

CARDIOVASCULAR DISEASE SERIES

**NUMBER 26**

# **Aboriginal and Torres Strait Islander people with coronary heart disease— summary report**

*Further perspectives on health status and treatment*

**Sushma Mathur  
Lynelle Moon  
Sharon Leigh**

**September 2006**

Australian Institute of Health and Welfare  
Canberra

AIHW cat. no. CVD 34

© Australian Institute of Health and Welfare 2006

This work is copyright. Apart from any use as permitted under the *Copyright Act 1968*, no part may be reproduced without prior written permission from the Australian Institute of Health and Welfare. Requests and enquiries concerning reproduction and rights should be directed to the Head, Business Promotion and Media Unit, Australian Institute of Health and Welfare, GPO Box 570, Canberra ACT 2601.

This publication is part of the Australian Institute of Health and Welfare's Cardiovascular Disease Series. A complete list of the Institute's publications is available from the Business Promotion and Media Unit, Australian Institute of Health and Welfare, GPO Box 570, Canberra ACT 2601, or via the Institute's website <<http://www.aihw.gov.au>>.

ISSN 1323-9236  
ISBN 1 74024 605 5

### **Suggested citation**

AIHW: Mathur S, Moon L & Leigh S 2006. Aboriginal and Torres Strait Islander people with coronary heart disease: further perspectives on health status and treatment. Cardiovascular disease series no. 26. Cat. no. CVD 34. Canberra: Australian Institute of Health and Welfare.

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

Board Chair  
Hon. Peter Collins, AM, QC

Director  
Penny Allbon

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

Sushma Mathur  
Australian Institute of Health and Welfare  
GPO Box 570  
Canberra ACT 2601

Phone: (02) 6244 1000  
Email: [cvd@aihw.gov.au](mailto:cvd@aihw.gov.au)

Published by the Australian Institute of Health and Welfare

Printed by Pirion, Canberra

## Introduction

This summary booklet provides key findings from the main report *Aboriginal and Torres Strait Islander people with coronary heart disease: further perspectives on health status and treatment*.

## The issues

It is well known that Aboriginal and Torres Strait Islander people have much higher death rates from 'major coronary events' (often known as heart attacks) than other Australians. But what has not been known is whether this is because they are much more likely to have a heart attack in the first place; have much lower survival; are more complex cases; or receive less treatment—or some combination of these and other factors.

## The study

This study used 2002–2003 hospital and mortality records to examine some of these questions for Indigenous Australians. Data were considered adequate for inclusion in the analysis in Queensland, Western Australia, South Australia and the Northern Territory. The study is the first of this scale to take aspects of Indigenous case complexity into account and to measure Indigenous hospital procedure rates in terms of need.

## The findings

The study found that, compared with other Australians, Aboriginal and Torres Strait Islander people were considerably more likely to suffer a heart attack, to die from it without being admitted to hospital, and to die from it if admitted to hospital. In hospital they were less likely to receive key medical investigations or common procedures such as coronary bypass surgery or angioplasty.

It was also found that Indigenous Australians admitted to hospital for coronary heart disease (CHD) were more complex cases, but this does not appear to account for differences in procedure rates.

Specifically, compared with other Australians, Indigenous Australians had:

- 3 times the rate of major coronary events such as heart attack
- 1.4 times the out-of-hospital death rate from CHD

and when in hospital:

- more than twice the in-hospital CHD death rate
- a 40% lower rate of being investigated by angiography
- a 40% lower rate of coronary angioplasty or stent procedures
- a 20% lower rate of coronary bypass surgery.

The study also outlines some limitations in its underlying data and some other possible reasons for the findings that could not be explored in this report.

## The message

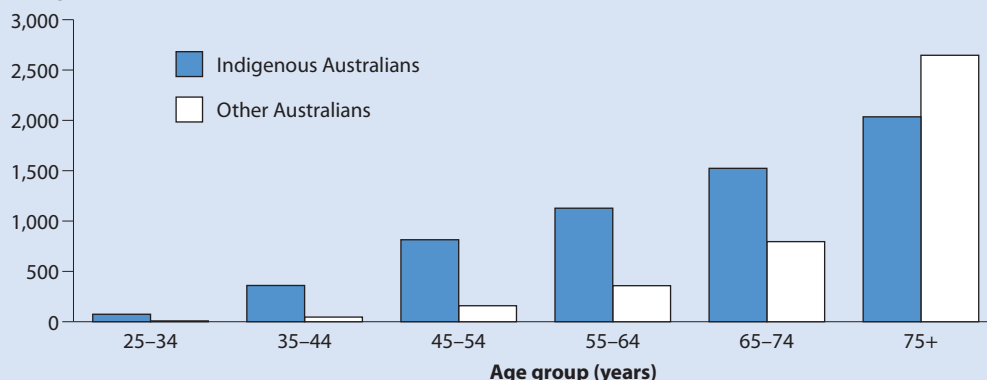
Even allowing for the study's limitations, the disparities it found still show a strong pattern that expands the picture of Indigenous disadvantage and poor health. The results make a compelling case that ways must be found to eliminate the disparities.

## Aboriginal and Torres Strait Islander people were more likely to have a major coronary event than other Australians

- Aboriginal and Torres Strait Islander people were far more likely to have a major coronary event than other Australians, across all age groups under 75 years in 2002–2003.
- After adjusting for differences in the age structure of the two population groups:
  - Indigenous Australians were three times (rate ratio of 3.0) as likely to have a major coronary event as other Australians
  - major coronary events in Indigenous people would have been reduced by two-thirds (67%) if they had experienced the same coronary event rates as other Australians.
- Younger to middle-aged Indigenous Australians were particularly affected. There would have been over 80% fewer coronary events occurring in Aboriginal and Torres Strait Islander people aged 25 to 54 years if they had experienced the same coronary event rates as other Australians. This arises partly because CHD in Indigenous Australians occurs at a much younger age compared with other Australians.

### Incidence of major coronary events in Qld, WA, SA and NT, 2002–2003

Rate per 100,000



Inequality measures <sup>(a)</sup>	Age group (years)						All ages	
	25-34	35-44	45-54	55-64	65-74	75+	Crude	ASR <sup>(b)</sup>
Rate ratio <sup>(c)</sup>	9.3	7.8	5.1	3.2	1.9	0.8	<b>0.8</b>	<b>3.0</b>
Rate difference (per 100,000)	66.2	314.0	655.5	769.7	728.0	-611.0	<b>-60.8</b>	—
Excess events	60	221	290	175	81	-32	—	<b>803</b>
Excess events %	90	88	81	70	50	-30	—	<b>67</b>

(a) See Glossary for definitions.

(b) ASR refers to indirectly age-standardised using 'other Australians' population as the standard population.

(c) An age-standardised rate ratio of 1.0 indicates the same number of observed cases as were expected in the standard population.

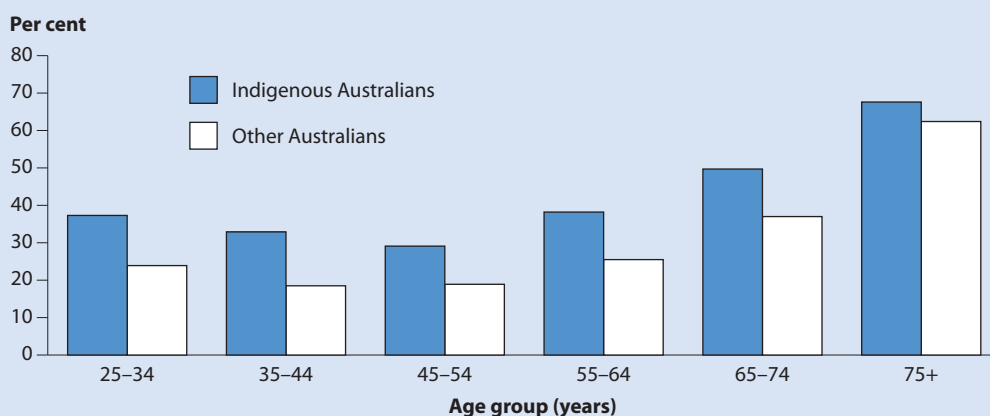
Sources: AIHW National Hospital Morbidity Database; AIHW National Mortality Database.

See pages 9–10 of the main report for more information on incidence of major coronary events.

## Indigenous Australians were more likely to die after a major coronary event

- Case fatality rates were considerably higher for Aboriginal and Torres Strait Islander people than other Australians across all age groups in 2002–2003. After adjusting for age, Indigenous Australians were 1.5 times as likely to die after a major coronary event than other Australians. Deaths from CHD in Indigenous Australians would have been around one-third (32%) lower had they experienced the same case fatality rates as other Australians.
- After experiencing a major coronary event, Indigenous Australians were more likely to die from it without being admitted to hospital (rate ratio of 1.4). If admitted to hospital for CHD, Indigenous Australians were over twice as likely to die from it (rate ratio of 2.3) than other Australians. There would have been 57% fewer in-hospital deaths for CHD among Indigenous Australians had they experienced the same in-hospital fatality rates as other Australians.

Case fatality for major coronary events in Qld, WA, SA and NT, 2002–2003



	Indigenous Australians	Other Australians	Age-standardised <sup>(a)</sup> inequality measures <sup>(b)</sup>		
	Per cent of cases <sup>(c)</sup>	Per cent of cases <sup>(c)</sup>	Rate ratio <sup>(d)</sup>	Excess deaths	Excess deaths %
<b>Case fatality rates<sup>(e)</sup></b>	38.4	47.6	1.5	145	32
<b>Out-of-hospital fatality rates</b>	31.3	40.2	1.4	102	27
<b>In-hospital fatality rates for CHD admissions</b>	2.1	2.5	2.3	49	57

(a) Indirectly age-standardised using 'other Australians' population as the standard population.

(b) See Glossary for definitions.

(c) Percentages have not been age-adjusted.

(d) An age-standardised rate ratio of 1.0 indicates the same number of observed cases as were expected in the standard population.

(e) Case fatality rate is the percentage of major coronary events that are fatal over a specified period. See Glossary for definitions.

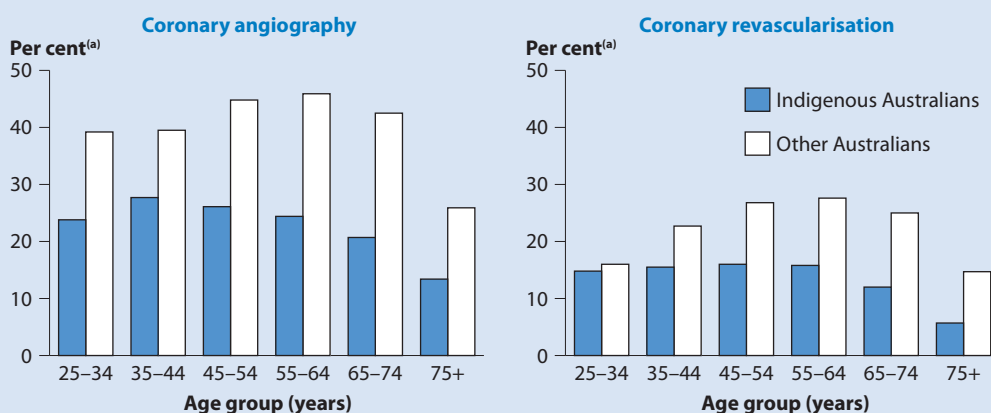
Sources: AIHW National Hospital Morbidity Database; AIHW National Mortality Database.

See pages 11–14 of the main report for more information about case fatality and place of death.

## Indigenous Australians were less likely to receive coronary procedures to treat their coronary heart disease

- Among those Australians hospitalised with CHD, Indigenous Australians were less likely to receive coronary angiography and revascularisation procedures than other Australians. The graphs below show that this is evident across all age groups.
- Revascularisation procedures include percutaneous coronary intervention (PCI: angioplasty or stenting—see Glossary for definitions) and coronary artery bypass grafts (CABG). For CHD, these procedures are important parts of treatment.
- Indigenous Australians hospitalised with CHD were 40% less likely to receive PCI and 20% less likely to receive CABG (age-adjusted rate ratio of 0.6 and 0.8 respectively) as other Australians.

### Use of coronary procedures for those hospitalised with a principal diagnosis of CHD (during one episode of care) in Qld, WA, SA and NT, 2002–2003



	Inequality measures <sup>(b)</sup>		
	Crude		ASR <sup>(c)</sup>
Revascularisation procedures	Rate ratio	Rate difference	Rate ratio <sup>(d)</sup>
PCI	0.6	-5.3	0.6
CABG	0.7	-2.3	0.8

(a) Per cent refers to the proportion of hospitalisations with CHD as the principal diagnosis receiving either coronary angiography or coronary revascularisation.

(b) See Glossary for definitions.

(c) ASR refers to indirectly age-standardised using 'other Australians' population as the standard population.

(d) An age-standardised rate ratio of 1.0 indicates the same number of observed cases as were expected in the standard population.

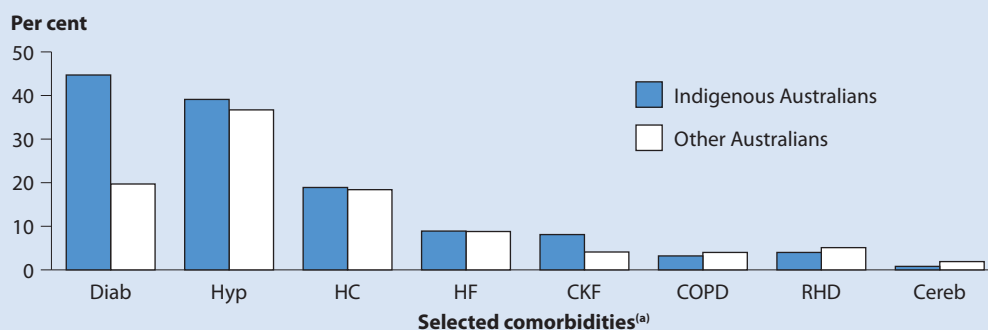
Source: AIHW National Hospital Morbidity Database.

See pages 15–18 of the main report for more information on coronary procedure rates for CHD hospitalisations.

## Aboriginal and Torres Strait Islander people presenting to hospital with CHD tend to be more complex cases than other Australians

- Aboriginal and Torres Strait Islander people hospitalised with CHD were more likely to have multiple comorbidities than other Australians. In 2002–2003, 16% of hospitalisations for Indigenous Australians with a principal diagnosis of CHD had at least three of the eight comorbidities investigated compared with 9% for other Australians.
- After adjusting for age, Indigenous Australians were 2.5 times as likely to have three or more comorbidities compared to other Australians. This suggests that, on average, hospitalisations for Indigenous Australians with CHD are more complex cases compared with other Australians similarly admitted.
- Diabetes was the most commonly recorded comorbidity for Indigenous Australians—45% of Indigenous CHD hospitalisations had diabetes recorded, an age-adjusted rate 2.5 times as high as for other Australians.

### CHD hospitalisations, proportion with selected comorbidities<sup>(a)</sup> in Qld, WA, SA and NT, 2002–2003



Number of comorbidities	Indigenous Australians	Other Australians	Inequality measures <sup>(b)</sup>		
			Crude		ASR <sup>(c)</sup>
	Per cent	Per cent	Rate ratio	Rate difference	Rate ratio <sup>(d)</sup>
No comorbidities	33.3	41.2	0.8	-7.9	0.7
One or two comorbidities	50.6	49.6	1.0	1.0	1.1
Three or more comorbidities	16.1	9.2	1.8	6.9	2.5

(a) In this study, complexity has been measured by the presence of selected comorbidities (i.e. additional diagnoses). These are Diab = diabetes, Hyp = hypertensive diseases, HC = high cholesterol, HF = heart failure, CKF = chronic kidney failure, COPD = chronic obstructive pulmonary disease, RHD = chronic rheumatic heart disease or other valve disorders and Cereb = cerebrovascular disease.

(b) See Glossary for definitions.

(c) ASR refers to indirectly age-standardised using 'other Australians' population as the standard population.

(d) An age-standardised rate ratio of 1.0 indicates the same number of observed cases as were expected in the standard population.

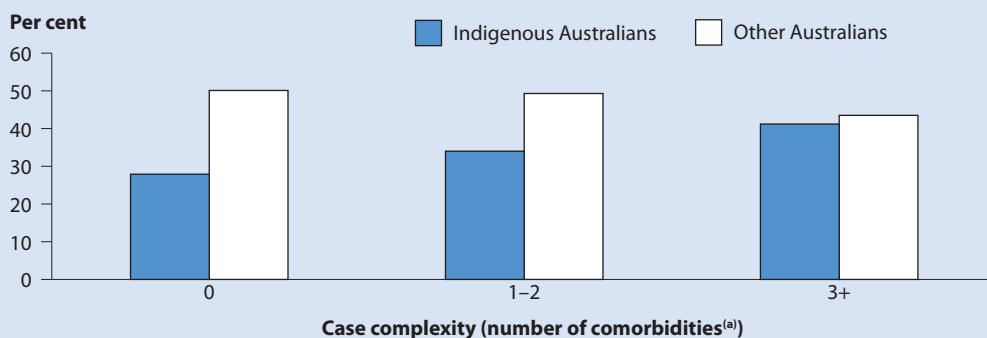
Source: AIHW National Hospital Morbidity Database.

See pages 19–21 of the main report for more information on case complexity and comorbidities.

## Case complexity does not appear to account for the lower coronary procedure rates in Indigenous Australians compared with other Australians

- When compared with other Australians, Indigenous Australians with CHD were less likely to receive coronary procedures and tended to be more complex cases (using number of comorbidities as a measure: see page 20 of main report). The study investigated if there was a relationship between case complexity and use of coronary procedures.
- In 2002–2003 Aboriginal and Torres Strait Islander people with CHD were less likely to undergo a coronary procedure across all levels of complexity. The largest difference in procedure rates between Indigenous Australians and other Australians occurred in the least complex groups (no or 1–2 comorbidities present). In these groups, Indigenous Australians were (rate ratio 0.6) just over half as likely to have a coronary procedure.
- Complexity, as measured by the number of comorbidities in our analysis does not explain the lower procedure rate in Indigenous Australians compared with other Australians.

**CHD hospitalisations with coronary procedures by number of comorbidities in Qld, WA, SA and NT, 2002–2003**



Case complexity (for hospitalisation with coronary procedure)	Indigenous Australians	Other Australians	Inequality measures <sup>(b)</sup>		
			Crude		ASR <sup>(c)</sup>
	Per cent	Per cent	Rate ratio	Rate difference	Rate ratio <sup>(d)</sup>
No comorbidities	27.9	50.1	0.6	–22.1	0.6
One or two comorbidities	34.0	49.3	0.7	–15.4	0.6
Three or more comorbidities	41.2	43.5	0.9	–2.3	0.8

(a) Comorbidities studied include diabetes, hypertensive diseases, high cholesterol, heart failure, chronic kidney failure, chronic obstructive pulmonary disease, chronic rheumatic heart disease or other valve disorders, and cerebrovascular disease.

(b) See Glossary for definitions.

(c) ASR refers to indirectly age-standardised using 'other Australians' population as the standard population.

(d) An age-standardised rate ratio of 1.0 indicates the same number of observed cases as were expected in the standard population.

Source: AIHW National Hospital Morbidity Database.

See pages 20–23 of the main report for more information on case complexity and the use of coronary procedures.



## Cautions about the data

- The identification of Aboriginal and Torres Strait Islander people is not complete in hospital and mortality data collections. Data from only four jurisdictions (Queensland, Western Australia, South Australia and the Northern Territory) were considered to have sufficient identification of Indigenous Australians for data analysis. Therefore the data included in this report may not be representative of all Indigenous Australians.
- While it is possible to identify many aspects of treatment in hospitals, there are limitations with using an episode-based rather than patient-based database. Importantly, it is not possible to track individual patients in the data, which may affect our analysis. For example, rates of admission for AMI may be inflated because of multiple admissions for the same event and transfers.
- In examining need and complexity, this study uses various proxy measures to analyse the data:
  - CHD hospitalisations (both elective and emergency admissions, which may have different profiles for Indigenous Australians and other Australians) have been used to provide a measure of procedure use relative to need. Indigenous Australians may be less likely to be admitted to hospital for CHD (due to differing treatment preferences and also higher case fatality rates), which could mean that this proxy underestimates the need of Indigenous Australians relative to other Australians.
  - Comorbidities were used as an indicator of complexity. There are also other factors that influence the results but have not been examined in this report. These include socioeconomic status, remoteness, hospital characteristics, severity of event, smoking status, patient preferences for intervention, and supply of cardiologists and cardio-thoracic specialists.

*See pages 3–6 and 27 of the main report for more information on these issues.*

## Glossary

**Aboriginal and Torres Strait Islander people, Indigenous Australians** and **Indigenous people**, are used interchangeably when referring to people who have identified as Aboriginal and/or Torres Strait Islander.

**Acute myocardial infarction (AMI)** A condition where part of a person's heart muscle dies as a result of a blood clot that completely blocks the flow of blood to that part.

**Age standardisation** A method of removing the influence of age when comparing populations with different age structures. Indirect age standardisation has been used in this report. A standardised ratio is calculated by comparing the actual number of events with the number expected if the age-specific rates in the 'other Australians' population applied to the Indigenous population. A ratio greater than one indicates more events than expected, whereas a ratio less than one indicates fewer events than expected.

**Case fatality** An important outcome measure which quantifies the proportion of cases that are fatal within a specific time period. Overall case fatality used in this report relates to major coronary events and is calculated as the number of CHD deaths in the specified population divided by the sum of all CHD deaths and non-fatal hospital admissions for AMI (with length of stay of 3 days or more) for the period 2002–2003.

**Comorbidity** In this report this term is used to describe the existence of a select list of conditions recorded as additional diagnosis on the hospital record.

**Coronary angiography** A diagnostic procedure which gives a picture of the heart's arteries.

**Coronary artery bypass grafting (CABG)** Surgical procedure using blood vessel grafts to bypass blockages in the coronary arteries and restore adequate blood flow to the heart muscle. See also *percutaneous coronary intervention*.

**Coronary heart disease (CHD)** Its primary feature is insufficient blood supply to the heart itself. The two major clinical forms are heart attack (the insufficient blood supply is sudden and extreme) and angina. The underlying problem is atherosclerosis, a complex process where fatty and fibre-like deposits build up on the inner walls of the arteries, often forming plaques. CHD is also known as ischaemic heart disease.

**Coronary stent** A metal mesh tube that is expanded within an artery at a point of narrowing and left there to hold the artery open.

**Crude rate** Calculated by dividing the total number of events (such as incidence and hospitalisations) by the total population at risk.

**Excess number of cases** An absolute measure of the impact of inequality calculated as the difference between the observed and expected number of cases. It represents the number of cases that would have been avoided if the rate for other Australians applied to the Indigenous population.

**Excess %** A relative measure of the impact of inequality. It is calculated as the excess number of cases as a percentage of all Indigenous cases and is interpreted as the percentage of Indigenous cases that would have been avoided if the rate for other Australians applied to the Indigenous population.

**Incidence of major coronary events** Estimated as the sum of the number of non-fatal hospital admissions for AMI (with length of stay of 3 days or more) and the number of deaths recorded as CHD deaths.

**In-hospital fatality rate** This refers to the proportion of hospitalised cases that die in hospital. In-hospital fatality for CHD used in this report is defined as the number of CHD deaths in hospital in those hospitalisations where CHD is the principal diagnosis divided by the number of hospitalisations with CHD as the principal diagnosis.

**Major coronary event** An event that results either in an acute admission to hospital for acute myocardial infarction (AMI) with a length of stay of 3 days or more, or in death from CHD. It should be noted that this excludes admissions for unstable angina or for coronary revascularisation procedures where the principal diagnosis is not AMI.

**Morbidity** Refers to ill health in an individual and to levels of ill health in a population or group.

**Other Australians** This term is used when referring to people that have not identified as Aboriginal and/or Torres Strait Islander. This group includes those people who have said they are non-Indigenous but may also include either Aboriginal and/or Torres Strait Islander people who have chosen not to identify as such or individuals for whom the relevant information was not collected.

**Out-of-hospital fatality rate** This refers to the proportion of cases that result in death without admission to hospital or after discharge from hospital. Out-of-hospital fatality used in this report is estimated as the total number of deaths from CHD less the number of CHD deaths in hospital in those hospitalisations where CHD is the principal diagnosis divided by the sum of all CHD deaths and non-fatal hospital admissions for AMI (with length of stay of 3 days or more). It should be noted that deaths occurring in the emergency departments of hospitals are included in this group, as these deaths occur before the formal admission to hospital takes place.

**Percutaneous coronary intervention (PCI)** Coronary angioplasty and coronary stenting when used together are referred to as PCI. It is used to restore adequate blood flow to blocked coronary arteries. Coronary angioplasty involves inserting a catheter with a balloon into a narrowed coronary artery. The balloon is then inflated against the blocked area to create a wider passage. Coronary stenting involves expanding a metal mesh tube within the artery to form a supporting structure to hold the artery open at the point where there is narrowing. See also *coronary artery bypass grafting* and *coronary stent*.

**Principal diagnosis** The diagnosis established, after study, to be chiefly responsible for the patient's episode of care in hospital; that is, the main or primary diagnosis.

**Rate difference** Absolute measure of inequality which is calculated as the rate for Indigenous Australians minus the rate for other Australians.

**Rate ratio** Relative measure of inequality which is calculated as the rate for Indigenous Australians divided by the rate for other Australians. For the age-standardised case, it is the ratio of the observed to the expected number of cases had the rates for other Australians applied.

**Revascularisation ('re-vesselling')** Restoring adequate blood flow to the heart or other part of the body, usually after the supply has been reduced or blocked, as in angina or a heart attack. Revascularisation includes methods such as *PCI* and *coronary artery bypass graft surgery*.

*See Chapter 2 and Appendix A of the main report for more information on these definitions.*