advisory Group on Aboriginal and Torres Strait Islander Health Information and Data (NAGATSIHID)
  - the National Health Information Standards and Statistics Committee (NHISSC)
- state and territory health departments
- rheumatic heart disease registers.

The authors thank all of the reviewers who provided comments.

# 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
AHMAC	Australian Health Ministers' Advisory Council
AIHW	Australian Institute of Health and Welfare
AMI	acute myocardial infarction
ARF	acute rheumatic fever
BPG	benzathine penicillin G
ECG	electrocardiography
CABG	coronary artery bypass graft
GP	general practitioner
GPMP	General Practitioner Management Plan
ICD-10	International Statistical Classification of Diseases and Related Health Problems, 10th revision
ICD-10-AM	International Statistical Classification of Diseases and Related Health Problems, 10th revision, Australian modification
MBS	Medicare Benefits Schedule
NHMD	National Hospital Morbidity Database
NMD	National Mortality Database
NSTEMI	non-ST-segment-elevation myocardial infarction
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
TCA	Team Care Arrangement
Vic	Victoria
VII	Voluntary Indigenous Identifier
WA	Western Australia

# Symbols

>	greater than
≥	greater than or equal to
✓	improved over time for Indigenous Australians
↔	no change over time or no clear trend for Indigenous Australians
n.a.	not available
..	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 success of the project. Data are available to report on many, but not all, of the measures. This report – the second national report – includes information for 11 measures for which updated data were available.

For some of the measures, rates for Indigenous Australians were better than or similar to those for non-Indigenous Australians. Based on age-standardised rates:

- Indigenous Australians were just as likely as non-Indigenous Australians to claim cardiac-related diagnostic items under the Medicare Benefit Schedule (MBS) in 2013–15 (both 3.9%)
- among people aged 35 and over, the in-hospital death rate of hospitalised events for acute myocardial infarction (AMI; commonly referred to as a heart attack) was similar for Indigenous and non-Indigenous Australians in 2009–14 (4.4% and 4.0%, respectively)
- Indigenous Australians with a cardiac condition were more likely than non-Indigenous Australians to claim a Team Care Arrangement (24% and 13%, respectively) or a General Practitioner Management Plan (27% and 16%, respectively) under the MBS in 2014–15.

For other measures, Indigenous Australians had higher rates of ill health and death from cardiac conditions, and lower rates of in-hospital treatment services. For example:

- Indigenous Australians were 1.9 times as likely as non-Indigenous Australians to be hospitalised for cardiac conditions in 2011–14, and 1.6 times as likely to die from cardiac conditions in 2009–2013 (based on age-standardised rates)
- among Indigenous adults aged 18 and over, 52% of hospitalised events for a severe heart attack – that is, a ST-segment-elevation myocardial infarction (STEMI) – were treated with percutaneous coronary intervention (PCI) to restore blood flow to a blocked coronary artery in 2011–14, compared with 75% among non-Indigenous adults (based on age-standardised rates)
- in 2011–2014, the incidence rate of acute rheumatic fever among Indigenous Australians was 59 per 100,000 population, compared with 0.2 per 100,000 for other Australians.

Some measures suggested improvements over time, while others showed either no change or no clear trend. Based on age-standardised rates:

- between 2004–05 and 2014–15, the proportion of Indigenous Australians who received an MBS item 715 health assessment increased from 3% to 25%
- the proportion of hospitalised STEMI events that were treated by PCI more than doubled for Indigenous adults between 2004–05 and 2013–14, from 26% to 57%
- between 1998 and 2013, the death rate due to cardiac conditions for Indigenous Australians fell by 43%, and the gap between Indigenous and non-Indigenous narrowed by 47%
- between 2004–05 and 2013–14, hospitalisation rates for cardiac conditions remained relatively stable for both Indigenous and non-Indigenous Australians, with ranges of 23%–25% and 13%–14%, respectively.

**Table S.1: Key results for the Better Cardiac Care measures**

Measure	Crude rate Indigenous	Age-standardised rate			Indigenous <sup>(a)</sup>							
		Indigenous	Non-Indigenous	Trend <sup>(b)</sup>	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
1.1 Health assessments—Indigenous-specific (MBS item 715), 2014–15 (%)	23	25	..	✓	21	14	30	22	18	8	21	28
1.3 (1) Primary care practitioner follow-up—blood pressure check, 2012–13 (%) <sup>(c)</sup>	87	n.a.	n.a.	n.a.	87	84	87	84	89	83	84	91
(2) Primary care practitioner follow-up—discussed quitting smoking, 2012–13 (%) <sup>(c)</sup>	40	n.a.	n.a.	n.a.	48	42	38	37	44	40	40	28
2.1 Cardiac-related diagnostic items, 2014–15 (%)	2.3	<sup>(d)</sup> 3.9	<sup>(d)</sup> 3.9	✓	<sup>(e)</sup> 4.5	<sup>(e)</sup> 3.6	3.7	3.2	3.2	<sup>(e)</sup>	<sup>(e)</sup>	4.1
3.1 Hospitalised events for ST-segment-elevation myocardial infarction among adult patients treated by percutaneous coronary intervention, 2011–14 (%)	54	52	75	✓	<sup>(f)</sup> 55	<sup>(e,f)</sup> 64	<sup>(f)</sup> 55	<sup>(f)</sup> 63	<sup>(f)</sup> 63	<sup>(e,f)</sup>	n.a.	<sup>(f)</sup> 16
3.3 Hospitalised events for acute coronary syndrome among adult patients that included diagnostic angiography and/or definitive revascularisation, 2011–14 (%)	46	48	61	✓	<sup>(f)</sup> 46	<sup>(e,f)</sup> 51	<sup>(f)</sup> 40	<sup>(f)</sup> 65	<sup>(f)</sup> 57	<sup>(e,f)</sup>	n.a.	<sup>(f)</sup> 45
3.5 Hospitalised events for acute myocardial infarction among patients aged 35 and over that ended with the death of the patient, 2009–14 (%)	4.3	4.4	4.0	✓	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4.2 (1) People with a cardiac condition with a Team Care Arrangement, 2014–15 (%)	30	24	13	✓	<sup>(e)</sup> 23	<sup>(e)</sup> 17	25	24	21	<sup>(e)</sup>	<sup>(e)</sup>	28
(2) People with a cardiac condition with a GP Management Plan, 2014–15 (%)	34	27	16	✓	<sup>(e)</sup> 27	<sup>(e)</sup> 21	28	30	24	<sup>(e)</sup>	<sup>(e)</sup>	31
(3) People with a cardiac condition with MBS allied health services, 2014–15 (%)	26	22	19	✓	<sup>(e)</sup> 24	<sup>(e)</sup> 27	28	12	19	<sup>(e)</sup>	<sup>(e)</sup>	8
5.1 Incidence of acute rheumatic fever, 2011–2014 (per 100,000)	59	<sup>(g)</sup> 59	<sup>(g)</sup> 0.2	↔	n.a.	n.a.	28	67	<sup>(d)</sup> 37	n.a.	n.a.	139
5.2 Recurrent acute rheumatic fever, 2011–2014 (%)	25	<sup>(g)</sup> 25	<sup>(g)</sup> 4	↔	n.a.	n.a.	13	20	<sup>(d)</sup> 24	n.a.	n.a.	34
5.3 Benzathine penicillin G doses, 2014 (% receiving >80% of doses)	37	<sup>(g)</sup> 37	<sup>(g)</sup> 29	n.a.	n.a.	n.a.	22	n.a.	44	n.a.	n.a.	46
6.1 Hospitalisations for cardiac conditions, 2011–14 (per 1,000)	13	25	13	↔	21	<sup>(e)</sup> 15	28	30	22	<sup>(e)</sup>	n.a.	33
6.2 (1) Deaths due to cardiac conditions, 2009–2013 (per 100,000)	81	208	128	✓	187	n.a.	199	257	159	n.a.	n.a.	273
(2) In-hospital deaths among patients with cardiac conditions, 2009–14 (per 100,000)	29	69	36	✓	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

.. = not applicable n.a. = not available ✓ = improved over time for Indigenous Australians ↔ = no change over time or no clear trend for Indigenous Australians

(a) State and territory data for measures 2.1, 3.1, 3.3, 4.2, 6.1 and 6.2.1 are age-standardised rates, whereas state and territory data for the remaining measures are crude rates.

(b) Trend data relate to Indigenous Australians for the following years: 2004–05 to 2014–15 for measures 1.1 and 2.1; 2004–05 to 2013–14 for measures 3.1, 3.3 and 6.1; 2005–08 to 2011–14 for measures 3.5 and 6.2.2; 2005–06 to 2014–15 for measure 4.2; 2010 to 2014 for measures 5.1 and 5.2; and 1998 to 2013 for measure 6.2.1.

(c) See the first national report (AIHW 2015b) for full results on measure 1.3; updated data for this measure were not available for this report.

(d) For measure 2.1, data for the comparison by Indigenous status relate to 2013–15 (rather than 2014–15). For measures 5.1 and 5.2, data for South Australia relate to 2013–2014 (rather than 2011–2014).

(e) For measures 2.1, 3.1, 3.3, 4.2 and 6.1, due to small numbers for Tasmania, those data are combined with Victoria. Also, for measures 2.1 and 4.2, due to small numbers for the Australian Capital Territory, those data are combined with New South Wales.

(f) Comparisons between states and territories for measures 3.1 and 3.3 should be made with caution—see Appendix A for details.

(g) For measures 5.1, 5.2 and 5.3, data by Indigenous status are crude (rather than age-standardised) rates, and the comparison group is 'other Australians' (see Glossary), rather than non-Indigenous Australians.

Sources: ABS 2012–13 Aboriginal and Torres Strait Islander Health Survey; AIHW analysis of Medicare Benefits Schedule data; AIHW analysis of rheumatic heart disease registers data; AIHW National Hospital Morbidity Database; AIHW National Mortality Database; ABS population data.

# 1 Introduction

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

Due to many interrelated reasons, heart-related conditions, which are also referred to as cardiac conditions, are more common among Indigenous than non-Indigenous Australians. These reasons include higher rates of several risk factors for cardiac conditions (such as smoking, insufficient physical activity, overweight and obesity, diabetes and high blood pressure), and poorer access to health services aimed at preventing and treating such conditions (AIHW 2015c, 2015d; 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 of the Australian Health Ministers' Advisory Council (AHMAC). It 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 care coordination.

The Better Cardiac Care for Aboriginal and Torres Strait Islander People Forum was held in March 2014; it involved representatives from a wide variety of Indigenous and other organisations, as well as Australian Government and state and territory health departments. The forum aimed to identify national priorities for action and high-impact initiatives that could improve cardiac outcomes for Indigenous Australians.

The post-forum report identified 5 priority areas for intervention that health services should undertake to improve cardiac care for Indigenous Australians (Better Cardiac Care Forum 2014). These priority areas:

- are aligned with national and international best practice guidelines for cardiac care and chronic disease
- were informed by the Essential Service Standards for Equitable National Cardiovascular Care (Brown et al. 2015)
- focus on providing sustainable models of care built around partnerships between all health service providers.

The 5 priority areas are:

- 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 ongoing preventive care
- rheumatic heart disease – strengthen the diagnosis, notification and follow-up of rheumatic heart disease.

Across these 5 priority areas, 17 actions were identified (see Table 1.1). The Australian Government is responsible for 1 of the actions, state and territory governments for 6, and all governments are responsible for the remaining 10.

A set of 21 Better Cardiac Care measures were developed to ensure implementation and ongoing monitoring of the priority areas and associated actions (see Table 1.2) (Better Cardiac Care Forum 2014). In June 2014, the AHMAC requested that proposals for implementation of the actions be developed, and that annual reports for the measures for which data are available at the national level be provided.

**Table 1.1: Priority areas and actions recommended by the Better Cardiac Care Forum**

Priority area and action	Responsibility
<b>Priority area 1: Primary preventive care—early cardiovascular risk assessment and management</b>	
1.1 Provide regular risk assessment and management of all identified risk factors	Australian Government
1.2 Implement electronic quality improvement systems, along with quality assurance processes, in all primary health services	All governments
1.3 Support strategies to reduce smoking rates in Aboriginal and Torres Strait Islander people	All governments
<b>Priority area 2: Clinical suspicion of disease—timely diagnosis of heart disease and heart failure</b>	
2.1 Develop or enhance regional cardiac service delivery plans, to improve the coordination of access to specialist physicians, and integrate the delivery of cardiac diagnostic services for Aboriginal and Torres Strait Islander people	All governments
<b>Priority area 3: Acute episode—guideline-based therapy for acute coronary syndrome</b>	
3.1 Promote education in relation to the warning signs of heart disease and acute coronary syndrome for Aboriginal and Torres Strait Islander people	State/territory governments
3.2 Establish coordinated regional systems of care from point of first clinical contact to definitive care for patients presenting with acute coronary syndrome	State/territory governments
3.3 Implement nationally consistent systems to monitor timing and rates of reperfusion and revascularisation in Aboriginal and Torres Strait Islander people with acute coronary syndrome	State/territory governments
3.4 Develop a standard national clinical audit tool for acute coronary syndrome, which includes evaluation of pre-, in- and post-hospital care	State/territory governments
<b>Priority area 4: Ongoing care—optimisation of health status and ongoing preventive care</b>	
4.1 Ensure all patients admitted with cardiac conditions receive culturally-appropriate cardiac education and commence cardiac rehabilitation while in hospital	State/territory governments
4.2 Ensure all patients admitted with cardiac conditions are automatically referred to the most appropriate primary health care service able to provide or coordinate multidisciplinary secondary prevention services	State/territory governments
4.3 Deliver ongoing community-based, multidisciplinary chronic disease follow-up and specialist physician review as required for all Aboriginal and Torres Strait Islander people with cardiac disease	All governments
4.4 Expand the delivery of innovative cardiac rehabilitation and secondary prevention services that are appropriate for Aboriginal and Torres Strait Islander people	All governments
<b>Priority area 5: Rheumatic heart disease—strengthen the diagnosis, notification and follow-up of rheumatic heart disease</b>	
5.1 Make rheumatic heart disease and acute rheumatic fever notifiable conditions in all jurisdictions	All governments
5.2 Consider the creation of a single national rheumatic heart disease/acute rheumatic fever register	All governments
5.2 Explore options to link data from the rheumatic heart disease registry to the Patient Controlled Electronic Health Record or equivalent	All governments
5.4 Increase clinicians' awareness and capacity to diagnose and manage acute rheumatic fever and rheumatic heart disease, in line with the current Australian guidelines for the prevention, diagnosis and management of acute rheumatic fever and rheumatic heart disease, particularly in high-risk or endemic communities	All governments
5.5 Establish dedicated centres for Aboriginal and Torres Strait Islander heart surgery and rheumatic heart surgery where appropriate, to enable centralisation of expertise and the development of culturally-appropriate specialist support services	All governments

Source: Better Cardiac Care Forum 2014.

**Table 1.2: Better Cardiac Care measures and data sources**

Measure	Data source
<b>Priority area 1: Early cardiovascular risk assessment and management</b>	
1.1 Number and proportion of people who received an MBS health assessment within the previous 12 months	MBS
1.2 Number and rate of people aged 20 and over without known cardiac disease with cardiovascular risk assessment and stratification in the previous 2 years	
1.3 Proportion of people with risk factors for cardiac disease with evidence of primary care practitioner follow-up	AATSIHS
<b>Priority area 2: Timely diagnosis of heart disease and heart failure</b>	
2.1 Number and proportion of people who claimed relevant MBS diagnostic items in the previous 12 months	MBS
2.2 Number and proportion of people who received diagnostic services within 30 days of referral	
2.3 Proportion of people with suspected/confirmed cardiac disease reviewed by a cardiologist within the previous 12 months	
<b>Priority area 3: Guideline-based therapy for acute coronary syndrome</b>	
3.1 Proportion of people with STEMI who were (i) treated by primary PCI or (ii) treated with fibrinolysis	NHMD
3.2 Proportion of people with STEMI who were not provided any reperfusion therapy	
3.3 Proportion of people with acute coronary syndrome who received diagnostic angiography or definitive revascularisation procedure within the index admission/within 30 days	NHMD
3.4 Proportion of people diagnosed with acute coronary syndrome discharged from hospital on appropriate secondary prevention medicines	
3.5 In-hospital, 30-day and 12-month mortality rates for people admitted to hospital with a primary diagnosis of acute myocardial infarction	NHMD
<b>Priority area 4: Optimisation of health status and provision of ongoing preventative care</b>	
4.1 Number and proportion of patients reviewed by a primary health care professional within 1 week of discharge from hospital	
4.2 Number and proportion of patients with cardiac disease who received follow-up MBS items within 3 months of hospital discharge	MBS
4.3 Number and proportion of patients with cardiac disease reviewed by a specialist physician within 3 and 12 months of discharge	
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	
<b>Priority area 5: Strengthen the diagnosis, notification and follow-up of rheumatic heart disease</b>	
5.1 Annual incidence of all acute rheumatic fever episodes	RHDRs
5.2 Proportion of all acute rheumatic fever episodes that were recurrent	RHDRs
5.3 Median proportion of scheduled benzathine penicillin G doses given to patients with confirmed acute rheumatic fever or rheumatic heart disease in the preceding 12 months	RHDRs
5.4 Proportion of people with moderate or severe rheumatic heart disease who received an echocardiogram in the previous 12 months	
<b>Summary measures: Hospitalisation and mortality</b>	
6.1 Age-standardised rates of hospitalisation for a cardiac condition	NHMD
6.2 Age-standardised rates of cardiac mortality	NMD/NHMD

Data are available to report on the full measure.
  Data are available to report on part of the measure.
  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; PCI = percutaneous coronary intervention; RHDRs = rheumatic heart disease registers; STEMI = ST-segment-elevation myocardial infarction

Source: Better Cardiac Care Forum 2014.

Data are available to report either fully or partially on 12 of the Better Cardiac Care measures. Of the 21 measures, data are:

- available to report fully on 4 measures – shown in green shading in Table 1.2
- available to report partially on 8 measures through: using a proxy measure; using data that provide information on part of the measure; or using data that are limited to a small number of states and territories – shown in blue shading in Table 1.2
- not available to report on 9 measures – shown in orange shading in Table 1.2.

To enable full reporting on all of the measures, work is needed to modify existing collections, investigate data linkage, and/or establish new data collections (AIHW 2015b). AIHW is working on a detailed data development plan that describes data gaps and options to address those gaps.

## Reporting on the Better Cardiac Care measures

In 2015, the AIHW published the first national report on the Better Cardiac Care measures, which reported on the 12 measures for which data were available (AIHW 2015b).

This report is the second in the series, and provides updated data for 11 measures. Updated results for 1 of the measures (measure 1.3) are not available. The data source for that measure is health survey data from the Australian Bureau of Statistics (ABS), and the most recent such survey was done in 2012–13. Those data were reported in the 2015 report (AIHW 2015b) and the full results can be found there. For completeness, key results for measure 1.3 have been included in Table S.1 in the Summary.

Key medical terms used in the report are explained in Box 1.1.

### Box 1.1: Key medical terms used in this report

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

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

**cardiac conditions:** Many different conditions can affect the heart, such as coronary heart disease, heart failure and rheumatic heart disease. In this report, 'cardiac conditions' is used as a general reference to such conditions. In the context of specific measures, more precise definitions might apply (see Table B1 in Appendix B for technical specifications for each measure).

**percutaneous coronary intervention (PCI):** Surgical procedures used to restore blood flow to blocked coronary arteries. Two types are used – coronary angioplasty without stent, and coronary stenting.

**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.

While time trend data are considered in this report, it does not include any discussion on the impact of the Better Cardiac Care project on cardiac outcomes for Indigenous Australians, as it is too soon to provide such an analysis. For example, there is an expected lead time



between developing priority and action areas in mid-2014, and implementing associated initiatives. There is also a lag between full implementation and changes in the outcomes of interest, as well as between when changes occur and when data are available to measure those changes.

## Structure of this report

**Chapter 2** presents the results for the 11 measures for which updated data are available, with the results structured around the 5 priority areas. The data sources used are:

- Medicare Benefits Schedule (MBS) data
- the National Hospital Morbidity Database (NHMD)
- the National Mortality Database (NMD)
- rheumatic heart disease registers (RHDRs) data
- population data from the ABS.

For each Better Cardiac Care measure, data are presented where possible:

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

In addition to the findings, a description of the full measure and why it is important is included. As noted above, in some cases, only partial reporting of the agreed measure is possible. In these cases, information is provided on how the reported and agreed measures differ. Each measure also includes a brief section called 'Things to consider', which highlights key points to note when interpreting the results.

**Appendix A** provides information on data sources, and notes about the interpretation of the data to help users understand data issues and limitations; these notes often expand on the points covered in the 'Things to consider' sections.

**Appendix B** provides technical specifications for the reported measures, including information on relevant classification codes (tables B1–B6).

**Appendix C** provides summary data about the numerator, denominator and rates for each of the measures presented in Chapter 2.

The **Glossary** defines terms used in this report.

**Supplementary tables** corresponding to each figure in Chapter 2 are provided as an attachment to this report; these tables include the underlying data and notes about the analyses for each measure. The inclusion of supplementary tables is a new feature of this second report, compared with the first report. These tables are available on the AIHW website at <[www.aihw.gov.au](http://www.aihw.gov.au)>.

## When reading this report

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

In some sections of this report, age-standardised rates are provided. Age-standardisation is a set of techniques used to remove, as far as possible, the effects of differences in age when comparing 2 or more populations. Unless otherwise stated, crude rates are shown – such rates have typically been used to describe data for the current period for Indigenous Australians, or where data were not available to support age-standardisation. Where possible, age-standardised rates have been used when data for Indigenous Australians are compared with non-Indigenous Australians and when data are compared across time, to adjust for the impact of age differences in the populations.

Rate differences and rate ratios are also provided for several measures. The rate difference describes the literal, or absolute, gap between 2 population rates, while the rate ratio describes the relative difference between populations by taking scale into account. These terms are described further in the Glossary.

Throughout the report, periods based on full calendar years (1 January to 31 December) are written as, for example, 2014 for 1 year. When there are 2 or more calendar years in the period, the first and final years are written in full. For example, 2013–2015 covers 3 calendar years. For periods based on financial years (1 July to 30 June, as with data about hospitalisations), the first year is written in full and the final year is shown in an abbreviated form – for example, 2014–15 for 1 financial year and 2012–15 for 3 financial years (from 2012–13 to 2014–15).

## 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*. It is based on the premise that all Aboriginal and Torres Strait Islander people who have no known cardiac disease should receive:


- an annual cardiovascular risk assessment
- appropriate management and follow-up of identified risk factors
- lifestyle modification advice appropriate to their absolute 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 (Better Cardiac Care Forum 2014).

Three measures were agreed in this priority area, with updated data available for 1 of them – measure 1.1 on health assessments (Table 2.1).

**Table 2.1: Priority area 1 – agreed measures, reported measures and data sources**

Agreed measure	Reported measure	Data source
1.1 Number and proportion of regular Aboriginal and Torres Strait Islander clients of health services who received an MBS health assessment within the previous 12 months	Annual data are available on how many Indigenous Australians received a health assessment that was claimed through MBS.  In the 2015 report, data for this measure were limited to those aged 25 and over, whereas data in this report include people of all ages.	MBS
1.3 Proportion of those Aboriginal and Torres Strait Islander people identified as having elevated risk of cardiac disease in the previous 2 years, with documented evidence of primary care practitioner follow-up, including the proportion commenced on anti-hypertensive and lipid-lowering therapy and proportion of smokers offered an evidence-based smoking cessation intervention	No data on primary care practitioner follow-up are available. Instead, data from the 2012–13 Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS) were provided as a proxy in the 2015 report.  The measure reported was:  (1) proportion of Indigenous Australians aged 18 and over living in non-remote areas without a current and long-term circulatory condition, who were at high risk of cardiac disease and had their blood pressure checked in the previous 2 years  (2) proportion of Indigenous Australians aged 18 and over without a current and long-term circulatory condition, who were at high risk of cardiac disease and were current smokers, who saw a doctor, health professional or specialist in the previous 12 months and discussed quitting smoking.  Updated data for this measure are not available for the 2016 report, so are not included in this section. Key results based on the 2012–13 AATSIHS are shown in Table S.1 in the summary, while the full results are shown in the 2015 report (AIHW 2015b).	AATSIHS

 Data are available to report on the full measure.

 Data are available to report on part of the measure.

## Measure 1.1: Annual health assessments

**Measure:** Proportion of Indigenous Australians who had an MBS health assessment within a 12-month period. For relevant MBS item numbers, see Table B2 in Appendix B.

### Why is it important?

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

All Indigenous Australians are eligible for an annual health assessment through the MBS (item 715). Australians (including Indigenous and non-Indigenous Australians) in specified target groups might be eligible for other types of MBS health assessments (Department of Health 2014) – these are referred to as ‘general’ health assessments in this report.

### Results

**Overall:** In 2014–15:

- 23% (167,221) of Indigenous Australians claimed an MBS item 715 health assessment and 1.5% (about 10,600) received a general MBS health assessment (Figure 1.1a)
- 3.5% of non-Indigenous Australians (about 796,800 people) received a general MBS health assessment; these data are not comparable with those for Indigenous Australians due to differences in eligibility for MBS health assessments (see Appendix A).

**Time trend:** Between 2004–05 and 2014–15, the age-standardised rate of Indigenous Australians who had an MBS item 715 health assessment increased from 3% to 25% (Figure 1.1b). A large increase occurred from 2009–10, which coincided with the introduction of the Australian Government’s Indigenous Chronic Disease Package.

**Sex and age:** Among Indigenous Australians in 2014–15:

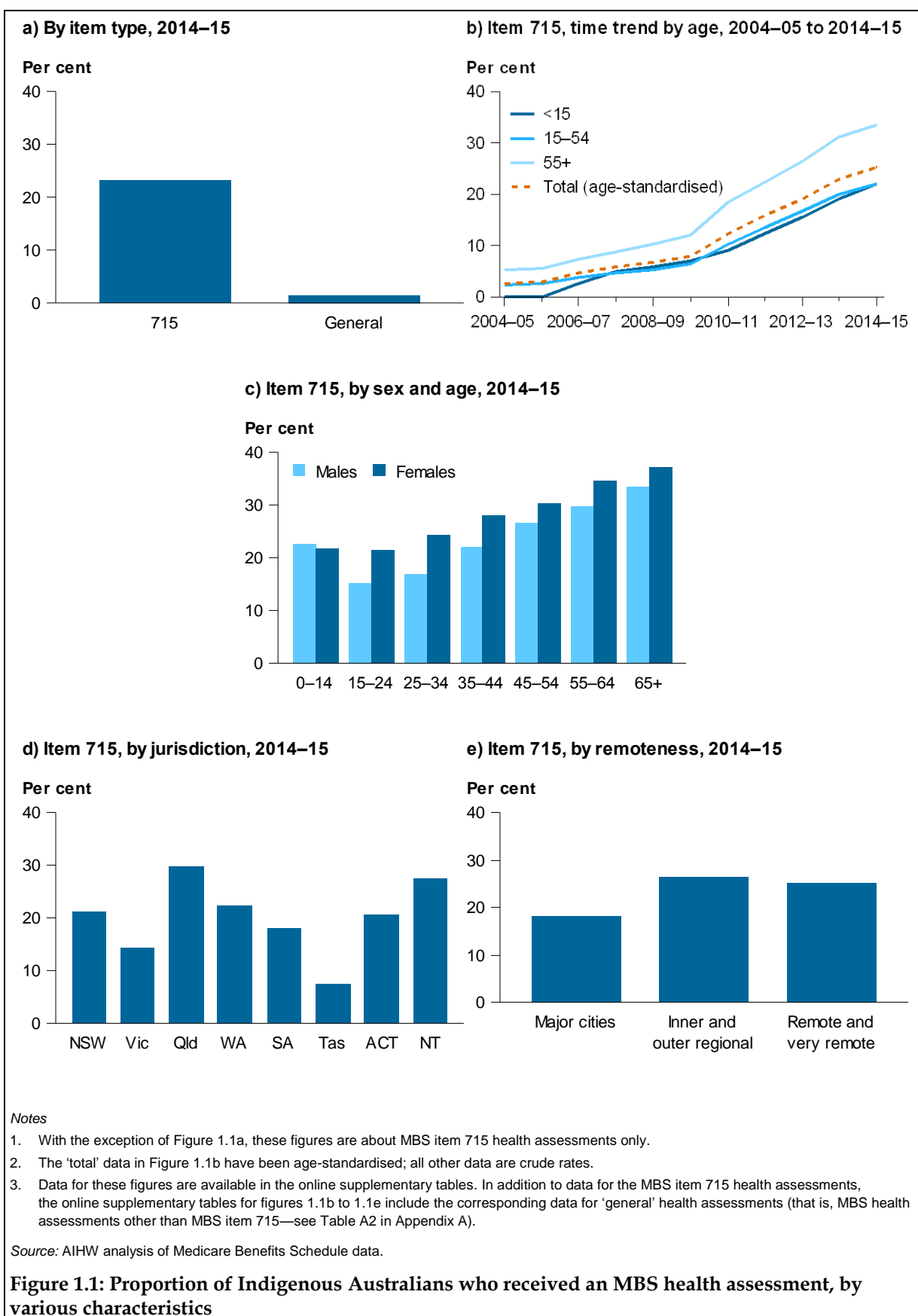
- just over 1 in 5 (22%) children aged under 15 had an MBS item 715 health assessment; for the other age groups, the proportion increased from 18% among those aged 15–24 to 35% among those aged 65 and over
- 25% of females had an MBS item 715 health assessment, compared with 21% of males. With the exception of those aged under 15, females were more likely than males to have received an MBS item 715 health assessment in each age group considered (Figure 1.1c).

**Jurisdiction and remoteness:** In 2014–15, the proportion of Indigenous Australians who had an MBS item 715 health assessment was:

- highest in Queensland (30%) and lowest in Tasmania (8%) (Figure 1.1d)
- higher in *Inner and outer regional* areas (26%) and *Remote and very remote* areas (25%) than in *Major cities* (18%) (Figure 1.1e).

### Things to consider (see also Appendix A)

- MBS data reflect billing practices, and not necessarily all services received. For example, MBS data do not generally capture equivalent services provided by jurisdictional-funded primary health care or by public hospitals. Equivalent or similar care may also be billed as a different MBS item (such as a standard consultation) (AIHW 2015e).
- The general health assessments data were adjusted for Indigenous under-identification.



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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*. It is based on the premise that all Aboriginal and Torres Strait Islander people suspected of having heart disease or heart failure should receive the appropriate initial diagnostic service (for example, stress testing or coronary angiography for ischaemic heart disease, echocardiography for heart failure and rheumatic heart disease, or other investigations as clinically indicated), as close to the patient's home as possible, and within acceptable timeframes according to the level of risk and the patient's condition (Better Cardiac Care Forum 2014).

Of the 3 measures recommended for this priority area, data are available for 1 of them – measure 2.1 on Medicare-listed diagnostic items (Table 2.2).

**Table 2.2: Priority area 2 – agreed measure, reported measure and data source**

Agreed measure	Reported measure	Data source
2.1 Number and proportion of regular Aboriginal and Torres Strait Islander clients of health services, who had relevant Medicare-listed diagnostic items claimed in the previous 12 months, compared with other Australians	Annual data are available on how many Australians claimed relevant diagnostic items through the MBS, by Indigenous status.	MBS

 Data are available to report on the full measure.

## Measure 2.1: Cardiac-related diagnosis

**Measure:** Number and proportion of Indigenous Australians who had claimed 1 or more relevant cardiac-related MBS diagnostic items in the previous 12 months, compared with non-Indigenous Australians. Relevant MBS items are listed in Table B3 in Appendix B.

### Why is it important?

People suspected of having cardiac disease should receive appropriate and timely diagnostic services. Common diagnostic tests include: electrocardiography (ECG) – recording of the electrical activity of the heart; echocardiography – an ultrasound of the heart; and cardiac catheterisation – insertion of a catheter into a blood vessel to enable diagnostic tests (and sometimes also treatment) to be performed on the heart (John Hopkins Medicine 2016; NHFA 2014).

### Results

**Overall:** In 2014–15, 2.3% of Indigenous Australians (about 16,900 people) claimed cardiac-related MBS diagnostic items. There were 3 groups of these diagnostic tests: 0.9% of Indigenous Australians had ECG monitoring (about 6,400 people), 2.0% had echocardiography (14,200 people) and 0.1% (900 people) had cardiac catheterisation.

In the 2-year period 2013–15 and based on age-standardised rates, similar proportions of Indigenous and non-Indigenous Australians claimed each of the cardiac-related diagnostic items (Figure 2.1a). Overall, when the 3 diagnostic groups were combined, the age-standardised rate of Indigenous Australians who had claimed cardiac-related diagnostic items was 3.9% – this is the same proportion as for non-Indigenous Australians.

**Time trend:** Between 2004–05 and 2014–15, the age-standardised rate of Indigenous Australians who had claimed cardiac-related diagnostic items through the MBS increased from 2.7% to 3.9%. Over the same period, the proportion for non-Indigenous Australians increased at a similar pace (from 2.8% to 3.9%) (Figure 2.1b).

**Sex and age:** In 2014–15, the proportion of Indigenous Australians who had claimed cardiac-related MBS diagnostic items:

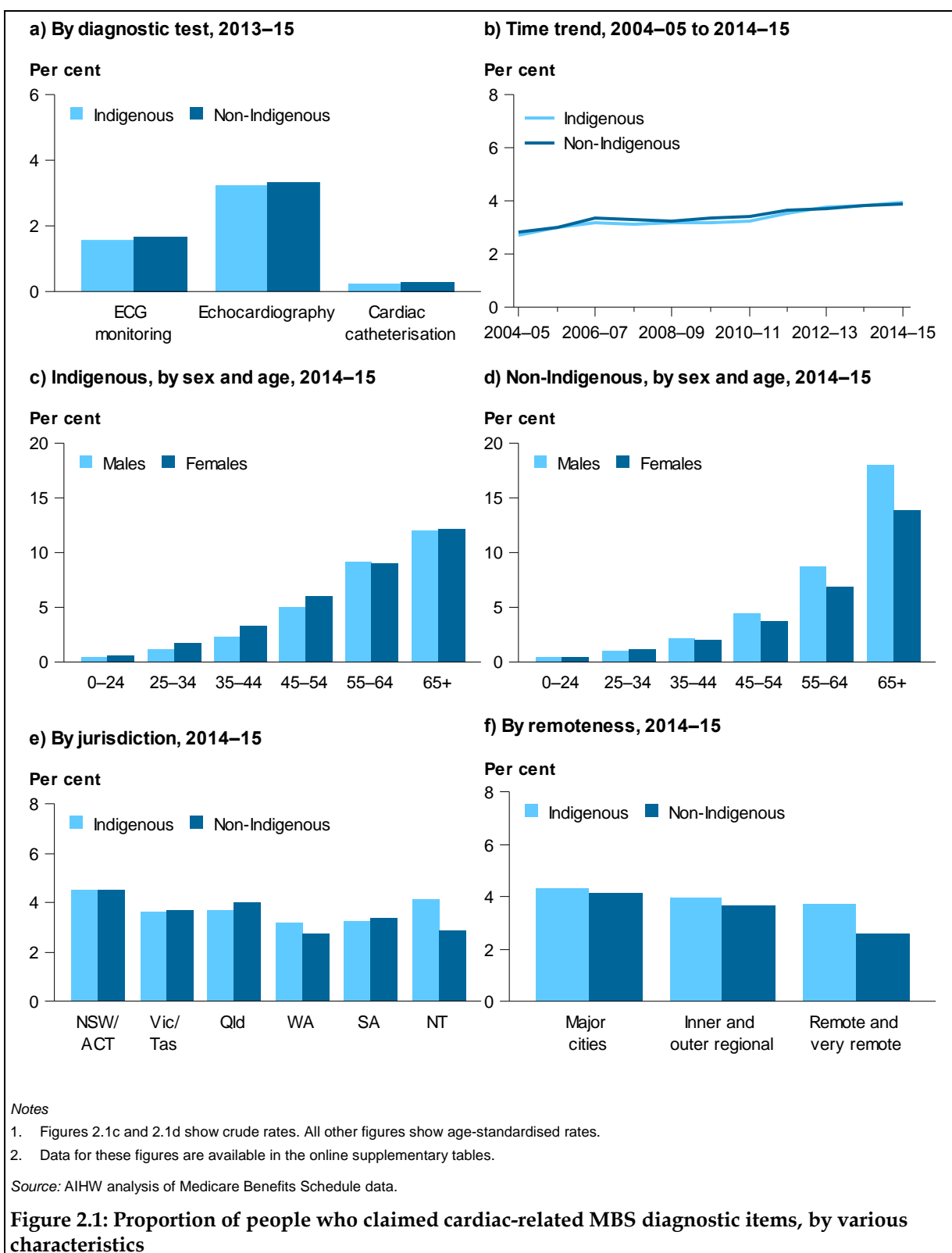
- increased with age from 0.5% for those aged under 25, to 12% for those aged 65 and over, and was similar for males and females (Figure 2.1c)
- was broadly similar to the proportion for non-Indigenous Australians in all age groups, except for those aged 65 and over (12% and 16%, respectively) (figures 2.1c and 2.1d).

**Jurisdiction and remoteness:** In 2014–15, the age-standardised rate of Indigenous Australians who had claimed cardiac-related MBS diagnostic items ranged from 3.2% to 4.5% across jurisdictions and from 3.7% to 4.3% across remoteness areas (figures 2.1e and 2.1f). Rates were broadly similar for Indigenous and non-Indigenous Australians, except in the Northern Territory and *Remote and very remote* areas, where they were slightly higher for Indigenous Australians (rate differences of 1.2% and 1.1%, respectively).

### Things to consider (see also Appendix A)

- MBS data reflect billing practices, and not necessarily all services received. For example, MBS data do not generally capture equivalent services provided by jurisdictional-funded primary health care or by public hospitals.
- MBS data shown for this measure were adjusted for Indigenous under-identification.





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## 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*. It is based on the premise that all Aboriginal and Torres Strait Islander people with acute coronary syndrome (ACS) should receive guideline-based therapy (Better Cardiac Care Forum 2014). ACS is a broad spectrum of acute clinical presentations, ranging from unstable angina to acute myocardial infarction. The Australian guidelines for the management of ACS are described in Aroney et al. 2006, Aroney et al. 2008 and Chew et al. 2011.

Of the 5 measures identified in this priority area, data are available from the National Hospital Morbidity Database to partially report on 3 of them (Table 2.3). Data from the NHMD pertain to hospitalisations (not individuals), and it is not possible to group associated hospitalisations together without data linkage. To reduce the double-counting of people with an ACS who were transferred to another hospital for further diagnosis or treatment, the analyses for the measures in this priority area exclude hospitalisations ending in transfer to another acute hospital. In this way, only the last hospitalisation for each event of an ACS is generally counted. While this method reduces double-counting of patients with contiguous hospitalisations, it purposefully includes non-contiguous hospitalisations; for example, if a person had 2 STEMI events in 1 year, both would (appropriately) be counted. See Appendix A for further details.

See tables B1 and B4 in Appendix B for classification codes used for these measures.

**Table 2.3: Priority area 3—agreed measures, reported measures and data sources**

Agreed measure	Reported measure	Data source
3.1 Proportion of people with ST-segment-elevation myocardial infarction (STEMI) who present within 12 hours of symptom onset and are eligible to receive emergency reperfusion therapy who are: (i) treated by primary percutaneous coronary intervention (ii) treated with fibrinolysis by Aboriginal and Torres Strait Islander status	(i) Data are reported on hospitalised events for STEMI for which PCI was provided <sup>(a)</sup> . Patients aged under 18 were excluded due to small numbers. Data are not available to assess whether patients present to emergency within 12 hours of symptom onset, nor on whether patients are eligible for reperfusion. (ii) While some data are available on treatment with fibrinolysis among admitted patients, those data are not presented in this report because they are incomplete. Available data suggest that 3% of hospitalisations of Indigenous Australians admitted with STEMI in the 3-year period 2011–14 were treated with fibrinolysis. This is an under-count because information about drug treatment/pharmacotherapy received by admitted patients is not routinely recorded; fibrinolysis is also more likely to be administered before hospital admission (for example, in an emergency department).	NHMD
3.3 Proportion of people with ACS who received diagnostic angiography or a definitive revascularisation procedure (PCI or coronary artery bypass graft) within the index admission and 30 days of the index admission, by Aboriginal and Torres Strait Islander status	Data are reported on hospitalised events for ACS during which diagnostic angiography and/or a definitive revascularisation procedure were performed <sup>(a)</sup> . Patients aged under 18 were excluded due to small numbers. Data are not available on whether the procedures were received within 30 days of index admission.	NHMD
3.5 In-hospital, 30-day and 12-month mortality rates for people admitted to hospital with a primary diagnosis of acute myocardial infarction (AMI), by Aboriginal and Torres Strait Islander status	Data are reported on hospitalised events for AMI that ended with the death of the patient <sup>(a)</sup> . Patients aged under 35 were excluded due to small numbers. Data are not available on 30-day and 12-month mortality following hospitalisation.	NHMD

 Data are available to report on part of the measure.

(a) Number of hospitalised events was estimated by excluding hospitalisations ending in transfer to another acute hospital.

### Measure 3.1: Hospitalised events for STEMI treated by percutaneous coronary intervention

**Measure:** Proportion of hospitalised events for ST-segment-elevation myocardial infarction (STEMI; a severe heart attack) among people aged 18 and over for which percutaneous coronary intervention (PCI; surgical procedures to restore blood flow to a blocked coronary artery) was provided, by Indigenous status.

#### Why is it important?

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

#### Results

**Overall:** In the 3-year period 2011–14, there were about 870 hospitalised events for STEMI among Indigenous adults (3.7% of such events where Indigenous status was known). In that period, 54% of hospitalised STEMI events among Indigenous adults were treated by PCI.

Based on age-standardised rates, in 2011–14, 52% of hospitalised STEMI events among Indigenous adults were treated by PCI, compared with 75% of such events for non-Indigenous adults (rate ratio of 0.7) (Figure 3.1a).

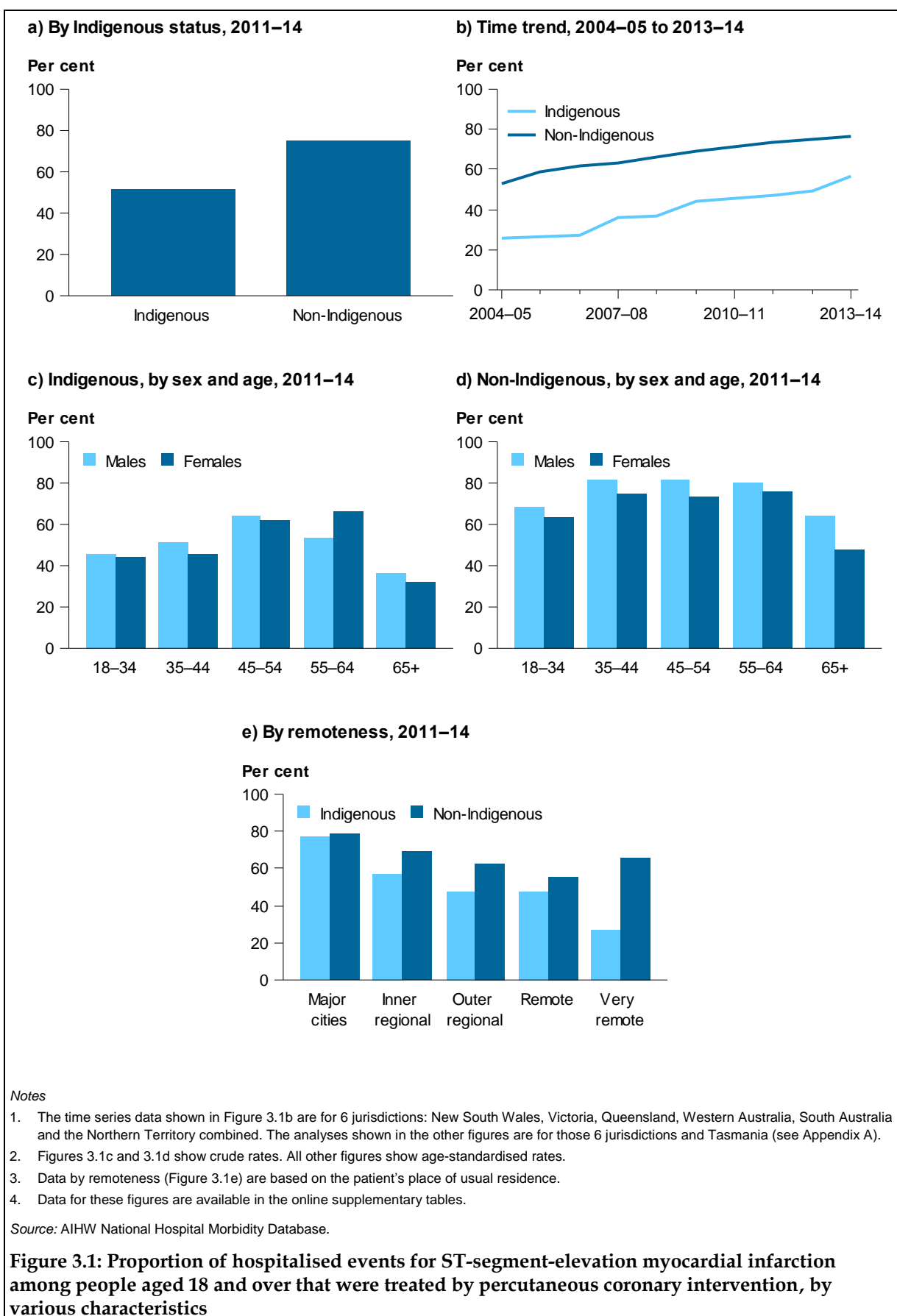
**Time trend:** Between 2004–05 and 2013–14, the age-standardised rate of hospitalised STEMI events that were treated by PCI more than doubled for Indigenous adults, from 26% to 57%, while for non-Indigenous adults it increased from 53% to 77% (Figure 3.1b).

**Sex and age:** In 2011–14, across all age groups, hospitalised STEMI events for Indigenous men and women were less likely than such events for non-Indigenous men and women to be treated by PCI (figures 3.1c and 3.1d). Among both Indigenous and non-Indigenous adults, treatment of STEMI by PCI was lowest for those aged 65 and over.

**Remoteness:** The age-standardised rate of hospitalised STEMI events for Indigenous adults that were treated by PCI in 2011–14 decreased with remoteness (from 77% in *Major cities* to 27% in *Very remote* areas), and the gap between Indigenous and non-Indigenous adults was highest in *Very remote* areas (Figure 3.1e). A major factor in the decision to choose PCI (over fibrinolysis) as a treatment is time, 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 (Ilton et al. 2014).

#### Things to consider (see also Appendix A)

- To reduce double-counting of hospitalisations associated with a single STEMI event, those ending in transfer to another acute hospital were excluded from the analysis. Caveats associated with this method include that only procedures performed in the last hospitalisation will be captured where there is more than 1 hospitalisation related to the single event (see Appendix A for further details).
- Data for the Australian Capital Territory were not available for this measure. Data for the other jurisdictions are presented in Appendix A (Table A3). Differences between states and territories should be interpreted with caution as the rates might be affected by jurisdictional differences in both inter-hospital transfer rates and clinical pathways of care for ACS.



### Measure 3.3: Hospitalised events for acute coronary syndrome that included diagnostic angiography or definitive revascularisation

**Measure:** Proportion of hospitalised events for acute coronary syndrome (ACS) among people aged 18 and over that included diagnostic angiography and/or a definitive revascularisation procedure – that is PCI or coronary artery bypass graft (CABG – open heart surgery with grafting of vessels) – by Indigenous status.

#### Why is it important?

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 can also be affected by other factors (for example, comorbid conditions) (Cunningham 2002; Randall et al. 2013).

#### Results

**Overall:** In 2011–14, about 5,440 hospitalised events for ACS among people aged 18 and over were for Indigenous Australians (4.0% of such events). Of these events, 45% included diagnostic angiography, 21% PCI and 3% CABG. Overall, 46% of hospitalised ACS events for Indigenous adults included at least 1 of these procedures.

Based on age-standardised rates, 48% of hospitalised ACS events for Indigenous adults included diagnostic angiography or a revascularisation procedure, compared with 61% for non-Indigenous adults (rate ratio of 0.8) (Figure 3.3a).

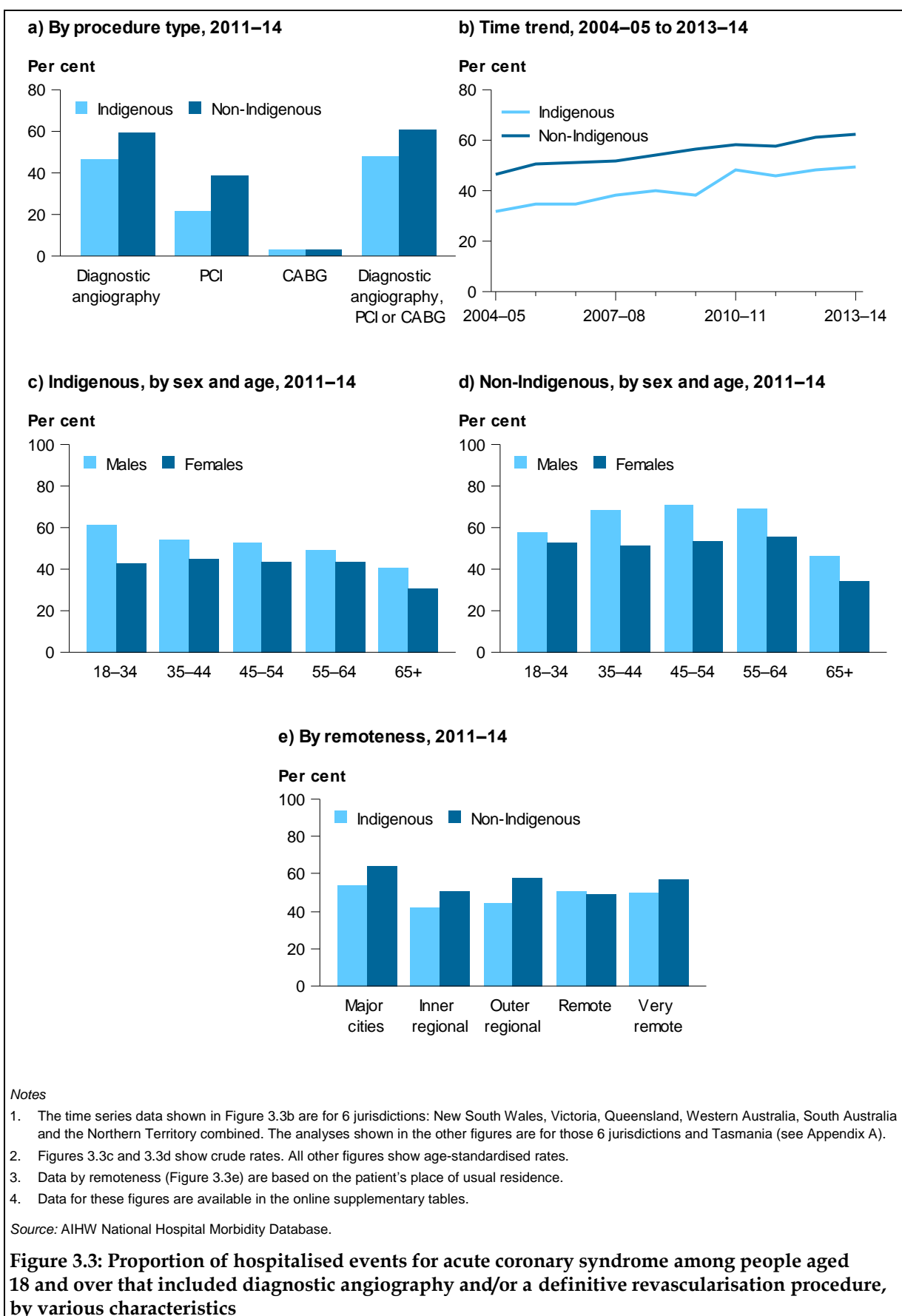
**Time trend:** Between 2004–05 and 2013–14, the age-standardised rate of hospitalised ACS events for Indigenous adults that included diagnostic angiography or a definitive revascularisation procedure increased from 32% to 50%, while the proportion for non-Indigenous adults increased from 47% to 63% (Figure 3.3b).

**Sex and age:** In 2011–14, the proportion of hospitalised ACS events that included diagnostic angiography or a definitive revascularisation procedure was lower for Indigenous men and women than non-Indigenous men and women in all age groups, except for males aged 18–34 (figures 3.3c and 3.3d). The average (mean) age at which Indigenous adults received such a procedure was 52, compared with 65 for non-Indigenous adults.

**Remoteness:** Across remoteness areas, the age-standardised rate of hospitalised ACS events for Indigenous adults who received diagnostic angiography or a definitive revascularisation procedure in 2011–14 was lower than for non-Indigenous adults, except in *Remote* areas where the proportions were similar (Figure 3.3e).

#### Things to consider (see also Appendix A)

- To reduce double-counting of hospitalisations associated with a single ACS event, those ending in transfer to another acute hospital were excluded from the analysis. Caveats associated with this method include that only procedures performed in the last hospitalisation will be captured where there is more than 1 hospitalisation related to the single event (see Appendix A for further details).
- Data for the Australian Capital Territory were not available for this measure. Data for the other jurisdictions are presented in Appendix A (Table A3). Differences between states and territories should be interpreted with caution as the rates might be affected by jurisdictional differences in both inter-hospital transfer rates and clinical pathways of care for ACS.



## Measure 3.5: Hospitalised events for acute myocardial infarction that ended with death of the patient

**Measure:** Proportion of hospitalised events for acute myocardial infarction (AMI) among patients aged 35 and over that ended in death, by Indigenous status.

### Why is it important?

AMI refers to a heart attack that has caused some death of 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:** For hospitalised events for AMI among Indigenous Australians aged 35 and over, 4.3% ended with the death of the patient (210 deaths) in the 5-year period 2009–14.

Based on age-standardised rates, the in-hospital death rate for hospitalised events for AMI was relatively similar for Indigenous and non-Indigenous Australians aged 35 and over (4.4% and 4.0%, respectively; rate ratio of 1.1) (Figure 3.5a).

**Time trend:** Between 2005–08 and 2011–14, the age-standardised rate of hospitalised events for AMI among patients aged 35 and over that ended with the patient's death fell among both Indigenous Australians (from 5.5% to 4.0%) and non-Indigenous Australians (from 5.5% to 3.6%) (Figure 3.5b).

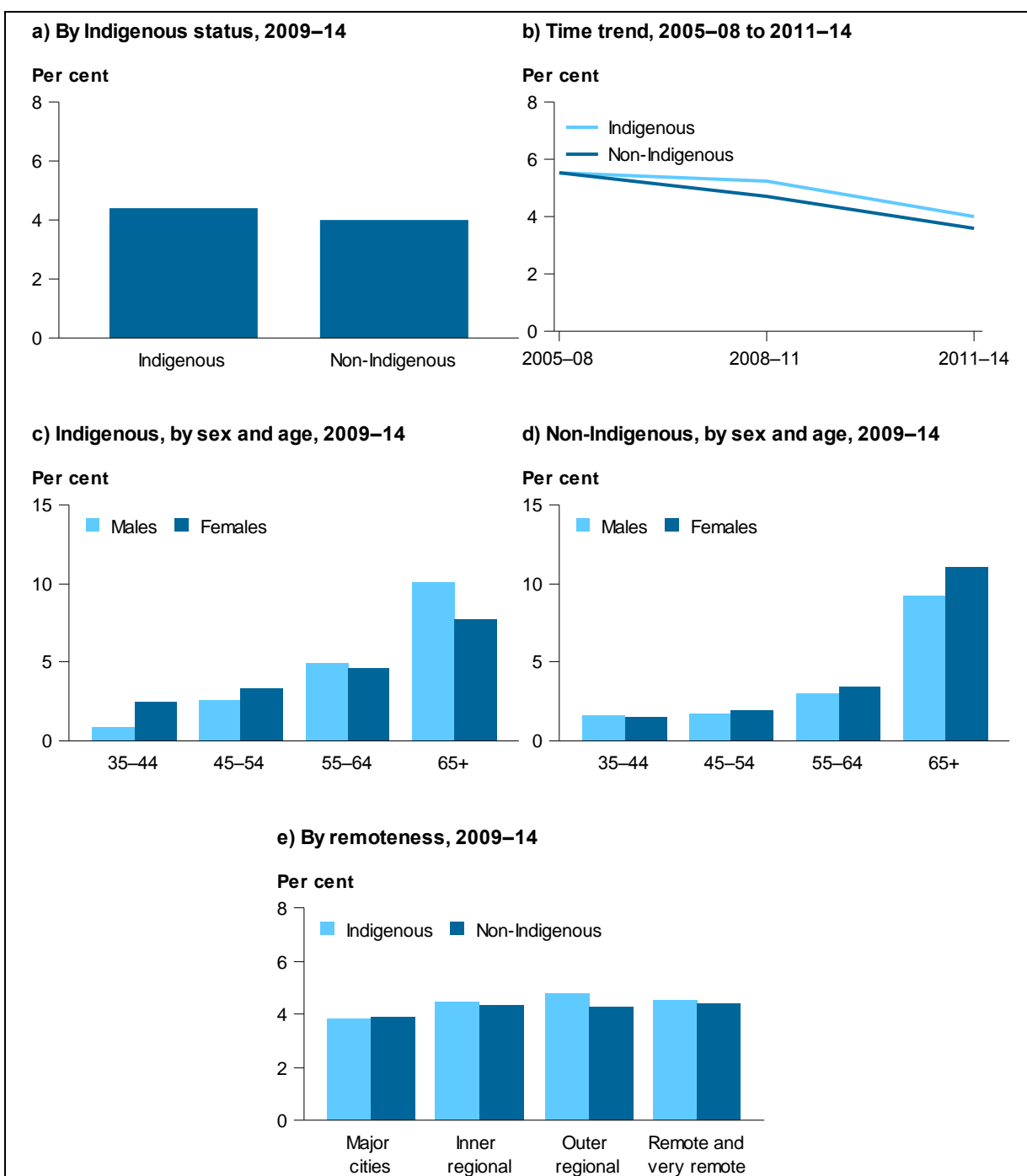
**Sex and age:** In 2009–14, the proportion of hospitalised events for AMI among patients aged 35 and over ending in death was higher for Indigenous males and females than for their non-Indigenous counterparts in all age groups, except for males aged 35–44 and females aged 65 and over (figures 3.5c and 3.5d).

**Remoteness:** The age-standardised rate of hospitalised events for AMI among Indigenous Australians that ended with the death of the patient ranged from 3.8% in *Major cities* to 4.8% in *Outer regional* areas. Across remoteness areas, the age-standardised rates were similar for Indigenous and non-Indigenous Australians, with the largest difference in *Outer regional* areas (rate difference of 0.5 percentage points) (Figure 3.5e).

### Things to consider (see also Appendix A)

- To reduce double-counting of hospitalisations associated with a single AMI event, those ending in transfer to another acute hospital were excluded from the analysis. Caveats associated with this method include that only procedures performed in the last hospitalisation will be captured where there is more than 1 hospitalisation related to the single event (see Appendix A for further details).
- No comparison by state and territory is provided. Data on in-hospital deaths by state and territory are not comparable due to 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. Including emergency department deaths would have resulted in an overestimate of the national rates and might have had an impact on the comparison of Indigenous and non-Indigenous rates.
- In-hospital death rates might also be affected by different approaches to pre- and post-hospital care (for example, more deaths occurring before reaching the hospital, or more deaths following discharge from hospital); thus the findings should be interpreted in the context of overall cardiac mortality.





#### Notes

1. Data for these figures are for New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined.
2. Figures 3.5c and 3.5d show crude rates. All other figures show age-standardised rates.
3. Data by remoteness (Figure 3.5e) are based on the patient's place of usual residence.
4. Data for these figures are available in the online supplementary tables.

Source: AIHW National Hospital Morbidity Database.

**Figure 3.5: Proportion of hospitalised events for acute myocardial infarction among people aged 35 and over that ended with the death of the patient, by 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*. It 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 optimise health status (Better Cardiac Care Forum 2014).

Data are only available to report partially on 1 of the 4 measures under this priority area (Table 2.4).

**Table 2.4: Priority area 4 – agreed measure, reported measure and data source**

Agreed measure	Reported measure	Data source
4.2 Number and proportion of patients with documented evidence of receiving a Medicare chronic disease management item (such as a Team Care Arrangement, General Practitioner Management Plan or allied health service item) within 3 months of discharge from hospital, by Aboriginal and Torres Strait Islander status and region	<p>Data are available on whether people with a cardiac condition had the following chronic disease management items claimed through the MBS:</p> <ul style="list-style-type: none"> <li>• Team Care Arrangement (Measure 4.2.1)</li> <li>• General Practitioner Management Plan (4.2.2)</li> <li>• allied health service (4.2.3).</li> </ul> <p>These data are not available specifically for patients discharged from hospital within a specified period.</p>	MBS



Data are available to report on part of the measure.

## Measure 4.2: Chronic disease management

**Measure:** Number and proportion of patients with a cardiac condition who received the following MBS chronic disease management item(s), by Indigenous status:

- Team Care Arrangement (TCA)
- General Practitioner Management Plan (GPMP)
- allied health service item(s).

Patients with a cardiac condition were identified as those who had received 1 or more of the cardiac-related MBS items listed in Table B5 in Appendix B. Item numbers for the MBS chronic disease management items are listed in Table B6.

### Why is it important?

Secondary prevention, which encompasses a broad range of multidisciplinary interventions and management (such as TCAs and GPMPs), helps reduce the recurrence of cardiac events or complications of disease in patients with an established diagnosis of cardiac disease. These interventions have been shown to reduce hospital readmission and mortality rates (NHFA 2010).

## Results

### 4.2.1 Team Care Arrangements

**Overall:** In 2014–15:

- among Indigenous Australians with a cardiac condition (about 18,600 people), 30% claimed an MBS TCA item (about 5,600 people)
- the age-standardised rate for Indigenous Australians with a cardiac condition who claimed an MBS TCA item was almost twice that for non-Indigenous Australians (24% and 13%, respectively) (Figure 4.2.1a).

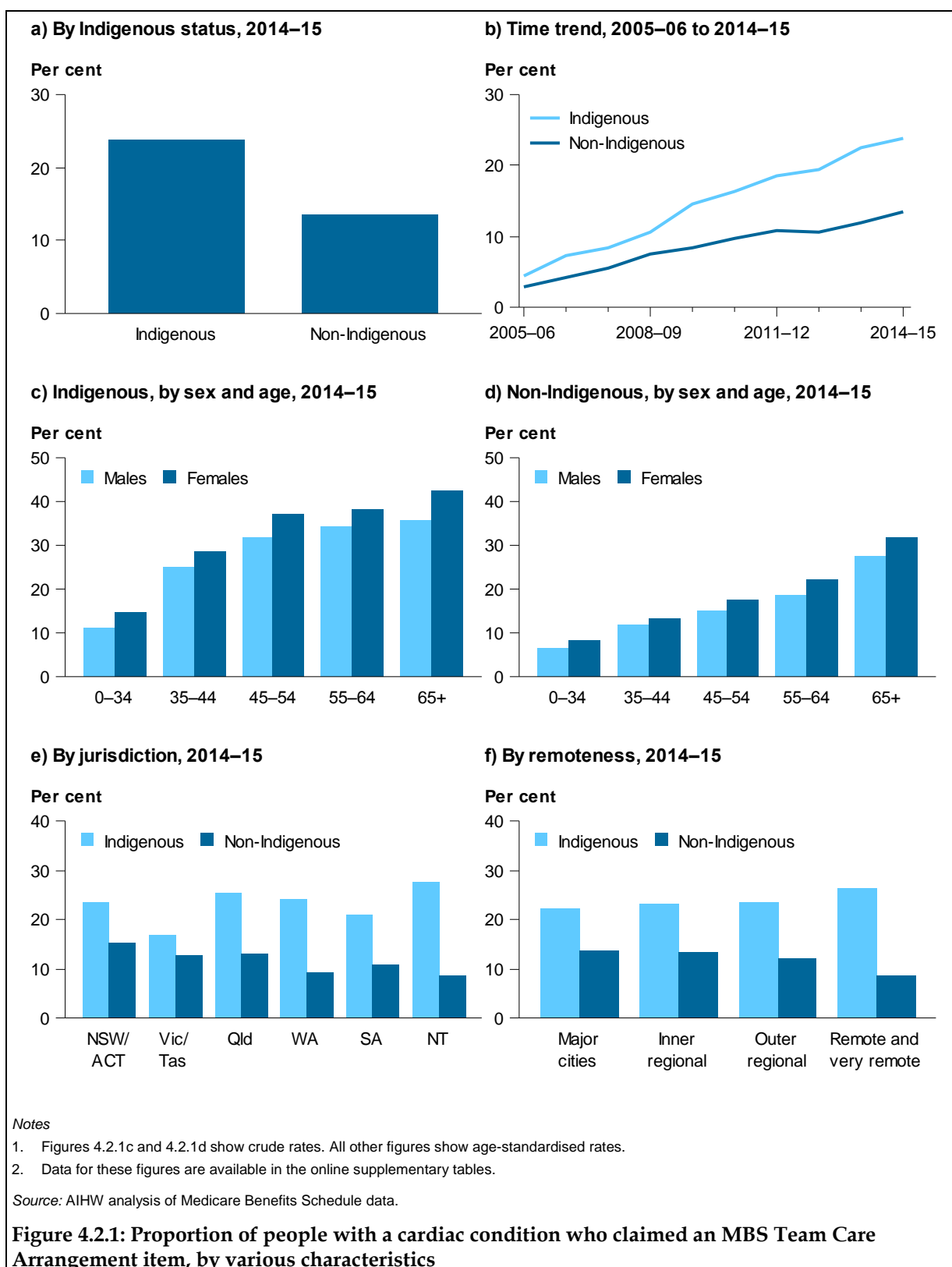
**Time trend:** Between 2005–06 and 2014–15, the age-standardised rate of Indigenous Australians with a cardiac condition who claimed a TCA item increased from 5% to 24%; this compares with an increase from 3% to 13% for non-Indigenous Australians (Figure 4.2.1b).

**Sex and age:** In 2014–15, the proportion of Indigenous Australians with a cardiac condition who claimed a TCA item:

- increased with age, from 13% for those aged under 35, to 39% for those aged 65 and over; among non-Indigenous Australians, the corresponding rates increased from 7% to 29%, respectively
- was higher than those for non-Indigenous Australians across all age groups, for both males and females (figures 4.2.1c and 4.2.1d).

**Jurisdiction and remoteness:** In 2014–15, the age-standardised rate of Indigenous Australians with a cardiac condition who claimed a TCA item:

- was lowest in Victoria and Tasmania combined (17%) and highest in the Northern Territory (28%); for non-Indigenous Australians, it was lowest in the Northern Territory (9%) and Western Australia (9%) and highest in New South Wales and the Australian Capital Territory combined (15%) (Figure 4.2.1e)
- increased slightly by remoteness (from 22% in *Major cities* to 26% in *Remote and very remote* areas); for non-Indigenous Australians it was lowest in *Remote and very remote* areas (8%) (Figure 4.2.1f).



## 4.2.2 General Practitioner Management Plans

**Overall:** In 2014–15, one-third (34% or about 6,300 people) of Indigenous Australians with a cardiac condition claimed an MBS GPMP item.

The age-standardised rate was higher for Indigenous Australians (27%) than for non-Indigenous Australians (16%) (rate ratio of 1.7) (Figure 4.2.2a).

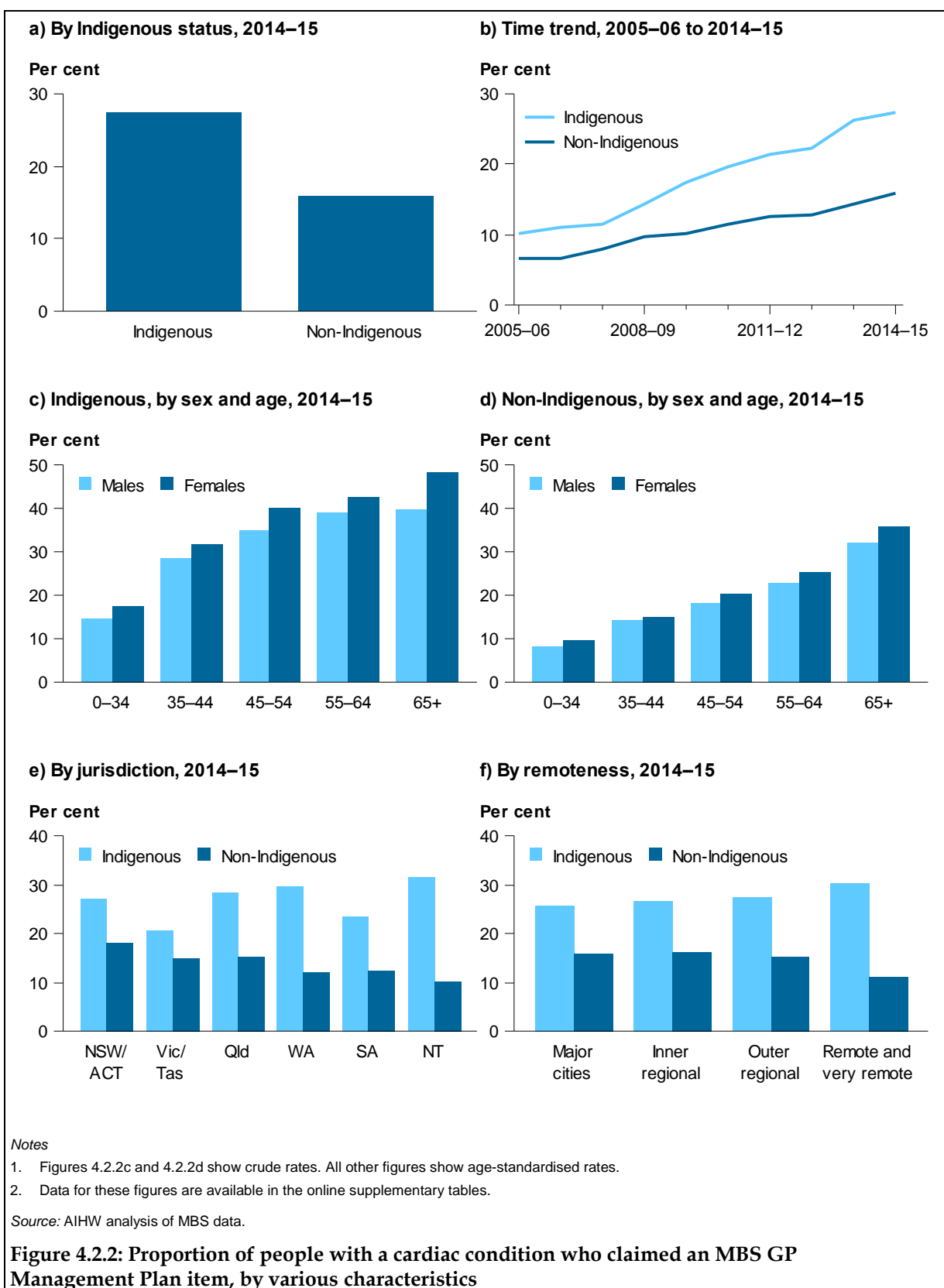
**Time trend:** Between 2005–06 and 2014–15, the age-standardised rate of Indigenous Australians with a cardiac condition who claimed a GPMP item increased from 10% to 27%. Over the same period, the corresponding proportions for non-Indigenous Australians increased from 7% to 16% (Figure 4.2.2b).

**Sex and age:** In 2014–15, the proportion of Indigenous Australians with a cardiac condition who claimed a GPMP item:

- increased with age, rising from 16% for those aged under 35, to 44% for those aged 65 and over; the corresponding figures for non-Indigenous Australians were 9% and 34%, respectively
- was higher than those for non-Indigenous Australians across all age groups, for both males and females (figures 4.2.2c and 4.2.2d).

**Jurisdiction and remoteness:** In 2014–15, the age-standardised rate of Indigenous Australians with a cardiac condition who claimed a GPMP item:

- ranged from 21% in Victoria and Tasmania combined to 31% in the Northern Territory; for non-Indigenous Australians, it was lowest in the Northern Territory (10%) and highest in New South Wales and the Australian Capital Territory combined (18%) (Figure 4.2.2e).
- increased slightly by remoteness, from 26% in *Major cities* to 30% in *Remote and very remote* areas; for non-Indigenous Australians, it was lowest in *Remote and very remote* areas (11%) (Figure 4.2.2f).



### 4.2.3 Allied health service items

**Overall:** In 2014–15, one-quarter (26% or about 4,900 people) of Indigenous Australians with a cardiac condition claimed at least 1 MBS allied health service item (such as physiotherapy, podiatry and allied mental health services).

The age-standardised rate was 22% for Indigenous Australians and 19% for non-Indigenous Australians (rate ratio of 1.1) (Figure 4.2.3a).

**Time trend:** Between 2005–06 and 2014–15, the age-standardised rate of Indigenous Australians with a cardiac condition who claimed an allied health service item increased from 2% to 22%, while the proportion for non-Indigenous Australians increased from 2% to 19% (Figure 4.2.3b). Several of the MBS allied health service items included in this analysis were introduced after 2005–06, contributing to the low proportions observed in the earlier years of the time trend (see Table B6 in Appendix B).

**Sex and age:** In 2014–15, the proportion of Indigenous Australians with a cardiac condition who claimed an allied health service item:

- increased with age, rising from 14% for those aged under 35, to 38% for those aged 65 and over; for non-Indigenous Australians, the rates ranged from 15% for those aged under 35 to 34% for those aged 65 and over
- was higher than those for non-Indigenous Australians in all age groups for males (with a particularly large difference for those aged 45–54), and in most age groups for females, except those aged under 35 (figures 4.2.3c and 4.2.3d).

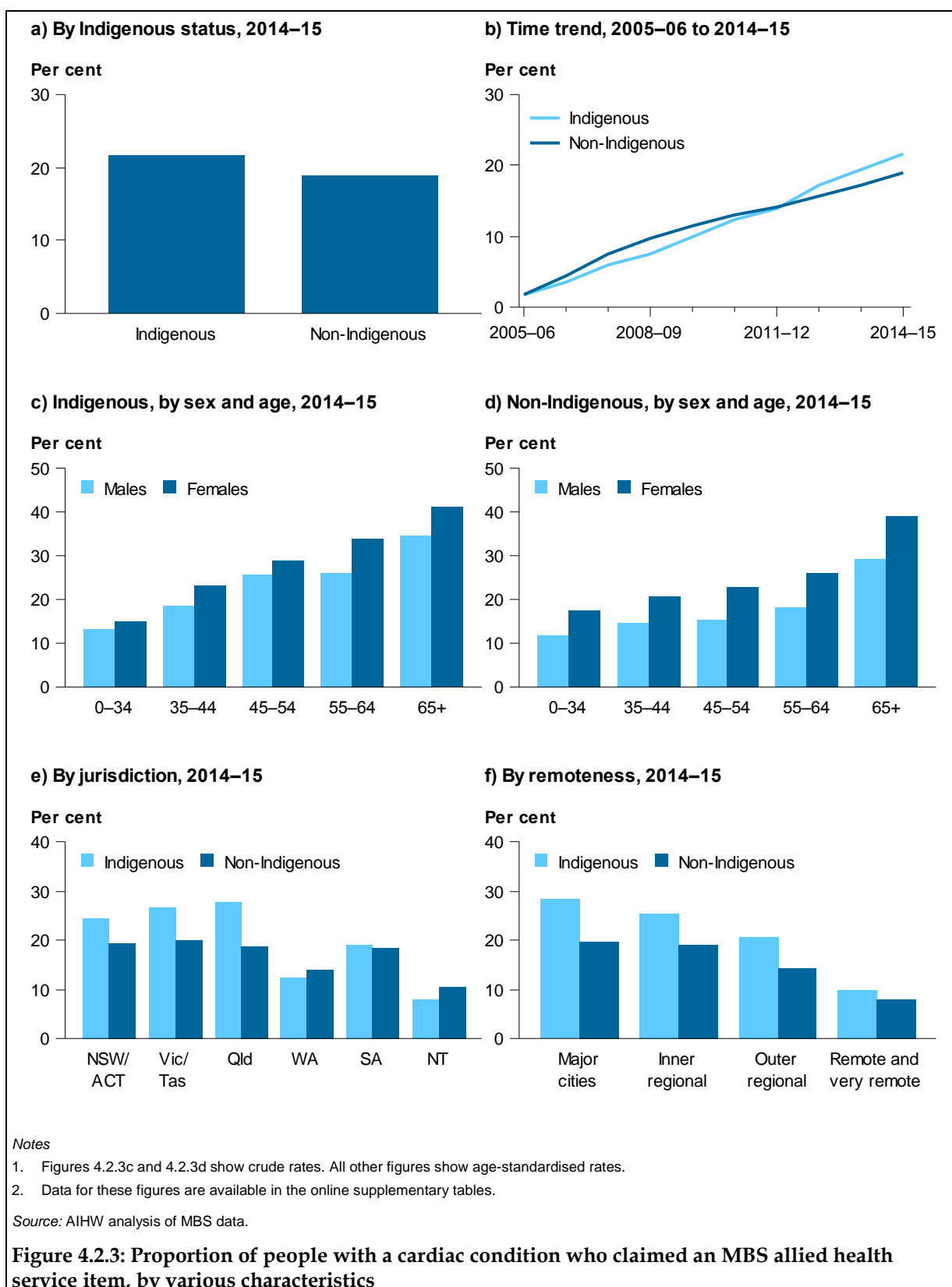
**Jurisdiction and remoteness:** In 2014–15, the age-standardised rate of Indigenous Australians with a cardiac condition who claimed an allied health service item:

- was lowest in the Northern Territory (8%) and highest in Queensland (28%); for non-Indigenous Australians, it was lowest in the Northern Territory (10%) and highest in Victoria and Tasmania combined (20%) (Figure 4.2.3e)
- decreased by remoteness, from 28% in *Major cities* to 10% in *Remote and very remote areas*; for non-Indigenous Australians, the rates also decreased by remoteness (from 20% to 8%, respectively) (Figure 4.2.3f).

#### Things to consider (see also Appendix A)

- MBS data reflect billing practices, and not necessarily all services received. For example, MBS data do not generally capture equivalent services provided by jurisdiction-funded primary health care or by public hospitals.
- MBS data shown for each of the 3 components of this measure (4.2.1, 4.2.2 and 4.2.3) were adjusted for Indigenous under-identification.
- People with a cardiac condition have been identified using MBS data (see Table B5 in Appendix B). These data can only identify people with cardiac disease who used MBS services related to their condition, so do not capture all of those with cardiac disease. As well, some of the MBS items used to identify people with a cardiac condition are diagnostic tests. Since some of the test results would have been negative, not all people who claimed these items would have cardiac conditions; no data are available on the number of tests that were negative.





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

Priority area 5 is *strengthen the diagnosis, notification and follow-up of rheumatic heart disease* (Better Cardiac Care Forum 2014). It is based on the premise that:

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

There is no diagnostic pathology test for acute rheumatic fever (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. Because of this, ARF can often go undetected in the acute stage, leading to ongoing complications and lifelong morbidity.

There are 4 measures under this priority area; data are available to partially report on 3 of these measures, with those data drawn from rheumatic heart disease registers in 4 jurisdictions (Table 2.5).


In the 2015 report on the Better Cardiac Care measures (AIHW 2015b), data were drawn from 3 jurisdictions where ARF is a notifiable disease and register and control programs have been established – Queensland, Western Australia and the Northern Territory (AIHW 2015b). In June 2015, Western Australia became the first jurisdiction in Australia to also make RHD notifiable (WA Health 2015).

For this report, data from the more recently established South Australia RHD register are also included. Both ARF and RHD became notifiable in South Australia in February 2016 (Australian Indigenous HealthInfoNet 2016).

In October 2015, New South Wales made both ARF and RHD notifiable for people aged under 35, and established a register-based control program (Australian Indigenous HealthInfoNet 2015). Thus data from New South Wales might also be available in the future.

**Table 2.5: Priority area 5 – agreed measures, reported measures and data sources**

Agreed measure	Reported measure	Data source
5.1 Annual incidence of all ARF episodes, by Aboriginal and Torres Strait Islander status	Data on new and recurrent episodes of ARF are available from Queensland, Western Australia, South Australia and the Northern Territory.	RHDRs
5.2 Proportion of all ARF episodes that are recurrent, by Aboriginal and Torres Strait Islander status	Data on the proportion of ARF episodes that are recurrent are available from Queensland, Western Australia, South Australia and the Northern Territory.	RHDRs
5.3 Median proportion of scheduled benzathine penicillin G doses given to patients with confirmed ARF or RHD in the preceding 12 months, by Aboriginal and Torres Strait Islander status	Data are reported on the percentage of required doses of benzathine penicillin G from Queensland, South Australia and the Northern Territory. Western Australia could not provide these data by Indigenous status.	RHDRs

 Data are available to report on part of the measure.

## Measure 5.1: Incidence of acute rheumatic fever

**Measure:** Incidence (new and recurrent episodes) of ARF, by Indigenous status.

### Why is it important?

ARF occurs among Indigenous Australians but is very rarely seen among non-Indigenous Australians. It is the result of an autoimmune response to a group A streptococcus bacterial infection (Parnaby & Carapetis 2010). The acute episode of ARF can be very painful and can lead to inflammation affecting the heart, joints, brain and skin. ARF can also cause permanent damage to the heart muscle and heart valves – known as RHD. Thus, primary prevention of RHD involves reducing rates of group A streptococcus infection and treating such infections efficiently to prevent ARF from developing (RHD Australia et al. 2012).

### Results

**Overall:** Over the 4-year period 2011–2014, 889 new and recurrent episodes of ARF were reported for Indigenous Australians in Queensland, Western Australia, South Australia and the Northern Territory combined, while 57 episodes were reported for other Australians. The rate for Indigenous Australians was 59 per 100,000 population, compared with 0.2 per 100,000 for other Australians (Figure 5.1a).

**Time trend:** Between 2010 and 2014, the incidence of ARF was lowest in 2010 and highest in 2012 for both the Northern Territory and Western Australia, while in Queensland, the rate was similar across the years, except in 2013 when the rate was slightly lower (Figure 5.1b). Across these 3 jurisdictions combined, the incidence of ARF ranged from 39 per 100,000 population in 2010 to 74 per 100,000 in 2012.

**Sex and age:** In 2011–2014, the rate of new and recurrent episodes of ARF among Indigenous Australians in Queensland, Western Australia and the Northern Territory combined was:

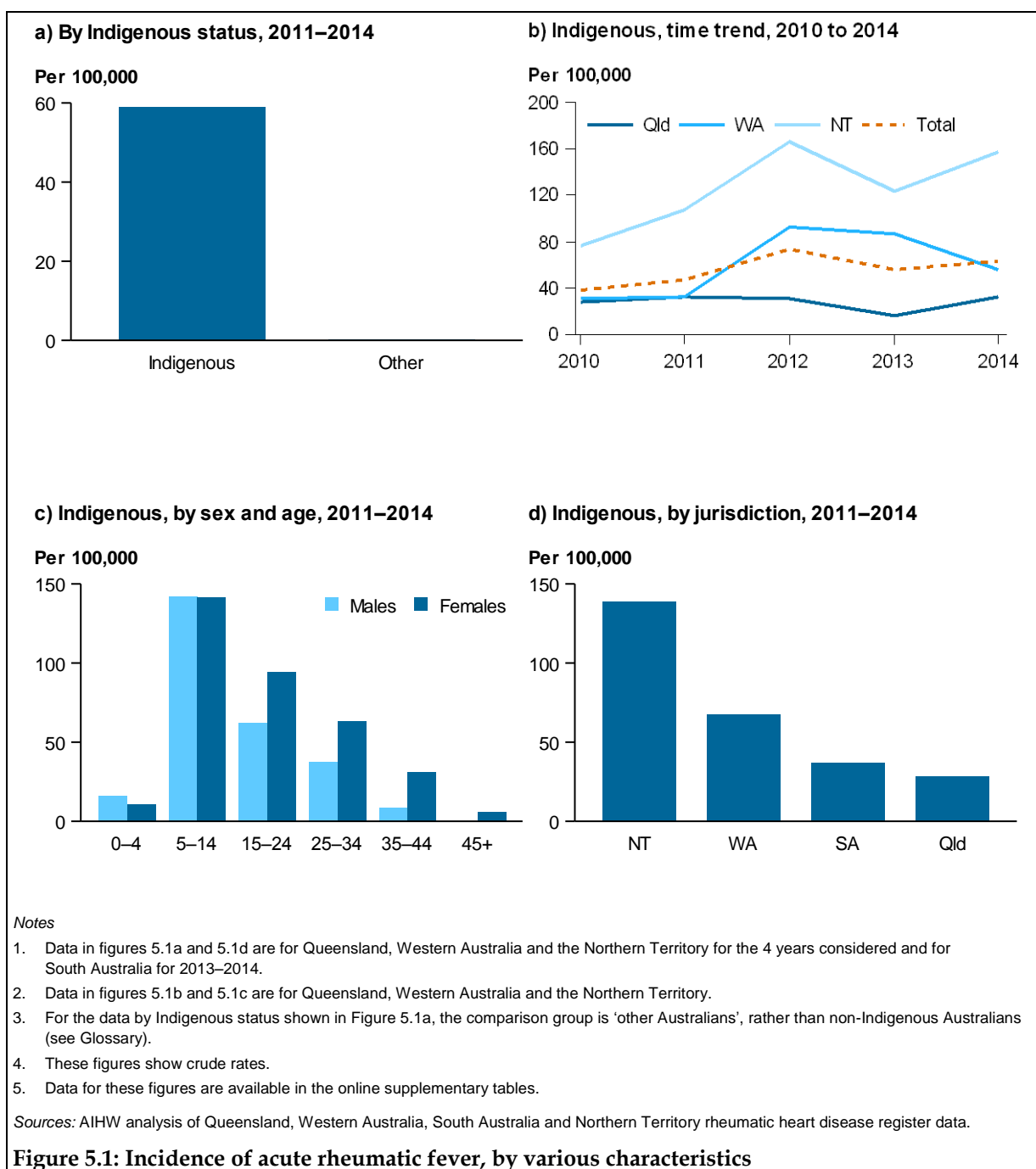
- highest for those aged 5–14 and then decreased with age
- higher for females than males for all age groups from 15 years and over; for the younger age groups, the rate was similar or slightly higher for males (Figure 5.1c).

The generally higher incidence of ARF observed among females compared with males might be related to a higher genetic susceptibility among females, increased exposure to group A streptococcus (due to generally greater involvement of women in child rearing), and/or reduced access to preventive medical care for females (Carapetis et al. 2005).

**Jurisdiction:** In 2011–2014, the rate of ARF among Indigenous Australians was highest in the Northern Territory (139 per 100,000 population), followed by Western Australia (67 per 100,000) and Queensland (28 per 100,000). For 2013–2014, the rate for South Australia was 37 per 100,000 (Figure 5.1d).

### Things to consider (see also Appendix A)

- Any improvements in ARF case ascertainment over time may influence observed trends.
- Data on the incidence of ARF are available from Queensland, Western Australia, South Australia and the Northern Territory. Complete data are not available from South Australia for all analyses – see notes to Figure 5.1.
- All rates are crude rates, since the necessary data to calculate age-standardised rates are not available due to the small numbers of episodes, particularly for the non-Indigenous population.



## Measure 5.2: Recurrent acute rheumatic fever

**Measure:** Proportion of all acute rheumatic fever episodes that were recurrent, by Indigenous status.

### Why is it important?

Treatment of ARF is aimed at preventing both disease recurrence and the development of RHD, and involves prolonged use of antibiotics (RHD Australia et al. 2012). Rates of recurrent ARF – that is, more than 1 incident of ARF in an individual – are an indicator of the success of this secondary prevention treatment.

### Results

**Overall:** For the period 2011–2014, data on ARF recurrence are available for Queensland, Western Australia and the Northern Territory for all 4 years, while data for South Australia are available for 2013–2014.

Based on available data, 25% of ARF episodes for Indigenous Australians were recurrent in 2011–2014, compared with 4% for other Australians (Figure 5.2a).

**Time trend:** There was no clear trend in the proportion of ARF episodes among Indigenous Australians that were recurrent over the period 2010 to 2014. Among Indigenous Australians:

- in the Northern Territory, the proportion of ARF episodes that were recurrent was highest in 2011 (when it was 41%), while in other years, it ranged between 31% and 35%
- in Western Australia, the proportion ranged between 14% (in 2012) and 33% (in 2014)
- in Queensland, the proportion was highest in 2013 (18%), and ranged between 10% and 13% in the other years considered (Figure 5.2b).

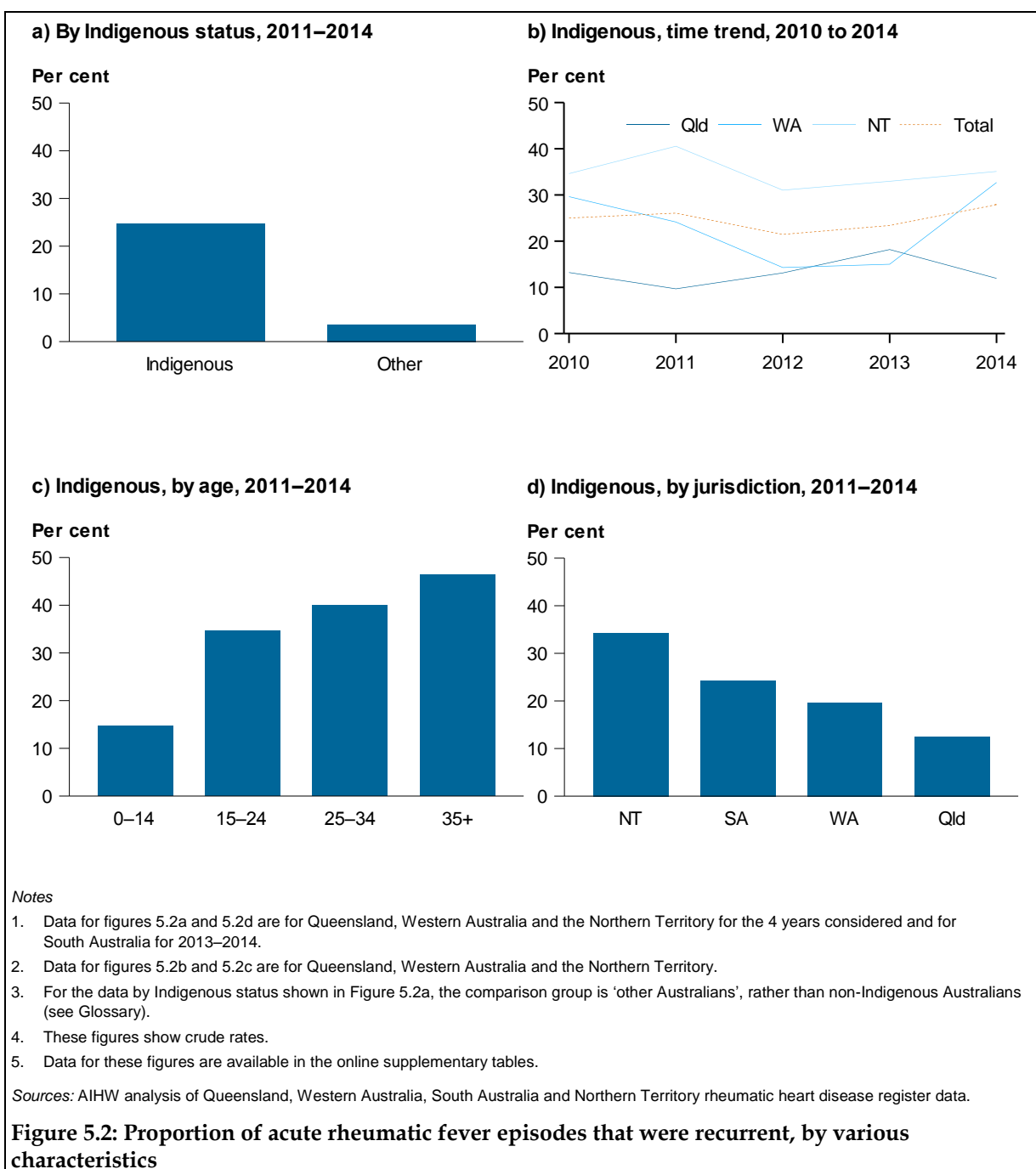
In Queensland, Western Australia and the Northern Territory combined, the proportion of ARF episodes among Indigenous Australians that were recurrent was lowest in 2012 (21%) and highest in 2014 (28%).

**Age:** In 2011–2014, about 1 in 7 (15%) ARF episodes among Indigenous children aged under 15 in Queensland, Western Australia and the Northern Territory combined were recurrent. This increased to 35% among those aged 15–24, 40% among those aged 25–34, and 47% among those aged 35 and over (Figure 5.2c).

**Jurisdiction:** In 2011–2014, the proportion of ARF episodes that were recurrent among Indigenous Australians was 34% in the Northern Territory, 20% in Western Australia and 13% in Queensland. In 2013–2014, the proportion of ARF episodes in South Australia that were recurrent was 24% (Figure 5.2d).

### Things to consider (see also Appendix A)

- Any improvements in ARF case ascertainment over time may influence observed trends.
- Data on the proportion of ARF episodes that were recurrent are available from Queensland, Western Australia, South Australia and the Northern Territory. Complete data were not available from South Australia for all analyses – see notes to Figure 5.2.
- All rates are crude rates, since the necessary data to calculate age-standardised rates are not available due to the small numbers of episodes, particularly for the non-Indigenous population.



## Measure 5.3: Benzathine penicillin G doses

**Measure:** Percentage of required doses of benzathine penicillin G (BPG) received in the previous 12 months among people on an ARF/RHD program, by Indigenous status.

### Why is it important?

For people with a history of ARF or RHD, the 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 patients should receive injections of BPG every 4 weeks (or every 3 weeks if they are considered high risk), and should continue treatment 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, while those with severe RHD should continue treatment up to age 40 (and longer if the patient wishes).

### Results

**Overall:** In 2014, 2,241 Indigenous Australians and 66 other Australians were on an ARF/RHD program in Queensland, South Australia and the Northern Territory combined. Among Indigenous Australians on an ARF/RHD program in those 3 jurisdictions:

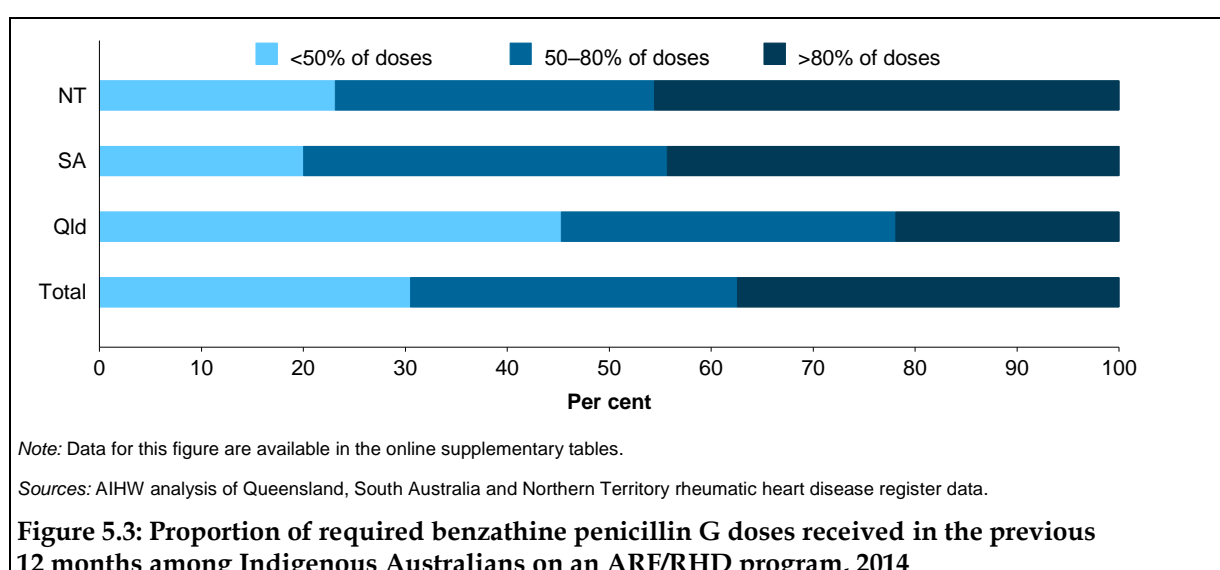
- 30% received less than 50% of required doses of BPG in the previous 12 months
- 32% received between 50% and 80% of required doses
- 37% received more than 80% of required doses (Figure 5.3).

Adherence to the recommended treatment protocol was better among Indigenous Australians than other Australians. For example, in 2014 in the 3 jurisdictions for which data are available, 37% of Indigenous Australians on an ARF/RHD program received more than 80% of required doses, compared with 29% of other Australians.

**Jurisdiction:** In 2014, the proportion of Indigenous Australians on the ARF/RHD program who received more than 80% of required doses was 22% in Queensland, 44% in South Australia and 46% in the Northern Territory (Figure 5.3).

### Things to consider (see also Appendix A)

- Data on receipt of recommended benzathine penicillin G doses among Indigenous Australians are available from Queensland, South Australia and the Northern Territory.





## Summary measures: Hospitalisation and mortality


As well as the measures relating to the priority action areas, 2 summary measures are designed to monitor hospitalisations and mortality from cardiac conditions among Indigenous Australians.

These measures, which provide a population-wide perspective on the impact of cardiac conditions over time, are broad indicators of the effectiveness of early risk assessment and preventative care. They can be reported using existing data collections (NHMD and NMD) (Table 2.6).

Note that the NHMD data presented for measures 6.1 and 6.2.2 relate to *hospitalisations*; this differs from the priority area 3 measures where the NHMD data relate to *hospitalised events* (see Glossary for definitions of these terms).

**Table 2.6: Summary measures: agreed measures, reported measures and data sources**

Agreed measure	Reported measure	Data source
6.1 Age-standardised rates of hospitalisation for a cardiac condition, by Aboriginal and Torres Strait Islander status	Same as agreed measure.	NHMD
6.2 Age-standardised rates of cardiac mortality, by Aboriginal and Torres Strait Islander status	6.2.1 Same as agreed measure. 6.2.2 An indicator of in-hospital mortality for patients admitted for cardiac conditions is also reported.	NMD & NHMD

 Data are available to report on the full measure.

## Measure 6.1: Hospitalisations for cardiac conditions

**Measure:** Rates of hospitalisation for a cardiac condition, by Indigenous status.

### 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:** In the 3-year period 2011–14:

- there were about 27,000 Indigenous hospitalisations for cardiac conditions – a rate of 13 per 1,000 population
- the age-standardised hospitalisation rate due to cardiac conditions for Indigenous Australians was 1.9 times that for non-Indigenous Australians (25 and 13 per 1,000, respectively) (Figure 6.1a).

**Time trend:** Between 2004–05 and 2013–14, age-standardised hospitalisation rates for cardiac conditions remained relatively stable for both Indigenous and non-Indigenous Australians (with ranges of 23%–25% and 13%–14%, respectively) (Figure 6.1b).

**Sex and age:** In 2011–14, hospitalisation rates for cardiac conditions:

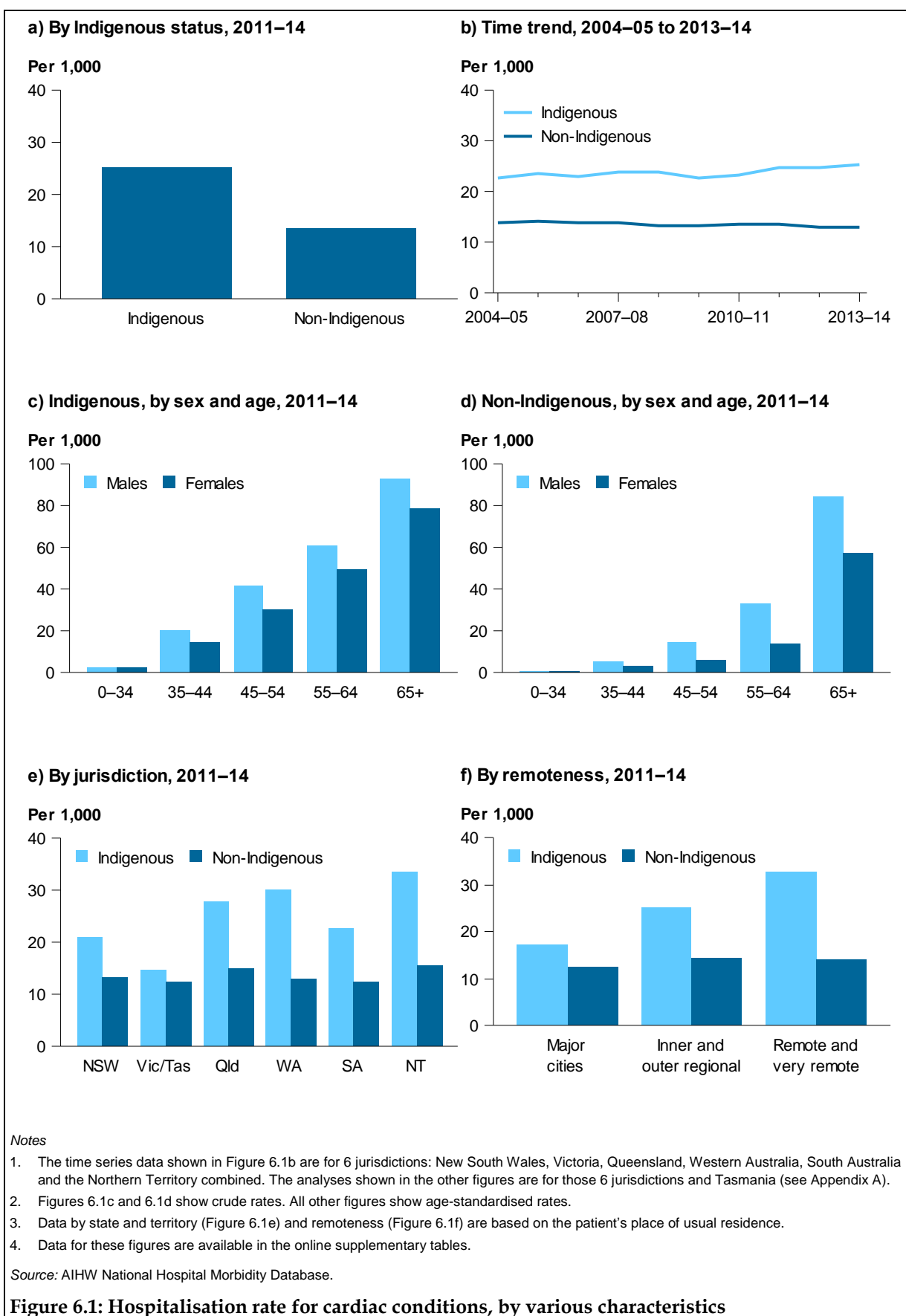
- were generally higher for males than females across the age groups; the gap between males and females was greater among non-Indigenous than Indigenous Australians
- increased with age for both Indigenous and non-Indigenous Australians, though Indigenous Australians had higher rates of hospitalisation than non-Indigenous Australians, especially at younger ages (figures 6.1c and 6.1d).

**Jurisdiction and remoteness:** Age-standardised hospitalisation rates for cardiac conditions:

- were highest for Indigenous Australians in the Northern Territory (33 per 1,000 population) and Western Australia (30 per 1,000) in 2011–14; in both these jurisdictions, Indigenous Australians were hospitalised for cardiac conditions at more than twice the rate of non-Indigenous Australians (Figure 6.1e)
- were highest for Indigenous Australians in *Remote and very remote* areas combined (33 per 1,000); in these areas, Indigenous Australians were hospitalised for cardiac conditions at 2.3 times the rate of non-Indigenous Australians (Figure 6.1f).

### Things to consider (see also Appendix A)

- The data presented for this measure are a count of hospitalisations for cardiac conditions. It is not a count of individuals because some of the hospitalisations would represent transfers for ongoing care (for example, after a STEMI event) or hospitalisations of 1 individual at different times of the year. It is also not a count of cardiac events such as STEMIs because the diagnosis codes used were for the full range of cardiac conditions, rather than just those for events such as STEMIs. This differs from the approach used for priority 3 measures in which data relate to hospitalised events, which were estimated by only using diagnosis codes for specific cardiac events and by excluding hospitalisations ending in transfer to another acute hospital.
- Hospitalisations for cardiac care might be affected by different approaches to pre- and post-hospital care, so findings should be interpreted in the context of overall cardiac care.
- Data for the Australian Capital Territory were not available for this measure.



## Measure 6.2: Mortality due to cardiac conditions

**Measure:** Rates of:

- cardiac mortality, by Indigenous status
- in-hospital mortality for patients admitted with cardiac conditions, by Indigenous status.

### 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 diagnosis of heart disease and heart failure, and the use of guideline-based treatment.

## Results

### 6.2.1 Deaths from cardiac conditions

**Overall:** In the 5-year period 2009–2013, in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined:

- 2,401 Indigenous Australians died from cardiac conditions – a rate of 81 per 100,000 population
- the age-standardised death rate due to cardiac conditions for Indigenous Australians was 1.6 times that for non-Indigenous Australians (208 and 128 per 100,000, respectively) (Figure 6.2.1a).

**Time trend:** Between 1998 and 2013, the age-standardised death rate due to cardiac conditions declined by 43% for Indigenous Australians (from 346 to 196 per 100,000 population), while the rate for non-Indigenous Australians fell by 40% (Figure 6.2.1b). Reflecting this similar pace of decline, the relative difference in rates between Indigenous and non-Indigenous Australians (as measured by the rate ratio) was similar in 1998 and 2013 (1.7 and 1.6, respectively), but the absolute gap (as measured by the rate difference) fell by 47% over this period.

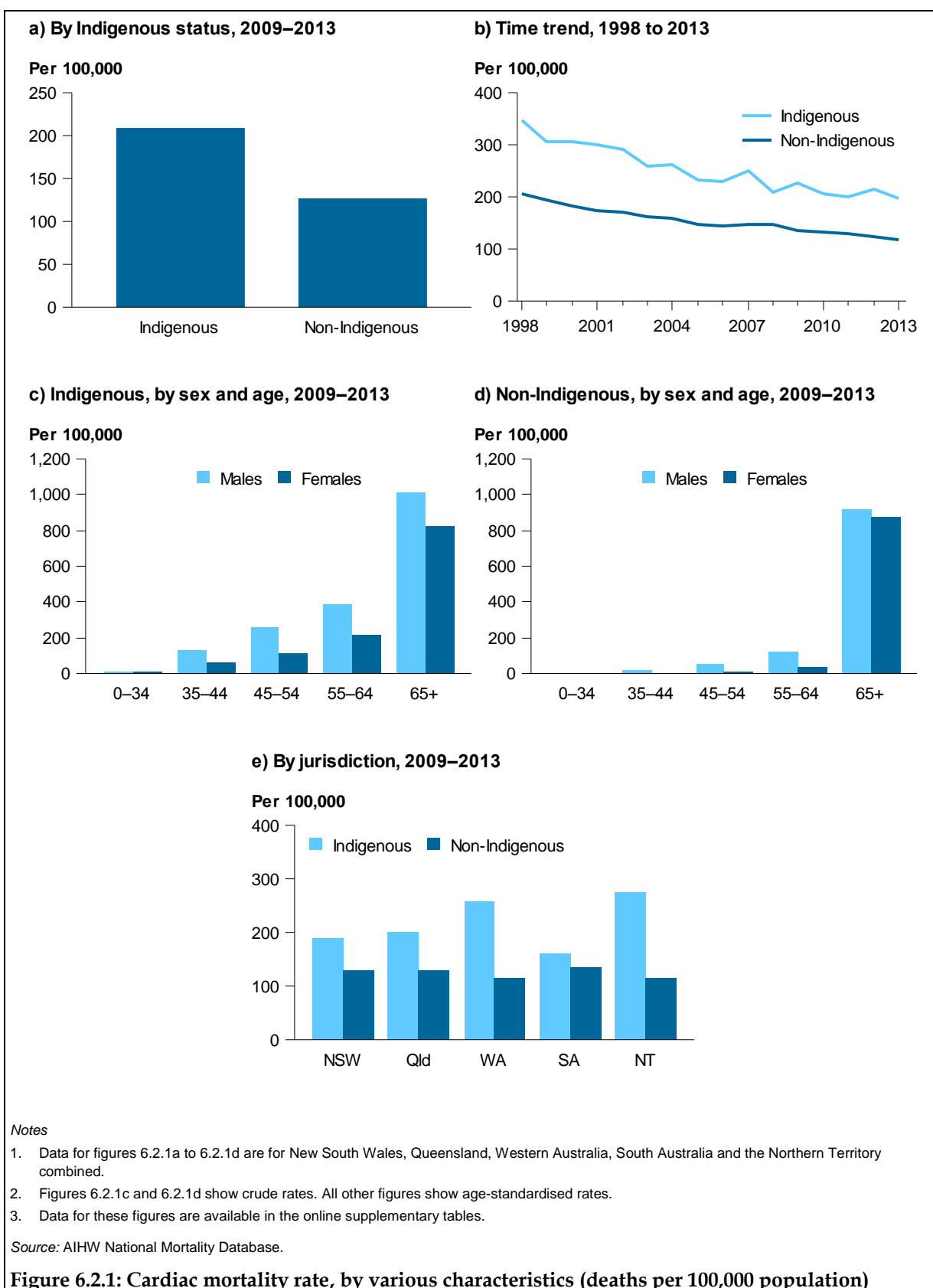
**Sex and age:** In 2009–2013:

- Indigenous males had a higher cardiac mortality rate than Indigenous females for all age groups (Figure 6.2.1c)
- while cardiac mortality rates were fairly similar for Indigenous and non-Indigenous Australians aged 65 and over, Indigenous Australians in the other age groups died of cardiac conditions at a higher rate than non-Indigenous Australians; the difference was most pronounced for those aged 35–44 (8 times as high for males and 14 times as high for females) (figures 6.2.1c and 6.2.1d).

**Jurisdiction:** The age-standardised mortality rate due to cardiac conditions for Indigenous Australians was highest in the Northern Territory (273 per 100,000 population), followed by Western Australia (257 per 100,000) in 2009–2013. The cardiac mortality rate for Indigenous Australians was twice that for non-Indigenous Australians in the Northern Territory and Western Australia (rate ratios of 2.4 and 2.2, respectively), and between 1.2 and 1.5 times the mortality rate in the other 3 states (Figure 6.2.1e).

### Things to consider (see also Appendix A)

- Mortality data are reported by Indigenous status for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory – these have been assessed by the ABS and the AIHW as having adequate Indigenous identification.



## 6.2.2 In-hospital mortality for patients admitted for cardiac conditions

**Overall:** In the 5-year period 2009–14:

- about 950 Indigenous Australians who were admitted to hospital for cardiac conditions died in the hospital – a rate of 29 per 100,000 population
- the age-standardised in-hospital death rate for Indigenous Australians admitted for cardiac conditions was almost twice that of non-Indigenous Australians (69 and 36 per 100,000 population, respectively) (Figure 6.2.2a).

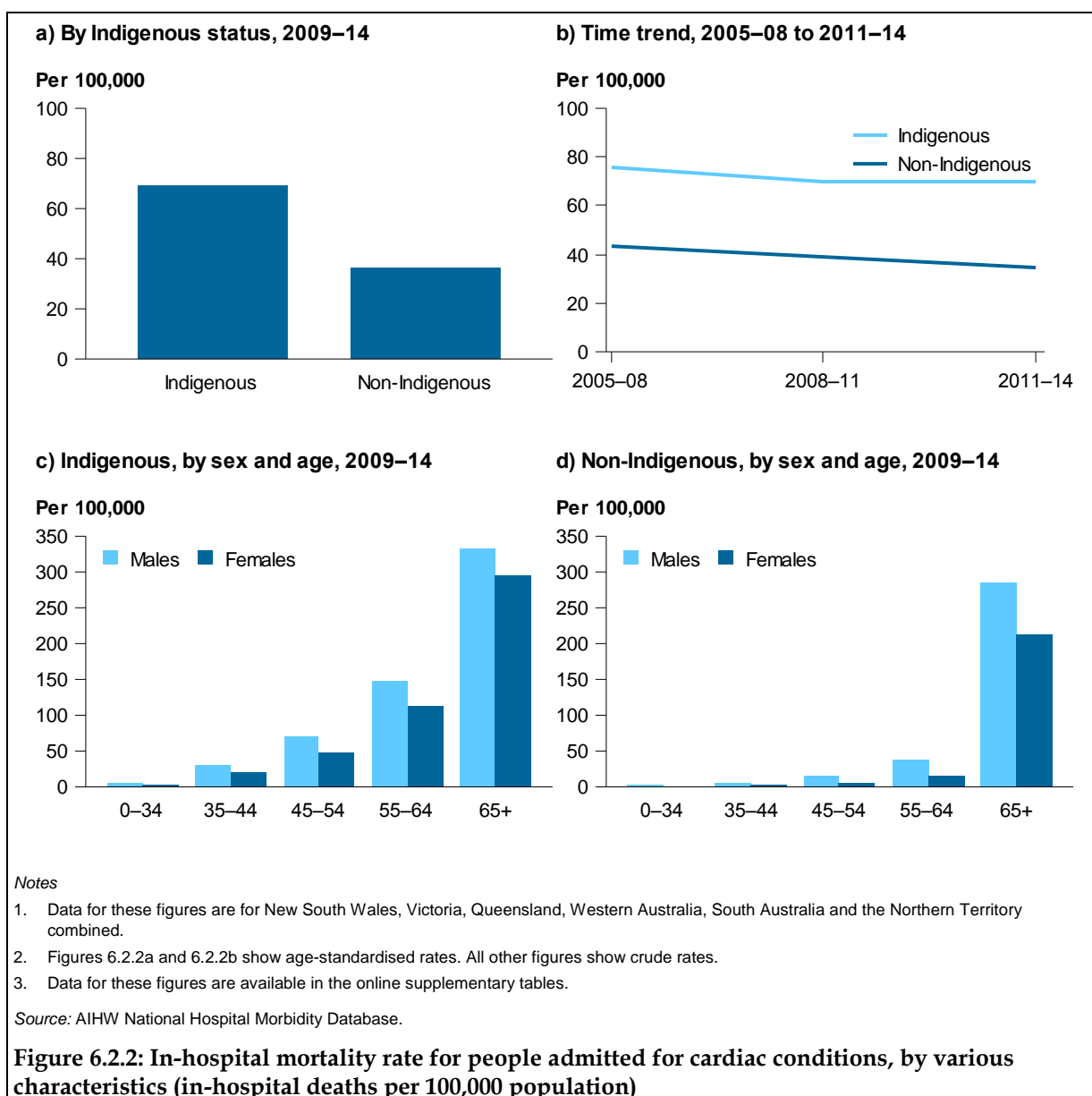
**Time trend:** Between 2005–08 and 2011–14, the age-standardised rate of in-hospital deaths for patients admitted for cardiac conditions fell for both Indigenous and non-Indigenous Australians (Figure 6.2.2b).

**Sex and age:** In 2009–14:

- Indigenous males admitted to hospital for cardiac conditions had a higher in-hospital death rate than Indigenous females for all age groups (Figure 6.2.2c)
- in-hospital death rates for Indigenous Australians admitted for cardiac conditions were higher than those for non-Indigenous Australians for all age groups for both males and females (figures 6.2.2c and 6.2.2d)
- for males, the relative difference between rates for Indigenous and non-Indigenous Australians (as measured by the rate ratio) was most pronounced for those aged 35–44 and 45–54 (both 5 times as high as for Indigenous males); for females, it was for those aged 45–54 (8 times as high as for Indigenous females)
- for both males and females, the absolute differences between rates for Indigenous and non-Indigenous Australians (as measured by the rate difference) was most pronounced for those aged 55–64 – with differences of 111 deaths per 100,000 population for males, and 98 per 100,000 population for females.

### Things to consider (see also Appendix A)

- As for the other summary measures, the denominator for this measure is all people in the population, not people hospitalised with cardiac conditions.
- Data are based on principal diagnosis (that is, the diagnosis primarily responsible for the hospitalisation). The principal diagnosis recorded for in-hospital deaths is not necessarily the cause of death – that is, some patients with a principal diagnosis of a cardiac condition might have died as the result of another cause.
- No comparison by state and territory is provided. Data on in-hospital deaths by state and territory are not comparable due to 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. Including emergency department deaths would have resulted in an overestimate of the national rates presented for this measure and might have had an impact on the comparison of Indigenous and non-Indigenous rates.
- In-hospital death rates might also be affected by different approaches to pre- and post-hospital care (for example, more deaths occurring before reaching the hospital, or more deaths following discharge from hospital); thus the findings should be interpreted in the context of overall cardiac mortality.



# 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.

One issue that should be considered in the context of interpreting data from all collections used in this report relates to changes in the tendency of people to identify as being of Aboriginal and/or Torres Strait Islander origin. Data from the ABS Census of Population and Housing – which were the basis for the ABS population estimates used to calculate rates for this report – indicate that the number of Indigenous Australians has increased considerably over the 2 decades to 2011, with a particularly large rise between 2006 and 2011 (ABS 2013a). This increase was beyond what could be expected based on population growth, and about 30% was related to non-demographic factors, such as improvements in Census coverage, a fall in the number of records with unknown Indigenous status, and an increased likelihood of individuals identifying themselves and their children as Indigenous. Change in Indigenous identification over time might affect the comparability of trend data. However, we do not know whether, and if so by how much, changes in Indigenous identification have occurred over time 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 the AIHW further analysing those data (for example, deriving rates).

The data are based on the date of processing of claims. The claim may have been made by the patient (or their representative) or by the health care provider.

Data presented by state and territory and 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 Statistical Geography Standard. For the analyses by jurisdiction for measures 2.1 and 4.2, data for Tasmania were combined with those for Victoria, due to small numbers for Tasmania. Similarly, due to small numbers for the Australian Capital Territory, those data were combined with New South Wales.

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 (Section 19(2) of the *Health Insurance Act 1973*) prevents salaried health providers funded by government (including Australian, state and local governments, and authorities established by a law of the Commonwealth, a state or a territory) from claiming payments from Medicare (Health Insurance Act 1973). This aims to ensure the Australian 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.

However, some of these organisations can apply for a Section 19(2) exemption to allow them to claim Medicare payments. For example, some state- or territory-funded services in rural and remote areas 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 is not complete. Since 2002, individuals who choose to 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 (VII). VII enrolment is through either a VII 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 VII process. VII coverage varies by age group and state and territory (Table A1).

**Table A1: Estimated proportion of Indigenous Australians enrolled on the VII, 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
<b>Total</b>	<b>54.7</b>	<b>61.3</b>	<b>71.2</b>	<b>74.8</b>	<b>61.9</b>	<b>51.4</b>	<b>52.7</b>	<b>72.7</b>	<b>64.6</b>

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

*Sources:* Department of Health analysis of MBS data; 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 (which relate to services that can be claimed irrespective of Indigenous status), information from the VII was used. As not all Indigenous Australians are enrolled on the VII, the MBS data based on the VII 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 VII 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 and territory). The adjustment factors for each subgroup were calculated as follows:

*Adjustment factor = 100 / estimated percentage of Indigenous population enrolled on the VII*

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

One caveat associated with the adjustment method for under-identification is that as the VII list is generated voluntarily, it is not truly random and cannot be fully representative of the Indigenous population until full coverage is achieved. As a result, there could be biases in the data that are not addressed by the adjustment method. A second caveat is that the level of VII enrolment and the extent of adjustment required varies both across subgroups of the population and over time.

### **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 of 9 months between such assessments.

There are a number of general health assessment MBS items – 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).

### **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 B5 in Appendix B). 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).

### **Comparisons with MBS data in previous report**

Information about the Indigenous status of people in the MBS database is continually updated as more people are identified as being of Aboriginal and/or Torres Strait Islander origin through the VII process. Since the previous report, the Department of Health has revised the methodology used for retrospectively adjusting the MBS data based on the VII for under-identification. The impact of this change is largest for data pertaining to earlier reference periods. Consequently, the estimates of MBS service use that were provided in the first national report on the Better Cardiac Care measures (AIHW 2015b) may differ somewhat from the historical data included in this report, particularly for the earlier years in the time periods considered. Thus MBS data from the 2015 report should not be compared with data in this report.

**Table A2: Target group and frequency of service for 'general' (non-MBS item 715) MBS health assessments<sup>(a)</sup>**

Target group	Frequency of service
A Healthy Kids Check for children aged at least aged 3 and less than 5 who have received or who are receiving their 4-year-old immunisation	Once 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 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 per lifetime to an eligible patient
A health assessment for former serving members of the Australian Defence Force	Once per lifetime to an eligible patient

(a) There are 4 time-based MBS health assessment items for brief (item 701), standard (703), long (705) and prolonged (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.

## 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; details are provided in the relevant sections of the report.

A principal diagnosis is reported for each hospitalisation and recorded in the NHMD, while additional diagnoses are reported if the condition affected patient management (also see Glossary). In this report, information on principal diagnoses was used to identify hospitalisations for specific conditions; additional diagnoses have not been considered.

NHMD data were not available for the Australian Capital Territory and are not included in totals. For some analyses, other jurisdictional exclusions based on the quality of Indigenous identification also apply – for details, see the 'Indigenous identification' section that follows.

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

For analyses by remoteness area, the NHMD data for 2012–13 onwards were classified according to the Australian Statistical Geography Standard; earlier years were classified according to the Australian Standard Geographical Classification. The analyses of hospitalisations data by remoteness area in measures 3.1, 3.3, 3.5 and 6.1 combine 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 found that, in 2011–12, the true number of hospitalisations nationally for Indigenous Australians was about 9% higher than reported (AIHW 2013). In 2013–14, about 408,000 hospitalisations were recorded as being for Indigenous Australians. Based on the level of under-identification suggested by the AIHW study, the true number of hospitalisations for Indigenous Australians in 2013–14 is estimated to have been about 445,000 (AIHW 2015a). NHMD data presented in this report have not been adjusted for under-identification, so are likely to underestimate the true level of hospitalisations for Indigenous Australians.

The analyses for measures 3.5 and 6.2.2 and the time series comparisons for the other measures based on NHMD data include data for years before 2010–11. Those analyses are limited to data for the 6 states and territories 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 states and territories represent about 95% of the Australian Indigenous population (AIHW 2015d).

Changes in the accuracy of Indigenous identification in hospital records will result in changes in the reported number of 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. An increase in hospitalisation rates for a particular population might also reflect higher use of admitted patient hospital services – as opposed to other forms of health care – rather than a worsening of health. Likewise, a decrease in hospitalisation rates might not necessarily indicate better health.

With the exception of data from hospitals in Western Australia, hospitalisations where the person's Indigenous status was not stated were excluded from analyses that compare 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 events for priority area 3 measures**

For the analyses for priority area 3 measures, data pertain to hospitalisations for admitted patients with a care type of 'acute care' and an urgency of admission of 'emergency' that did not end in transfer to another acute hospital – referred to as 'hospitalised events' in this report. The purpose of excluding hospitalisations ending in transfer is to reduce the double-counting of people with an ACS who were transferred to another hospital for further diagnosis or treatment. In this way, 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). But some limitations were noted as part of these analyses:

- 5–11% (depending on the jurisdiction) of hospitalisations ending in transfer did not have a subsequent hospitalisation recorded; some of these patients, for example, could have been transferred interstate
- following transfer, 4–7% (depending on the jurisdiction) of 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 procedure rates. A notable limitation of the method for calculating procedure rates is that, among those events that involved multiple hospitalisations, if a relevant procedure was provided in an earlier hospitalisation but not in the last, that event will not be counted as having included that procedure. Further, if a patient is transferred to another acute hospital for recovery following a procedure in the first hospitalisation and is 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’.

Unpublished analyses by NSW Health using linked data (for 2008–09 to 2012–13) suggest that the method used in this report to estimate hospitalised ACS events might:

- overestimate the proportion of STEMI events for which PCI was provided (measure 3.1) – using New South Wales data and replicating the AIHW method, 56% of STEMI events were treated by PCI based on non-linked data, compared with 47% if using linked data
- underestimate the proportion of ACS events that included diagnostic angiography and/or revascularisation (measure 3.3) – using New South Wales data and replicating the AIHW method, 46% of ACS events included diagnostic angiography and/or revascularisation based on non-linked data, compared with 53% if using linked data
- overestimate the in-hospital mortality rate (measure 3.5) – using New South Wales data and replicating the AIHW method, the in-hospital mortality rate was calculated as 6.7% based on non-linked data, compared with 5.2% using linked data.

The differing direction of the observed error for measures 3.1 and 3.3 might reflect different patterns of transfer. For example, the New South Wales linked data suggest that STEMI patients treated by PCI (measure 3.1) were *less likely* to be transferred to another hospital than those who did not have this procedure. In contrast, patients with non-ST-segment-elevation acute coronary syndrome treated by PCI (who are included in measure 3.3) were *more likely* to be transferred than those who did not.

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 and territory comparisons for priority area 3 measures

The unpublished analyses by NSW Health, described in the previous section, suggest that the accuracy of the method used in this report to reduce double-counting is affected by inter-hospital transfer patterns. 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 between 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 a larger, more urban hospital 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. However, results by jurisdiction are shown in Table A3 to provide states and territories with their 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 states and territories 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 across states and territories, and are not included in this report.

**Table A3: Results for measures 3.1 and 3.3, by jurisdiction, 2011–14**

State/territory	Measure 3.1 <sup>(a)</sup> (%)			Measure 3.3 <sup>(b)</sup> (%)		
	Crude rate	Age-standardised rate		Crude rate	Age-standardised rate	
		Indigenous	Non-Indigenous <sup>(c)</sup>		Indigenous	Non-Indigenous <sup>(c)</sup>
NSW	56.6	54.7	72.5	45.8	45.6	60.3
Vic/Tas	67.9	64.1	79.8	46.0	51.1	66.9
Qld	57.3	55.2	69.9	38.3	39.8	48.0
WA	62.1	62.9	79.2	60.6	65.1	71.7
SA	68.5	63.0	79.1	54.9	56.6	65.4
NT	19.4	16.2	35.1	44.3	44.8	50.5

(a) The rate of hospitalised events for STEMI among people aged 18 and over that were treated by PCI, by Indigenous status.

(b) The rate of hospitalised events for ACS among people aged 18 and over that included diagnostic angiography and/or a definitive revascularisation procedure (PCI or CABG), by Indigenous status.

(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 pertain to people aged 18 and over who usually reside 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 and B4 in Appendix B for classification codes used for these measures.

Source: AIHW National Hospital Morbidity Database.

## PCIs are also performed in a non-admitted patient setting

Some PCIs are performed in a non-admitted patient setting; these are not captured in the NHMD. The condition and characteristics of non-admitted patients might differ from those of admitted patients.

## **Eligibility for reperfusion therapy**

Not all patients with a STEMI are eligible for reperfusion because of multiple comorbidities, including chronic kidney disease, which increase the risks associated with PCI. Eligibility for reperfusion therapy cannot be determined from the 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, as well as by the National Coronial Information System
- assigned codes for cause(s) of death by the ABS
- based on calendar years.

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 and 2013 are based on revised and preliminary versions, respectively, 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](http://www.abs.gov.au/ausstats/abs@.nsf/mf/3303.0)> and <[www.abs.gov.au/ausstats/abs@.nsf/mf/3302.0](http://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 2015b).

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. This applied to 5,318 registered deaths in 2009–2013 in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined – representing 1% of all registered deaths in these jurisdictions. For deaths due to cardiac conditions in 2009–2013 (measure 6.2.1), 1,180 registered deaths had missing information on Indigenous status – representing 1% of all cardiac deaths in these jurisdictions.

### **Time series analysis**

Linear regression analysis was used to determine whether there was a statistically significant increase or decrease over time in the Indigenous and non-Indigenous cardiac mortality rates (and the corresponding rate difference) presented in measure 6.2.1.

The total percentage change estimates presented for that measure were calculated using start and end points derived from the regression line, rather than the actual start and end points.

## **Rheumatic heart disease registers data**

Data for the priority area 5 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.

## **ABS population data**

The rates in this report were calculated using ABS estimates and projections of the population based on the 2011 Census (ABS 2013b, 2014, 2015a). The ABS advises that backcast estimates for 1996 to 2000 should be used with caution, due to the lack of reliable Indigenous life expectancy estimates for the earlier period and an increasing tendency for people to identify as being of Aboriginal and Torres Strait Islander origin over time (ABS 2014).

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 2014 are shown in Table A4.

In 2014, the Indigenous population ranged from about 222,900 in New South Wales to 6,700 in the Australian Capital Territory. The proportion of the population who are Indigenous also varies by state and territory. In 2014, this proportion ranged from nearly 30% in the Northern Territory to less than 1% in Victoria.



**Table A4: Australian population, by Indigenous status and jurisdiction, 2014**

State/territory	Indigenous <sup>(a)</sup>	Non-Indigenous <sup>(b)</sup>	Total	% Indigenous
NSW	220,902	7,293,073	7,513,975	2.9
Vic	50,983	5,787,765	5,838,748	0.9
Qld	203,045	4,517,426	4,720,471	4.3
WA	93,778	2,464,594	2,558,372	3.7
SA	39,800	1,645,684	1,685,484	2.4
Tas	25,845	488,925	514,770	5.0
ACT	6,707	378,690	385,397	1.7
NT	72,251	171,412	243,663	29.7
<b>Australia</b>	<b>713,589</b>	<b>22,750,497</b>	<b>23,464,086</b>	<b>3.0</b>

(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, 2015a.

## Appendix B: Technical specifications

**Table B1: Technical specifications for measures presented in this report**

Number	Description <sup>(a)</sup>	Calculation <sup>(b)</sup>	Numerator	Denominator	Data source
1.1	Proportion of people who received an MBS health assessment within the previous 12 months	Numerator ÷ Denominator x 100	Estimated number of people who received an MBS health assessment (listed in Table B2) that was claimed through the MBS within the financial year.	Estimated 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
1.3.1	Proportion of Indigenous people aged 18 and over living in non-remote areas without a current and long-term circulatory condition who were at high risk of cardiac disease who had their blood pressure checked in the last 2 years	Numerator ÷ Denominator x 100	Number of Indigenous people living in non-remote areas without a current and long-term circulatory condition who were at high risk of cardiac disease who had their blood pressure checked in the previous 2 years (for further details, see AIHW 2015b:Table A2).	Number of Indigenous people living in non-remote areas without a current and long-term circulatory condition who were at high risk of cardiac disease (for further details, see AIHW 2015b:Table A2).	ABS 2012–13 AATSIHS
1.3.2	Proportion of Indigenous people aged 18 and over without a current and long-term circulatory condition who were at high risk of cardiac disease, who saw a doctor/health professional or specialist in the last 12 months and were current smokers who discussed quitting smoking	Numerator ÷ Denominator x 100	Number of Indigenous people without a current and long-term circulatory condition who were at high risk of cardiac disease, who saw a doctor/health professional or specialist in the previous 12 months and were current smokers who discussed quitting smoking (for further details, see AIHW 2015b:Table A2).	Number of Indigenous people without a current and long-term circulatory condition, who were at high risk of cardiac disease, who saw a doctor/health professional or specialist in the previous 12 months and who were current smokers (for further details, see AIHW 2015b:Table A2).	ABS 2012–13 AATSIHS
2.1	Proportion of people who had claimed relevant MBS cardiac-related diagnostic items in the previous 12 months	Numerator ÷ Denominator x 100	Estimated number of people who had relevant MBS cardiac-related diagnostic items (as listed in Table B3) claimed in the financial year.	Estimated 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
3.1	Proportion of hospitalised events for STEMI among people aged 18 and over for which PCI was provided	Numerator ÷ Denominator x 100	Number of hospitalisations with a principal diagnosis of STEMI (ICD-10-AM codes I21.0–I21.3), and a care type of 'acute care', and urgency of admission of 'emergency', and separation mode not equal to 'transferred to another acute hospital', with a procedure code for PCI (as listed in Table B4).	Number of hospitalisations with a principal diagnosis of STEMI (ICD-10-AM codes I21.0–I21.3), and a care type of 'acute care', and urgency of admission of 'emergency', and separation mode not equal to 'transferred to another acute hospital'.	NHMD

(continued)

**Table B1 (continued): Technical specifications for measures presented in this report**

Number	Description <sup>(a)</sup>	Calculation <sup>(b)</sup>	Numerator	Denominator	Data source
3.3	Proportion of hospitalised events for ACS among people aged 18 and over that included diagnostic angiography and/or a definitive revascularisation procedure (PCI or CABG)	Numerator ÷ Denominator x 100	Number of hospitalisations with a principal diagnosis of STEMI (ICD-10-AM codes I21.0–I21.3), non-ST-segment-elevation myocardial infarction (NSTEMI) (I21.4), unspecified AMI (I21.9) or unstable angina (I20.0), and a care type of 'acute care', and urgency of admission of 'emergency', and separation mode not equal to 'transferred to another acute hospital', with a procedure code for diagnostic angiography, PCI or CABG (as listed in Table B4).	Number of hospitalisations with a principal diagnosis of STEMI (ICD-10-AM codes I21.0–I21.3), NSTEMI (I21.4), unspecified AMI (I21.9) or unstable angina (I20.0), and a care type of 'acute care', and urgency of admission of 'emergency', and separation mode not equal to 'transferred to another acute hospital'.	NHMD
3.5	Proportion of hospitalised events for AMI among people aged 35 and over, that ended with the death of the patient	Numerator ÷ Denominator x 100	Number of hospitalisations with a principal diagnosis of AMI (ICD-10-AM code I21), and a care type of 'acute care', and urgency of admission of 'emergency', and separation mode of 'died'.	Number of hospitalisations with a principal diagnosis of AMI (ICD-10-AM code I21), and a care type of 'acute care', and urgency of admission of 'emergency', and separation mode not equal to 'transferred to another acute hospital'.	NHMD
4.2	Proportion of people with a cardiac condition who received an MBS chronic disease management item of: (1) Team Care Arrangement (2) GP Management Plan (3) allied health service	Numerator ÷ Denominator x 100	Estimated number of people with a cardiac condition (those who had relevant MBS cardiac-related items, as listed in Table B5, claimed in the financial year) who received an MBS chronic disease management item of: (1) Team Care Arrangement (2) GP Management Plan (3) allied health service (Table B6).	Number of people with a cardiac condition (those who had relevant MBS cardiac-related items, as listed in Table B5, claimed in the financial year).	MBS
5.1	Incidence (new and recurrent episodes) of ARF	Numerator ÷ Denominator x 100,000	Number of new and recurrent episodes of ARF in the calendar year.	Estimated population at the middle of the calendar year (30 June).  Where numerator data are summed across multiple years, the denominator is calculated by summing the mid-point population data for the relevant years.	Qld, WA, SA, NT RHDRs and ABS population data
5.2	Proportion of all ARF episodes that are recurrent	Numerator ÷ Denominator x 100	Number of recurrent episodes of ARF in the calendar year.	Number of new and recurrent episodes of ARF in the calendar year.	Qld, WA, SA, NT RHDRs
5.3	Percentage of required doses of benzathine penicillin G received in previous 12 months for people on an ARF/RHD program	Numerator ÷ Denominator x 100	Number of people on an ARF/RHD program who received less than 50%, 50%–80%, or more than 80% of required doses of benzathine penicillin G in the previous 12 months.	Number of people on an ARF/RHD program.	Qld, SA, NT RHDRs

(continued)

**Table B1 (continued): Technical specifications for measures presented in this report**

Number	Description <sup>(a)</sup>	Calculation <sup>(b)</sup>	Numerator	Denominator	Data source
6.1	Rates of hospitalisation for a cardiac condition	Numerator ÷ Denominator x 1,000	Number of hospitalisations in the financial year with a principal diagnosis of a cardiac condition (ICD-10-AM codes I00–I52, which includes ARF, chronic RHDs, hypertensive diseases, ischaemic heart diseases, pulmonary heart disease and diseases of pulmonary circulation, and other forms of heart disease) and a care type not equal to 'newborn—unqualified days only' or 'organ procurement—posthumous' or 'hospital boarder'.	Estimated population at the middle of the financial year (31 December), calculated from the average of the populations at 30 June at the beginning and end of the financial year.  Where numerator data are summed across multiple years, the denominator is calculated by summing the mid-point population data for the relevant years.	NHMD and ABS population data
6.2.1	Rates of cardiac mortality	Numerator ÷ Denominator x 100,000	Number of deaths in the calendar year where a cardiac condition (ICD-10 codes I00–I52, which includes ARF, chronic RHDs, hypertensive diseases, ischaemic heart diseases, pulmonary heart disease and diseases of pulmonary circulation, and other forms of heart disease) is the underlying cause of death (based on reference year).	Estimated population at the middle of the calendar year (30 June).  Where numerator data are summed across multiple years, the denominator is calculated by summing the mid-point population data for the relevant years.	NMD and ABS population data
6.2.2	Rates of in-hospital mortality for patients admitted with cardiac conditions	Numerator ÷ Denominator x 100,000	Number of hospitalisations in the financial year with a principal diagnosis of a cardiac condition (ICD-10-AM codes I00–I52, which includes ARF, chronic RHDs, hypertensive diseases, ischaemic heart diseases, pulmonary heart disease and diseases of pulmonary circulation, and other forms of heart disease), 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'.	Estimated population at the middle of the financial year (31 December), calculated from the average of the populations at 30 June at the beginning and end of the financial year.  Where numerator data are summed across multiple years, the denominator is calculated by summing the mid-point population data for the relevant years.	NHMD and ABS population data

ICD-10 International Statistical Classification of Diseases and Related Health Problems, 10th revision (WHO 2004)

ICD-10-AM International Statistical Classification of Diseases and Related Health Problems, 10th revision, Australian modification (ACCD 2016c)

(a) Data are presented for all ages for all measures except: measures 1.3, 3.1 and 3.3, where data for those aged 18 and over are provided; and measure 3.5, where data for those aged 35 and over are presented.

(b) Calculation for crude rates is shown. For many measures, age-standardised rates were also calculated. Such rates were directly age-standardised to the 2001 Australian standard population, using the formula:

$$\text{Age-standardised rate} = \sum_i N_i p_i / \sum_i N_i$$

where  $p_i$  is the age-specific rate for age group  $i$  in the population being studied, and  $N_i$  is the population of age group  $i$  in the standard population.

**Table B2: MBS health assessment items**

Type of health assessment	MBS item numbers—current period analysis (2014–15)	MBS item numbers—time series analysis (2004–05 to 2014–15)
<b>Indigenous-specific—</b> An annual Indigenous-specific health assessment for which all Aboriginal and Torres Strait Islander people are eligible	715	Items 704, 706 (specifically for Indigenous Australians aged 55 and over)—claimable from 1 November 1999 to 30 April 2010 Item 708 (specifically for Indigenous children aged 0–14)—claimable from 1 May 2006 to 30 April 2010 Item 710 (specifically for Indigenous Australians aged 15–54)—claimable from 1 May 2004 to 30 April 2010 The 4 items above were combined into the single item 715 from 1 May 2010
<b>Other—</b> General, time-tiered health assessment items; see Table A2 in Appendix A for more detailed descriptions	701, 703, 705, 707	Items 700, 702—claimable from 1 November 1999 to 30 April 2010 Item 709—claimable from 1 July 2008 to 30 April 2010 Item 712—claimable from 1 July 2004 to 30 April 2010 Item 713—claimable from 1 July 2008 to 30 April 2010 Item 714—claimable from 1 May 2006 to 30 April 2010 Item 716—claimable from 1 May 2006 to 30 April 2010 Item 717—claimable from 1 November 2006 to 30 April 2010 Items 718, 719—claimable from 1 July 2007 to 30 April 2010 The 10 items above were replaced with items 701, 703, 705 and 707 from 1 May 2010

**Table B3: Cardiac-related MBS diagnostic items**

Procedure	MBS item numbers—current period analysis (2014–15)	MBS item numbers—time series analysis (2004–05 to 2014–15)	Description
ECG monitoring	11712	Same as current period (item was claimable from 1 December 1991)	Multi-channel ECG monitoring and recording during exercise
Echocardiography	55113, 55114, 55116–55119, 55120, 55122, 55123, 55125	Items 55113, 55114, 55116, 55117, 55118—claimable from 1 July 2001 or earlier (thus included in all years of the time series analysis) Items 55119, 55120, 55122, 55123, 55125—claimable from 1 July 2011	Echocardiography (includes exercise and pharmacological stress echocardiography) Excludes 55115 and 55121 (investigation of congenital heart disease)
Cardiac catheterisation with or without PCI	38215–38246	Items 38215–38240, 38242–38246—claimable from 1 May 2002 or earlier (thus included in all years of the time series analysis) Item 38241—claimable from 1 November 2006	Selective coronary angiography
	38300–38318	Claimable from 1 November 2005	Endovascular interventional procedures (PCI)
	38200, 38203, 38206	Same as current period analysis (claimable from 1 December 1991)	Cardiac catheterisation

**Table B4: Procedure codes from the Australian Classification of Health Interventions (ACHI) used in the analyses for this report, 4–8th editions<sup>(a)</sup>**

Procedure	ACHI code 8th edition	Description (8th edition) <sup>(b)</sup>	Corresponding codes in earlier ACHI editions <sup>(c)</sup>			
			4th	5th	6th	7th
Percutaneous coronary intervention	38300-00	Percutaneous transluminal balloon angioplasty of 1 coronary artery	35304-00	35304-00	38300-00	38300-00
	38303-00	Percutaneous transluminal balloon angioplasty of ≥2 coronary arteries	35305-00	35305-00	38303-00	38303-00
	38306-00	Percutaneous insertion of 1 transluminal stent into single coronary artery	35310-00	35310-00	38306-00	38306-00
	38306-01	Percutaneous insertion of ≥2 transluminal stents into single coronary artery	35310-01	35310-01	38306-01	38306-01
	38306-02	Percutaneous insertion of ≥2 transluminal stents into multiple coronary arteries	35310-02	35310-02	38306-02	38306-02
	38309-00	Percutaneous transluminal coronary rotational atherectomy, 1 artery	35304-00	35335-00	38309-00	38309-00
	38312-00	Percutaneous transluminal coronary rotational atherectomy, 1 artery with insertion of 1 stent	35310-00	35338-00	38312-00	38312-00
	38312-01	Percutaneous transluminal coronary rotational atherectomy, 1 artery with insertion of ≥2 stents	35310-01	35338-01	38312-01	38312-01
	38315-00	Percutaneous transluminal coronary rotational atherectomy, multiple arteries	35305-00	35341-00	38315-00	38315-00
	38318-00	Percutaneous transluminal coronary rotational atherectomy, multiple arteries with insertion of 1 stent	35305-00	35344-00	38318-00	38318-00
	38318-01	Percutaneous transluminal coronary rotational atherectomy, multiple arteries with insertion of ≥2 stents	35310-02	35344-01	38318-01	38318-01
	90218-00 <sup>(d)</sup>	Percutaneous transluminal coronary angioplasty with aspiration thrombectomy, 1 artery	..	..	..	..
	90218-01 <sup>(d)</sup>	Percutaneous transluminal coronary angioplasty with aspiration thrombectomy, multiple arteries	..	..	..	..
	90218-02 <sup>(d)</sup>	Percutaneous transluminal coronary angioplasty with embolic protection device, 1 artery	..	..	..	..
	90218-03 <sup>(d)</sup>	Percutaneous transluminal coronary angioplasty with embolic protection device, multiple arteries	..	..	..	..
Diagnostic angiography	38215-00	Coronary angiography	38215-00	38215-00	38215-00	38215-00
	38218-00	Coronary angiography with left heart catheterisation	38218-00	38218-00	38218-00	38218-00
	38218-01	Coronary angiography with right heart catheterisation	38218-01	38218-01	38218-01	38218-01
	38218-02	Coronary angiography with left and right heart catheterisation	38218-02	38218-02	38218-02	38218-02

(continued)

**Table B4 (continued): Procedure codes from the Australian Classification of Health Interventions (ACHI) used in the analyses for this report, 4–8th editions<sup>(a)</sup>**

Procedure	ACHI code 8th edition	Description (8th edition) <sup>(b)</sup>	Corresponding codes in earlier ACHI editions <sup>(c)</sup>			
			4th	5th	6th	7th
Coronary artery bypass graft	38300-01	Open transluminal balloon angioplasty of 1 coronary artery	35304-01	35304-01	38300-01	38300-01
	38303-01	Open transluminal balloon angioplasty of ≥2 coronary arteries	35305-01	35305-01	38303-01	38303-01
	38306-03	Open insertion of 1 transluminal stent into single coronary artery	35310-03	35310-03	38306-03	38306-03
	38306-04	Open insertion of ≥2 transluminal stents into single coronary artery	35310-04	35310-04	38306-04	38306-04
	38306-05	Open insertion of ≥2 transluminal stents into multiple coronary arteries	35310-05	35310-05	38306-05	38306-05
	38497-00	Coronary artery bypass, using 1 saphenous vein graft	38497-00	38497-00	38497-00	38497-00
	38497-01	Coronary artery bypass, using 2 saphenous vein grafts	38497-01	38497-01	38497-01	38497-01
	38497-02	Coronary artery bypass, using 3 saphenous vein grafts	38497-02	38497-02	38497-02	38497-02
	38497-03	Coronary artery bypass, using ≥4 saphenous vein grafts	38497-03	38497-03	38497-03	38497-03
	38497-04	Coronary artery bypass, using 1 other venous graft	38497-04	38497-04	38497-04	38497-04
	38497-05	Coronary artery bypass, using 2 other venous grafts	38497-05	38497-05	38497-05	38497-05
	38497-06	Coronary artery bypass, using 3 other venous grafts	38497-06	38497-06	38497-06	38497-06
	38497-07	Coronary artery bypass, using ≥4 other venous grafts	38497-07	38497-07	38497-07	38497-07
	38500-00	Coronary artery bypass, using 1 left internal mammary artery graft	38500-00	38500-00	38500-00	38500-00
	38500-01	Coronary artery bypass, using 1 right internal mammary artery graft	38500-01	38500-01	38500-01	38500-01
	38500-02	Coronary artery bypass, using 1 radial artery graft	38500-02	38500-02	38500-02	38500-02
	38500-03	Coronary artery bypass, using 1 epigastric artery graft	38500-03	38500-03	38500-03	38500-03
	38500-04	Coronary artery bypass, using 1 other arterial graft	38500-04	38500-04	38500-04	38500-04
	38500-05	Coronary artery bypass, using 1 composite graft	(e)	(e)	(e)	38500-05
	38503-00	Coronary artery bypass, using ≥2 left internal mammary artery grafts	38503-00	38503-00	38503-00	38503-00
	38503-01	Coronary artery bypass, using ≥2 right internal mammary artery grafts	38503-01	38503-01	38503-01	38503-01
	38503-02	Coronary artery bypass, using ≥2 radial artery grafts	38503-02	38503-02	38503-02	38503-02

(continued)

**Table B4 (continued): Procedure codes from the Australian Classification of Health Interventions (ACHI) used in the analyses for this report, 4–8th editions<sup>(a)</sup>**

Procedure	ACHI code 8th edition	Description (8th edition) <sup>(b)</sup>	Corresponding codes in earlier ACHI editions <sup>(c)</sup>			
			4th	5th	6th	7th
Coronary artery bypass graft (continued)	38503-03	Coronary artery bypass, using ≥2 epigastric artery grafts	38503-03	38503-03	38503-03	38503-03
	38503-04	Coronary artery bypass, using ≥2 other arterial grafts	38503-04	38503-04	38503-04	38503-04
	38503-05	Coronary artery bypass, using ≥2 composite grafts	(e)	(e)	(e)	38503-05
	90201-00	Coronary artery bypass, using 1 other graft, not elsewhere classified	90201-00	90201-00	90201-00	90201-00
	90201-01	Coronary artery bypass, using 2 other grafts, not elsewhere classified	90201-01	90201-01	90201-01	90201-01
	90201-02	Coronary artery bypass, using 3 other grafts, not elsewhere classified	90201-02	90201-02	90201-02	90201-02
	90201-03	Coronary artery bypass, using ≥4 other grafts, not elsewhere classified	90201-03	90201-03	90201-03	90201-03

ACHI Australian Classification of Health Interventions (ACCD 2016b)

. . . not applicable. For the NHMD analyses in this report, these codes were used only for data based on the 8th edition of ACHI (that is, 2013–14 data). See also footnote (d).

(a) NHMD procedures data for 2004–06 are based on the 4th edition of ACHI, data for 2006–08 on the 5th edition, data for 2008–10 on the 6th edition, data for 2010–13 on the 7th edition, and data for 2013–14 on the 8th edition.

(b) Descriptions of the codes are shown for the most recent edition (that is, the 8th edition).

(c) With the exception of the codes indicated by (d), procedures were mapped across ACHI editions using the historical code maps (available from ACCD 2016a), backwards and forwards from the 7th edition, as applicable.

(d) These are new procedure codes added to the 8th edition of ACHI, identified using the logical code maps (available from ACCD 2016a). Using the historical code maps, these procedures map backwards to the 7th edition code 38456–19 (other intrathoracic procedures on arteries of heart without cardiopulmonary bypass). As this code may capture procedures other than PCI, it was excluded from the analyses in this report.

(e) The backwards mapping file from the 7th to the 6th edition indicates that this procedure code maps to procedure codes that are already captured in the table.



**Table B5: Cardiac-related MBS items**

<b>MBS item numbers—current period analysis (2014–15)</b>	<b>MBS item numbers—time series analysis (2005–06 to 2014–15)</b>	<b>Description</b>
11712	Same as current period (item was claimable from 1 December 1991)	Multi-channel ECG monitoring and recording during exercise
38215–38246	Item 38241 was not claimable until 1 November 2006  Other item numbers are included in all years of the time series analysis (items were claimable from 1 May 2002 or earlier)	Selective coronary angiography
38300–38318	These items were claimable from 1 November 2005	Endovascular interventional procedures (PCI)
55113, 55114, 55116–55119, 55120, 55122, 55123, 55125	Items 55119, 55120, 55122, 55123, 55125 were claimable from 1 July 2011  Other item numbers are included in all years of the time series analysis (claimable from 1 July 2001 or earlier)	Echocardiography (includes exercise and pharmacological stress echocardiography)  Exclude 55115 and 55121 (investigation of congenital heart disease)
38200, 38203, 38206	Same as current period analysis (items were claimable from 1 December 1991)	Cardiac catheterisation
38497–38504	Same as current period analysis (items were claimable from 1 November 2002 or earlier)	Coronary artery bypass
11708, 11709, 11710, 11711, 11722, 38285	Same as current period analysis (items were claimable from 1 November 2004 or earlier)	Ambulatory electrocardiography items critical in the diagnosis of cardiac arrhythmias

**Table B6: Chronic disease management MBS items**

Management item	MBS item numbers—current period analysis (2014–15)	MBS item numbers—time series analysis (2005–06 to 2014–15)	Description
GP Management Plan	721	Same item number as current period (item claimable from 1 July 2005)	A care plan for people with a chronic or terminal medical condition. It provides an organised approach to care, identifying health and care needs, setting out services to be provided by the GP, and listing actions that the individual can take to help manage their condition.
Team Care Arrangement	723	Same item number as current period (item claimable from 1 July 2005)	A care plan for people with a chronic or terminal medical condition who also have complex care needs and require treatment from 2 or more other health care providers. These plans are designed to help coordinate more effectively the care the person needs from their GP and other health or care providers.
Allied health service items	MBS item groups: M03, M06, M07, M08, M09, M11, M15 Specific item numbers: 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	Some items included in the current period analysis were not introduced until after 2005–06, so are not included in the earlier years of the time trend analysis Except for item 10953, Group M03 items were claimable from 1 July 2004, and are included in all years of the time series analysis. Item 10953 was available from 1 January 2006 Group M06, M07 and M08 items were claimable from 1 November 2006 Group M09 items were claimable from 1 May 2007 Group M11 items were claimable from 1 November 2008 Group M15 items were claimable from 1 November 2012	A broad range of allied health services such as diabetes education, audiology, exercise physiology, dietetics services, mental health services, occupational therapy, podiatry, chiropractic services, osteopathy, psychology, psychological therapy services, allied health services specifically for Indigenous Australians who have had a health check, and speech pathology.

# 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 Health assessments—Indigenous specific, 2014–15 (%) <sup>(a)</sup>	167,221	721,319	23.2	25.3	..	..	..	..
2.1 Cardiac-related diagnostic items, 2014–15 (%)	16,901	721,319	2.3	<sup>(b)</sup> 3.9	1,015,479	22,901,309	4.4	<sup>(b)</sup> 3.9
3.1 STEMI events among adult patients treated by PCI, 2011–14 (%)	467	871	53.6	51.5	15,540	22,491	69.1	75.1
3.3 ACS events among adult patients that included diagnostic angiography and/or definitive revascularisation, 2011–14 (%)	2,522	5,439	46.4	47.9	65,428	129,543	50.5	60.7
3.5 AMI events among patients aged 35 and over that ended with the death of the patient, 2009–14 (%)	210	4,888	4.3	4.4	9,675	132,142	7.3	4.0
4.2 People with a cardiac condition with:								
(1) a Team Care Arrangement, 2014–15 (%)	5,641	18,639	30.3	23.8	257,691	1,113,862	23.1	13.4
(2) a GP Management Plan, 2014–15 (%)	6,349	18,639	34.1	27.3	299,023	1,113,862	26.8	15.8
(3) MBS allied health services, 2014–15 (%)	4,930	18,639	26.4	21.7	301,066	1,113,862	27.0	18.9
5.1 Incidence of acute rheumatic fever, 2011–2014 (per 100,000) <sup>(a)</sup>	889	<sup>(c)</sup> 1,508,691	58.9	n.a.	57	<sup>(c)</sup> 31,082,447	0.2	n.a.
5.2 Recurrent acute rheumatic fever, 2011–2014 (%) <sup>(a)</sup>	218	889	24.5	n.a.	2	57	3.5	n.a.
5.3 Benzathine penicillin G doses, 2014 (% with >80% of doses) <sup>(a)</sup>	840	2,241	37.5	n.a.	19	66	28.8	n.a.
6.1 Hospitalisations for cardiac conditions, 2011–14 (per 1,000)	26,992	<sup>(c)</sup> 2,051,549	13.2	25.2	982,905	<sup>(c)</sup> 65,333,891	15.0	13.4
6.2 (1) Deaths due to cardiac conditions, 2009–2013 (per 100,000)	2,401	<sup>(c)</sup> 2,963,095	81.0	208.5	109,504	<sup>(c)</sup> 76,803,163	142.6	127.7
(2) In-hospital deaths among patients with cardiac conditions, 2009–14 (per 100,000)	948	<sup>(c)</sup> 3,232,678	29.3	69.1	42,985	<sup>(c)</sup> 105,136,036	40.9	36.3

ASR = age-standardised rate .. = not applicable n.a. = not available

(a) For measure 1.1, data pertain to MBS item 715 services for which only Indigenous Australians are eligible (see Appendix A). For measures 5.1, 5.2 and 5.3, the comparison group is 'other Australians' (see Glossary).

(b) The age-standardised rates for measure 2.1 are for 2013–15 (rather than for 2014–15).

(c) For these measures, the denominator was calculated by summing the mid-year population estimates for the relevant years.

## Notes

- Data for measures 3.1, 3.3 and 6.1 are for all jurisdictions excluding the Australian Capital Territory. Data for measures 3.5 and 6.2.2 are for all jurisdictions excluding the Australian Capital Territory and Tasmania. Data for measure 6.2.1 are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory. Data for measures 5.1 and 5.2 are for the Queensland, Western Australia, South Australia and the Northern Territory. Data for measure 5.3 are for Queensland, South Australia and the Northern Territory. Data for the other measures are for all states and territories.
- See Appendix B for detailed technical specifications for these measures, including the data source(s) used.

# Glossary

Note that the terms in bold type in the definitions are themselves glossary items.

**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 they first present as clinical emergencies with chest pain or other features.

**acute myocardial infarction (AMI):** 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.

**additional diagnosis:** A condition or complaint either coexisting with the principal diagnosis or arising during the episode of admitted patient care, episode of residential care or attendance at a health care establishment. METeOR identifier: 514271. Compare with **principal diagnosis**.

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

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

**cardiac conditions:** Many different conditions can affect the heart, such as coronary heart disease, heart failure and **rheumatic heart disease**. In this report, 'cardiac conditions' is used as a general reference to such conditions. In the context of specific measures, more precise definitions might apply (see Table B1 in Appendix B for technical specifications for each measure).

**care type:** The overall nature of clinical service provided to an **admitted patient** during an episode of care. Care types for admitted patients are classified as follows:

- 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 above.

METeOR identifier: 491557.

**coronary artery bypass graft (CABG):** A 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 allows the diagnosis of various disorders and injuries to the blood vessels.

**heart attack:** A life-threatening emergency that occurs when a vessel supplying blood to the heart muscle is suddenly blocked 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** that 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). Used to report on measures 6.1 and 6.2.2 in this report. Compare with **hospitalised event**.

**hospitalised event:** In this report, refers to an episode of care for an **admitted patient** with a care type of 'acute care' and an urgency of admission of 'emergency' that did not end in transfer to another acute hospital. Used to report on measures 3.1, 3.3 and 3.5 in this report. Compare with **hospitalisation**.

**Indigenous:** Used interchangeably with **Aboriginal and Torres Strait Islander** in this report.

**mode of separation:** Status at **separation** of an **admitted patient** (discharge/transfer/death) and 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 (NSTEMI) (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. METeOR identifier: 514273. Compare with **additional diagnosis**.

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

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

**rate ratio:** 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, and is interpreted as follows:

- a rate ratio of 1 indicates there is no difference between the rates
- a ratio 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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This is the second national report on the 21 Better Cardiac Care measures for Aboriginal and Torres Strait Islander people, with updated data available to report on 11 measures. For some of the measures, a better or similar rate for Indigenous Australians compared with non-Indigenous Australians was apparent, while on other measures, higher rates of ill health and death from cardiac conditions and lower rates of in-hospital treatment services among Indigenous Australians were evident. A number of measures suggested improvements for Indigenous Australians over time; examples include a decline in the death rate due to cardiac conditions and an increase in the proportion who received an MBS health assessment.