



Australian Government

**Australian Institute of
Health and Welfare**

Better Cardiac Care measures for Aboriginal and Torres Strait Islander people



Australian Government

**Australian Institute of
Health and Welfare**

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

Better Cardiac Care measures for Aboriginal and Torres Strait Islander people

First national report 2015

Australian Institute of Health and Welfare
Canberra

Cat. no. IHW 156

The Australian Institute of Health and Welfare is a major national agency which provides reliable, regular and relevant information and statistics on Australia's health and welfare. The Institute's mission is authoritative information and statistics to promote better health and wellbeing.

© Australian Institute of Health and Welfare 2015



This product, excluding the AIHW logo, Commonwealth Coat of Arms and any material owned by a third party or protected by a trademark, has been released under a Creative Commons BY 3.0 (CC-BY 3.0) licence. Excluded material owned by third parties may include, for example, design and layout, images obtained under licence from third parties and signatures. We have made all reasonable efforts to identify and label material owned by third parties.

You may distribute, remix and build upon this work. However, you must attribute the AIHW as the copyright holder of the work in compliance with our attribution policy available at <www.aihw.gov.au/copyright/>. The full terms and conditions of this licence are available at <<http://creativecommons.org/licenses/by/3.0/au/>>.

A complete list of the Institute's publications is available from the Institute's website <www.aihw.gov.au>.

ISBN 978-1-74249-760-0 (PDF)

ISBN 978-1-74249-761-7 (Print)

Suggested citation

Australian Institute of Health and Welfare 2015. Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: first national report 2015. Cat. no. IHW 156. Canberra: AIHW.

Australian Institute of Health and Welfare

Board Chair
Dr Mukesh C Haikerwal AO

Acting Director
Ms Kerry Flanagan PSM

Any enquiries about 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

Published by the Australian Institute of Health and Welfare

This publication is printed in accordance with ISO 14001 (Environmental Management Systems) and ISO 9001 (Quality Management Systems). The paper is sourced from sustainably managed certified forests.



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

Contents

Acknowledgments	v
Abbreviations	vi
Symbols	vii
Summary	viii
Key findings	viii
1 Introduction	11
Better Cardiac Care project	11
Reporting on the Better Cardiac Care measures.....	13
Structure of this report	14
2 Results	15
Priority area 1: Early cardiovascular risk assessment and management	15
Measure 1.1: Annual health assessments.....	16
Measure 1.3: Primary care practitioner follow-up	18
Priority area 2: Timely diagnosis of heart disease and heart failure.....	22
Measure 2.1: Cardiac-related diagnosis	24
Priority area 3: Guideline-based therapy for acute coronary syndrome.....	26
Measure 3.1: STEMI patients treated by PCI.....	28
Measure 3.3: Acute coronary syndrome patients who received diagnostic angiography or definitive revascularisation	30
Measure 3.5: Mortality rates for people admitted to hospital with acute myocardial infarction.....	34
Priority area 4: Optimisation of health status and provision of ongoing preventive care	36
Measure 4.2: Medicare chronic disease management.....	38
Priority area 5: Strengthen the diagnosis, notification and follow-up of rheumatic heart disease.....	44
Measure 5.1: Incidence of acute rheumatic fever	46
Measure 5.2: Recurrent acute rheumatic fever	48
Measure 5.3: Benzathine penicillin doses	50
Summary measures: hospitalisation and mortality.....	51
Measure 6.1: Hospitalisations for cardiac conditions	52
Measure 6.2: Cardiac mortality	54

3	Data development requirements.....	58
	Data development relevant to Better Cardiac Care currently underway	58
	Modifications required to existing collections	60
	Data linkage of existing collections	60
	Next steps	61
	Appendix A: Technical specifications.....	64
	Appendix B: Data sources.....	72
	AIHW National Hospital Morbidity Database	72
	AIHW National Mortality Database.....	72
	ABS population data.....	73
	ABS 2012–13 Australian Aboriginal and Torres Strait Islander Health Survey	73
	MBS database.....	74
	Rheumatic Heart Disease registers	74
	Appendix C: Things to consider when interpreting the data	75
	Appendix D: List of persons consulted.....	78
	Glossary.....	79
	References	81
	List of tables	83
	List of figures	84

Acknowledgments

This report was prepared by Helen Johnstone, Michelle Harvey and Indrani Pieris-Caldwell of the Indigenous Community and Health Services Reporting Unit at the Australian Institute of Health and Welfare (AIHW). It is based on the measures developed by the Better Cardiac Care for Aboriginal and Torres Strait Islander People Forum, an initiative of the Australian Health Ministers' Advisory Council. The Department of Health funded the preparation of the report.

The authors gratefully acknowledge the advice and guidance offered by Fadwa Al-Yaman during the production of this report.

The AIHW would like to thank the data providers, including the Australian and state and territory health departments; the Northern Territory, Queensland and Western Australian Rheumatic Heart Disease registers; and the Australian Bureau of Statistics.

State and territory health departments provided valuable comments on the draft as did members of the National Aboriginal and Torres Strait Islander Health Standing Committee (NATSIHSC) (see Appendix D for a list of NATSIHSC members and jurisdiction contacts for the Better Cardiac Care for Aboriginal and Torres Strait Islander People Forum).

Abbreviations

AATSIHS	Australian Aboriginal and Torres Strait Islander Health Survey
ABS	Australian Bureau of Statistics
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
CABG	coronary artery bypass graft
ESSENCE	Essential Service Standards for Equitable National Cardiovascular Care for Aboriginal and Torres Strait Islander people
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
NATSIHSC	National Aboriginal and Torres Strait Islander Health Standing Committee
NHMD	National Hospital Morbidity Database
nKPI	national key performance indicator
NMD	National Mortality Database
NSTEACS	non-ST elevation acute coronary syndrome
NSW	New South Wales
PCI	percutaneous coronary intervention
Qld	Queensland
RHD	rheumatic heart disease
RHDR	Rheumatic Heart Disease Register
SA	South Australia
STEMI	ST-elevation myocardial infarction

Tas	Tasmania
Vic	Victoria
WA	Western Australia

Symbols

>	greater than
≥	greater than or equal to
<	less than
n.a.	not available

Summary

Aboriginal and Torres Strait Islander people have higher rates of cardiac conditions, and lower access to health services aimed at preventing and treating these conditions, than non-Indigenous Australians. The Better Cardiac Care for Aboriginal and Torres Strait Islander People – a project supported by the Australian Health Ministers’ Advisory Council – aims to reduce mortality and morbidity from cardiac conditions by increasing access to services, better managing risk factors and treatment, and by improving the coordination of care.

This is the first national report on the 21 Better Cardiac Care measures that were developed to monitor the success of the project. It includes information for 4 full measures and 8 part measures for which national data were available, and outlines the data development work that is required to report on all 21 measures.

Key findings

The indicators provide examples of higher rates of mortality and morbidity from cardiac conditions for Aboriginal and Torres Strait Islander people, and lower rates of in-hospital treatment services, than for other Australians.

- The age-standardised mortality rate for cardiac conditions for Indigenous Australians in 2008–2012 was 212 per 100,000 compared with 133 per 100,000 for non-Indigenous Australians.
- The age-standardised proportion of people who presented to a hospital with a severe heart attack (that is, a STEMI), and had a procedure to open a blocked or narrowed artery (that is, a PCI) in 2010–13 was 46% for Indigenous Australians and 70% for non-Indigenous Australians.

Access to cardiac prevention and treatment services for Indigenous Australians varied by state and by region.

- For example, the proportion of Indigenous people who presented to a hospital with a STEMI and had a PCI in 2010–13 ranged from 21% in the Northern Territory to 62% in Western Australia, and from 29% in *Very remote* areas to 64% in *Major cities*.

Over time, mortality from cardiac conditions for Indigenous Australians decreased significantly and access to cardiac care improved.

- The age-standardised mortality rate for cardiac conditions for Indigenous Australians decreased by 41% between 1998 and 2012, from 347 to 215 per 100,000.
- The age-standardised proportion of Indigenous people who presented to a hospital with a STEMI and had a PCI increased from 25% in 2004–05 to 46% in 2012–13.

There are 17 Better Cardiac Care measures that require further data development to enable full reporting. The required improvements include linkage between data sets for information on post-hospital care and mortality, more details on hospital treatment, better coverage of Rheumatic Heart Disease registers, and new data collections on services provided by general practitioners and cardiologists.

Table S1: Summary of Better Cardiac Care results for Indigenous Australians

Measure	Crude rate Indigenous	Age-standardised rate			Change over time	Indigenous							
		Indigenous	Non-Indigenous			NSW	Vic	Qld	WA	SA	Tas	ACT	NT
1.1 Annual health assessments, 2013–14 (%)	26	27	4	✓	24	16	30	27	21	10	16	30	
1.3 Primary care practitioner follow-up													
(i) Blood pressure check, 2012–13 (%)	87	n.a.	n.a.	n.a.	87	84	87	84	89	83	84	91	
(ii) Discussed quitting smoking, 2012–13 (%)	40	n.a.	n.a.	n.a.	48	42	38	37	44	40	40	28	
2.1 Cardiac-related diagnostic items, 2013–14 (%)	2	4	4	✓	4 ^(a)	3 ^(a)	4	3	3	(a)	(a)	3	
3.1 ST-elevation myocardial infarction patients treated with percutaneous coronary intervention, 2010–13 (%)	50	46	70	✓	56 ^(a)	62 ^(a)	48	62	56	(a)	(a)	21	
3.3 Acute coronary syndrome patients who received diagnostic angiography or definitive revascularisation, 2010–13 (%)	45	48	56	✓	46 ^(a)	44 ^(a)	35	60	54	(a)	(a)	46	
3.5 People admitted to hospital with acute myocardial infarction who died in hospital, 2008–13 (%)	5	4	4	✓	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
4.2 (i) People with cardiac disease with Team Care Arrangements, 2013–14 (%)	29	22	12	✓	23 ^(a)	16 ^(a)	24	17	12	(a)	(a)	29	
(ii) People with cardiac disease with a GP Management Plan, 2013–14 (%)	33	26	14	✓	26 ^(a)	18 ^(a)	27	24	18	(a)	(a)	32	
(iii) People with cardiac disease with Allied Health Services, 2013–14 (%)	24	19	17	✓	24 ^(a)	20 ^(a)	21	8	16	(a)	(a)	9	
5.1 New and recurrent cases of acute rheumatic fever, 2010–2013 (no. per 100,000)	53	53	0.2	X	n.a.	n.a.	26	61	n.a.	n.a.	n.a.	119	
5.2 Recurrent acute rheumatic fever, 2010–2013 (%)	n.a.	n.a.	n.a.	↔	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	34	
5.3 Benzathine penicillin doses, 2013 (% receiving >80% of doses)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	33	
6.1 Hospitalisations for cardiac conditions, 2010–13 (no. per 1,000)	13	24	13	↔	19 ^(a)	15 ^(a)	27	29	22	(a)	(a)	32	
6.2 (i) Deaths from cardiac conditions, 2008–2012 (no. per 100,000)	81	212	133	✓	68	n.a.	66	104	80	n.a.	n.a.	132	
(ii) In-hospital deaths for patients admitted with cardiac conditions, 2008–13 (no. per 100,000)	29	70	38	✓	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	

(a) Data for New South Wales are combined with data for the Australian Capital Territory, and data for Victoria are combined with data for Tasmania.
 ✓ = improved over time for Indigenous Australians; X = worsened over time for Indigenous Australians; ↔ = no change over time for Indigenous Australians.

Notes

1. Data by state and territory for measures 2.1, 4.2 and 6.1 are age standardised, whereas state and territory data for the remaining measures are crude rates.
2. Data for the Indigenous/non-Indigenous comparison for measure 5.1 are not age standardised.
3. Change over time is measured over the following years: 2004–05 to 2013–14 for measures 1.1 and 1.3; 2004–05 and 2012–13 for measures 3.1, 3.3 and 6.1; 2004–07 and 2010–13 for measure 3.5; 2005–06 and 2013–14 for measure 4.2; 2010 and 2013 for measures 5.1 and 5.2; 1998 and 2012 for measure 6.2.

Sources: ABS 2012–13 Aboriginal and Torres Strait Islander Health Survey; AIHW analysis of Medical Benefits Schedule data; AIHW analysis of NT Rheumatic Heart Disease Program data; AIHW National Hospital Morbidity Database; AIHW National Mortality Database.

1 Introduction

Heart and circulatory conditions contribute most to the disease burden of Aboriginal and Torres Strait Islander people and are major contributors to the gap in life expectancy between Indigenous and other Australians (Vos et al. 2009). Research evidence shows that, as well as having higher rates of cardiac conditions, Aboriginal and Torres Strait Islander people have poorer access to health services aimed at preventing and treating cardiac conditions (Clark et al. 2012; Mathur et al. 2006; Walters et al. 2008).

The Better Cardiac Care for Aboriginal and Torres Strait Islander People project was an initiative of the Australian Health Ministers' Advisory Council (AHMAC). It aims to reduce mortality and morbidity from cardiac conditions among Aboriginal and Torres Strait Islander people by increasing access to services, better managing risk factors and treatment and by improving the coordination of care.

A related project, the Essential Service Standards for Equitable National Cardiovascular Care for Aboriginal and Torres Strait Islander people (ESSENCE), has produced standards on the essential services and care for Aboriginal and Torres Strait Islander people with cardiovascular disease. These standards were developed by a national steering committee of experts in Aboriginal and Torres Strait Islander cardiovascular care. Measures for these standards (some of which overlap the Better Cardiac Care measures) are being developed by project staff at the Wardliparingga Unit at the South Australian Health and Medical Research Institute. The aim of the ESSENCE measures is to assess performance against the ESSENCE standards and associated improvements in cardiovascular health outcomes. It is expected that implementing these ESSENCE measures will drive change in practice across the continuum of care.

Better Cardiac Care project

The Better Cardiac Care for Aboriginal and Torres Strait Islander People Forum, a joint initiative of Australian, state and territory governments, was held in March 2014 and involved representatives from both the Department of Health and state and territory health departments. The forum's role was to identify national priorities for action and high-impact initiatives for implementation to improve cardiac outcomes for Aboriginal and Torres Strait Islander people.

The post-forum report identified five priority areas for intervention and associated actions that health services should undertake to improve cardiac care for Aboriginal and Torres Strait Islander people (Better Cardiac Care Forum 2014). These five priority areas and actions recommended by the forum are outlined in Table 1.1.

Table 1.1: Priority areas and actions recommended by the Better Cardiac Care Forum^(a)

Priority area and action	Responsibility
Priority area 1: Primary preventive care—Early cardiovascular risk assessment and management	
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
Priority area 2: Clinical suspicion of disease—Timely diagnosis of heart disease and heart failure	
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
Priority area 3: Acute episode—Guideline-based therapy for acute coronary syndrome	
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
Priority area 4: Ongoing care—Optimisation of health status and ongoing preventive care	
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
Priority area 5: Rheumatic heart disease—Strengthen the diagnosis, notification and follow-up of rheumatic heart disease	
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

(a) The AHMAC agreed to these priority areas and actions in June 2014.

The forum also developed a set of 21 Better Cardiac Care measures that were designed to ensure implementation and ongoing monitoring of these actions (Table 1.2). The Australian Institute of Health and Welfare (AIHW) was funded to prepare this first report on these 21 measures.

Reporting on the Better Cardiac Care measures

The report includes data for 4 full measures and 8 part measures for which national data are currently available. Measures were reported in full where data were available, or partially where there were data available that closely approximated the original agreed measure. The report also outlines the data development work that is likely to be required to fully report on all 21 measures. The measures, their reporting status, main data sources and estimated data development time frames are summarised in Table 1.2.

Table 1.2: Summary of Better Cardiac Care measures: reporting status, data sources and data development time frame

Measure	Data source	Time frame
Priority area 1: Early cardiovascular risk assessment and management		
1.1 Number/proportion of people who received an MBS Health Assessment within the previous 12 months*	MBS	
1.2 Number/per 1,000 people ≥20 years of age without cardiac disease with cardiovascular risk assessment and stratification in the last 2 years		Short term
1.3 Proportion of people with risk factors for cardiac disease with evidence of primary care practitioner follow-up	AATSIHS	Long term
Priority area 2: Timely diagnosis of heart disease and heart failure		
2.1 Number/proportion of clients with Medicare-listed diagnostic items claimed in the previous 12 months*	MBS	
2.2 Number/proportion of people who received diagnostic services within 30 days of referral		Long term
2.3 Proportion of people with suspected/confirmed cardiac disease reviewed by a cardiologist within the previous 12 months		Long term
Priority area 3: Guideline-based therapy for acute coronary syndrome		
3.1 Proportion of people with STEMI: (a) treated by primary PCI; (b) treated with fibrinolysis*	NHMD	Med term
3.2 Proportion of people with STEMI who are not provided any reperfusion therapy	NHMD	Med term
3.3 Proportion of people with ACS who received diagnostic angiography or definitive revascularisation procedure within the index admission/within 30 days*	NHMD	Med term
3.4 Proportion of people diagnosed with ACS discharged from hospital on appropriate secondary prevention medicines		Med term
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	Short term
Priority area 4: Optimisation of health status and provision of ongoing preventative care		
4.1 Number/proportion of patients reviewed by a primary health-care professional within 1 week of discharge from hospital		Short term
4.2 Number/proportion of patients with cardiac disease who received follow-up Medicare items within 3 months of hospital discharge	MBS	Short term
4.3 Number/proportion of patients with cardiac disease reviewed by a specialist physician within 3/12 months of discharge		Short term
4.4 Number/proportion of patients with coronary heart disease discharged on prevention medications and remaining on it at 3, 6 and 12 months		Med term

(continued)

Table 1.2 (continued): Summary of Better Cardiac Care measures: reporting status, data sources and data development time frame

Measure	Data source	Time frame
Priority area 5: Strengthen the diagnosis, notification and follow-up of rheumatic heart disease		
5.1 Annual incidence of all acute rheumatic fever episodes	RHDR	Med term
5.2 Proportion of all acute rheumatic fever episodes that are recurrent	RHDR	Med term
5.3 Median proportion of scheduled benzathine penicillin doses given to patients with confirmed acute rheumatic fever or rheumatic heart disease in the preceding 12 months	RHDR	Med term
5.4 Proportion of people with moderate or severe rheumatic heart disease who received an echocardiogram in the previous 12 months		Long term
Summary measures: Hospitalisation and mortality		
6.1 Age-standardised rates of hospitalisation for a cardiac condition	NHMD	
6.2 Age-standardised rates of cardiac mortality	NMD	

Green shading indicates national data are available to report on the full measure
 Blue shading indicates that national data are available to report on part of the measures
 Orange shading indicates that no data are available for national reporting

* Indicates those measures for which AHMAC requested annual reporting (1.1, 2.1, 3.1, 3.3, and 3.5).

AATSIHS = Aboriginal and Torres Strait Islander Health Survey; ACS = acute coronary syndrome; MBS = Medicare Benefit Schedule; NHMD = National Hospital Morbidity Database; NMD = National Mortality Database; PCI = percutaneous coronary intervention; RHDRs = Rheumatic Heart Disease registers; STEMI = ST-elevation myocardial infarction.

Structure of this report

Chapter 2 of this report includes the results for 12 measures for which national data were available, structured around the 5 priority areas. Each measure is reported on separately, including a description of the full measure and why it is important. Where available, the relevant data are presented at the national, state and regional levels; by age and sex; by Indigenous status; and by trends over time. Data presented at the national level for Indigenous Australians are crude rates, whereas data presented by Indigenous status are age standardised. A list of things to consider in interpreting the data for each measure is included to assist users understand any data issues and limitations.

In some cases, the original indicators were modified to enable reporting. Appendix A outlines the original indicators and how these were modified. It also provides the technical specifications for all the measures reported. Information on the data sources used in this report is provided at Appendix B. Appendix C includes more information about the data issues and limitations listed under the 'things to consider' heading for each indicator.

Chapter 3 of the report provides consolidated information on the data development work required to fully report on all 21 Better Cardiac Care measures.

2 Results

Priority area 1: Early cardiovascular risk assessment and management

The first priority area 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 without known cardiac disease should receive a cardiovascular risk assessment each year, appropriate management and follow-up of identified risk factors, and 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 not only long-term outcomes for Aboriginal and Torres Strait Islander people (and reduce the population burden of chronic cardiac disease) but also the appropriate delivery of care by the health-care system.

Three measures were agreed in this priority area: measure 1.1, on health assessments, is a national measure; measure 1.2, on cardiovascular disease risk assessment, and measure 1.3, on early management strategies, are service level measures. Data were available to fully report on measure 1.1 and to partly report on measure 1.3.

Measure agreed at Better Cardiac Care Forum	Measure reported
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	Data were reported for Aboriginal and Torres Strait Islanders aged 25 and over with an MBS Health Assessment. Persons aged under 25 were excluded due to the small numbers.
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 were available so AATSIHS data were provided as a proxy. The measure reported was: (i) 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 (ii) proportion of Indigenous people aged 18 and over without a current and long-term circulatory condition who were at high risk of cardiac disease and were current smokers who saw a doctor/health professional or specialist in the previous 12 months and discussed quitting smoking.

Measure 1.1: Annual health assessments

Proportion of people aged 25 and over who received a Medicare Benefits Schedule (MBS) Health Assessment within the previous 12 months.

Why it is important

Health assessments are intended to increase preventative health opportunities, detect chronic disease risk factors, better manage existing chronic disease and reduce inequities in access to primary care for Aboriginal and Torres Strait Islander people. Early detection and management of the risk factors for cardiac disease (smoking, physical inactivity, poor diet, high blood pressure) have the potential to reduce the incidence of cardiac disease and to lessen its severity. All Aboriginal and Torres Strait Islander people are eligible for an annual Indigenous-specific health assessment, listed as item 715 on the MBS. Both Indigenous and non-Indigenous people may also have a general MBS Health Assessment.

Results

Nationally: Just over one-quarter (26% or 81,086) of Indigenous people aged 25 and over had an MBS Health Assessment in 2013–14 (crude rate).

Indigenous status: After adjusting for the age differences in the populations, Indigenous Australians aged 25 and over were 7 times as likely to have had an MBS Health Assessment as non-Indigenous Australians (27% compared with 4%) (Figure 1.1a). This higher figure reflects the creation of a specific MBS item for Indigenous people to address the health issue disadvantages they face.

Time trend: In the 10 years from 2004–05 to 2013–14, the age-standardised proportion of Indigenous people aged 25 and over who had an MBS Health Assessment increased from 4% to 27% (Figure 1.1b). Over the same period, the proportion for non-Indigenous people increased from 2% to 4%. For Indigenous people, there was a particularly large increase from 2008–09 (Figure 1.1b) which coincided with the introduction of the Australian Government's Indigenous Chronic Disease Package.

Age and sex

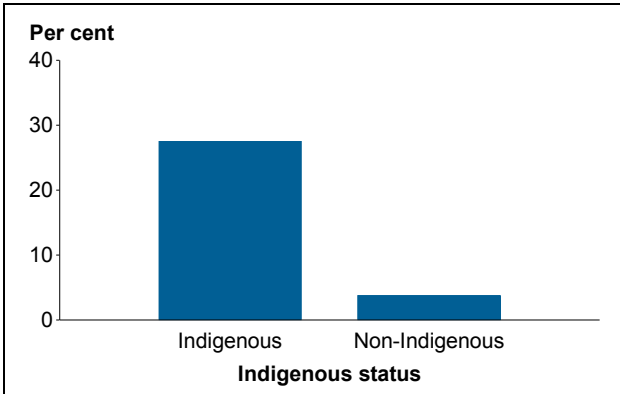
- The proportion of Indigenous Australians who had an MBS Health Assessment increased with age, from 19% for those aged 25–34 to 37% for those aged 65 and over.
- For each age group, Indigenous females were more likely than Indigenous males to have had an MBS Health Assessment (Figure 1.1c).
- Rates were higher for Indigenous than for non-Indigenous males and females in all age groups.

Jurisdiction: The proportion of Indigenous people aged 25 and over who had an MBS Health Assessment was highest in Queensland and the Northern Territory (both 30%), followed by Western Australia (27%). The proportion was lowest in Tasmania (10%) (Figure 1.1d).

Region: Uptake of MBS Health Assessments was highest in *Inner and outer regional areas* (29%) and lowest in *Major cities* (19%) (Figure 1.1e).

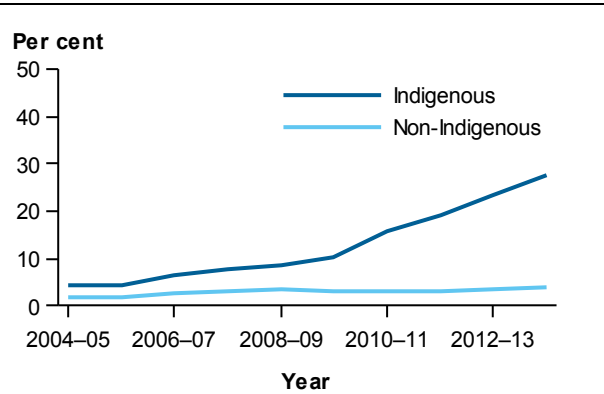
Things to consider

- The MBS data reflect billing practices and not necessarily services provided.
- The general health assessments data were adjusted for Indigenous under-identification. General health assessments for non-Indigenous Australians are not directly comparable with Indigenous-specific health assessments.



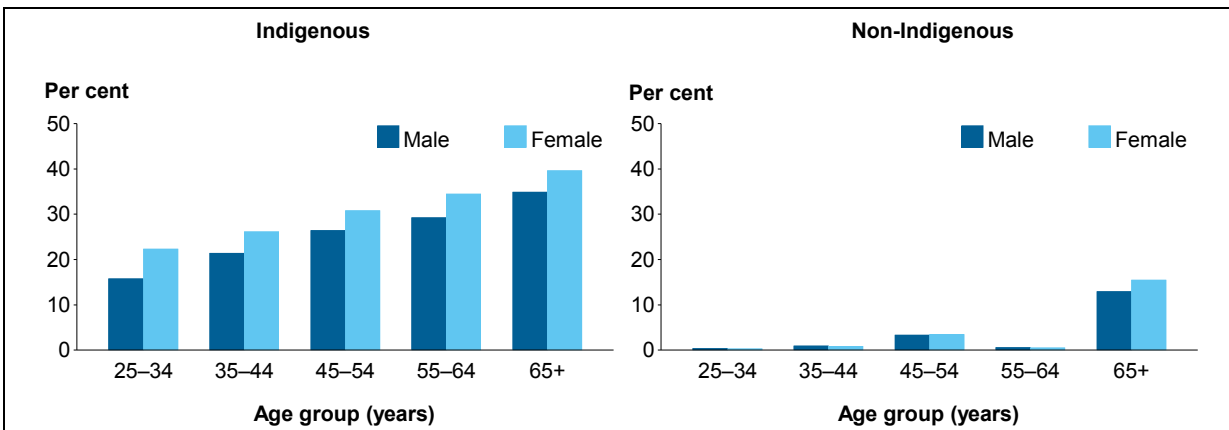
Source: AIHW analysis of MBS data.

Figure 1.1a: Age-standardised proportion of people who had an MBS Health Assessment, by Indigenous status, 2013-14



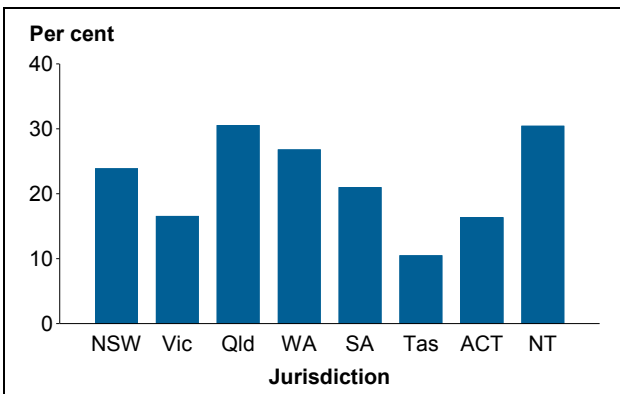
Source: AIHW analysis of MBS data.

Figure 1.1b: Trends in age-standardised proportion of people who had an MBS Health Assessment, by Indigenous status



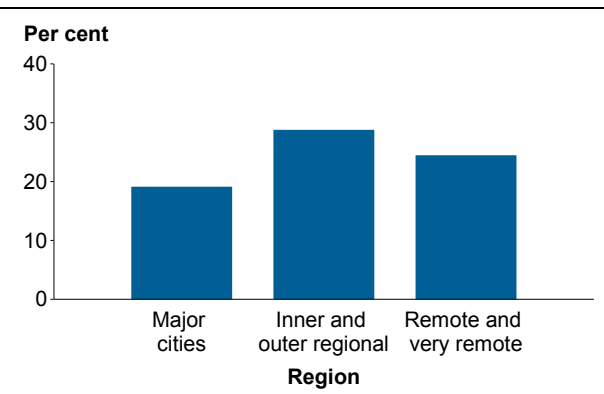
Source: AIHW analysis of MBS data.

Figure 1.1c: Proportion of people who had an MBS Health Assessment, by Indigenous status, age and sex, 2013-14



Source: AIHW analysis of MBS data.

Figure 1.1d: Proportion of Indigenous people who had an MBS Health Assessment, by state and territory, 2013-14



Source: AIHW analysis of MBS data.

Figure 1.1e: Proportion of Indigenous people who had an MBS Health Assessment, by region, 2013-14

Measure 1.3: Primary care practitioner follow-up

(i) 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 previous 2 years.

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

Why it is important

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

Box 1: At high risk of cardiac disease

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

Results

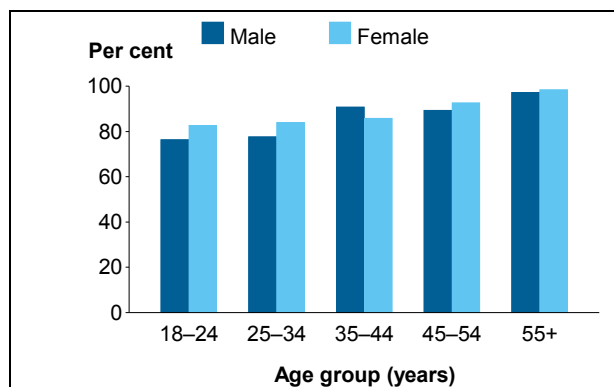
1.3 (i) Blood pressure check

Nationally: In 2012–13, in non-remote areas, 87% of Indigenous people without a circulatory condition who were at high risk of cardiac disease had their blood pressure checked in the last 2 years.

Age and sex: The proportion of Indigenous Australians at high risk of cardiac disease who had their blood pressure checked in the last 2 years increased with age from 79% for those aged 18–24 to 98% for those aged 55 and over (Figure 1.3a).

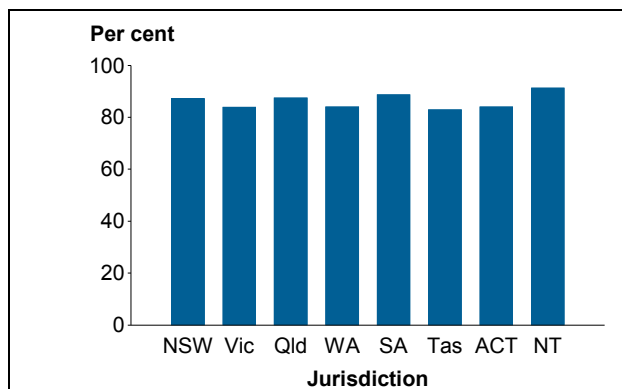
Jurisdiction: The proportion of Indigenous people at high risk of cardiac disease who had their blood pressure checked in the last 2 years was highest in the Northern Territory (91%), followed by South Australia (89%) (Figure 1.3b).

Region: The proportion of Indigenous people at high risk of cardiac disease who had their blood pressure checked in the last 2 years was highest in *Inner regional* areas (90%) (Figure 1.3c).



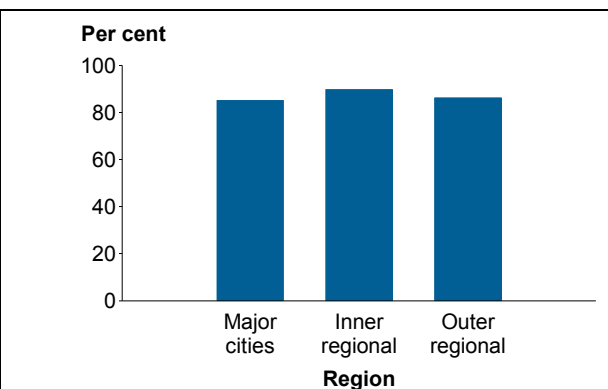
Source: ABS 2012-13 AATSIHS.

Figure 1.3a: Proportion of Indigenous people at high risk of cardiac disease who had their blood pressure checked in the last 2 years, by age and sex, 2012-13



Source: ABS 2012-13 AATSIHS.

Figure 1.3b: Proportion of Indigenous people at high risk of cardiac disease who had their blood pressure checked in the last 2 years, by state and territory, 2012-13



Source: ABS 2012-13 AATSIHS.

Figure 1.3c: Proportion of Indigenous people at high risk of cardiac disease who had their blood pressure checked in the last 2 years, by region, 2012-13

1.3 (ii) Discussed quitting smoking

Nationally: In 2012–13, 40% of Indigenous people at high risk of cardiac disease who were current smokers and saw a doctor/health professional or specialist in the previous 12 months and discussed quitting smoking.

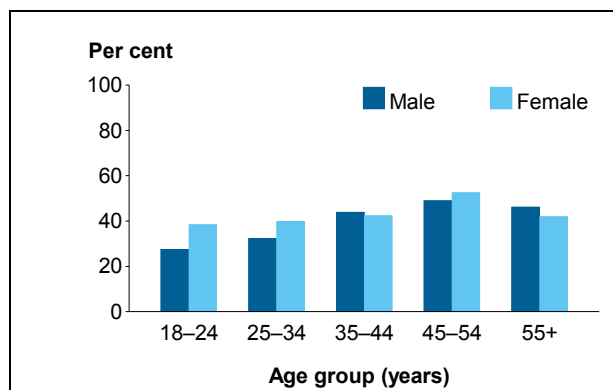
Age and sex: The proportion of Indigenous Australians at high risk of cardiac disease who discussed quitting smoking with their doctor/health professional or specialist in the previous 12 months increased with age from 33% for those aged 18–24 to 51% for those aged 45–54 (Figure 1.3d).

Jurisdiction: The Northern Territory had the lowest proportion of Indigenous people at high risk of cardiac disease who discussed quitting smoking with their doctor/health professional or specialist in the previous 12 months (28%) (Figure 1.3e).

Region: The proportion of Indigenous people at high risk of cardiac disease who discussed quitting smoking with their doctor/health professional or specialist in the previous 12 months decreased with remoteness, from 50% in *Major cities* to 27% in *Very remote* areas (Figure 1.3f).

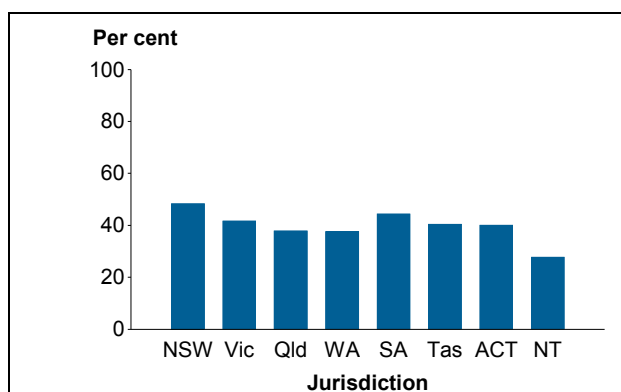
Things to consider

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



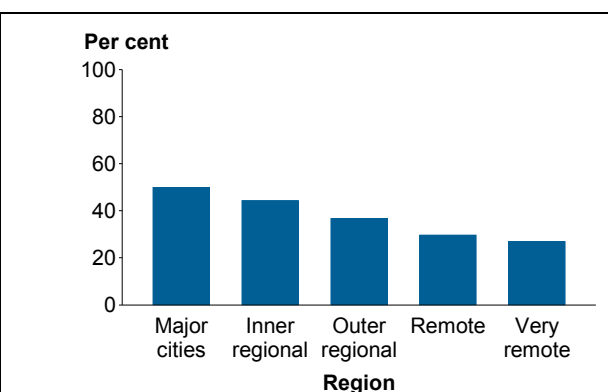
Source: ABS 2012-13 AATSIHS.

Figure 1.3d: Proportion of Indigenous people at high risk of cardiac disease who discussed quitting smoking, by age and sex, 2012-13



Source: ABS 2012-13 AATSIHS.

Figure 1.3e: Proportion of Indigenous people at high risk of cardiac disease who discussed quitting smoking, by state and territory, 2012-13



Source: ABS 2012-13 AATSIHS.

Figure 1.3f: Proportion of Indigenous people at high risk of cardiac disease who discussed quitting smoking, by region, 2012-13

[This page intentionally left blank]

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

The second priority area 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 to have 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 time frames according to the level of risk and the patient’s condition.

Of the 3 measures recommended for this priority area, only measure 2.1 on Medicare-listed diagnostic items claimed in the previous 12 months is reported here.

Measure agreed at Better Cardiac Care Forum	Measure reported
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, by region, compared with other Australians	Same as agreed measure.

Measure 2.1: Cardiac-related diagnosis

Number and proportion of Aboriginal and Torres Strait Islander people who had relevant Medicare diagnostic items claimed in the previous 12 months, in comparison with other Australians.

Why it is important

The level of access to diagnostic cardiac services in Australia varies considerably across regions and settings. This means that there is variation in the extent to which health-care professionals can provide appropriate treatment and follow-up. Data indicate that Aboriginal and Torres Strait Islander people have lower rates of angiography and other diagnostic services than other Australians, and that their access to these services is highly variable across Australia (AIHW 2013a).

Results

Nationally: In 2013–14, around 15,636 or 2% of Indigenous people had cardiac-related Medicare-listed diagnostic items claimed. There were 3 groups of these procedures: 6,255 or 1% of Indigenous people had electrocardiogram (ECG) monitoring, 12,822 or 2% had echocardiography and 933 or 0.1% had cardiac catheterisation (with or without PCI).

Indigenous status: The age-standardised proportions were slightly lower for Indigenous Australians than for non-Indigenous Australians, with a rate ratio of 0.9 for each of the 3 procedure groups: ECG monitoring (1.5% compared with 1.7%, respectively), echocardiography (2.9% compared with 3.2%) and cardiac catheterisation (0.26% compared with 0.29%) (Figure 2.1a).

Time trend: Between 2004–05 and 2013–14, the age-standardised proportion of Indigenous people who had Medicare-listed diagnostic items claimed increased from 1% to 4%. Over the same period, the proportion for non-Indigenous people remained fairly stable around 3–4% (Figure 2.1b).

Age and sex:

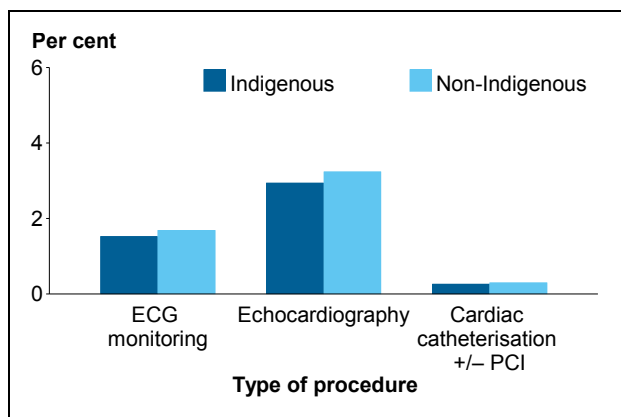
- The proportion of Indigenous Australians who had Medicare-listed cardiac-related diagnostic items claimed increased with age from 0.5% for those aged under 25 to 11% for those aged 65 and over (Figure 2.1c).
- Proportions were similar for Indigenous males and females.

Jurisdiction: The age-standardised proportion of Indigenous people who had Medicare-listed diagnostic items claimed was similar in all jurisdictions for both Indigenous and non-Indigenous Australians (Figure 2.1d).

Region: For both Indigenous and non-Indigenous Australians, the age-standardised proportion who had claimed Medicare-listed diagnostic items was lower in *Remote and very remote* areas compared with other areas (Figure 2.1e).

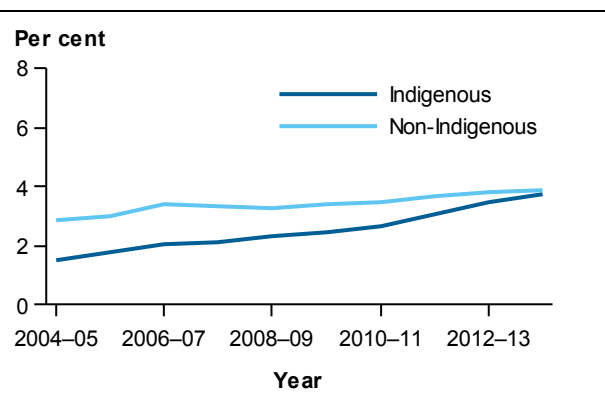
Things to consider

- The MBS data reflect billing practices and not necessarily services provided. People may access these interventions (especially PCI) in public hospitals that are not captured in these data.
- The MBS data were adjusted for Indigenous under-identification.



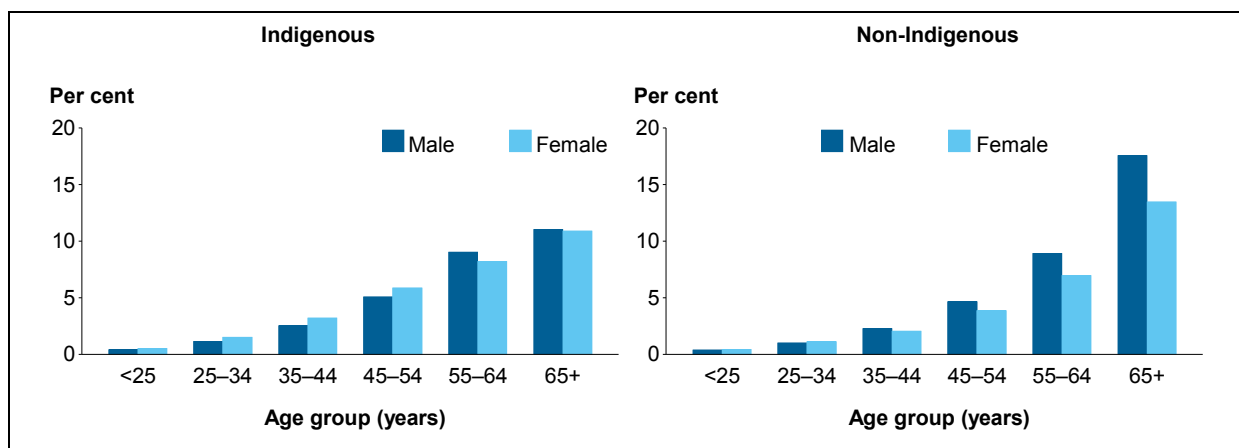
Source: AIHW analysis of MBS data.

Figure 2.1a: Age-standardised proportion of people who had Medicare-listed diagnostic items claimed, by Indigenous status, 2012-14



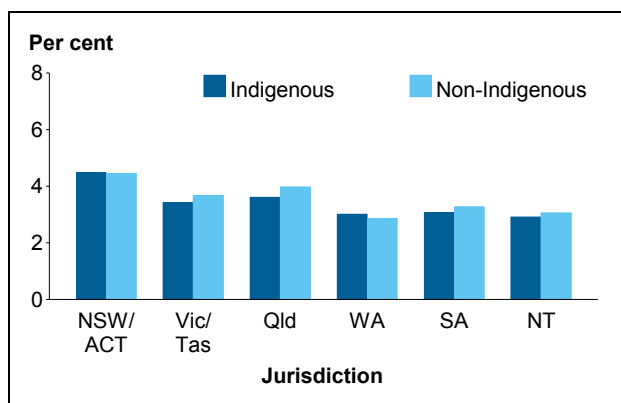
Source: AIHW analysis of MBS data.

Figure 2.1b: Trends in age-standardised proportion of people who had Medicare-listed diagnostic items claimed, by Indigenous status



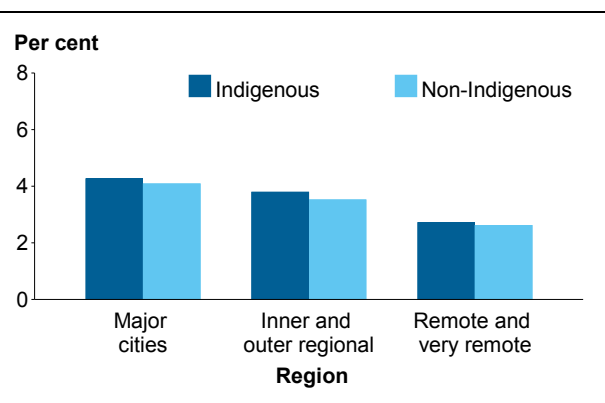
Source: AIHW analysis of MBS data.

Figure 2.1c: Proportion of people who had Medicare-listed diagnostic items claimed, by Indigenous status, age and sex, 2013-14



Source: AIHW analysis of MBS data.

Figure 2.1d: Age-standardised proportion of people who had Medicare-listed diagnostic items claimed, by Indigenous status, state and territory, 2013-14



Source: AIHW analysis of MBS data.

Figure 2.1e: Age-standardised proportion of people who had Medicare-listed diagnostic items claimed, by Indigenous status and region, 2013-14

[This page intentionally left blank]

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

The third priority area 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 ACS, a broad spectrum of acute clinical presentations ranging from unstable angina to acute myocardial infarction, receive guideline-based therapy.

Data for 3 of the 5 measures identified in this priority area are reported.

Measure agreed at Better Cardiac Care Forum	Measure reported
3.1 Proportion of people with STEMI who present within 12 hours of symptom onset and are eligible to receive emergency reperfusion therapy who are (a) treated by primary PCI, (b) treated with fibrinolysis	Data were not available to assess whether patients with a presented to emergency within 12 hours of symptom onset, nor on whether patients were eligible for reperfusion; hence, data on all people presenting with STEMI were reported. No data were available on whether patients were treated with fibrinolysis so this was not reported. People aged under 18 were excluded due to the small numbers.
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 were reported on estimates of people with ACS who received diagnostic angiography or a definitive revascularisation procedure within their period of care (contiguous episodes of care separated only by a transfer within or between hospitals). This was estimated by excluding hospitalisations ending in transfer to another acute hospital, so that only the 'last' hospitalisation was counted. Data were not available on whether these were received within 30 days of index admission. People aged under 18 were excluded due to the small numbers.
3.5 In-hospital, 30-day and 12-month mortality rates for people admitted to hospital with a primary diagnosis of acute myocardial infarction, by Aboriginal and Torres Strait Islander status	Data were reported on in-hospital mortality for people aged 35 and over who were admitted to hospital with a principal diagnosis of acute myocardial infarction. No national data were available on 30-day and 12-month mortality following hospitalisation.

Measure 3.1: STEMI patients treated by PCI

Proportion of people aged 18 and over with a ST-elevation myocardial infarction (STEMI) who are treated by percutaneous coronary intervention (PCI) by Aboriginal and Torres Strait Islander status.

Why it is important

One of the most effective treatments for people presenting to hospitals with a STEMI (that is, a severe heart attack) is to unblock the affected artery by PCI (that is, a procedure such as stent that opens blocked or narrowed coronary arteries) (Pie'rard 2007). Across all states and territories, Aboriginal and Torres Strait Islander people have lower rates of access to reperfusion and revascularisation services, despite higher rates of hospitalisation and a higher proportion of Indigenous patients with ACS being 'high-risk' (Gausia et al. 2014).

Results

Nationally: Half (crude rate of 50%) of Indigenous people aged 18 and over with a STEMI were treated by PCI during the period 2010–13.

Indigenous status: After adjusting for the age differences in the populations, 46% of Indigenous Australians with a STEMI were treated by PCI compared with 70% of non-Indigenous Australians (rate ratio of 0.7) (Figure 3.1a).

Time trend: Between 2004–05 and 2012–13, the age-standardised proportion of Indigenous people with a STEMI who were treated by PCI almost doubled, from 25% to 46%. Over the same period, the equivalent proportion for non-Indigenous people increased from 52% to 71% (Figure 3.1b).

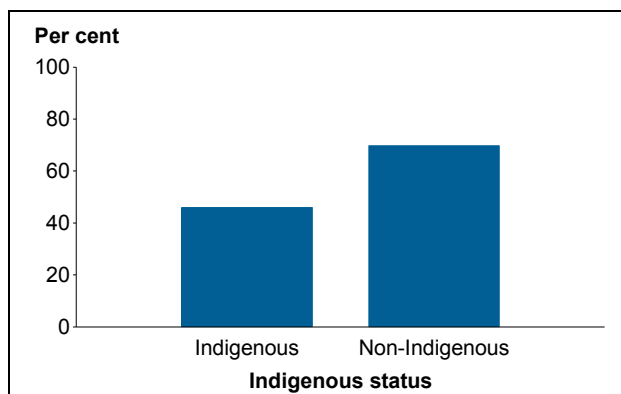
Age and sex: Indigenous males and females with a STEMI in all age groups were less likely than their non-Indigenous counterparts to be treated by PCI. For both Indigenous and non-Indigenous Australians, the proportion of people with a STEMI who were treated by PCI was lowest for those aged 65 and over (Figure 3.1c).

Jurisdiction: The proportion of Indigenous people aged 18 and over with a STEMI who were treated by PCI was lowest in the Northern Territory (21%) and highest in Western Australia (62%) (Figure 3.1d).

Region: The proportion of Indigenous people with a STEMI who were treated by PCI decreased with remoteness, from 64% in *Major cities* to 29% in *Very remote* areas (Figure 3.1e).

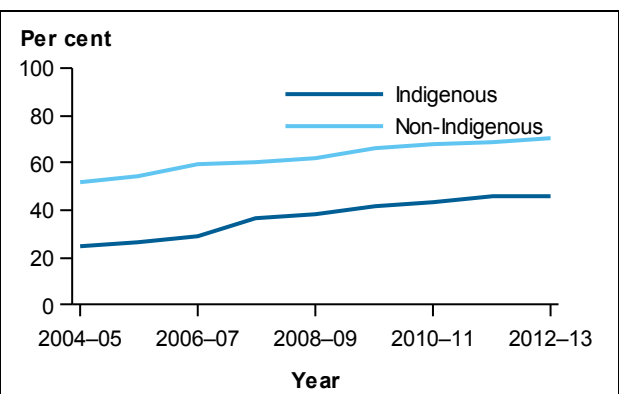
Things to consider

- The NHMD includes data on hospitalisations and not people, so the number of people is an estimate only. Hospitalisations ending in transfer to another acute hospital were excluded so that only the 'last' hospitalisation episode is counted. Analysis by NSW Health using linked hospital data showed that this method appears to overestimate the percentage of STEMI patients who receive PCI.
- There is some under-identification of Indigenous people in the NHMD.
- Eligibility for reperfusion therapy cannot be determined from the NHMD.
- PCIs are also performed in a non-admitted patient setting but these are not captured in the NHMD.



Source: AIHW NHMD.

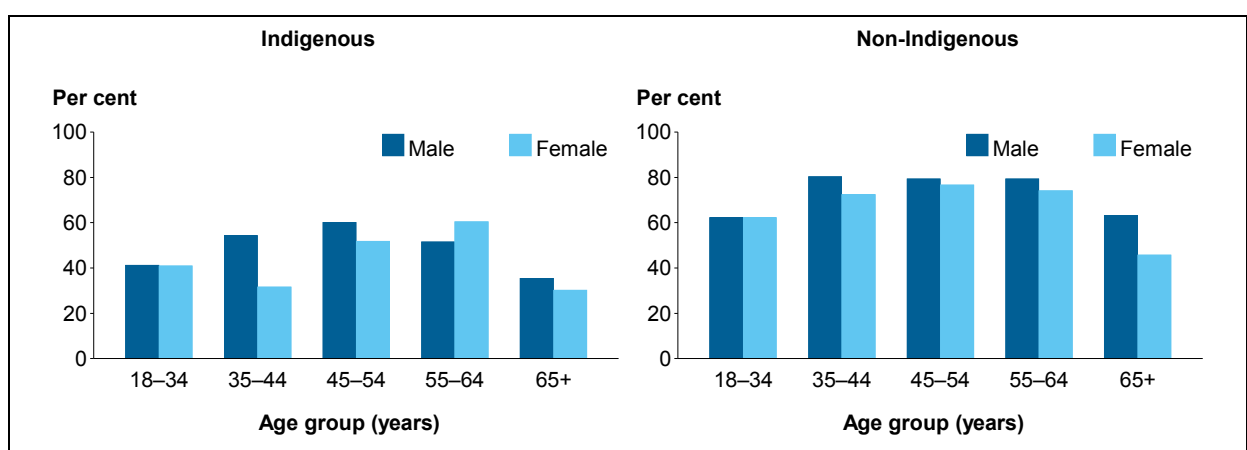
Figure 3.1a: Age-standardised proportion of people with a STEMI treated by PCI, by Indigenous status, 2010-13



Note: Includes NSW, Vic, Qld, WA, SA and NT combined.

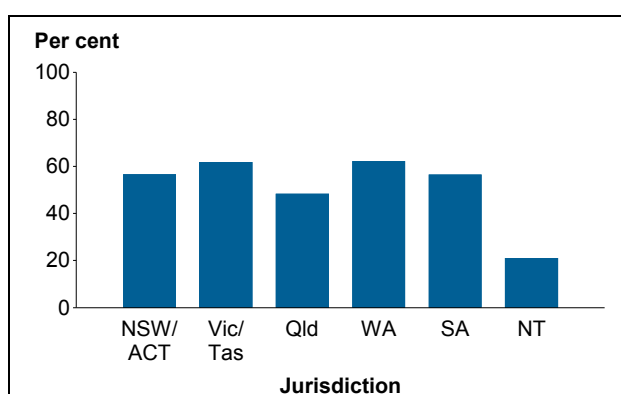
Source: AIHW NHMD.

Figure 3.1b: Trends in age-standardised proportion of people with a STEMI treated by PCI, by Indigenous status



Source: AIHW NHMD.

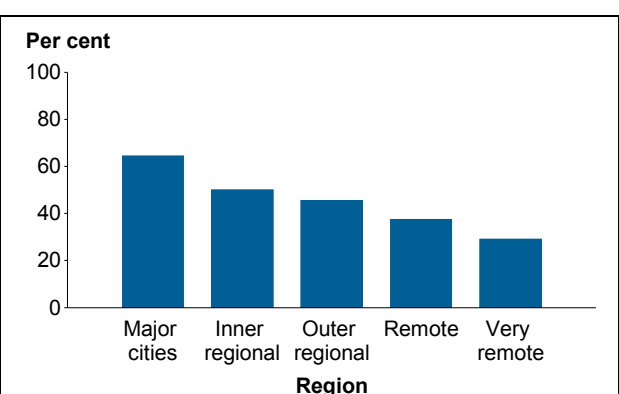
Figure 3.1c: Proportion of people with a STEMI treated by PCI, by Indigenous status, age and sex, 2010-13



Note: Data were reported by patient's place of usual residence.

Source: AIHW NHMD.

Figure 3.1d: Proportion of Indigenous people with a STEMI treated by PCI, by state and territory, 2010-13



Note: Includes NSW, Vic, Qld, WA, SA and NT combined.

Source: AIHW NHMD.

Figure 3.1e: Proportion of Indigenous people with a STEMI treated by PCI, by region, 2009-12

Measure 3.3: Acute coronary syndrome patients who received diagnostic angiography or definitive revascularisation

Proportion of people with an ACS who received one of the following within the period of care by Aboriginal and Torres Strait Islander status:

- diagnostic angiography, or
- a definitive revascularisation procedure, that is PCI or coronary artery bypass graft (open heart surgery with grafting of vessels).

Why it is important

Equitable access to acute cardiac care and adherence to cardiac care guidelines vary across hospitals, regions and for different patient groups (Gausia et al. 2014; Ong & Weeramanthri 2000). Barriers to accessing timely ACS treatment can, in part, be explained by geographical disparity in services. Geographical mapping of cardiac services across Australia estimated that 60% of Aboriginal and Torres Strait Islander people cannot access a PCI-capable hospital within 1 hour of where they live (Clark et al. 2012). Other studies have indicated that the differences in procedures rates cannot be explained by place of residence alone, and rates of thrombolysis (an appropriate second-line alternative to PCI) and revascularisation procedures among Indigenous people are still lower in some settings than for other Australians living in the same area or accessing the same services (Cunningham 2002; Ong & Weeramanthri 2000; Prabhu et al. 2013; Randall et al. 2013).

Results

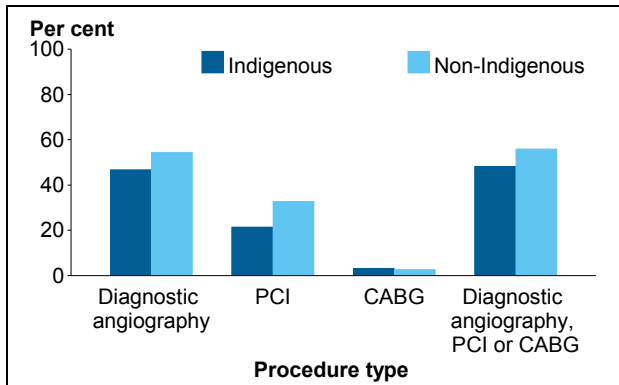
Nationally: In 2010–13, 45% of Indigenous people aged 18 and over with ACS received diagnostic angiography or a definitive revascularisation procedure (PCI or CABG) within the period of care. Of Indigenous people aged 18 and over with ACS, 44% received diagnostic angiography, 20% received PCI and 3% had a CABG within the period of care.

Indigenous status

- After adjusting for the age differences in the populations, 48% of Indigenous Australians with ACS received diagnostic angiography or definitive revascularisation compared with 56% of non-Indigenous Australians (rate ratio of 0.9) (Figure 3.3a).
- Indigenous Australians with ACS were less likely to have received angiography than non-Indigenous Australians (47% compared with 54%, respectively, a rate ratio of 0.9) and were less likely to have received PCI (21% compared with 33%, a rate ratio of 0.7).
- However, Indigenous Australians with ACS were more likely to have received CABG than non-Indigenous Australians (3.1% compared with 2.6%, respectively, a rate ratio of 1.2).

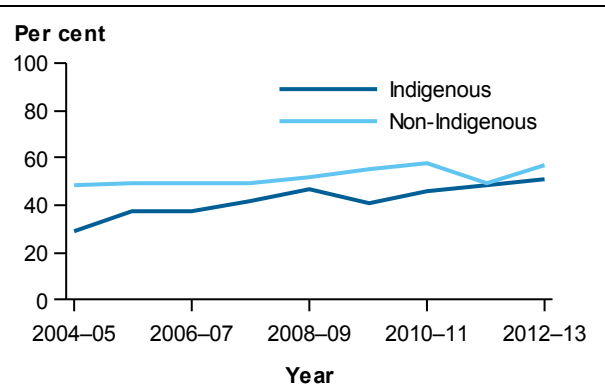
Time trend: Between 2004–05 and 2012–13, the age-standardised proportion of Indigenous people with ACS who received diagnostic angiography or a definitive revascularisation procedure increased from 29% to 51%. Over the same period, the proportion for non-Indigenous people increased from 48% to 57% (Figure 3.3b).

Age and sex: The proportion of people with ACS who received diagnostic angiography or a definitive revascularisation procedure within the period of care was generally higher for non-Indigenous males and females than for Indigenous males and females (Figure 3.3c).



Source: AIHW NHMD.

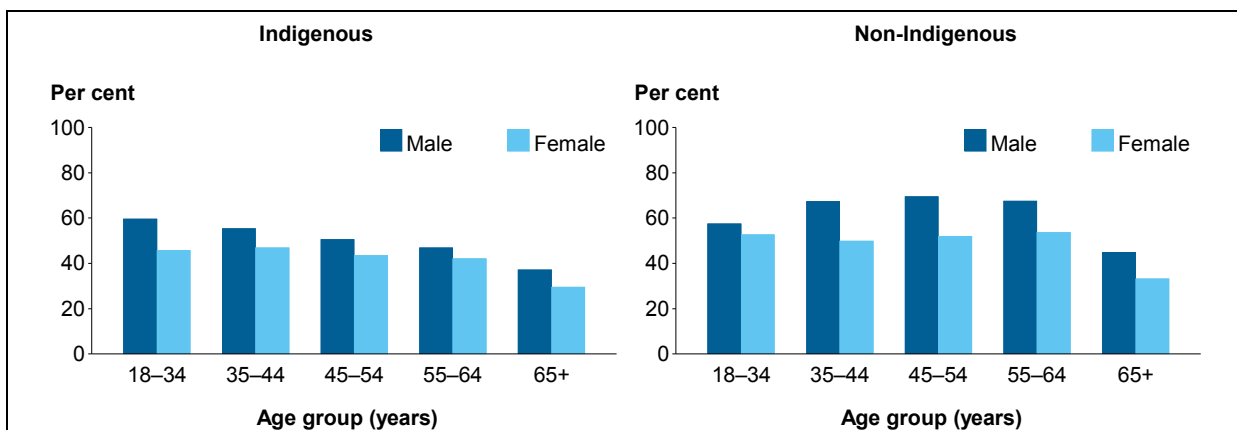
Figure 3.3a: Age-standardised proportion of people with ACS who received diagnostic angiography or a revascularisation procedure, by Indigenous status, 2010-13



Note: Includes NSW, Vic, Qld, WA, SA and NT combined.

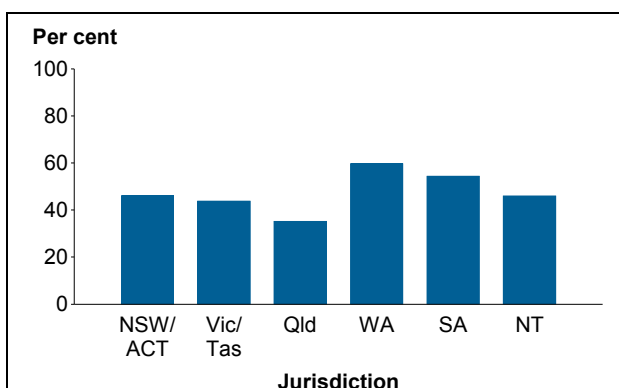
Source: AIHW NHMD.

Figure 3.3b: Trends in age-standardised proportion of people with ACS who received diagnostic angiography or a revascularisation procedure, by Indigenous status



Source: AIHW NHMD.

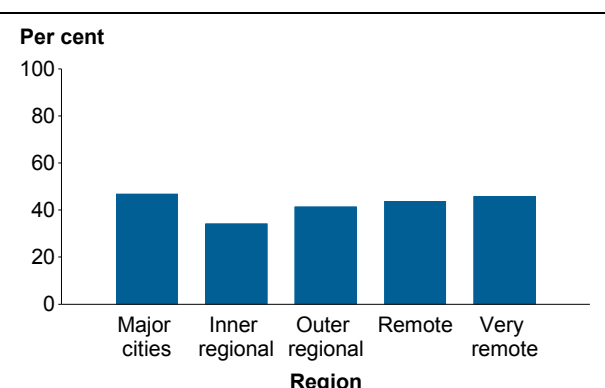
Figure 3.3c: Proportion of people with ACS who received diagnostic angiography or a revascularisation procedure, by Indigenous status, age and sex, 2010-13



Note: Data were reported by patient's place of usual residence.

Source: AIHW NHMD.

Figure 3.3d: Proportion of Indigenous people with ACS who received diagnostic angiography or a revascularisation procedure, by state and territory, 2010-13



Note: Includes NSW, Vic, Qld, WA, SA and NT combined.

Source: AIHW NHMD.

Figure 3.3e: Proportion of Indigenous people with ACS who received diagnostic angiography or a revascularisation procedure, by region, 2009-12

Jurisdiction: The proportion of Indigenous people with ACS who received diagnostic angiography or a revascularisation procedure ranged from just over one-third (35%) in Queensland to 60% in Western Australia (Figure 3.3d).

Region: The proportion of Indigenous people with ACS who received diagnostic angiography or a revascularisation procedure was lowest in *Inner regional* areas (34%) (Figure 3.3e).

Things to consider

- The NHMD includes data on hospitalisations, so the number of people is an estimate only. Hospitalisations ending in transfer to another acute hospital were excluded. The proportion of ACS patients who receive angiography or revascularisation may be underestimated.
- There is some under-identification of Indigenous people in the NHMD.

PCIs are also performed in a non-admitted patient setting but these are not captured in the NHMD.

[This page intentionally left blank]

Measure 3.5: Mortality rates for people admitted to hospital with acute myocardial infarction

Proportion of people aged 35 and over, admitted to hospital with a principal diagnosis of acute myocardial infarction (AMI) who died in hospital, by Aboriginal and Torres Strait Islander status.

Why it is important

Improvements in treatment for people with AMI should result in decreases in the mortality rate over both the short and longer term (Ong & Weeramanthri 2000; Tideman et al. 2014).

Results

Nationally: In 2008–13, 5% of Indigenous people aged 35 and over who were admitted to hospital with AMI, died in hospital.

Indigenous status: After adjusting for the age differences in the populations in 2008–13, 5% of Indigenous Australians with AMI died in hospital compared with 4% of non-Indigenous Australians (rate ratio of 1.1) (Figure 3.5a).

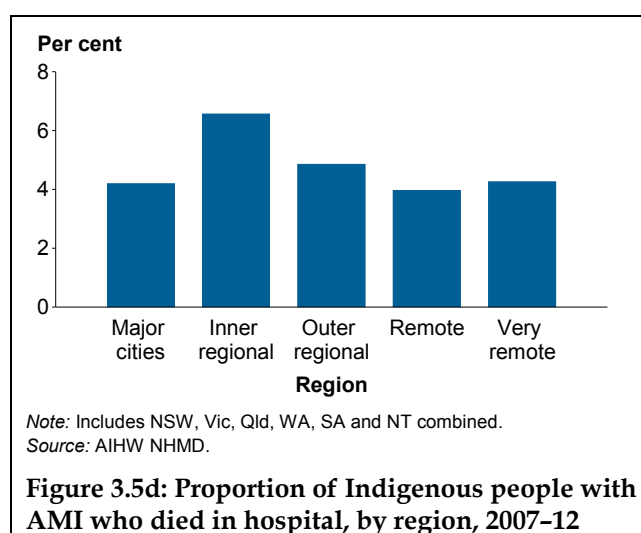
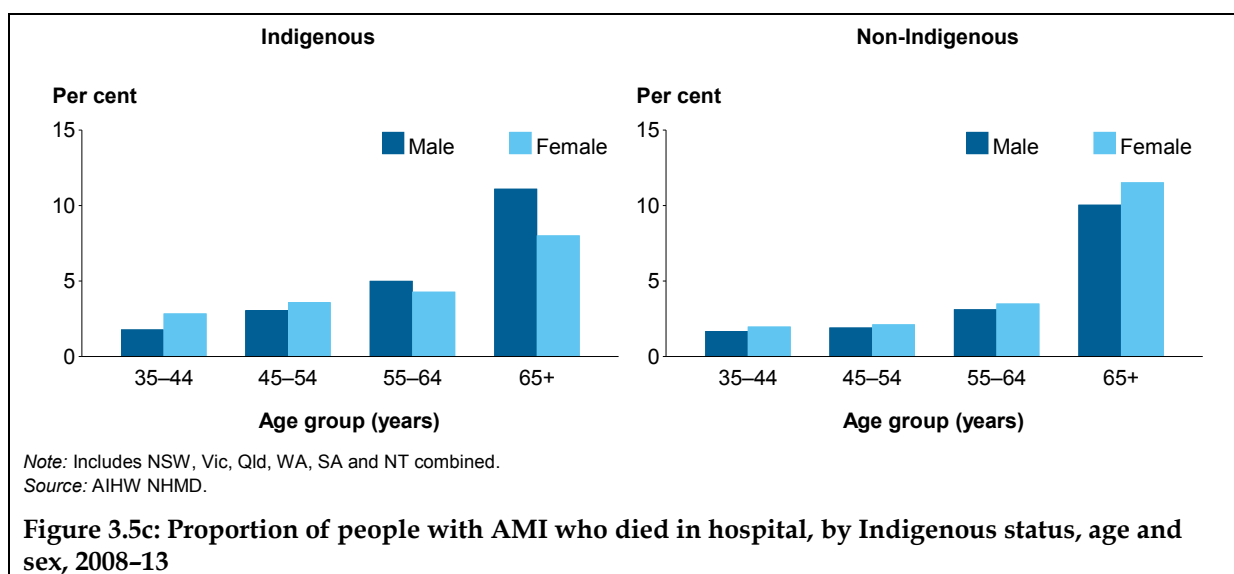
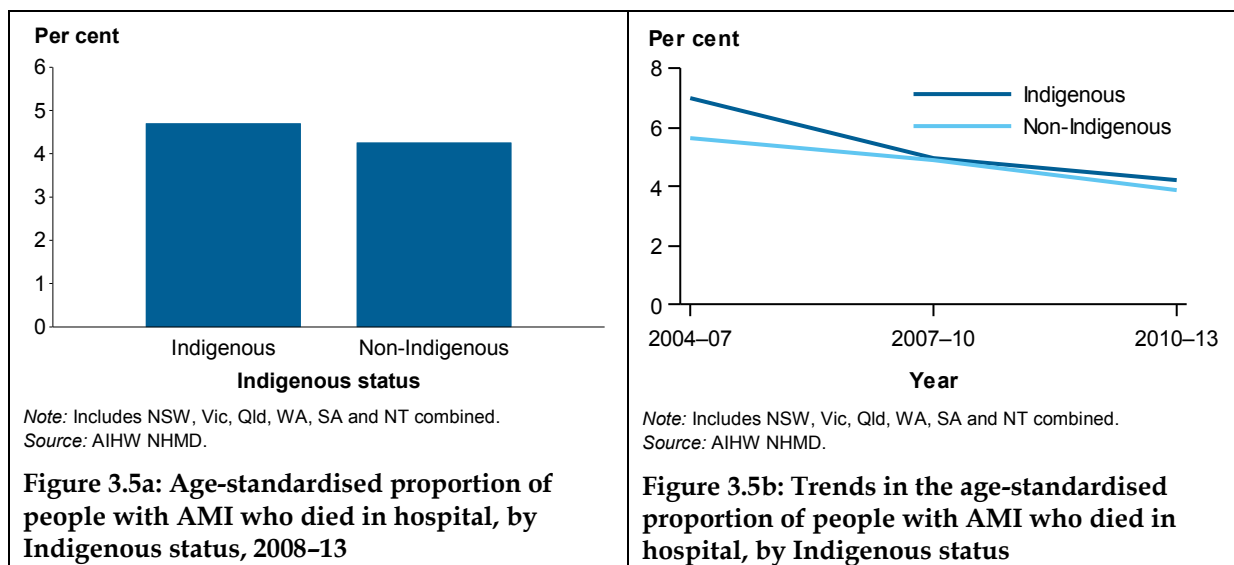
Time trend: The proportion of Indigenous people with AMI who died in hospital decreased from 7% to 4% between 2004–07 and 2010–13. Over the same period, the rate for non-Indigenous people decreased from 6% to 4% (Figure 3.5b).

Age and sex: In general, Indigenous males and females of all ages who were hospitalised with AMI were more likely than their non-Indigenous counterparts to die in hospital. The only exception to this was among the non-Indigenous females aged 65 and over (Figure 3.5c). The proportion of population surviving beyond age 65+ was highest for non-Indigenous females.

Region: The proportion of Indigenous people with AMI who died in hospital was highest in *Inner regional areas* (7%) (Figure 3.5d).

Things to consider

- Data by jurisdiction could not be provided as they were not comparable due to different practices for recording deaths in the NHMD. Some jurisdictions recorded deaths in emergency departments as in-hospital deaths for admitted patients, while others did not. Inclusion of emergency department deaths would have resulted in an overestimate of the national rates presented in this report and would have potentially had an impact on the comparisons of Indigenous and non-Indigenous rates.
- In-hospital mortality rates may also be affected by different approaches to pre- and post-hospital care, and should therefore be interpreted in the context of overall cardiac mortality.
- While the indicator refers to proportions for people, the data presented for this indicator are based on proportions for hospitalisations. Hospitalisations ending in transfer to another acute hospital were excluded. Analysis by NSW Health using linked hospital data showed that this method appears to overestimate the in-hospital mortality rate.
- There is some under-identification of Indigenous people in the NHMD.



[This page intentionally left blank]

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

The fourth priority area of the Better Cardiac Care project 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, based on existing guidelines, to prevent further illness and to optimise health status, including active referral to allied and multidisciplinary health services for community-based cardiac rehabilitation services and ongoing risk factor management (National Heart Foundation of Australia 2010).

Aboriginal and Torres Strait Islander people do not receive ongoing management of their cardiac or other chronic conditions after discharge from hospital at sufficient rates, despite bearing a considerably greater cardiovascular disease burden than non-Indigenous people.

Of the 4 measures under this priority area, only part of measure 4.2 had data available for reporting.

Measure agreed at Better Cardiac Care Forum	Measure reported
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	Data were reported on all people with cardiac disease receiving a Medicare Chronic Disease Management item of (a) Team Care Arrangement, (b) General Practitioner Management Plan (c) Allied Health Service. Data were not available specifically for patients discharged from hospital.

Measure 4.2: Medicare chronic disease management

Number and proportion of patients with a cardiac condition (people who had one or more of the cardiac-related MBS items in Table A4) who received the following Medicare Chronic Disease management items by Aboriginal and Torres Strait Islander status and region:

- (i) Team Care Arrangement
- (ii) General Practitioner Management Plan (GPMP)
- (iii) Allied Health Service item(s).

Why it is important

Secondary prevention, which encompasses a broad range of multidisciplinary interventions and management (such as Team Care Arrangements and GPMPs) are important to reduce the recurrence of 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 (National Heart Foundation of Australia 2006; WHO 1995). MBS data are the best source of data currently available to report on these areas.

Results

4.2 (i) Team Care Arrangements

Nationally: In 2013–14, around 4,957 or 29% of Indigenous people with a cardiac condition also claimed a Medicare Team Care Arrangement item.

Indigenous status: The age-standardised proportion was higher for Indigenous Australians (22%) than for non-Indigenous Australians (12%) (rate ratio 1.9) (Figure 4.2a).

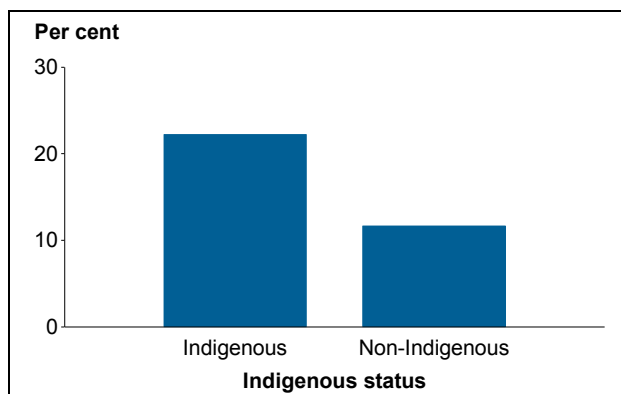
Time trend: Between 2005–06 and 2013–14, the age-standardised proportion of Indigenous people with a cardiac condition and a Team Care Arrangement increased from 5% to 22%. Over the same period, the proportion for non-Indigenous people increased from 3% to 12% (Figure 4.2b).

Age and sex:

- The proportions of Indigenous Australians with a cardiac condition and a Team Care Arrangement were higher than those for non-Indigenous Australians across all age groups, for both males and females.
- The proportions for Indigenous Australians increased with age, rising from 9% for those aged under 25 to 38% for those aged 65 and over (Figure 4.2c).
- The proportions for non-Indigenous Australians ranged from 5% for those aged under 25 to 27% for those aged 65 and over.

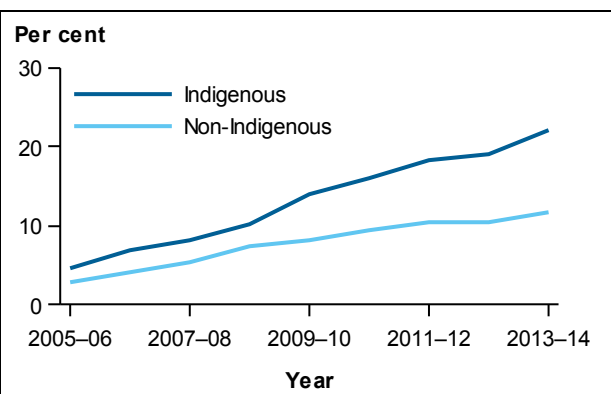
Jurisdiction: The age-standardised proportion of Indigenous people with a cardiac condition and a Team Care Arrangement was highest in the Northern Territory (29%) and lowest in South Australia (12%), while for non-Indigenous Australians it was highest in New South Wales/Australian Capital Territory (14%) and lowest in Western Australia (8%) (Figure 4.2d).

Region: The age-standardised proportion of Indigenous Australians with a cardiac condition and a Team Care Arrangement was lowest in *Major cities*, while for non-Indigenous Australians it was lowest in *Very remote* areas (Figure 4.2e).



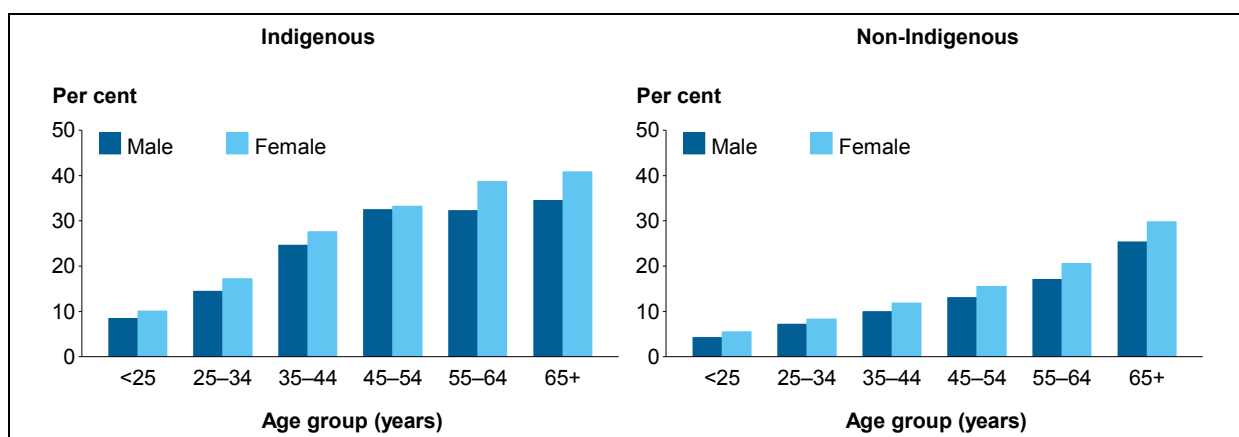
Source: AIHW analysis of MBS data.

Figure 4.2a: Age-standardised proportion of people with a cardiac condition with a Team Care Arrangement, by Indigenous status, 2013-14



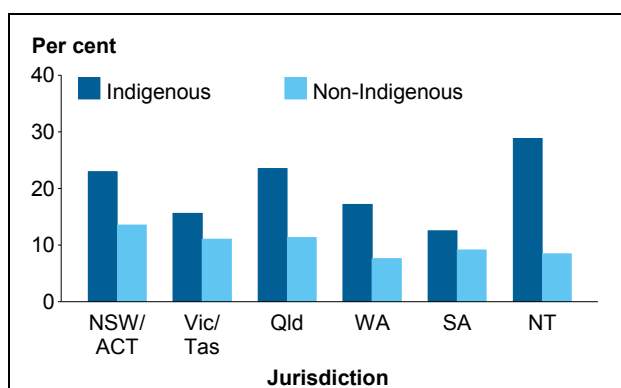
Source: AIHW analysis of MBS data.

Figure 4.2b: Trends in age-standardised proportion of people with a cardiac condition with a Team Care Arrangement, by Indigenous status



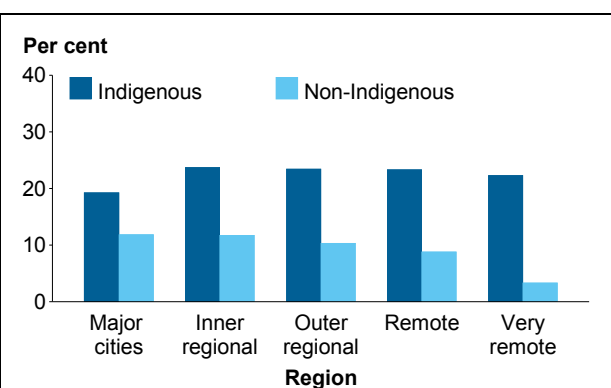
Source: AIHW analysis of MBS data.

Figure 4.2c: Proportion of people with a cardiac condition with a Team Care Arrangement, by Indigenous status, age and sex, 2013-14



Source: AIHW analysis of MBS data.

Figure 4.2d: Age-standardised proportion of people with a cardiac condition with a Team Care Arrangement, by Indigenous status, state and territory, 2013-14



Source: AIHW analysis of MBS data.

Figure 4.2e: Age-standardised proportion of people with a cardiac condition with a Team Care Arrangement, by Indigenous status and region, 2013-14

4.2 (ii) General Practitioner Management Plans

Nationally: In 2013–14, around 5,647 or 33% of Indigenous people with a cardiac condition also had a GPMP.

Indigenous status: The age-standardised proportion was higher for Indigenous Australians (26%) than for non-Indigenous Australians (14%) (rate ratio 1.8) (Figure 4.2f).

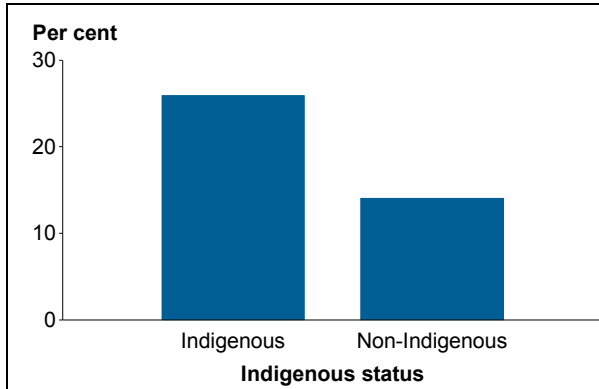
Time trend: Between 2005–06 and 2013–14, the age-standardised proportion of Indigenous people with a cardiac condition who also had a GPMP increased from 10% to 26%. Over the same period, the corresponding proportion for non-Indigenous people increased from 6% to 14% (Figure 4.2g).

Age and sex:

- The proportions of Indigenous Australians with a cardiac condition who also had a GPMP were higher than those for non-Indigenous Australians across all age groups, for both males and females.
- The proportions for Indigenous Australians increased with age rising from 12% for those aged under 25 to 43% for those aged 65 and over (Figure 4.2h).
- The proportions for non-Indigenous Australians ranged from 6% for those aged under 25 to 32% for those aged 65 and over.

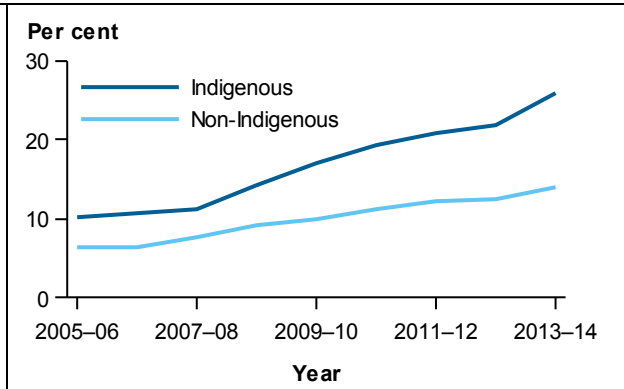
Jurisdiction: The age-standardised proportion of Indigenous people with a cardiac condition who also had a GPMP was highest in the Northern Territory (32%) and lowest in Victoria/Tasmania (18%), while for non-Indigenous Australians it was highest in New South Wales/Australian Capital Territory (16%) and lowest in Western Australia (10%) (Figure 4.2i).

Region: The age-standardised proportion of Indigenous Australians with a cardiac condition who also had a GPMP was lowest in *Major cities*, while for non-Indigenous Australians it was lowest in *Very remote* areas (Figure 4.2j).



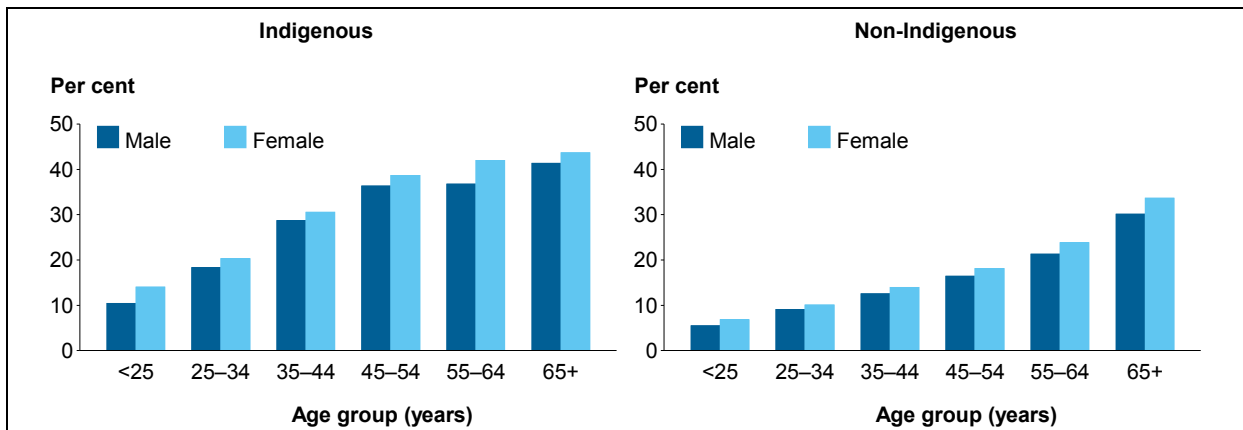
Source: AIHW analysis of MBS data.

Figure 4.2f: Age-standardised proportion of people with a cardiac condition with a GPMP, by Indigenous status, 2013-14



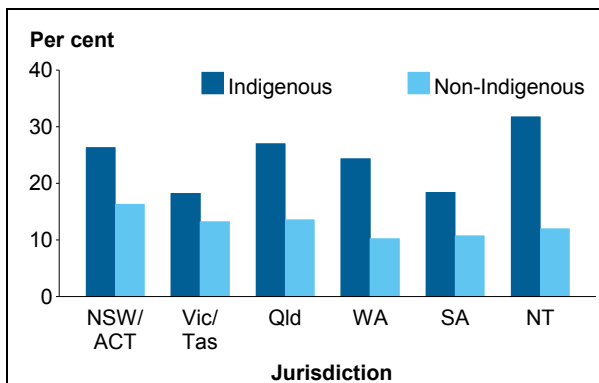
Source: AIHW analysis of MBS data.

Figure 4.2g: Trends in age-standardised proportion of people with a cardiac condition with a GPMP, by Indigenous status



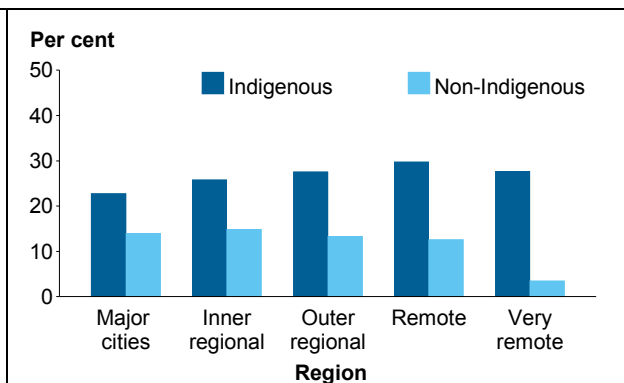
Source: AIHW analysis of MBS data.

Figure 4.2h: Proportion of people with a cardiac condition with a GPMP, by Indigenous status, age and sex, 2013-14



Source: AIHW analysis of MBS data.

Figure 4.2i: Age-standardised proportion of people with a cardiac condition with a GPMP, by Indigenous status, state and territory, 2013-14



Source: AIHW analysis of MBS data.

Figure 4.2j: Age-standardised proportion of people with a cardiac condition with a GPMP, by Indigenous status and region, 2013-14

4.2 (iii) Allied Health Service items

Nationally: In 2013–14, around 4,187 or 24% of Indigenous people with a cardiac condition also claimed at least 1 Allied Health Service item.

Indigenous status: The age-standardised proportion was similar for Indigenous Australians (19%) and non-Indigenous Australians (17%) (rate ratio 1.1) (Figure 4.2k).

Time trend: Between 2005–06 and 2013–14, the age-standardised proportion of Indigenous people with a cardiac condition who also had an Allied Health Service increased from 2% to 19%. Over the same period, the proportion for non-Indigenous people increased by a similar amount from 2% to 17% (Figure 4.2l).

Age and sex:

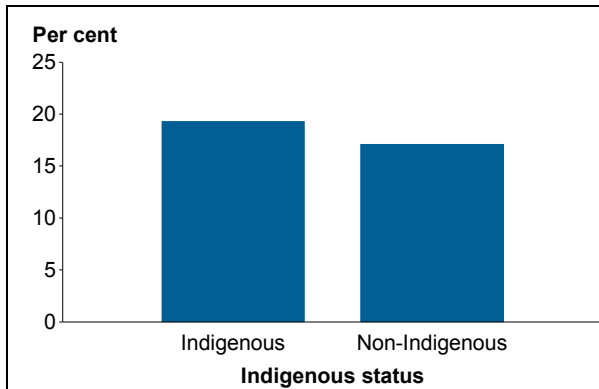
- The proportions of Indigenous Australians with a cardiac condition who also had an Allied Health Service were higher than those for non-Indigenous Australians in most age groups – for males aged from 25 and over and for females from 35 and over.
- The proportions for Indigenous Australians increased with age, rising from 10% for those aged under 25 to 39% for those aged 65 and over (Figure 4.2m).
- The proportions for non-Indigenous Australians ranged from 12% for those aged under 25 to 32% for those aged 65 and over.

Jurisdiction: The age-standardised proportion of Indigenous people with a cardiac condition who also had an Allied Health Service was highest in New South Wales/ Australian Capital Territory (24%) and lowest in Western Australia (8%), while for non-Indigenous Australians it was highest in Victoria/Tasmania (18%) and lowest in the Northern Territory (8%) (Figure 4.2n).

Region: The age-standardised proportion of those with a cardiac condition who also had an Allied Health Service was lowest in *Remote* and *Very remote* areas for both Indigenous and non-Indigenous Australians (Figure 4.2o).

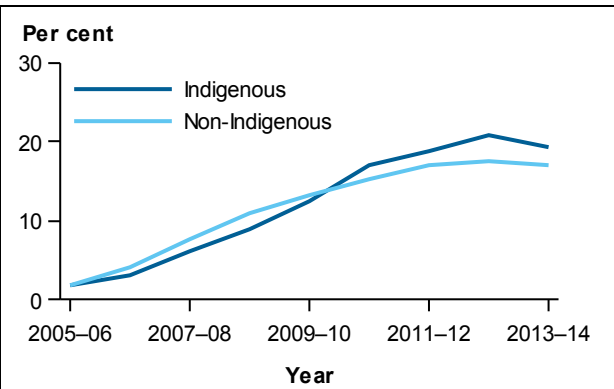
Things to consider

- The MBS data reflect claiming practices and not necessarily services provided.
- The MBS data were adjusted for Indigenous under-identification.
- As some of the MBS items used to identify people with a cardiac condition are diagnostic, not all people with these items would have cardiac conditions (as some of the tests would have been negative).



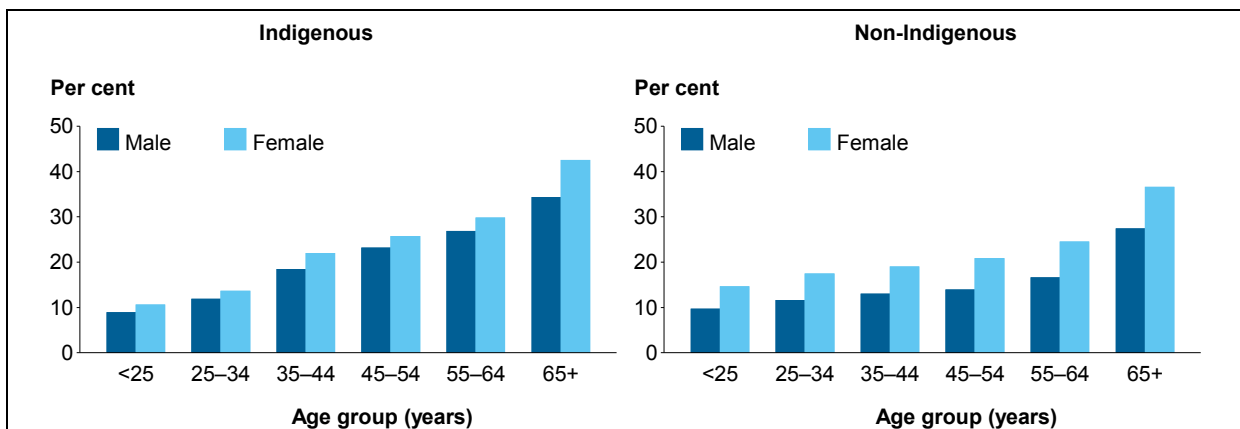
Source: AIHW analysis of MBS data.

Figure 4.2k: Age-standardised proportion of people with a cardiac condition with an Allied Health Service item, by Indigenous status, 2013-14



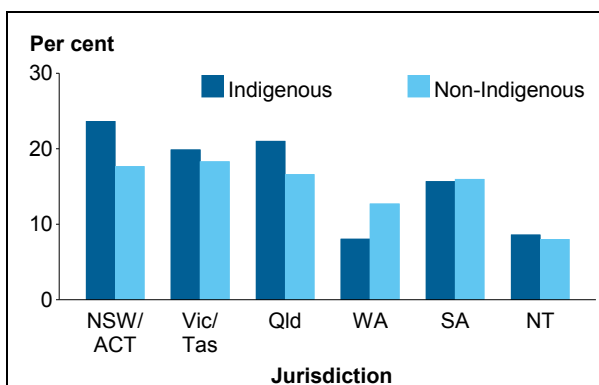
Source: AIHW analysis of MBS data.

Figure 4.2l: Trends in age-standardised proportion of people with a cardiac condition with an Allied Health Service item, by Indigenous status



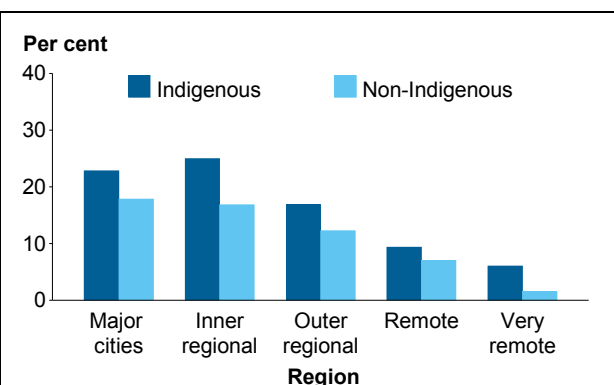
Source: AIHW analysis of MBS data.

Figure 4.2m: Proportion of people with a cardiac condition with an Allied Health Service item, by Indigenous status, age and sex, 2013-14



Source: AIHW analysis of MBS data.

Figure 4.2n: Age-standardised proportion of people with a cardiac condition with an Allied Health Service item, by Indigenous status, state and territory, 2013-14



Source: AIHW analysis of MBS data.

Figure 4.2o: Age-standardised proportion of people with a cardiac condition with an Allied Health Service item, by Indigenous status and region, 2013-14

[This page intentionally left blank]

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

The fifth priority area is *strengthen the diagnosis, notification and follow-up of rheumatic heart disease*. It is based on the premise that all Aboriginal and Torres Strait Islander people suspected to have ARF or RHD should receive an echocardiogram as early as possible. In addition, new cases should be automatically reported to a central register, to facilitate tracking of patients and ensure ongoing care (AIHW 2013c; National Heart Foundation of Australia 2006).

There were 4 measures under this priority area, with data available to partly report on 3 of them.

Measure agreed at Better Cardiac Care Forum	Measure reported
5.1 Annual incidence of all ARF episodes, by Aboriginal and Torres Strait Islander status	For some registers, data on new and recurrent cases could not be separated, so data were reported on both new and recurrent cases for NT, WA and Qld combined. Consistent national data were not available.
5.2 Proportion of all ARF episodes that are recurrent, by Aboriginal and Torres Strait Islander status	Same as agreed measure. But data were reported on recurrent episodes for NT only. Data were not available for other jurisdictions.
5.3 Median proportion of scheduled benzathine penicillin doses given to patients with confirmed ARF or RHD in the preceding 12 months, by Aboriginal and Torres Strait Islander status	Data were reported on the percentage of required doses of benzathine penicillin received in the previous 12 months for NT only.

Measure 5.1: Incidence of acute rheumatic fever

Incidence (new and recurrent cases) of ARF, by Aboriginal and Torres Strait Islander status.

Why it is important

ARF can cause permanent damage to the heart; when this occurs, it is known as RHD. In Australia, ARF occurs among Aboriginal and Torres Strait Islander people but is seen very rarely in other populations. The clinical manifestation of ARF is non-specific and can be atypical in Indigenous people; therefore, many cases of ARF can go undetected in the acute stage, leading to ongoing complications and lifelong morbidity (RHD Australia 2012).

Results

Nationally: In the period 2010–2013, there were 743 new and recurrent cases of ARF in the Northern Territory, Western Australia and Queensland combined – a rate of 53 per 100,000.

Indigenous status: In Queensland, Western Australia and the Northern Territory combined, the rate of new and recurrent cases of ARF was higher for Indigenous Australians than for other Australians (53 per 100,000 compared with 0.2 per 100,000) (Figure 5.1a).

Time trend: The rate of new and recurrent cases of ARF increased from 37 to 73 per 100,000 between 2010 and 2012, then decreased to 54 per 100,000 in 2013 (Figure 5.1b).

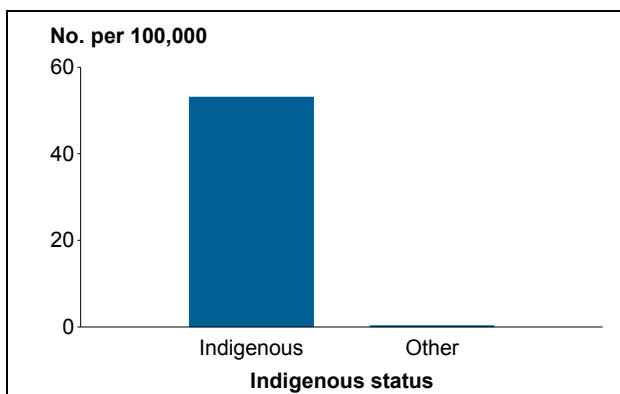
Age and sex:

- The rate of new and recurrent cases of ARF was highest for those aged 5–14, and then decreased with age (Figure 5.1c).
- In each age group, except those aged 5–14, the rate of new and recurrent cases of ARF was higher for females than males.

Jurisdiction: The Northern Territory had the highest rate of new and recurrent cases of ARF (119 per 100,000), followed by Western Australia (61 per 100,000) and Queensland (26 per 100,000) (Figure 5.1d).

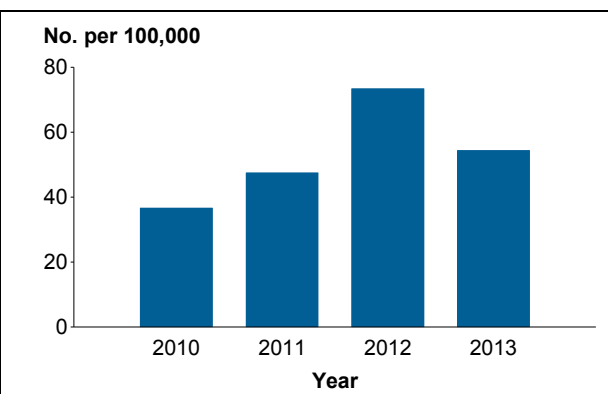
Things to consider

- Data on the incidence of ARF were available for the Northern Territory, Queensland and Western Australia only.
- All rates are crude rates as data were not available for age standardisation.
- There is no diagnostic laboratory test for ARF, so its diagnosis is based on a clinical decision. The clinical appearances of ARF are non-specific and can be atypical in Aboriginal and Torres Strait Islander people, so many cases can go undetected.



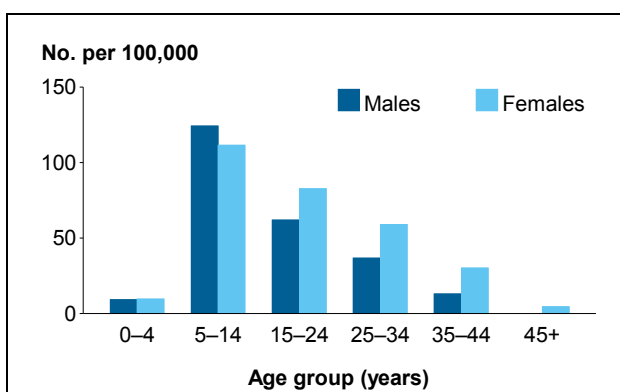
Note: Includes Qld, WA and NT combined.
Source: AIHW 2015.

Figure 5.1a: New and recurrent cases of ARF, by Indigenous status, 2010–2013



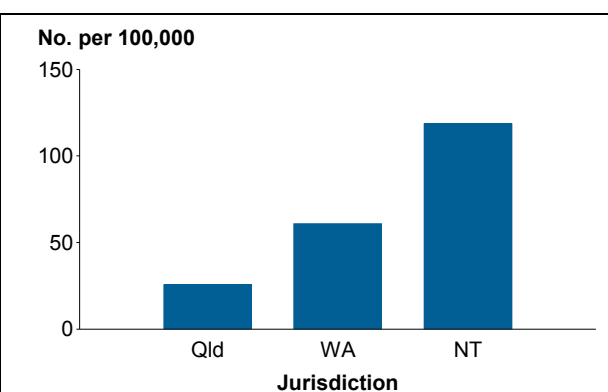
Note: Includes Qld, WA and NT combined.
Source: AIHW 2015.

Figure 5.1b: Trends in new and recurrent cases of ARF among Indigenous Australians



Note: Includes Qld, WA and NT combined.
Source: AIHW 2015.

Figure 5.1c: New and recurrent cases of ARF among Indigenous Australians, by age and sex, 2010–2013



Source: AIHW 2015.

Figure 5.1d: New and recurrent cases of ARF among Indigenous Australians, by state and territory, 2010–2013

Measure 5.2: Recurrent acute rheumatic fever

Proportion of all ARF episodes that are recurrent, by Aboriginal and Torres Strait Islander status.

Why it is important

Treatment of ARF is aimed at preventing disease recurrence and the development of RHD, and involves prolonged use of antibiotics. Rates of recurrent ARF are an indicator of the success of this secondary prevention treatment (National Heart Foundation of Australia 2006).

Results

Nationally: In the period 2010–2013, 34% of ARF episodes for Indigenous people in the Northern Territory were recurrent.

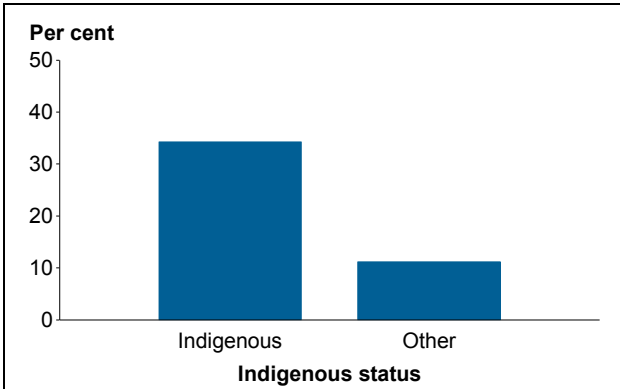
Indigenous status: Just over one-third (34%) of episodes of ARF for Indigenous people were recurrent compared with 11% of episodes for other Australians (Figure 5.2a).

Time trend: The proportion of ARF episodes for Indigenous people that were recurrent ranged from 31% in 2012 to 41% in 2011 (Figure 5.2b).

Age: The proportion of ARF episodes for Indigenous people that were recurrent increased with age, from 18% for those aged under 15 to 55%–57% for those aged 25 and over (Figure 5.2c).

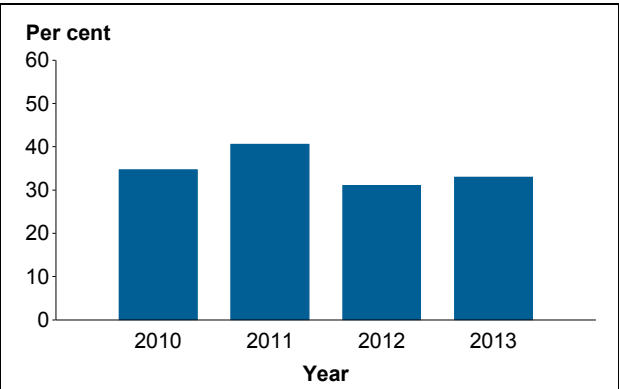
Things to consider

- Data on recurrent cases were provided for the Northern Territory only.
- All rates are crude rates as data were not available for age standardisation.
- There is no diagnostic laboratory test for ARF, so its diagnosis is based on a clinical decision. The clinical appearances of ARF are non-specific and can be atypical in Aboriginal and Torres Strait Islander people, so many cases of ARF can go undetected.



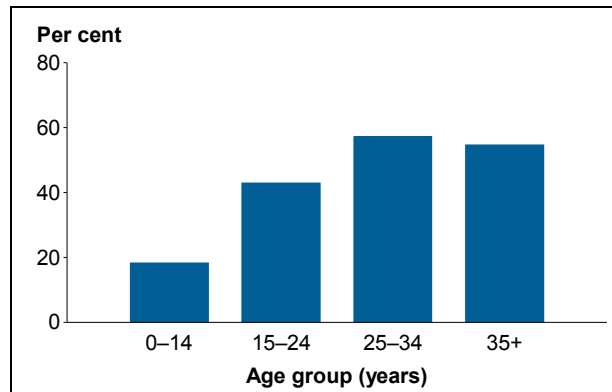
Source: AIHW analysis of Northern Territory Rheumatic Heart Disease Program data.

Figure 5.2a: Proportion of ARF episodes that are recurrent, by Indigenous status, 2010-2013



Source: AIHW analysis of Northern Territory Rheumatic Heart Disease Program data.

Figure 5.2b: Trends in proportion of ARF episodes that are recurrent among Indigenous Australians



Source: AIHW analysis of Northern Territory Rheumatic Heart Disease Program data.

Figure 5.2c: Proportion of Indigenous ARF episodes that are recurrent, by age, 2010-2013

Measure 5.3: Benzathine penicillin doses

Percentage of required doses received in the previous 12 months for Indigenous persons on the ARF/RHD program.

Why it is important

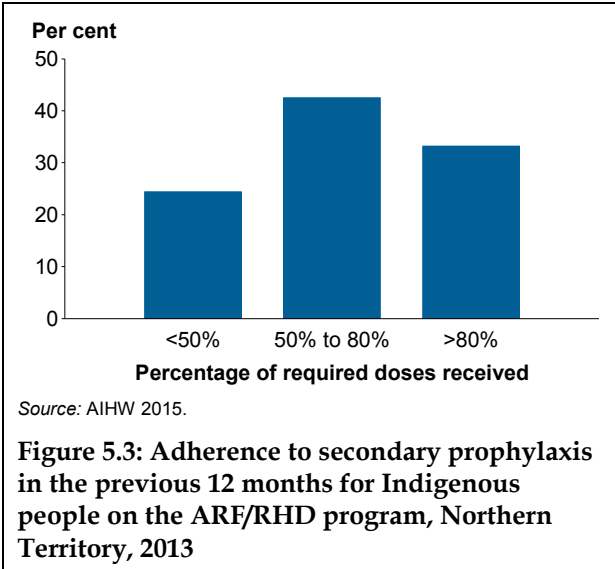
Treatment of ARF and RHD involves use of benzathine penicillin over a prolonged period of time. This measure assesses what proportion of Indigenous patients receive the number of doses of penicillin required. Failure of treatment may lead to recurrence of ARF and development of RHD (National Heart Foundation of Australia 2006).

Results

Almost one-quarter (24%) of Indigenous people on the ARF/RHD program in the Northern Territory received less than 50% of required doses in the previous 12 months, 42% received 50% to 80% and 33% received greater than 80% (Figure 5.3).

Things to consider

- Data on prophylaxis were provided for the Northern Territory only.



Summary measures: hospitalisation and mortality

Overview

As well as the measures relating to the priority action areas, there are 2 summary measures designed to monitor hospitalisations and mortality from cardiac conditions. These measures provide a population-wide perspective on the impact of cardiac conditions over time, and can be reported using existing data collections.

Measure agreed at Better Cardiac Care Forum	Measure reported
6.1 Age-standardised rates of hospitalisation for a cardiac condition, by Aboriginal and Torres Strait Islander status	Same as agreed measure.
6.2 Age-standardised rates of cardiac mortality, by Aboriginal and Torres Strait Islander status	Same as agreed measure. As well, an indicator of in-hospital mortality for patients admitted with cardiac conditions was also reported.

Measure 6.1: Hospitalisations for cardiac conditions

Cardiac morbidity – age-standardised rates of hospitalisation for a cardiac condition, by Aboriginal and Torres Strait Islander status.

Why it is important

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

Results

Nationally: In 2010–13, there were around 25,500 Indigenous hospitalisations for cardiac conditions (a rate of 13 per 1,000 population).

Indigenous status: The age-standardised hospitalisation rate due to cardiac conditions for Indigenous people was 1.8 times that of non-Indigenous people (24 and 13 per 1,000, respectively) (Figure 6.1a).

Time trend: Between 2004–05 and 2012–13, age-standardised hospitalisation rates for cardiac conditions remained unchanged for both Indigenous and non-Indigenous Australians (Figure 6.1b).

Age and sex:

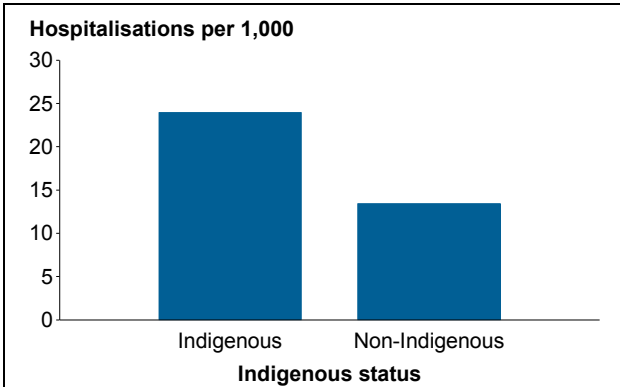
- In all age groups, Indigenous males and females were hospitalised for cardiac conditions at a higher rate than non-Indigenous males and females (Figure 6.1c).
- Hospitalisation rates for cardiac conditions increased with age for both Indigenous and non-Indigenous Australians; however, Indigenous Australians experienced higher rates of hospitalisation than non-Indigenous Australians at younger ages.

Jurisdiction: Age-standardised hospitalisation rates for cardiac conditions were highest for Indigenous people in the Northern Territory (32 per 1,000) and Western Australia (29 per 1,000). In both these jurisdictions, Indigenous Australians were hospitalised for a cardiac condition at more than twice the rate of non-Indigenous Australians (Figure 6.1d).

Region: Age-standardised hospitalisation rates for cardiac conditions were highest for Indigenous people in *Outer regional and remote* areas combined. In this area, Indigenous Australians were hospitalised for cardiac conditions at 2.5 times the rate of non-Indigenous Australians (Figure 6.1e). Note that population data are combined for *Outer regional* and *Remote* areas of Victoria and therefore rates based on population data cannot be presented separately for these regions.

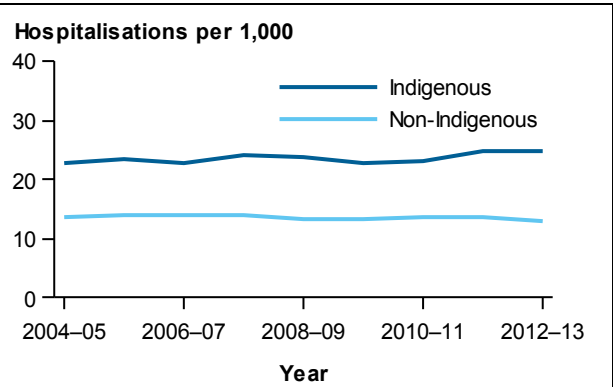
Things to consider

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



Source: AIHW NHMD.

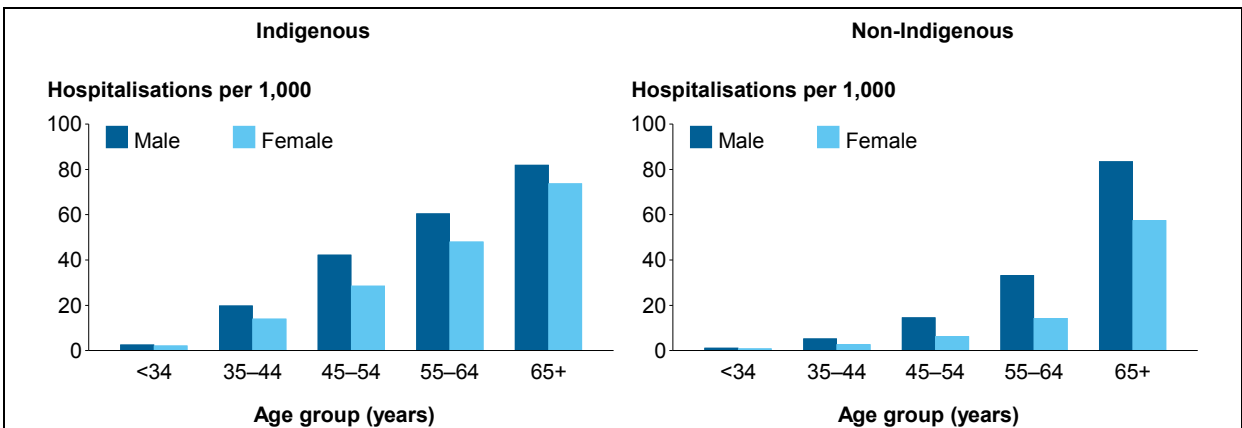
Figure 6.1a: Age-standardised hospitalisation rates for cardiac conditions, by Indigenous status, 2010-13



Note: Includes NSW, Vic, Qld, WA, SA and NT combined.

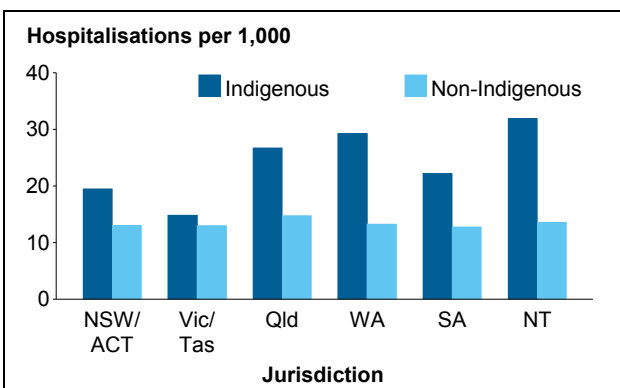
Source: AIHW NHMD.

Figure 6.1b: Trends in age-standardised hospitalisation rates for cardiac conditions, by Indigenous status



Source: AIHW NHMD.

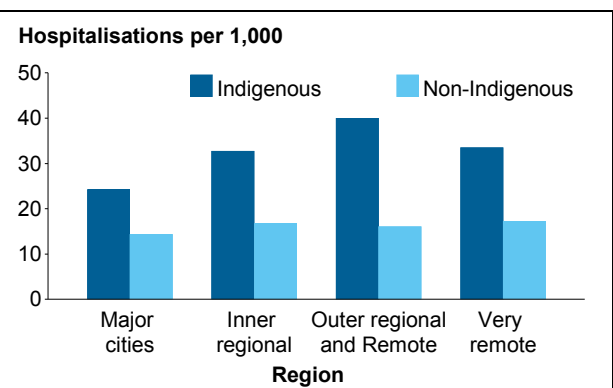
Figure 6.1c: Age-specific hospitalisation rates for cardiac conditions, by Indigenous status, age and sex, 2010-13



Note: Data were reported by patient's place of usual residence.

Source: AIHW NHMD.

Figure 6.1d: Age-standardised hospitalisation rates for cardiac conditions, by Indigenous status and state and territory, 2010-13



Note: Includes NSW, Vic, Qld, WA, SA and NT combined.

Source: AIHW NHMD.

Figure 6.1e: Age-standardised hospitalisation rates for cardiac conditions, by Indigenous status and region, 2009-12

Measure 6.2: Cardiac mortality

- (i) Cardiac mortality – age-standardised rates of cardiac mortality, by Aboriginal and Torres Strait Islander status.
- (ii) Cardiac mortality – age-standardised rates of in-hospital mortality for patients admitted with cardiac conditions, by Aboriginal and Torres Strait Islander status.

Why it is important

The mortality rate for cardiac conditions provides a broad indicator of the effectiveness of early risk assessment and preventative care, timely diagnosis of heart disease and heart failure, and guideline-based treatment.

Results

6.2 (i) Deaths from cardiac conditions

Nationally: In the period 2008–2012, in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined, there were 2,353 Indigenous deaths due to cardiac conditions (a rate of 81 per 100,000 people).

Indigenous status: The age-standardised death rate due to cardiac conditions for Indigenous people was 1.6 times that of non-Indigenous people (212 and 133 per 100,000, respectively) (Figure 6.2a).

Time trend: The age-standardised death rate due to cardiac conditions for Indigenous people declined by 41% between 1998 and 2012, from 347 to 215 per 100,000 people. There were also declines in non-Indigenous mortality due to cardiac conditions (38%), and in the rate difference (46%) over this period (Figure 6.2b).

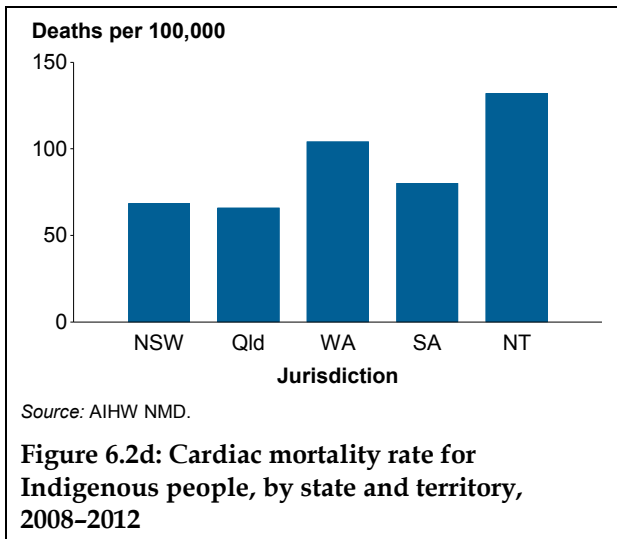
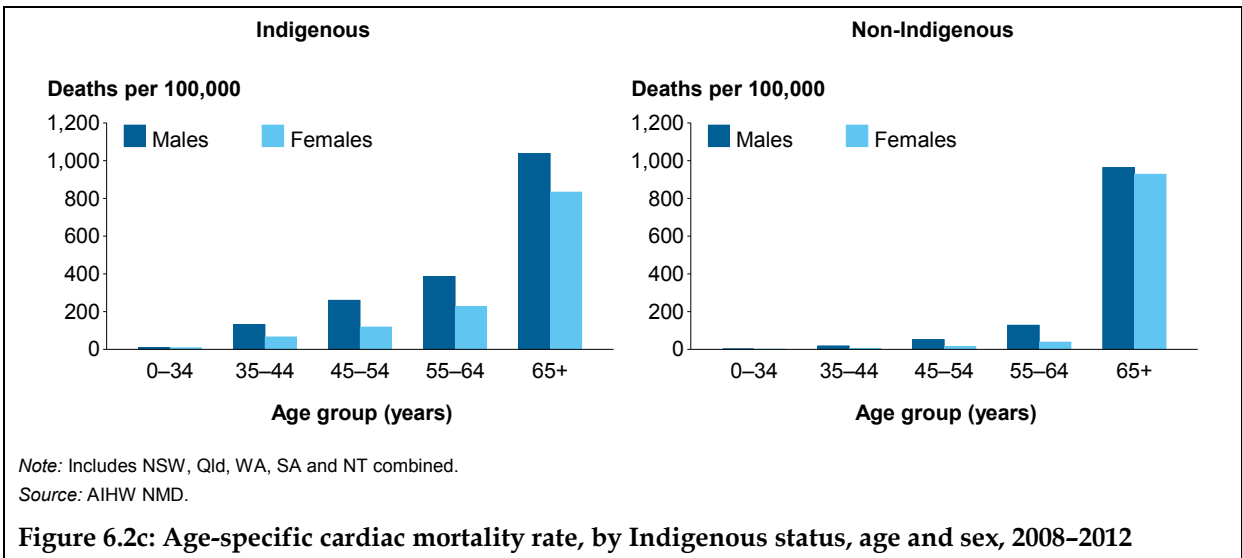
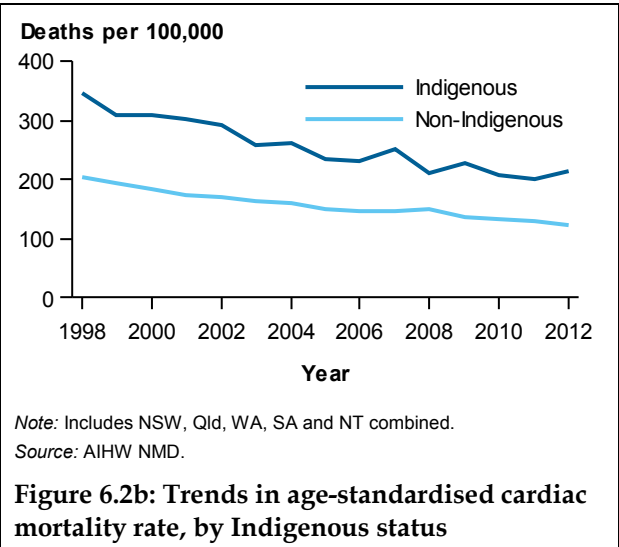
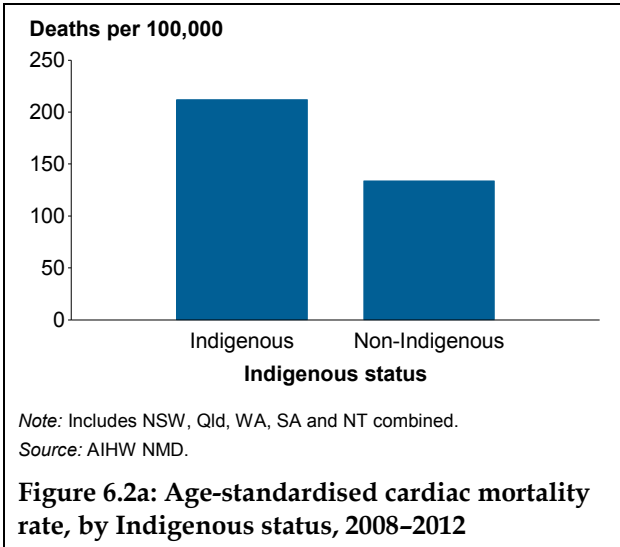
Age and sex:

- In all age groups, Indigenous males had a higher cardiac mortality rate than Indigenous females (Figure 6.2c).
- While mortality rates for a cardiac condition were similar for Indigenous and non-Indigenous Australians aged 65 and over, younger Indigenous people died of cardiac conditions at a higher rate than non-Indigenous people. The difference was most pronounced for those aged 35–44 (rate ratio of 8 for males and 15 for females).

Jurisdiction: Mortality rates for a cardiac condition were highest in the Northern Territory (132 per 100,000) followed by Western Australia (104 per 100,000) (Figure 6.2d).

Things to consider

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



6.2 (ii) In-hospital deaths for patients admitted with cardiac conditions

Nationally: Between 2008–13, there were 914 in-hospital deaths of Indigenous people who were admitted for cardiac conditions (a rate of 29 per 100,000 population).

Indigenous status: The age-standardised in-hospital death rate for Indigenous people admitted with cardiac conditions was almost twice that of non-Indigenous people (70 and 38 per 100,000, respectively) (Figure 6.2e).

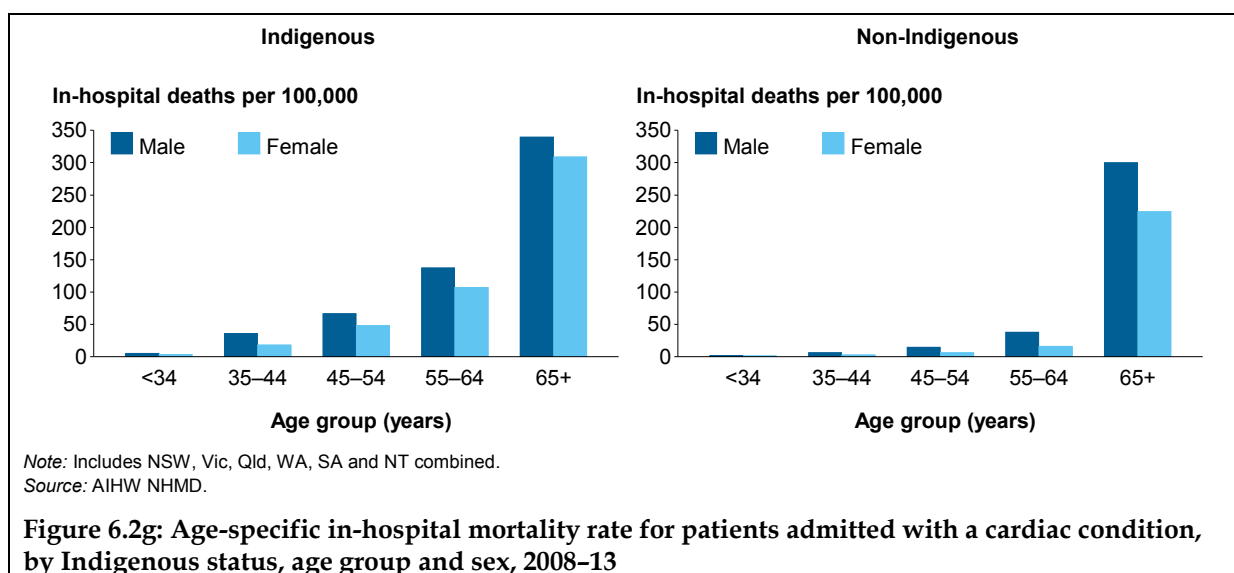
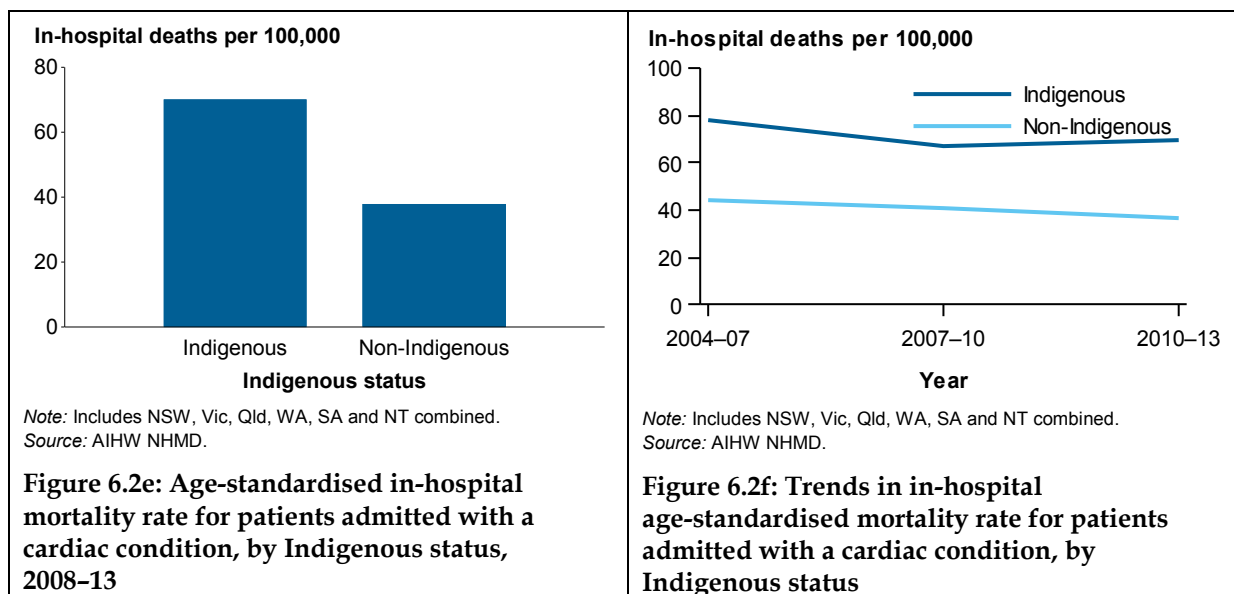
Time trend: There was an overall decline in both Indigenous and non-Indigenous in-hospital mortality for patients admitted with cardiac conditions (Figure 6.2f).

Age and sex:

- In all age groups, Indigenous males admitted with cardiac conditions had a higher in-hospital mortality rate than Indigenous females (Figure 6.2g).
- In-hospital mortality rates for Indigenous people admitted with cardiac conditions were higher than those for non-Indigenous people in all age groups. The difference was most pronounced for those aged 35–44 for males (a rate ratio of 6) and those aged 45–54 for females (a rate ratio of 8).

Things to consider

- Data by jurisdiction could not be provided as they were not comparable due to different practices of recording deaths in the NHMD. Some jurisdictions recorded deaths in emergency departments as in-hospital deaths for admitted patients, while others did not. Including emergency department data would have resulted in an overestimate of the national rates presented in this report and would have potentially had an impact on the comparisons of Indigenous and non-Indigenous rates.
- In-hospital mortality rates may also be affected by different approaches to pre- and post-hospital care, and should therefore be interpreted in the context of overall cardiac mortality.
- While the indicator refers to rates for people, the data presented for this indicator are based on rates for hospitalisations. Hospitalisations ending in transfer to another acute hospital were excluded but this still does not address multiple hospitalisations of an individual in a single reporting period. As a result, the denominator includes all episodes of hospitalisations for cardiac conditions, including multiple episodes for the same person, while the numerator is a single event associated with one of the hospital episodes in the denominator.
- There is some under-identification of Indigenous people in the NHMD.



3 Data development requirements

There are 17 Better Cardiac Care measures that require further data development work to enable full reporting, including 8 measures for which partial data were provided in this report. The data development work covers a range of activities such as modifying existing collections and establishing new data collections. Of the 17 measures requiring data development:

- 1 has data development activity currently underway that will enable future reporting (measure 1.2)
- 9 require modifications to existing data collections (measures 3.1, 3.2, 3.3, 3.4, 4.4, 5.1, 5.2, 5.3 and 5.4)
- 4 may be reportable through linkage of different data collections (measures 3.5, 4.1, 4.2 and 4.3), with 4 requiring modifications to existing data plus data linkage within the hospital morbidity data collection (measures 3.1, 3.2, 3.3 and 3.4) and 1 requiring modifications to existing data plus data linkage of different collections (measure 4.4)
- 3 require the establishment of new data collections (1.3, 2.2 and 2.3).

The following section describes the further data development work required. Table 3.1 summarises the data development needed to report on each of the measures (and the estimated time frames for this work). Table 3.2 provides details of the data development required for each measure.

Data development relevant to Better Cardiac Care currently underway

There are currently very limited national data on the provision of primary health-care services in Australia. The exception to this is the national key performance indicator (nKPI) data collection for Indigenous primary health-care services. Information is collected on 21 of the 24 nKPIs that received in-principal approval from AHMAC for reporting; these focus on chronic disease risk factors, prevention and management, and maternal and child health. A number of data items collected are highly relevant to the Better Cardiac Care project (health assessments, smoking status, overweight and obesity, kidney function test, diabetes management and blood pressure for people with diabetes). Currently, data are collected only from all Indigenous-specific primary health-care services that are funded by the Australian Government, but the collection will be progressively rolled out to include all state and territory funded services, starting from mid-2015.

Measure 1.2 requires data on whether people without diagnosed cardiac disease have had a cardiovascular disease risk assessment and stratification in the previous 2 years. The nKPI Indigenous primary health-care data collection includes a newly developed indicator on the number and proportion of regular clients aged 35 to 74 who have had an absolute cardiovascular disease risk assessment as per national guidelines. Data for the indicator will be collected within the next 2 years and can be used to report this Better Cardiac Care measure.

Table 3.1: Better Cardiac Care measures: summary of data development requirements

Measure	Likely data source	Time frame
Data development underway		
1.2 Number/per 1,000 peoples ≥20 years of age without cardiac disease with cardiovascular risk assessment and stratification in the last 2 years	nKPI underway	Short term
Modify existing collections		
3.1 Proportion of people with STEMI: (a) treated by primary PCI, (b) treated with fibrinolysis	NHMD	Medium term
3.2 Proportion of people with STEMI who are not provided any reperfusion therapy	NHMD	Medium term
3.3 Proportion of people with ACS who received diagnostic angiography or definitive revascularisation procedure within the index admission/within 30 days*	NHMD	Medium term
3.4 Proportion of people diagnosed with ACS discharged from hospital on appropriate secondary prevention medicines	NHMD	Medium term
4.4 Number/proportion of patients with coronary heart disease discharged on prevention medications and remaining on it at 3, 6 and 12 months*	NHMD, PBS	Medium term
5.1 Annual incidence of all ARF episodes	Extend RHD registers	Medium term
5.2 Proportion of all ARF episodes that are recurrent	Modify/extend RHD registers	Medium term
5.3 Median proportion of scheduled benzathine penicillin doses given to patients with confirmed ARF or RHD in the previous 12 months	Modify/extend RHD registers	Long term
5.4 Proportion of people with moderate or severe RHD who received an echocardiogram in the previous 12 months	Modify/extend RHD registers	Long term
Data linkage required		
3.5 In-hospital, 30-day and 12-month mortality rates for people admitted to hospital with a primary diagnosis of AMI*	Data linkage—NHMD, NMD	Short term
4.1 Number/proportion of patients reviewed by a primary health-care professional within 1 week of discharge from hospital	Data linkage—NHMD, MBS	Short term
4.2 Number/proportion of patients with cardiac disease who received follow-up Medicare items within 3 months of hospital discharge	Data linkage—NHMD, MBS	Short term
4.3 Number/proportion of patients with cardiac disease reviewed by a specialist physician within 3/12 months of discharge	Data linkage—NHMD, MBS	Short term
4.4 Number/proportion of patients with coronary heart disease discharged on prevention medications and remaining on it at 3, 6 and 12 months*	Data linkage—NHMD, PBS	Medium term
No current data sources		
1.3 Proportion of people with risk factors for cardiac disease with evidence of primary care practitioner follow-up	New collection	Long term
2.2 Number/proportion of people who received diagnostic services within 30 days of referral	New collection	Long term
2.3 Proportion of people with suspected/confirmed cardiac disease reviewed by a cardiologist within the previous 12 months	New collection	Long term

* Indicates measure that requires modifications to the NHMD and data linkage.

PBS = Pharmaceutical Benefits Scheme.

Note: Shading indicates those measures for which some data were reported.

Modifications required to existing collections

National Hospital Morbidity Database

In order to report on 3 of the measures, the NHMD needs to capture the following information that is currently not included:

- Measure 3.3 requires timing information on when cardiac procedures were performed.
- Measures 3.1 and 3.2 require the collection of information on treatment with fibrinolysis for people with STEMI; measure 3.1 also requires information on the timing of treatment.
- Measures 3.4 and 4.4 require the collection of information on medications provided on discharge from hospital.

The best way to capture this information, including modifications required to state-based collections, needs to be further investigated.

In addition, for all indicators that use the NHMD, data linkage between records in the NHMD would provide better estimates of the number of people hospitalised than the method used in this report.

Rheumatic Heart Disease registers

Consistent national data on ARF are not available. The data provided in the report were drawn from the Queensland, Western Australian and Northern Territory registers where ARF is a notifiable disease. South Australia established an RHD register in 2012 but has yet to provide data for national reporting. But all these registers require some data development to fully report on measures 5.1 to 5.4. In addition, those jurisdictions that do not have a register (New South Wales, Victoria, Tasmania and the Australian Capital Territory) need to establish registers or some other mechanism for collecting the information required.

Data linkage of existing collections

There are 9 measures for which data are likely to be available through data linkage. The time frames for these data need to incorporate the relevant clearance processes required to undertake national data linkage.

National Hospital Morbidity Database

Measures 3.1, 3.2, 3.3, 3.4 and 3.5 report on people; however, individuals are not identified in the NHMD, nor are associated hospitalisations able to be grouped together. In this report, the number of people was estimated by excluding hospitalisations ending in transfer to another acute hospital so that only the 'last' hospitalisation episode is counted. But this method has some limitations. Ethics approval for data linkage within the NHMD based on a person identifier will be sought to improve the estimate of people for future reports.

National Hospital Morbidity and National Mortality Databases

Measure 3.5 includes 30-day and 12-month mortality following discharge from hospital. Data linkage between the NHMD and the NMD is required to fully report on this measure.

National Hospital Morbidity and Medicare Benefits Schedule databases

Measures 4.1, 4.2 and 4.3 require data on care provided to cardiac patients following discharge from hospital. Data linkage between the NHMD and the MBS database should be further explored to determine if this can provide the required data. Otherwise new data collections may be required.

National Hospital Morbidity and Pharmaceutical Benefits Scheme databases

Measure 4.4 requires data on whether cardiac patients have remained on preventative medications following release from hospital. Data linkage between the NHMD and the Pharmaceutical Benefits Scheme database should be further explored to determine if this can provide the required data. Otherwise new data collections may be required.

No current data sources

Measures 1.3, 2.2 and 2.3 require data that are not available from current sources. These are measures of primary care practitioner follow-up for those at risk of cardiac conditions, referrals to diagnostic services, and review by cardiologists for those with cardiac conditions. These were initially developed as service level measures that could potentially be available through clinical audits. Options to collect information for these measures, including the development of new data collections, need to be developed further.

Next steps

The report provides the currently available national data on the Better Cardiac Care measures. It also provides an initial assessment of the data development work required and likely time frames for full reporting on these measures. More detailed data development plans and requirements for the various data collections need to be developed.

Table 3.2: Details of data developments required for each Better Cardiac Care measure

Measure	Possible data source and data development requirements
1.2 Number and proportion of Aboriginal and Torres Strait Islander peoples aged 20 and over without known cardiac disease with a documented absolute cardiovascular risk assessment and stratification in the last 2 years per 1,000 Aboriginal and Torres Strait Islander service population	No data were available. The nKPI data collection, which covers primary health-care organisations funded to provide services to Aboriginal and Torres Strait Islander people, is developing an indicator to collect data on the number and proportion of regular clients aged 35 to 74 who have had an absolute cardiovascular disease risk assessment with results at specified levels. These data will be collected within the next 2 years and can be used to report on this Better Cardiac Care measure.
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	Proxy data from the AATSIHS were provided. This measure was developed as a service level measure. The data from the AATSIHS captures only a component of the measure. It is a complicated measure requiring long-term follow-up of clients. This measure requires the development of an appropriate data collection or clinical audits to enable reporting.
2.2 Number and proportion of Aboriginal and Torres Strait Islander people referred for initial diagnostic services receiving the appropriate test within 30 days of referral, by region	No data were available. This measure was developed as a service-level measure and requires the development of an appropriate data collection or clinical audits to enable reporting.
2.3 Proportion of Aboriginal and Torres Strait Islander people with suspected or confirmed cardiac disease reviewed by a cardiologist within the previous 12 months, in comparison with other Australians	No data were available. This measure was developed as a service-level measure and requires the development of an appropriate data collection or clinical audits to enable reporting.
3.1 Proportion of people with STEMI who present within 12 hours of symptom onset and are eligible to receive emergency reperfusion therapy who are (a) treated by primary PCI, (b) treated with fibrinolysis	NHMD data were available for part (a) hospital admissions for which PCI was reported. But data on treatment with fibrinolysis were not available and data modifications to the NHMD are required to collect this. No data were available on whether treatment is provided within 12 hours of symptom onset. Presentations to emergency departments are captured in the National Non-admitted Patient Emergency Department Care database, which may be able to capture these data.
3.2 Proportion of people with STEMI who are not provided any reperfusion therapy, by Aboriginal and Torres Strait Islander status	No data were available. The NHMD does not include information on clients treated with fibrinolysis (pharmacologic reperfusion). Data modifications to the NHMD are required to collect data on treatment with fibrinolysis.
3.3 Proportion of people with an 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 from the NHMD were available on people admitted to hospitals with ACS who received the two procedures. This data collection does not include information on whether treatment was provided within 30 days of index admission. Data modifications to the NHMD are required to fully report on this measure.
3.4 Proportion of Aboriginal and Torres Strait Islander people diagnosed with ACS (STEMI and non-STEMI) discharged from hospital on appropriate medicines for secondary prevention according to guidelines, specifically aspirin or other antiplatelet agent, statin, ACE-inhibitor or angiotensin receptor blocker and beta-blocker	No data were available as the NHMD does not have data on medications on discharge. Data modifications to the NHMD are required to collect data on medications on discharge.
3.5 In-hospital, 30-day and 12-month mortality rates, for people admitted to hospital with a primary diagnosis of AMI, by Aboriginal and Torres Strait Islander status	The NHMD data available in this report covered only part of this measure—in-hospital mortality rates. Data linkage between the NHMD and the NMD is required to report on 30-day and 12-month mortality rates. Some jurisdictions have linked data and are able to report on the full measure.

(continued)

Table 3.2 (continued): Details of data developments required for each Better Cardiac Care measure

Measure	Possible data source and data development requirements
4.1 Number and proportion of patients reviewed by a primary health-care professional within 1 week of discharge from hospital, by Aboriginal and Torres Strait Islander status and region	No data were available. Data may be available through data linkage between the MBS and the NHMD—further investigation required.
4.2 Number and proportion of patients with documented evidence of receiving a Medicare Chronic Disease Management item (such as a Team Care Arrangement, GPMP or Allied Health Service item) within 3 months of discharge from hospital, by Aboriginal and Torres Strait Islander status and region	The MBS data reported in this report captured the Medicare Chronic Disease Management items for all Indigenous persons, not just those discharged from hospital. Full data may be available through data linkage between the MBS and the NHMD.
4.3 Number and proportion of Aboriginal and Torres Strait Islander patients with cardiac disease reviewed by a specialist physician within 3 months and 12 months of discharge from hospital, by region	No data were available. Data may be available through data linkage between the MBS and the NHMD—further investigation required.
4.4 Number and proportion of Aboriginal and Torres Strait Islander people with a diagnosis of coronary heart disease prescribed secondary prevention medications (aspirin or other antiplatelet agent, a statin, an ACE inhibitor or angiotensin receptor blocker, and a beta-blocker, as appropriate) at discharge and remaining on their medications at 3, 6 and 12 months post-discharge, by region	No data were available as the NHMD does not have data on medications at discharge. Data modifications to the NHMD are required to collect data on medications on discharge. In order to get information on people remaining on medications, data linkage between the NHMD and the Pharmaceutical Benefits Scheme should be investigated.
5.1 Annual incidence of all ARF episodes, by Aboriginal and Torres Strait Islander status	Consistent national data on the incidence of ARF are not available. The data currently available are drawn from the RHDRs in Qld, WA and the NT. But only the NT and WA can separate recurrent and new cases. The data provided therefore includes initial and recurrent cases for the NT, and initial, recurrent and probable cases for Qld and WA. SA established an RHDR in 2012 but has yet to provide data for national reporting. In order to report complete national data for measures 5.1 and 5.2, those jurisdictions with existing registers need to collect information on both initial and recurrent cases and those jurisdictions that do not have a register need to establish one to collect this information.
5.2 Proportion of all ARF episodes that are recurrent, by Aboriginal and Torres Strait Islander status	Data were provided from the RHDR for the NT only. See measure 5.1 for data development required in other jurisdictions.
5.3 Median proportion of scheduled benzathine penicillin doses given to patients with confirmed ARF or RHD in the preceding 12 months, by Aboriginal and Torres Strait Islander status	Data were provided from the RHDR for the NT only, but NT can report only on 'Adherence to secondary prophylaxis in the previous 12 months'. Modifications are required to the NT register to fully report on this measure. Qld, WA and SA, which have a register, need to ensure this information is collected. The remaining jurisdictions need to set up registers or other mechanisms to collect this information.
5.4 Proportion of people with moderate or severe RHD who received an echocardiogram in the previous 12 months, by Aboriginal and Torres Strait Islander status	No data were provided. Qld, WA, SA and the NT have RHDRs but do not collect this information. In these jurisdictions, it would need to be added to the register. The remaining jurisdictions need to set up registers or other mechanisms to collect this information.

Note: As well as the data developments outlined in the table, for all indicators that use the NHMD, data linkage between records in the NHMD would provide better estimates of the number of people hospitalised than the method used in this report.

Appendix A: Technical specifications

Table A1: Original measures and measures reported

Measure agreed at Better Cardiac Care Forum	Measure reported
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	Data were reported for Aboriginal and Torres Strait Islanders aged 25 and over with an MBS Health Assessment due to the small numbers of those aged under 25.
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 were available so AATSIHS data were provided as a proxy. The measure reported was: (a) % of Indigenous people without circulatory conditions, and at high risk of cardiac disease who had their blood pressure checked in the previous 2 years; (b) % of Indigenous people at high risk of cardiac disease who were current smokers, who saw a doctor, health professional or specialist and discussed quitting smoking.
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, by region, in comparison with other Australians	Same as agreed measure.
3.1 Proportion of people with STEMI who present within 12 hours of symptom onset and are eligible to receive emergency reperfusion therapy who are (a) treated by primary PCI, (b) treated with fibrinolysis	Data were not available to assess whether patients with STEMI presented to emergency within 12 hours of symptom onset, so data on all people presenting with STEMI were reported. No data were available on whether treated with fibrinolysis so this was not reported. No data were available on whether patients were eligible for reperfusion. Data were reported for those aged 18 and over.
3.3 Proportion of people with an 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 were reported on estimates of people with ACS who received diagnostic angiography or a definitive revascularisation procedure within their period of care. Data were not available on whether these were received within 30 days of index admission. Data were reported for those aged 18 and over.
3.5 In-hospital, 30-day and 12-month mortality rates for people admitted to hospital with a primary diagnosis of AMI, by Aboriginal and Torres Strait Islander status	Data were reported on in-hospital mortality for people aged 35 and over admitted to hospital with a principal diagnosis of AMI. No national data were available on 30-day and 12-month mortality since hospitalisation.
4.2 Number and proportion of patients with documented evidence of receiving a Medicare Chronic Disease Management item (such as a Team Care Arrangement, GPMP or Allied Health Service item) within 3 months of discharge from hospital, by Aboriginal and Torres Strait Islander status and region	Data were reported on all people with cardiac disease receiving a Medicare Chronic Disease Management item. Data were not available for patients discharged from hospital.
5.1 Annual incidence of all ARF episodes, by Aboriginal and Torres Strait Islander status	For some registers, data on new and recurrent cases could not be separated, so data were reported on both new and recurrent cases for Qld, WA and the NT combined. Consistent national data were not available.
5.2 Proportion of all acute rheumatic care episodes that are recurrent, by Aboriginal and Torres Strait Islander status	Same as agreed measure. But data were reported on recurrent episodes for the NT only. Data were not available for other jurisdictions.
5.3 Median proportion of scheduled benzathine penicillin doses given to patients with confirmed ARF or RHD in the preceding 12 months, by Aboriginal and Torres Strait Islander status	Data were reported on % of required doses of benzathine penicillin received in the previous 12 months for the NT only.
6.1 Age-standardised rates of hospitalisation for a cardiac condition, by Aboriginal and Torres Strait Islander status	Same as agreed measure.
6.2 Age-standardised rates of cardiac mortality, by Aboriginal and Torres Strait Islander status	Same as agreed measure. As well, an indicator of in-hospital mortality for patients admitted with cardiac conditions was reported.

Table A2: Technical specifications for Better Cardiac Care measures with data reported

No.	Description	Calculation	Numerator	Denominator	Age group (years)	Definitions	Data sources
1.1	Proportion of people aged 25 and over who received an MBS Health Assessment within the previous 12 months	$\frac{\text{Numerator}}{\text{Denominator}} \times 100$	Number of people who had an MBS Health Assessment (Item 715, A14, 701, 703, 705 or 707) billed to the MBS within the financial year.	Population at the middle of the financial year, calculated from the average of the populations at 30 June at the beginning and end of the financial year.	25 and over		MBS and ABS population data
1.3(i)	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	$\frac{\text{Numerator}}{\text{Denominator}} \times 100$	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.	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.	18 and over	<p><i>Without a current and long-term circulatory condition</i>—people who did not report any current or long-term heart or circulatory condition, comprising ischaemic heart diseases; other heart diseases; tachycardia; cerebrovascular diseases; oedema; diseases of arteries, arterioles and capillaries; diseases of veins and lymphatic vessels etc.; other diseases of the circulatory system and symptoms or signs involving the circulatory system.</p> <p><i>At high risk of cardiac disease</i>—comprises people who reported having one or more of the following: self-reported Type 2 diabetes; self-reported hypertensive disease or measured high blood pressure (systolic or diastolic blood pressure >140/90 mmHg); self-reported high cholesterol or current smoker (includes those who smoked daily, at least weekly, or less than weekly).</p>	ABS 2012–13 AATSIHS

(continued)

Table A2 (continued): Technical specifications for Better Cardiac Care measures with data reported

No.	Description	Calculation	Numerator	Denominator	Age group (years)	Definitions	Data sources
1.3(ii)	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	$\frac{\text{Numerator}}{\text{Denominator}} \times 100$	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.	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.	18 and over	<i>Without a current and long-term circulatory condition</i> —1.3(i) above. <i>At high risk of cardiac disease</i> —1.3(i) above. <i>Current smokers</i> — includes those who smoked daily, at least weekly, or less than weekly.	ABS 2012–13 AATSIHS
2.1	Proportion of people who had relevant Medicare-listed cardiac-related diagnostic items claimed in the previous 12 months	$\frac{\text{Numerator}}{\text{Denominator}} \times 100$	Number of people who had relevant Medicare-listed cardiac-related diagnostic items (listed in Table A3) claimed in the financial year.	Population at the middle of the financial year, calculated from the average of the populations at 30 June at the beginning and end of the financial year.	All ages		MBS and ABS population data
3.1	Proportion of people aged 18 and over with a STEMI who are treated by PCI, by Aboriginal and Torres Strait Islander status	$\frac{\text{Numerator}}{\text{Denominator}} \times 100$	Number of hospitalisations with a principal diagnosis of STEMI (ICD-10-AM codes I21.0, I21.1, I21.2 and I21.3), and a care type of 'acute care', and urgency of admission of 'emergency', and separation mode not 'transferred to another acute hospital', with a procedure code related to PCI (listed in Table A4).	Number of hospitalisations with a principal diagnosis of STEMI (ICD 10-AM codes I21.0, I21.1, I21.2 and 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'.	18 and over		NHMD

(continued)

Table A2 (continued): Technical specifications for Better Cardiac Care measures with data reported

No.	Description	Calculation	Numerator	Denominator	Age group (years)	Definitions	Data sources
3.3	Proportion of people with ACS who received diagnostic angiography or a definitive revascularisation procedure (PCI or CABG) within the period of care	Numerator ÷ Denominator x 100	Number of hospitalisations with a principal diagnosis of STEMI (ICD-10-AM codes I21.0, I21.1, I21.2 and 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', with a procedure code related to diagnostic angiography or PCI or CABG (listed in Table A4).	Number of hospitalisations with a principal diagnosis of STEMI (ICD-10-AM codes I21.0, I21.1, I21.2 and 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'.	18 and over	<i>Period of care</i> —contiguous episodes of care, separated only by a transfer within or between hospitals, are combined into a single 'period of care'. This was estimated by excluding hospitalisations ending in transfer to another acute hospital, so that only the 'last' hospitalisation was counted.	NHMD
3.5	Proportion of people aged 35 and over, admitted to hospital with a principal diagnosis of AMI who died in hospital, by Aboriginal and Torres Strait Islander status	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'.	35 and over		NHMD
4.2	Proportion of people with cardiac disease who received a Medicare Chronic Disease Management item (i) Team Care Arrangement (ii) GPMP (iii) Allied Health Service(s)	Numerator ÷ Denominator x 100	Number of people with cardiac disease who received a Medicare Chronic Disease Management item (i) Team Care Arrangement (ii) GPMP (iii) Allied Health Service(s).	Number of people with cardiac disease.	All ages	<i>People with cardiac disease</i> —those who had relevant Medicare-listed cardiac items (listed in Table A4) claimed in the financial year.	MBS
5.1	Incidence (new and recurrent cases) of ARF, by Aboriginal and Torres Strait Islander status	Numerator ÷ Denominator x 100,000	Number of new and recurrent cases of ARF in the calendar year.	Population at 30 June.	All ages		Qld, WA and NT RHDR data, ABS population data

(continued)

Table A2 (continued): Technical specifications for Better Cardiac Care measures with data reported

No.	Description	Calculation	Numerator	Denominator	Age group	Definitions	Data sources
5.2	Proportion of all ARF episodes that are recurrent, by Aboriginal and Torres Strait Islander status	Numerator ÷ Denominator x 100	Number of recurrent cases of ARF in the calendar year.	Number of new and recurrent cases of ARF in the calendar year.	All ages		NT RHDR
5.3	Percentage of required doses of benzathine penicillin received in previous 12 months for Indigenous persons on the ARF/RHD program	Numerator ÷ Denominator x 100	Number of people on the AFR/RHD program who received: <ul style="list-style-type: none"> • less than 50% • 50% to 80% • greater than 80% of required doses in the previous 12 months.	Number of people on the AFR/RHD program.	All ages		NT RHDR
6.1	Cardiac morbidity—age-standardised rates of hospitalisation for a cardiac condition, by Aboriginal and Torres Strait Islander status	Crude rate: Numerator ÷ Denominator x 1,000 Age-standardised rate (ASR): $ASR = \frac{\sum_i N_i p_i}{\sum_i N_i}$ where: p_i is the age-specific rate for age group i in the population being studied N_i is the population of age group i in the standard population.	Number of hospitalisations with a principal diagnosis of 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 'new born—unqualified days only' or 'organ procurement—posthumous' or 'hospital boarder'.	Population at the middle of the financial year, calculated from the average of the populations at 30 June at the beginning and end of the financial year.	All ages		NHMD and ABS population data

(continued)

Table A2 (continued): Technical specifications for Better Cardiac Care measures with data reported

No.	Description	Calculation	Numerator	Denominator	Age group	Definitions	Data sources
6.2(i)	Cardiac mortality—age-standardised rates of cardiac mortality, by Aboriginal and Torres Strait Islander status	Crude rate: Numerator ÷ Denominator x 100,000 $ASR = \sum_i N_i p_i / \sum_i N_i$ where: p_i is the age-specific rate for age group i in the population being studied N_i is the population of age group i in the standard population.	Number of deaths 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 in the calendar year (based on year of registration of death). Numerator data are reported for NSW, Qld, WA, SA and the NT (for more information see Appendix B).	Population at 30 June. Denominator data are reported for NSW, Qld, WA, SA and NT (for more information see Appendix B).	All ages		NMD and ABS population data
6.2(ii)	Cardiac mortality—age-standardised rates of in-hospital mortality for patients admitted with cardiac conditions, by Aboriginal and Torres Strait Islander status	Crude rate: Numerator ÷ Denominator x 100,000 $ASR = \sum_i N_i p_i / \sum_i N_i$ where: p_i is the age-specific rate for age group i in the population being studied N_i is the population of age group i in the standard population.	Number of hospitalisations with a principal diagnosis of 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 'new born—unqualified days only' or 'organ procurement—posthumous' or 'hospital boarder' and a separation mode equal to 'died'.	Population at the middle of the financial year, calculated from the average of the populations at 30 June at the beginning and end of the financial year.	All ages		NHMD and ABS population data

Table A3: Medicare-listed cardiac-related diagnostic items

Procedure type	Medicare item	Description
ECG monitoring	11712	Multi-channel ECG monitoring and recording during exercise
Echocardiography	55113, 55114, 55116 to 55119, 55120, 55122, 55123, and 55125	Echocardiography (includes exercise and pharmacological stress echocardiography) Exclude 55115 and 55121 (investigation of congenital heart disease)
Cardiac catheterisation +/- PCI	38215 to 38246 38300 to 38318 38200, 38203 and 38206	Selective coronary angiography Endovascular Interventional Procedures (PCI) Cardiac catheterisation

Table A4: Medicare-listed cardiac-related items

Medicare item	Description
11712	Multi-channel ECG monitoring and recording during exercise
38215 to 38246	Selective coronary angiography
38300 to 38318	Endovascular Interventional Procedures (PCI)
55113, 55114, 55116 to 55119, 55120, 55122, 55123, and 55125	Echocardiography (includes exercise and pharmacological stress echocardiography) Exclude 55115 and 55121 (investigation of congenital heart disease)
38200, 38203 and 38206	Cardiac catheterisation
38497 to 38504	Coronary artery bypass
11708, 11709, 11710, 11711, 11722 and 38285	Ambulatory electrocardiography items critical in the diagnosis of cardiac arrhythmias

Table A5: Procedure codes from the Australian Classification of Health Interventions, 7th Edition, 2010

Procedure	ACHI code	Description
PCI	38300-00	Percutaneous transluminal balloon angioplasty of 1 coronary artery
	38303-00	Percutaneous transluminal balloon angioplasty of ≥ 2 coronary arteries
	38306-00	Percutaneous insertion of 1 transluminal stent into single coronary artery
	38306-01	Percutaneous insertion of ≥ 2 transluminal stents into single coronary artery
	38306-02	Percutaneous insertion of ≥ 2 transluminal stents into multiple coronary arteries
	38309-00	Percutaneous transluminal coronary rotational atherectomy, 1 artery
	38312-00	Percutaneous transluminal coronary rotational atherectomy, 1 artery with insertion of 1 stent
	38312-01	Percutaneous transluminal coronary rotational atherectomy, 1 artery with insertion of ≥2 stents
	38315-00	Percutaneous transluminal coronary rotational atherectomy, multiple arteries
	38318-00	Percutaneous transluminal coronary rotational atherectomy, multiple arteries with insertion of 1 stent
	38318-01	Percutaneous transluminal coronary rotational atherectomy, multiple arteries with insertion of ≥ 2 stents

(continued)

Table A5 (continued): Procedure codes from the Australian Classification of Health Interventions, 7th Edition, 2010

Procedure	ACHI code	Description
Diagnostic angiography	38215-00	Coronary angiography
	38218-00	Coronary angiography with left heart catheterisation
	38218-01	Coronary angiography with right heart catheterisation
	38218-02	Coronary angiography with left and right heart catheterisation
CABG	38300-01	Open transluminal balloon angioplasty of 1 coronary artery
	38303-01	Open transluminal balloon angioplasty of ≥ 2 coronary arteries
	38306-03	Open insertion of 1 transluminal stent into single coronary artery
	38306-04	Open insertion of ≥ 2 transluminal stents into single coronary artery
	38306-05	Open insertion of ≥ 2 transluminal stents into multiple coronary arteries
	38497-00	Coronary artery bypass, using 1 saphenous vein graft
	38497-01	Coronary artery bypass, using 2 saphenous vein grafts
	38497-02	Coronary artery bypass, using 3 saphenous vein grafts
	38497-03	Coronary artery bypass, using ≥ 4 saphenous vein grafts
	38497-04	Coronary artery bypass, using 1 other venous graft
	38497-05	Coronary artery bypass, using 2 other venous grafts
	38497-06	Coronary artery bypass, using 3 other venous grafts
	38497-07	Coronary artery bypass, using ≥ 4 other venous grafts
	38500-00	Coronary artery bypass, using 1 left internal mammary artery graft
	38500-01	Coronary artery bypass, using 1 right internal mammary artery graft
	38500-02	Coronary artery bypass, using 1 radial artery graft
	38500-03	Coronary artery bypass, using 1 epigastric artery graft
	38500-04	Coronary artery bypass, using 1 other arterial graft
	38500-05	Coronary artery bypass, using 1 composite graft
	38503-00	Coronary artery bypass, using ≥ 2 left internal mammary artery grafts
	38503-01	Coronary artery bypass, using ≥ 2 right internal mammary artery grafts
	38503-02	Coronary artery bypass, using ≥ 2 radial artery grafts
	38503-03	Coronary artery bypass, using ≥ 2 epigastric artery grafts
	38503-04	Coronary artery bypass, using ≥ 2 other arterial grafts
	38503-05	Coronary artery bypass, using 1 composite graft
	38505-00	Open coronary endarterectomy
	90201-00	Coronary artery bypass, using 1 other graft, not elsewhere classified
	90201-01	Coronary artery bypass, using 2 other grafts, not elsewhere classified
	90201-02	Coronary artery bypass, using 3 other grafts, not elsewhere classified
	90201-03	Coronary artery bypass, using ≥ 4 other grafts, not elsewhere classified

Appendix B: Data sources

AIHW National Hospital Morbidity Database

Data about admitted patient care were extracted from the AIHW NHMD, which is a compilation of episode-level records from admitted patient morbidity 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.

Analysis in this report is based on the patient's place of usual residence. Data are based on financial years.

For each hospitalisation, the principal diagnosis is reported, while additional diagnoses are reported if the condition affected patient management. In this report, information on principal diagnoses was used to identify hospitalisations for specific conditions; additional diagnoses have not been considered.

Changes in the level of accuracy of Indigenous identification in hospital records will result in changes in the level of reported hospitalisations for Indigenous Australians. Caution should be used when interpreting changes over time, as it is not possible to ascertain whether a change in reported hospitalisations is due to changes in the accuracy of Indigenous identification and/or real changes in the rates at which Indigenous people were hospitalised. An increase in hospitalisation rates for a particular population may also reflect increased use of admitted patient hospital services – as opposed to other forms of health care – rather than a worsening of health; likewise, a decrease in hospitalisation rates may not necessarily indicate an improvement in health.

Hospitalisations data presented in this report have not been adjusted for under-identification and are therefore likely to underestimate the true level of Indigenous hospitalisations. Also, hospitalisations where Indigenous status was not stated are excluded from analyses that compare Indigenous and non-Indigenous rates.

The analysis of hospitalisations data by region in measures 3.1, 3.3, 3.5 and 5.1 uses the Australian Standard Geographical Classification Remoteness Structure, and data for the years 2009–12 (instead of 2010–13 used for the other analyses) as remoteness classifications changed in 2012–13.

The complete NHMD data quality statement is available online at <http://meteor.aihw.gov.au/content/index.phtml/itemId/568730>.

AIHW National Mortality Database

Mortality data presented in this report were extracted from the AIHW's 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 Australian Bureau of Statistics (ABS).

Due to the small number of Indigenous deaths from cardiac conditions each year, mortality data for the most 'recent' period are presented for the 5-year period 2008–2012 to allow for the reporting of data by age and sex.

Deaths registered in:

- 2010 and earlier are based on the final version of cause of death data
- 2011 and 2012 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 2014a for further details.

Data are reported for five jurisdictions – New South Wales, Queensland, Western Australia, South Australia and the Northern Territory. Other jurisdictions have a small number of Indigenous deaths, and identification of Indigenous deaths in their death registration system is poor, making the data less reliable.

The Indigenous status of a deceased person is identified through the death registration process. While it is considered likely that most deaths of Indigenous Australians are registered, a proportion of these deaths are not reported as a death of an Indigenous person by the family, health worker or funeral director during the death registration process, leading to some degree of under-identification of Indigenous people in mortality data. Mortality data presented in this report have not been adjusted for under-identification and are therefore likely to underestimate the true level of Indigenous mortality (ABS 2014a).

In this report, registered deaths where Indigenous status was not stated are excluded from analyses that compare Indigenous and non-Indigenous mortality rates. This applies to 5,517 registered deaths in 2008–2012.

Although the NMD includes information about both the underlying and associated causes of death, only the underlying cause is used in the analyses presented in this report.

The data quality statements underpinning the NMD can be found in quality declaration summaries in the following ABS publications:

<<http://www.abs.gov.au/AUSSTATS/abs@.nsf/mf/3303.0/>>

<<http://www.abs.gov.au/ausstats/abs@.nsf/mf/3302.0>>.

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, 2014b).

For analysis by region in measure 6.1, population data using the Australian Standard Geographical Classification Remoteness Structure were used. These data are based on the 2006 Census and therefore rates differ from those for the other analysis of this measure.

ABS 2012–13 Australian Aboriginal and Torres Strait Islander Health Survey

The ABS 2012–13 AATSIHS was designed to obtain national benchmark information on a range of health-related issues and to enable monitoring over time of the health of Indigenous people (ABS 2013a).

Overall, the AATSIHS included a nationally representative sample of around 13,000 Indigenous people living in 8,300 private dwellings in remote and non-remote areas of Australia, including discrete Indigenous communities.

MBS database

The MBS is part of the Medicare Benefits Scheme, the aim of which is to provide an entitlement to benefits for medical and hospital services for all Australian residents. 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 paid. Medicare enrolment application forms are lodged by persons wishing to enrol with Medicare at Medicare offices in each state/territory or by mail. Information from these forms is entered directly into the Medicare database, which is held by the Department of Health.

Rheumatic Heart Disease registers

Jurisdictional data are available from Queensland, Western Australian and Northern Territory RHDRs. ARF has been a notifiable disease in the Northern Territory since 1994 (RHD Australia 2012), and it became a notifiable disease in Queensland in 1999 (Queensland Health: Sweeny & Beard 2009) and in Western Australia in September 2007 (Western Australia Department of Health 2015). South Australia has had a register in place since 2012, but was unable to provide data for this report.

Appendix C: Things to consider when interpreting the data

Medicare data

Measures based on Medicare data

The Medicare data reported come from the MBS database. It should be noted that while the data have been used as measures of specific activities, changes in the use of an item can reflect changes in billing/claiming practices or the introduction of new items and not necessarily changes in health care provided.

Indigenous identification in Medicare data

The data for measure 1.1 includes MBS item 715, which is an Indigenous-specific health assessment, as well as other MBS health assessments (MBS items A14, 701, 703, 705 and 707). The identification of Indigenous Australians in the Medicare database is not complete as it is based on the Voluntary Indigenous Identifier (VII). In November 2002, the ABS standard question on Indigenous identification was included on the Medicare enrolment application form. The question is asked in relation to the cardholder and any other family member named on the card. Responding to the question is voluntary.

Medicare data presented in this report have been adjusted for under-identification. There are a number of caveats to the VII adjustment methodology, including that, as the VII sample is generated voluntarily, it is not truly random and cannot be fully representative of the Indigenous population until full coverage is achieved. There could, therefore, be biases in the data that are not addressed by the adjustment methodology.

Health assessments for non-Indigenous Australians

The MBS item 715, Health Assessments, is specifically for Indigenous Australians and is claimable annually. Non-Indigenous Australians are also eligible to receive health assessments under MBS items A14, 701, 703, 705 and 707; however, these checks are available only to specific groups of people and are sometimes available less frequently than the Indigenous specific health checks (Table C1). Therefore, the data for Indigenous and non-Indigenous people are not directly comparable.

Estimate of people with a cardiac condition from MBS data

The MBS data do not have information about whether people have a cardiac condition, so this was estimated based on people who had one or more of the cardiac-related MBS items in the previous financial year (Table A4). 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).

Proxy measures for primary care practitioner follow-up

The first measure for 1.3 is on whether blood pressure was checked, as a proxy for evidence of primary care practitioner follow-up and whether antihypertensive therapy was started. Data for this proxy measure is available only for non-remote areas.

The second proxy measure for 1.3 is on whether smokers discussed quitting smoking as a proxy for whether smokers were offered evidence-based smoking cessation intervention.

Table C1: Target group and frequency of service for MBS items A14, 701, 703, 705 and 707

Target group	Frequency of service
A Healthy Kids Check for children aged at least 3 and less than 5, who have received or who are receiving their 4-year-old immunisation	Once only to an eligible patient
A type 2 diabetes risk evaluation for people aged 40–49 (inclusive) with a high risk of developing type 2 diabetes as determined by the Australian Type 2 Diabetes Risk Assessment Tool	Once every 3 years to an eligible patient
A health assessment for people aged 45–49 (inclusive) who are at risk of developing chronic disease	Once only to an eligible patient
A health assessment for people aged 75 and older	Provided annually to an eligible patient
A comprehensive medical assessment for permanent residents of residential aged care facilities	Provided annually to an eligible patient
A health assessment for people with an intellectual disability	Provided annually to an eligible patient
A health assessment for refugees and other humanitarian entrants	Once only to an eligible patient
A health assessment for former serving members of the Australian Defence Force	Once only to an eligible patient

National hospital morbidity data

Estimation of people in the National Hospital Morbidity Database

Because individuals are not identified in the NHMD, nor are associated hospitalisations able to be grouped together, hospitalisations that are coded with a ‘separation mode’ of ‘transferred to another acute hospital’ were excluded from this analysis. In this way (in theory) only the ‘last’ hospitalisation episode is counted, and the initial episodes are excluded. This method is used to avoid double counting of individual patients. It was validated in calculating the incidence of acute coronary events when the AIHW compared results from the NHMD and the NMD with results from linked hospitalisation and deaths data from New South Wales and Western Australia (AIHW 2014). The AIHW analysis indicated that the method is valid; however, there were some limitations:

- 5%–11% of hospitalisations ending in transfer did not have a subsequent hospitalisation. Some of these patients could have been transferred to non-acute care facilities interstate.
- Following transfer, 4%–7% of hospitalisations did not have a principal diagnosis of AMI or unstable angina. It is possible that the transfer was initiated for what was thought to be ACS, but subsequently was not confirmed.

Note that for the measure presented here, patients will not be counted if they transfer to another hospital for recovery after a procedure. Also, this method will remove double counting of patients within a contiguous hospitalisation, but it will not remove double counting of non-contiguous hospitalisations (for example, if a patient is admitted for a heart attack, recovers and then 3 months later is admitted for a second heart attack, this would be counted as 2 people in the method used in this report). This is not a limitation of the analysis, as ideally the indicator would collect information on the treatment received for each event of a heart attack.

Indigenous identification in the National Hospital Morbidity Database

While there is some under-identification of Indigenous Australians in the NHMD, data for all states and territories are considered to have adequate Indigenous identification from 2010–11 onwards (AIHW 2013b). For some measures, because of small numbers, the data for the Australian Capital Territory were combined with those for New South Wales, and the data for Tasmania were combined with those for Victoria.

Time series comparisons are based on data for the six jurisdictions that were assessed by the AIHW as having adequate identification of Indigenous hospitalisations from 2004–05 onwards – namely, New South Wales, Victoria, Queensland, Western Australia, South Australia and public hospitals in the Northern Territory (AIHW 2010). This represents 95% of the Australian Indigenous population.

PCIs are also performed in a non-admitted patient setting

A certain proportion of PCIs are performed in a non-admitted patient setting and the condition or characteristics of these patients may differ considerably from that of admitted patients.

Eligibility for reperfusion therapy

Not all patients with STEMI are eligible for reperfusion because of multiple comorbidities, including chronic kidney disease, which increase the risks associated with PCI. However, eligibility for reperfusion therapy cannot be determined from administrative data sources.

Rheumatic heart disease registers

Availability of ARF data

The data currently available are drawn from Queensland, Western Australia and the Northern Territory where ARF is a notifiable disease and where register and control programs have been established. The incidence of ARF includes initial and recurrent cases for the Northern Territory and initial, recurrent and probable cases for Queensland and Western Australia.

Age standardisation of ARF data

All rates of ARF are crude rates as data required for age standardisation were not available from all registers.

Diagnosis of ARF

Currently, there is no diagnostic laboratory test for ARF, so diagnosis remains a clinical decision based on the identification of major and minor manifestations of the illness. However, the clinical appearances are non-specific and can be atypical in Aboriginal and Torres Strait Islander people. Accurate diagnosis hinges on early echocardiographic imaging to exclude or confirm rheumatic carditis; however, without an appropriate level of clinical suspicion to refer for echocardiogram, many cases of ARF can go undetected in the acute stage.

National mortality data

Indigenous identification in National Mortality Database

Mortality data are reported for five jurisdictions combined – New South Wales, Queensland, Western Australia, South Australia and the Northern Territory. Other jurisdictions have a small number of Indigenous deaths, and identification of Indigenous deaths in their death registration systems is relatively poor, making the data less reliable. The AIHW considers the quality of Indigenous identification in mortality data for the five jurisdictions to be adequate from 1998; thus, trend data are shown in this report from that year onwards.

Appendix D: List of persons consulted

Member	Affiliations
Jurisdictional members for the Better Cardiac Care for Aboriginal and Torres Strait Islander People Forum	
Wendy Ah Chin	Department of Health and Families, Northern Territory
Darren Walters	Queensland Health
Ian Maynard	Director General Queensland Health
Phil Tideman	Department for Health and Ageing, South Australia
Caroline Sharpe	NSW Ministry of Health
Leah Nolan	Department of Health, South Australia
Stephen Christley	Department for Health and Ageing, South Australia
Frances Diver	Department of Health, Australian Government
Mel Robinson	Western Australia Health
Walter Abhayaratna	Canberra Hospital
Craig White	Chief Medical Officer, Tasmania
Karen Foster	Department of Health and Human Services, Tasmania
Michelle Cretikos	NSW Ministry of Health
Marianne Gail	NSW Ministry of Health
National Aboriginal and Torres Strait Islander Health Committee members	
Wendy Ah Chin	Department of Health and Families, Northern Territory
Deborah Butler	Department of Health and Families, Northern Territory
April Lawrie-Smith	SA Health
Tanya McGregor	SA Health
Yvonne Mills	ACT Health
Rod Schreiber	Department of Health, Australian Government
Matthew Richter	ACT Health
Bridget Carrick	Department of Health, Australian Government
Di Maurer	Queensland Health
Jade Daylight-Baker	Queensland Health
Mark Stracey	Vic Health
Wendy Casey	WA Health
Shane Nichols	Vic Health
Narelle Smith	Department of Health and Human Services, Tasmania
Carmen Parter	NSW Ministry of Health
Jacinta Bunfield	NSW Ministry of Health

Glossary

acute coronary syndrome (ACS): a term used for any condition brought on by sudden, reduced blood flow to the heart. It includes a heart attack and unstable angina (pressure in the chest while at rest or doing light physical activity).

acute myocardial infarction (AMI): a heart attack.

acute rheumatic fever (ARF): a delayed autoimmune complication of throat infections caused by Group A *Streptococcus*. ARF can also develop following streptococcal skin infections, often secondary to scabies.

admitted patient: a patient who undergoes a hospital's admission process to receive treatment and/or care. This treatment and/or care is provided over a period of time and 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 techniques used to remove, as far as possible, the effects of differences in age when comparing two or more populations.

at high risk of cardiac disease: a classification of Indigenous people based on their having one or more of the following: self-reported type 2 diabetes, self-reported hypertensive disease or measured high blood pressure (systolic or diastolic blood pressure >140/90 mmHg), self-reported high cholesterol, or current smoker (includes those who smoked daily, at least weekly, or less than weekly).

care type: the overall type of clinical service provided to an **admitted patient** during an episode of care (admitted care), or the type of service provided by the hospital for boarders or posthumous organ procurement (care other than admitted care). METeOR identifier: 491557. Admitted patient care consists of the following categories:

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

Care other than admitted care include:

- posthumous organ procurement
- hospital boarder.

coronary artery bypass graft (CABG): a type of surgery that improves blood flow to the heart.

current smoker: includes those who smoked daily, at least weekly, or less than weekly.

definitive revascularisation procedure: a procedure used to increase coronary artery blood flow.

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.

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

index admission: the admission with a principal diagnosis of a specified condition.

mode of separation: status at **separation** of a person (discharge/transfer/death) and place to which a person is released (where applicable). METeOR identifier: 270094.

non-ST elevation acute coronary syndromes (NSTEACS): unstable angina (pressure in the chest while at rest or doing light physical activity) and non-ST elevation myocardial infarction (the less severe type of heart attack).

percutaneous coronary intervention (PCI): a procedure such as stent that opens blocked or narrowed coronary arteries.

period of care: a single combination of contiguous episodes of care separated only by a transfer within or between hospitals. This was estimated by excluding hospitalisations ending in transfer to another acute hospital, so that only the 'last' hospitalisation was counted.

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

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

rheumatic heart disease (RHD): a disease that results from ongoing damage to the heart caused by acute rheumatic fever; it often requires cardiac surgery to repair or replace damaged valves.

separation: *see* **hospitalisation**.

ST-elevation myocardial infarction (STEMI): a type of heart attack. Heart attacks are divided into two types, according to their severity; a STEMI is the more severe type.

without a current and long-term circulatory condition: a classification that excludes persons who reported a current and long-term heart or circulatory condition, comprising ischaemic heart diseases; other heart diseases; tachycardia; cerebrovascular diseases; oedema; diseases of arteries, arterioles and capillaries; diseases of veins, lymphatic vessels etc.; other diseases of the circulatory system, and symptoms or signs involving the circulatory system.

References

- ABS (Australian Bureau of Statistics) 2013a. Australian Aboriginal and Torres Strait Islander Health Survey: users' guide, 2012–13. ABS cat. no. 4727.0.55.002. Canberra: ABS.
- ABS 2013b. Estimates of Aboriginal and Torres Strait Islander Australians, June 2011. ABS cat. no. 3238.0.55.001. Canberra: ABS.
- ABS 2014a. Causes of death, Australia, 2012. ABS cat. no. 3303.0. Canberra: ABS.
- ABS 2014b. Estimates and projections, Aboriginal and Torres Strait Islander Australians, 2001 to 2026. ABS cat. no. 3238.0. Canberra: ABS.
- AIHW (Australian Institute of Health and Welfare) 2010. Indigenous identification in hospital separations data: quality report. Health services series no. 35. Cat. no. HSE 85. Canberra: AIHW.
- AIHW 2013a. Aboriginal and Torres Strait Islander Health Performance Framework 2012: detailed analyses. Cat. no. IHW 94. Canberra: AIHW.
- AIHW 2013b. Indigenous identification in hospital separations data: quality report. Cat. no. IHW 90. Canberra: AIHW.
- AIHW 2013c. Rheumatic heart disease and acute rheumatic fever in Australia: 1996–2012. Cardiovascular series. Cat. no. CVD 60. Canberra: AIHW.
- AIHW 2014. Acute coronary syndrome: validation of the method used to monitor incidence in Australia. A working paper using linked hospitalisation and deaths data from Western Australia and New South Wales. Cat. no. CVD 68. Canberra: AIHW.
- AIHW 2015. Aboriginal and Torres Strait Islander Health Performance Framework 2014: data tables. Viewed on 6 July 2015 < <http://www.aihw.gov.au/indigenous-data/health-performance-framework/>>.
- Better Cardiac Care Forum 2014. National recommendations for Better Cardiac Care for Aboriginal and Torres Strait Islander people: post-forum report (unpublished paper prepared for the June 2014 AHMAC meeting).
- Clark R, Coffee N, Turner D, Eckert K, van Gaans A, Wilkinson D, et al. 2012. Application of geographic modeling techniques to quantify spatial access to health services before and after an acute cardiac event: the Cardiac ARIA Project. *Circulation* 125(6):2006–14.
- Cunningham J 2002. Diagnostic and therapeutic procedures among Australian hospital patients identified as Indigenous. *Medical Journal of Australia* 176:58–62.
- Gausia K, Katzenellenbogen J, Sanfilippo F, Knuiman M, Thompson P, St Hobbs M, et al. 2014. Evidence-based prescribing of drugs for secondary prevention of acute coronary syndrome in Aboriginal and non-Aboriginal patients admitted to Western Australian hospitals. *Internal Medicine Journal* 44: 353–61.
- Mathur S, Moon L & Leigh S 2006. Aboriginal and Torres Strait Islander people with coronary heart disease: further perspectives on health status and treatment. Canberra: AIHW.
- NACCHO/RACGP (National Aboriginal Community Controlled Health Organisation/Royal Australian College of General Practitioners) 2012. National guide to a

preventive health assessment for Aboriginal and Torres Strait Islander people. South Melbourne: RACGP.

National Heart Foundation of Australia [RF/RHD guideline development working group] and the Cardiac Society of Australia and New Zealand 2006. Diagnosis and management of acute rheumatic fever and rheumatic heart disease in Australia – an evidence-based report. Sydney: National Heart Foundation of Australia and Cardiac Society of Australia and New Zealand.

National Heart Foundation of Australia 2010. Secondary prevention of cardiovascular disease. National Heart Foundation of Australia.

Ong M & Weeramanthri T 2000. Delay times and management of acute myocardial infarction in indigenous and non-indigenous people in the Northern Territory. *Medical Journal of Australia* 173:136–44.

Pie´rard LA 2007. ST elevation after myocardial infarction: what does it mean? *Heart* 93:1329–30.

Prabhu A, Tully P, Bennetts J, Tuble S & Baker R 2013. The morbidity and mortality outcomes of Indigenous Australian peoples after isolated coronary artery bypass graft surgery: the influence of geographic remoteness. *Heart, Lung and Circulation* 22: 559–605.

Queensland Health: Sweeny AL & Beard FH 2009. Queensland Health notifiable diseases report 2002–2006. Brisbane: Communicable Diseases Branch, Queensland Health. Viewed 20 January 2015, <http://www.health.qld.gov.au/ph/documents/cdb/notif_dis_reportl.pdf>.

Randall D, Jorm LR, Lujic S, O’Loughlin AJ, Eades SJ & Leyland AH 2013. Disparities in revascularization rates after acute myocardial infarction between Aboriginal and non-Aboriginal people in Australia. *Clinical Perspective. Circulation* 127(7):811–9.

RHD Australia [ARF/RHD writing group], National Heart Foundation of Australia and the Cardiac Society of Australia and New Zealand 2012. The Australian guideline for the prevention, diagnosis and management of acute rheumatic fever and rheumatic heart disease (2nd edn). Northern Territory: RHD Australia, Menzies School of Health Research.

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

Vos T, Barker B, Begg S, Stanley L & Lopez A 2009. Burden of disease and injury in Aboriginal and Torres Strait Islander peoples: the Indigenous health gap. *International Journal of Epidemiology* 38:470–7.

Walters D, Aroney C, Chew D, Bungey L, Coverdale S, Allan R et al. 2008. Variations in the application of cardiac care in Australia. Results from a prospective audit of the treatment of patients presenting with chest pain. *Medical Journal of Australia* 188(4):218–23.

Western Australia Department of Health 2015. Rheumatic fever (acute). Perth: Public Health Division, Western Australia Department of Health. Viewed 20 January 2015, <http://www.public.health.wa.gov.au/3/593/3/rheumatic_fever_acute.pm>.

World Health Organization (WHO) 1995. Strategy for controlling rheumatic fever/rheumatic heart disease, with emphasis on primary prevention: memorandum from a joint WHO/ISFC meeting. *Bulletin of the World Health Organization* 73(5): 583–7.

List of tables

Table S1: Summary of Better Cardiac Care results for Indigenous Australians ix

Table 1.1: Priority areas and actions recommended by the Better Cardiac Care Forum.....12

Table 1.2: Summary of Better Cardiac Care measures: reporting status, data sources and data development time frame.....13

Table 3.1: Better Cardiac Care measures: summary of data development requirements59

Table 3.2: Details of data developments required for each Better Cardiac Care measure 62

Table A1: Original measures and measures reported 64

Table A2: Technical specifications for Better Cardiac Care measures with data reported.....65

Table A3: Medicare-listed cardiac-related diagnostic items.....70

Table A4: Medicare-listed cardiac-related items.....70

Table A5: Procedure codes from the Australian Classification of Health Interventions, 7th Edition, 201070


Table C1: Target group and frequency of service for MBS items A14, 701, 703, 705 and 70776

List of figures

Figure 1.1a: Age-standardised proportion of people who had an MBS Health Assessment, by Indigenous status, 2013–14.....	17
Figure 1.1b: Trends in age-standardised proportion of people who had an MBS Health Assessment, by Indigenous status.....	17
Figure 1.1c: Proportion of people who had an MBS Health Assessment, by Indigenous status, age and sex, 2013–14.....	17
Figure 1.1d: Proportion of Indigenous people who had an MBS Health Assessment, by state and territory, 2013–14.....	17
Figure 1.1e: Proportion of Indigenous people who had an MBS Health Assessment, by region, 2013–14.....	17
Figure 1.3a: Proportion of Indigenous people at high risk of cardiac disease who had their blood pressure checked in the last 2 years, by age and sex, 2012–13.....	19
Figure 1.3b: Proportion of Indigenous people at high risk of cardiac disease who had their blood pressure checked in the last 2 years, by state and territory, 2012–13.....	19
Figure 1.3c: Proportion of Indigenous people at high risk of cardiac disease who had their blood pressure checked in the last 2 years, by region, 2012–13.....	19
Figure 1.3d: Proportion of Indigenous people at high risk of cardiac disease who discussed quitting smoking, by age and sex, 2012–13.....	21
Figure 1.3e: Proportion of Indigenous people at high risk of cardiac disease who discussed quitting smoking, by state and territory, 2012–13.....	21
Figure 1.3f: Proportion of Indigenous people at high risk of cardiac disease who discussed quitting smoking, by region, 2012–13.....	21
Figure 2.1a: Age-standardised proportion of people who had Medicare-listed diagnostic items claimed, by Indigenous status, 2012–14.....	25
Figure 2.1b: Trends in age-standardised proportion of people who had Medicare-listed diagnostic items claimed, by Indigenous status.....	25
Figure 2.1c: Proportion of people who had Medicare-listed diagnostic items claimed, by Indigenous status, age and sex, 2013–14.....	25
Figure 2.1d: Age-standardised proportion of people who had Medicare-listed diagnostic items claimed, by Indigenous status, state and territory, 2013–14.....	25
Figure 2.1e: Age-standardised proportion of people who had Medicare-listed diagnostic items claimed, by Indigenous status and region, 2013–14.....	25
Figure 3.1a: Age-standardised proportion of people with a STEMI treated by PCI, by Indigenous status, 2010–13.....	29
Figure 3.1b: Trends in age-standardised proportion of people with a STEMI treated by PCI, by Indigenous status.....	29
Figure 3.1c: Proportion of people with a STEMI treated by PCI, by Indigenous status, age and sex, 2010–13.....	29
Figure 3.1d: Proportion of Indigenous people with a STEMI treated by PCI, by state and territory, 2010–13.....	29
Figure 3.1e: Proportion of Indigenous people with a STEMI treated by PCI, by region, 2009–12.....	29

Figure 3.3a: Age-standardised proportion of people with ACS who received diagnostic angiography or a revascularisation procedure, by Indigenous status, 2010–13	31
Figure 3.3b: Trends in age-standardised proportion of people with ACS who received diagnostic angiography or a revascularisation procedure, by Indigenous status	31
Figure 3.3c: Proportion of people with ACS who received diagnostic angiography or a revascularisation procedure, by Indigenous status, age and sex, 2010–13	31
Figure 3.3d: Proportion of Indigenous people with ACS who received diagnostic angiography or a revascularisation procedure, by state and territory, 2010–13	31
Figure 3.3e: Proportion of Indigenous people with ACS who received diagnostic angiography or a revascularisation procedure, by region, 2009–12.....	31
Figure 3.5a: Age-standardised proportion of people with AMI who died in hospital, by Indigenous status, 2008–13.....	35
Figure 3.5b: Trends in the age-standardised proportion of people with AMI who died in hospital, by Indigenous status	35
Figure 3.5c: Proportion of people with AMI who died in hospital, by Indigenous status, age and sex, 2008–13.....	35
Figure 3.5d: Proportion of Indigenous people with AMI who died in hospital, by region, 2007–12.....	35
Figure 4.2a: Age-standardised proportion of people with a cardiac condition with a Team Care Arrangement, by Indigenous status, 2013–14.....	39
Figure 4.2b: Trends in age-standardised proportion of people with a cardiac condition with a Team Care Arrangement, by Indigenous status.....	39
Figure 4.2c: Proportion of people with a cardiac condition with a Team Care Arrangement, by Indigenous status, age and sex, 2013–14.....	39
Figure 4.2d: Age-standardised proportion of people with a cardiac condition with a Team Care Arrangement, by Indigenous status, state and territory, 2013–14	39
Figure 4.2e: Age-standardised proportion of people with a cardiac condition with a Team Care Arrangement, by Indigenous status and region, 2013–14.....	39
Figure 4.2f: Age-standardised proportion of people with a cardiac condition with a GPMP, by Indigenous status, 2013–14.....	41
Figure 4.2g: Trends in age-standardised proportion of people with a cardiac condition with a GPMP, by Indigenous status.....	41
Figure 4.2h: Proportion of people with a cardiac condition with a GPMP, by Indigenous status, age and sex, 2013–14.....	41
Figure 4.2i: Age-standardised proportion of people with a cardiac condition with a GPMP, by Indigenous status, state and territory, 2013–14	41
Figure 4.2j: Age-standardised proportion of people with a cardiac condition with a GPMP, by Indigenous status and region, 2013–14.....	41
Figure 4.2k: Age-standardised proportion of people with a cardiac condition with an Allied Health Service item, by Indigenous status, 2013–14.....	43
Figure 4.2l: Trends in age-standardised proportion of people with a cardiac condition with an Allied Health Service item, by Indigenous status.....	43
Figure 4.2m: Proportion of people with a cardiac condition with an Allied Health Service item, by Indigenous status, age and sex, 2013–14	43

Figure 4.2n: Age-standardised proportion of people with a cardiac condition with an Allied Health Service item, by Indigenous status, state and territory, 2013–14	43
Figure 4.2o: Age-standardised proportion of people with a cardiac condition with an Allied Health Service item, by Indigenous status and region, 2013–14.....	43
Figure 5.1a: New and recurrent cases of ARF, by Indigenous status, 2010–2013.....	47
Figure 5.1b: Trends in new and recurrent cases of ARF among Indigenous Australians.....	47
Figure 5.1c: New and recurrent cases of ARF among Indigenous Australians, by age and sex, 2010–2013	47
Figure 5.1d: New and recurrent cases of ARF among Indigenous Australians, by state and territory, 2010–2013	47
Figure 5.2a: Proportion of ARF episodes that are recurrent, by Indigenous status, 2010–2013	49
Figure 5.2b: Trends in proportion of ARF episodes that are recurrent among Indigenous Australians.....	49
Figure 5.2c: Proportion of Indigenous ARF episodes that are recurrent, by age, 2010–2013	49
Figure 5.3: Adherence to secondary prophylaxis in the previous 12 months for Indigenous people on the ARF/RHD program, Northern Territory, 2013	50
Figure 6.1a: Age-standardised hospitalisation rates for cardiac conditions, by Indigenous status, 2010–13.....	53
Figure 6.1b: Trends in age-standardised hospitalisation rates for cardiac conditions, by Indigenous status.....	53
Figure 6.1c: Age-specific hospitalisation rates for cardiac conditions, by Indigenous status, age and sex, 2010–13.....	53
Figure 6.1d: Age-standardised hospitalisation rates for cardiac conditions, by Indigenous status and state and territory, 2010–13	53
Figure 6.1e: Age-standardised hospitalisation rates for cardiac conditions, by Indigenous status and region, 2009–12.....	53
Figure 6.2a: Age-standardised cardiac mortality rate, by Indigenous status, 2008–2012	55
Figure 6.2b: Trends in age-standardised cardiac mortality rate, by Indigenous status.....	55
Figure 6.2c: Age-specific cardiac mortality rate, by age group and sex, 2008–2012	55
Figure 6.2d: Cardiac mortality rate for Indigenous people, by state and territory, 2008–2012.....	55
Figure 6.2e: Age-standardised in-hospital mortality rate for patients admitted with a cardiac condition, by Indigenous status, 2008–13.....	57
Figure 6.2f: Trends in in-hospital age-standardised mortality rate for patients admitted with a cardiac condition, by Indigenous status.....	57
Figure 6.2g: Age-specific in-hospital mortality rate for patients admitted with a cardiac condition, by Indigenous status, age group and sex, 2008–13.....	57



This is the first national report on the 21 Better Cardiac Care measures for Aboriginal and Torres Strait Islander people. It shows that:

- the age-standardised death rate due to cardiac conditions for Indigenous people was 1.6 times that for non-Indigenous people
- mortality from cardiac conditions for Indigenous Australians decreased by 41% between 1998 and 2012, while access to cardiac care has improved over time.

