

## 3.05 Differential access to key hospital procedures

*The key hospital procedure differentials between Aboriginal and Torres Strait Islander peoples and other Australians as measured through standardised rates, ratios and rate differences in hospital separations with the same principal diagnosis*

### Data sources

Data for this measure come from the AIHW's National Hospital Morbidity Database.

The National Hospital Morbidity Database is a compilation of episode-level records from admitted patient morbidity data collection systems in Australian hospitals. Information on the characteristics, diagnoses and care of admitted patients in public and private hospitals is provided annually to the AIHW by state and territory health departments.

Data are presented for the four jurisdictions that have been assessed as having adequate identification of Indigenous hospitalisations in 2003–04 – Queensland, Western Australia, South Australia and the Northern Territory (AIHW 2005). These four jurisdictions represent approximately 60% of the Indigenous population of Australia. Data are presented by state/territory of usual residence of the patient.

Hospitalisations for which the Indigenous status of patients was not reported have been included with hospitalisations data for non-Indigenous people under the 'other' category. This is to enable consistency across jurisdictions as public hospitals in some states and territories do not have a category for the reporting of 'not stated' or inadequately recorded/reported Indigenous status.

Hospitalisation data are presented for the two-year period July 2002 to June 2004. An aggregate of two years of data has been used as the number of hospitalisations for some conditions is likely to be small for a single year.

The principal diagnosis is the diagnosis established to be the problem that was chiefly responsible for the patient's episode of care in hospital. The term 'hospitalisation' has been used to refer to a separation which is the episode of admitted patient care, which can be a total hospital stay (from admission to discharge, transfer or death) or a change in a type of care (for example, from acute to rehabilitation).

### Analyses

Age-standardised rates and ratios have been used for this indicator as a measure of hospitalisations in the Indigenous population relative to other Australians. Ratios of this type illustrate differences between the rates of hospital admissions among Indigenous people and those of other Australians, taking into account differences in age distributions.

## Hospitalisations

### Hospitalisations with a procedure recorded

Table 3.05.1 presents the proportion of hospitalisations with a procedure recorded between June 2002 and July 2004 by a number of demographic variables. This table includes all states and territories as the proportions are of those in hospital and not population rates and as such are not affected by Indigenous under-identification issues as are other data on hospital admissions.

- Between July 2002 and June 2004, there were around 10.8 million hospitalisations with a procedure reported in Australia, 2.5% (287,857) of which were hospitalisations recorded for Indigenous patients. In public hospitals, excluding procedures for haemodialysis, there were around 4.8 million hospitalisations with a procedure reported, 2.6% (126,847) of which were hospitalisations recorded for Indigenous patients. Over half of all hospitalisations had more than one procedure performed.
- While Indigenous Australians were more likely to be hospitalised than other Australians, they were less likely to undergo a procedure once admitted to hospital. Between July 2002 and June 2004, excluding care involving dialysis, 53% of Indigenous hospitalisations in public hospitals had a procedure recorded, compared with 70% of other hospitalisations in public hospitals (Table 3.05.1).
- The proportion of hospitalisations with a procedure recorded was highest for Indigenous patients aged 55–64 years (56%). Patients who were hospitalised in remote or very remote areas were less likely to undergo a procedure (43% of Indigenous and 55% of other patients) compared to those hospitalised in major cities (68% and 72% for Indigenous and other patients respectively).

**Table 3.05.1: Proportion of hospitalisations with a procedure recorded by Indigenous status, public hospitals, July 2002 to June 2004<sup>(a)</sup>**

	Indigenous	Other <sup>(b)</sup>
	%	%
<b>Overall</b>	52.6	69.6
<b>Sex</b>		
Males	52.0	69.5
Females	53.3	69.8
<b>Age group (years)</b>		
Under 1	40.2	47.4
1–14	46.9	57.0
15–34	49.4	63.7
35–54	49.7	70.9
55–64	55.7	75.9
65+	54.5	75.0
<b>Place of residence</b>		
Major cities	68.3	72.0
Regional (inner and outer)	52.1	66.6
Remote/very remote	43.1	55.3
Unknown	54.8	57.3
<b>Same-day admission</b>		
Yes	57.0	73.7
No	51.3	66.9
<b>Patient accommodation</b>		
Private	63.0	74.6
Public	52.7	68.9

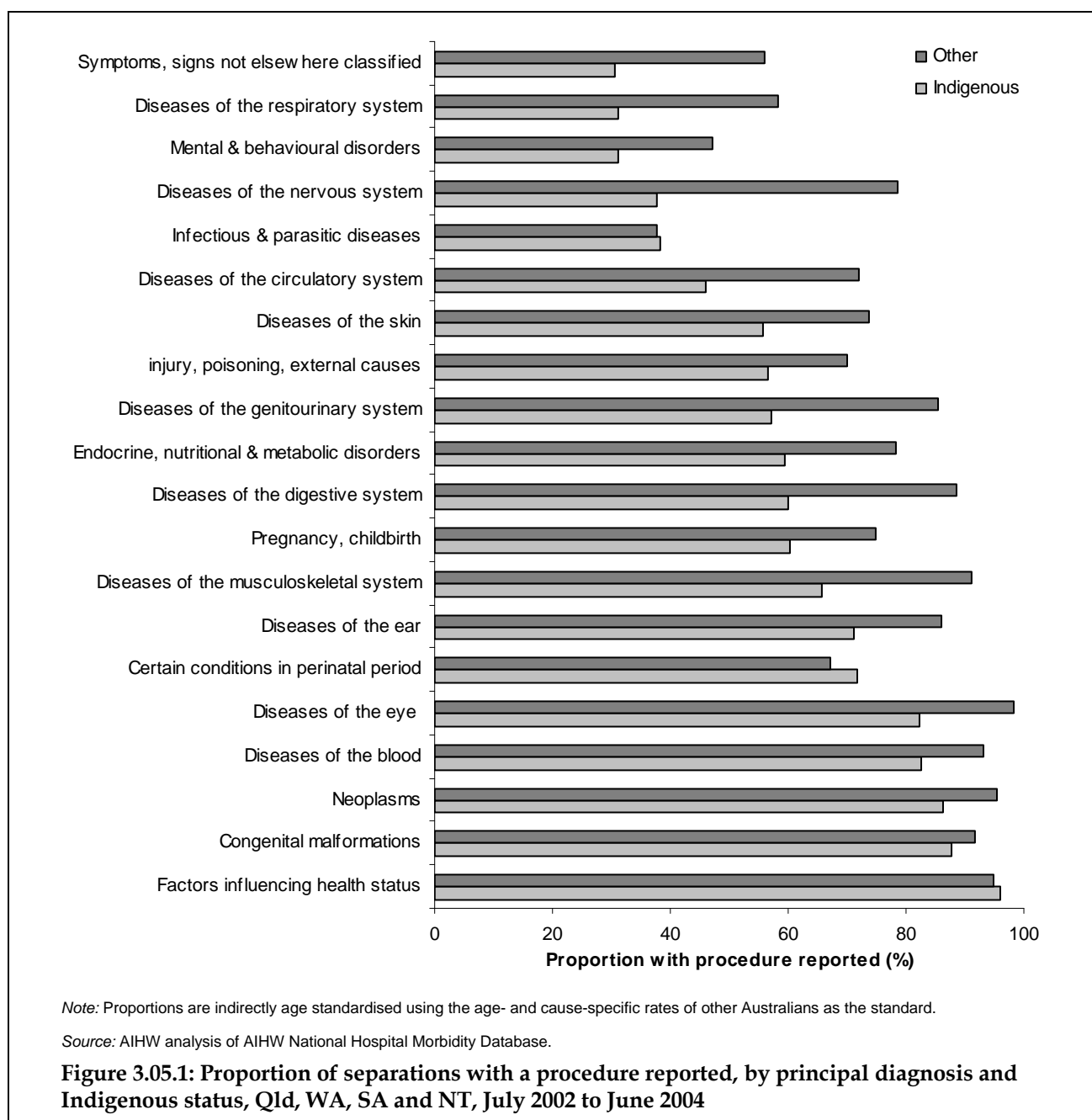
(a) Hospitalisations with a principal diagnosis of care involving dialysis (Z49) have been excluded.

(b) Other includes hospitalisations of non-Indigenous people and those for whom Indigenous status was 'not stated'.

Note: Proportions are age standardised using the age and cause-specific rates of other Australians.

Source: AIHW analysis of AIHW National Hospital Morbidity Database.

- Between July 2002 and June 2004, in Queensland, Western Australia, South Australia and the Northern Territory combined, although the overall rate of procedures per 1,000 population was higher for Indigenous persons, Figure 3.05.1 shows that the proportion of separations with a procedure by principal diagnosis was lower for Indigenous patients than for other patients for almost all of the diagnosis chapters. For example, for diseases of the nervous system, 38% of separations for Indigenous patients had a procedure reported, compared with 78% of separations for other patients. Factors influencing health status and contact with health services, which includes dialysis, infectious and parasitic diseases and certain conditions originating in the perinatal period were the only chapters for which the proportion of separations with procedures was higher for Indigenous patients.



## Hospital procedures

Procedures are clinical interventions that are surgical in nature, carry a procedural risk, carry an anaesthetic risk, require specialised training, and/or require special facilities or equipment only available in an acute care setting. Procedures, therefore, encompass surgical procedures and non-surgical investigative and therapeutic procedures such as X-rays and chemotherapy. Client support interventions that are neither investigative nor therapeutic (such as anaesthesia) are also included.

- Over the period July 2002 to June 2004, there were 374,670 hospital procedures performed on Indigenous patients in Queensland, Western Australia, South Australia and the Northern Territory combined. Approximately 35% of these procedures were for haemodialysis (Table 3.05.2).
- Procedures on the urinary system was the most frequently reported procedure chapter for Indigenous patients (135,119). For haemodialysis the number of procedures per 1,000 population for persons identified as Indigenous was about 15 times that for other persons. For procedures on the respiratory system the rate for persons identified as Indigenous was twice that for other persons and for procedures on the cardiovascular system the rate was 1.4 times that of other persons.
- Procedures for which the rate for Indigenous persons was less than that for other persons included procedures on the nervous system, procedures on the nose, mouth and pharynx, procedures on the male genital organs, chemotherapy and radiation, oncology, dental services, digestive and gynaecological procedures.

**Table 3.05.2: Hospital procedures, by type of procedure reported and Indigenous status, Qld, WA, SA and NT, July 2002 to June 2004<sup>(a)(b)(c)(d)</sup>**

	Number		Per cent		Rate per 1,000 <sup>(e)</sup>		Ratio <sup>(g)</sup>
	Indigenous	Other <sup>(f)</sup>	Indigenous	Other <sup>(f)</sup>	Indigenous	Other <sup>(f)</sup>	
Procedures on urinary system	135,119	665,088	36.1	7.0	476.4	45.4	10.5*
<i>Haemodialysis</i>	131,021	463,186	35.0	4.8	462.9	31.6	14.6*
Non-invasive, cognitive and interventions, not elsewhere classified	113,857	4,167,749	30.4	43.7	284.1	287.0	1.0
Obstetric procedures	17,659	355,160	4.7	3.7	25.5	25.4	1.0
Dermatological and plastic procedures	14,715	492,928	3.9	5.2	31.1	33.8	0.9*
Procedures on musculoskeletal system	13,545	447,253	3.6	4.7	28.4	30.7	0.9*
Imaging services	13,208	367,669	3.5	3.9	37.4	25.2	1.5*
Procedures on digestive system	12,473	917,151	3.3	9.6	36.3	62.5	0.6*
Dental services	11,153	326,564	3.0	3.4	12.8	23.2	0.6*
Procedures on cardiovascular system	10,757	335,142	2.9	3.5	32.7	22.9	1.4*
Gynaecological procedures	8,584	363,198	2.3	3.8	17.1	25.2	0.7*
Procedures on respiratory system	7,590	124,940	2.0	1.3	17.2	8.6	2.0*
Procedures on eye and adnexa	2,965	175,556	0.8	1.8	13.3	12.1	1.1*
Chemotherapeutic and radiation oncology procedures	2,991	294,962	0.8	3.1	9.5	20.0	0.5*
Procedures on nervous system	2,937	156,269	0.8	1.6	6.5	10.7	0.6*
Procedures on ear and mastoid process	2,534	50,303	0.7	0.5	3.2	3.6	0.9*
Procedures on nose, mouth and pharynx	2,069	141,767	0.6	1.5	3.7	9.9	0.4*
Procedures on male genital organs	1,067	63,131	0.3	0.7	2.0	4.4	0.4*
Procedures on breast	649	47,565	0.2	0.5	1.9	3.2	0.6*
Procedures on blood and blood-forming organs	649	37,725	0.2	0.4	1.9	2.6	0.7*
Procedures on endocrine system	149	8,391	0.0	0.1	0.4	0.6	0.8*
<b>Total (excluding dialysis)</b>	<b>243,709</b>	<b>9,104,685</b>	<b>65.0</b>	<b>95.5</b>	<b>578.4</b>	<b>627.3</b>	<b>0.9*</b>
<b>Total (including haemodialysis)<sup>(h)</sup></b>	<b>374,670</b>	<b>9,538,513</b>	<b>100.0</b>	<b>100.0</b>	<b>1,041.1</b>	<b>656.9</b>	<b>1.6*</b>

(continued)

**Table 3.05.2 (continued): Hospital procedures, by type of procedure reported and Indigenous status, Qld, WA, SA and NT, July 2002 to June 2004<sup>(a)(b)(c)(d)</sup>**

\* Represents results with statistically significant differences in the Indigenous/other comparisons at the  $p < .05$  level.

- (t) Data are from public and most private hospitals. Data exclude private hospitals in the Northern Territory.
- (u) Categories are based on the ICD-10-AM (National Centre for Classification in Health 2004).
- (v) Financial year reporting.
- (w) Data are presented by state/territory of usual residence of the patient and are reported for Western Australia, South Australia, the Northern Territory and Queensland only. These four jurisdictions are considered to have adequate levels of Indigenous identification, although the level of accuracy varies by jurisdiction and hospital. Data for these four jurisdictions over-represent Indigenous populations in less urbanised and more remote locations. Hospitalisation data for four jurisdictions should not be assumed to represent the hospitalisation experience in the other jurisdictions.
- (x) Directly age standardised using the Australian 2001 Standard population.
- (y) Other includes hospitalisations of non-Indigenous people and those for whom Indigenous status was not stated.
- (z) Rate ratio Indigenous:other.
- (aa) Includes procedures for the procedure category was not stated.

Source: AIHW analysis of AIHW National Hospital Morbidity Database.

### Time series analyses

Hospital procedure rates, rate ratios and rate differences between Indigenous and other Australians over the five-year period 1998–99 to 2003–04 excluding haemodialysis procedures are presented in Table 3.05.3 and Figure 3.05.2.

- Over the period 1998–99 to 2003–04, there were significant increases in hospital procedure rates, excluding dialysis for both Indigenous and other Australians. The fitted trend implies an average yearly increase in the rate of around 44 per 1,000 for Indigenous Australians and 50 per 1,000 for other Australians.
- There were no significant changes in the hospitalisation rate ratios or rate differences between Indigenous and other Australians over the period.

It should be noted that changes in the level of accuracy of Indigenous identification in hospital records will result in changes in the level of reported hospital procedures for Indigenous Australians. Also, changes in access, hospital policies and practices all impact on the level of hospitalisation over time. Caution should be used in interpreting changes over time as it is not possible to ascertain whether a change in reported hospitalisation is due to changes in the accuracy of Indigenous identification or real changes in the rates at which Indigenous people are hospitalised. An increase in procedures may reflect better access to hospitals/hospital procedures rather than a worsening of health.

**Table 3.05.3: Age-standardised hospital procedure rates, rate ratios and rate differences (excluding dialysis), Qld, WA, SA and NT, 1998-99 to 2003-04**

	1998-99	1999-00	2001-01	2001-02	2002-03	2003-04	Annual change <sup>(a)</sup>
<b>Indigenous rate per 1,000</b>							
Persons	389.1	406.4	504.0	519.1	561.7	599.7	43.8*
<b>Other Australian<sup>(b)</sup> rate per 1,000</b>							
Persons	414.1	413.6	560.5	580.4	625.0	632.1	49.8*
<b>Rate ratio<sup>(c)</sup></b>							
Persons	0.9	1.0	0.9	0.9	0.9	0.9	0.0
<b>Rate difference<sup>(d)</sup></b>							
Persons	-25.0	-7.2	-56.5	-61.3	-63.3	-32.3	-0.6

\* Represents results with statistically significant increases or declines at the  $p < .05$  level over the period 1998-99 to 2003-04.

(b) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.

(c) Other includes hospitalisations for non-Indigenous Australians and those for whom Indigenous status was not stated.

(d) Hospitalisation rates for Indigenous Australians divided by hospitalisation rates for other Australians.

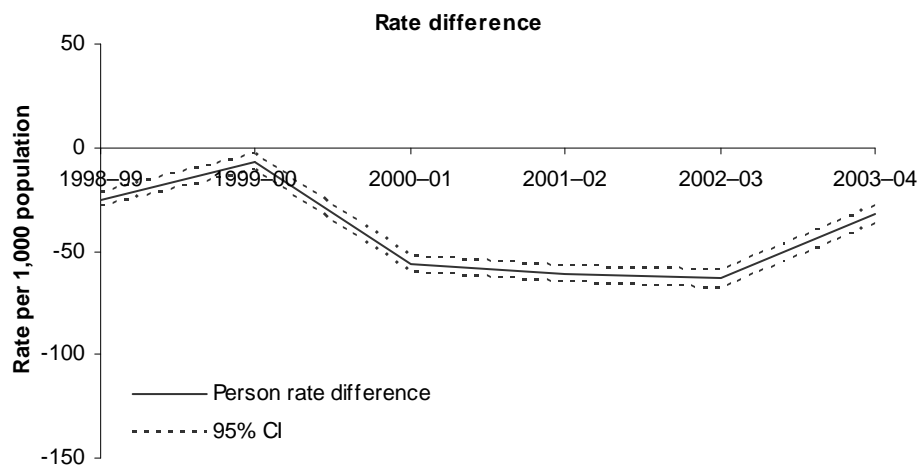
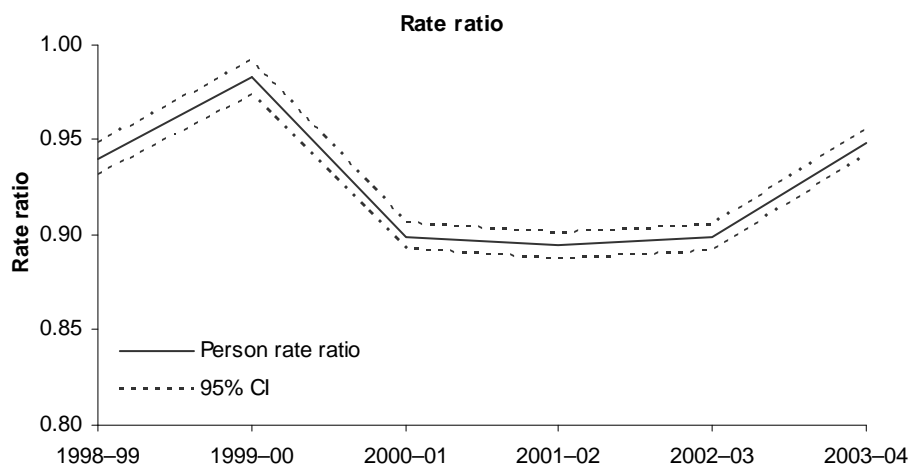
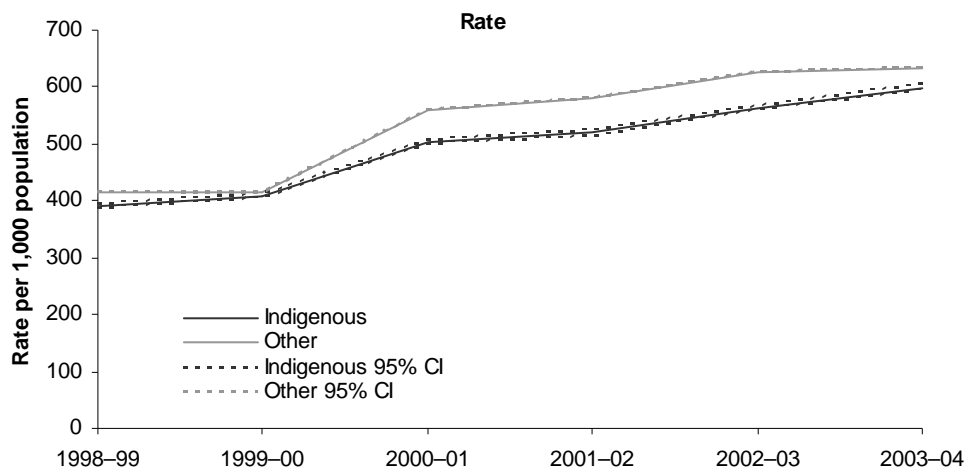
(e) Hospitalisation rates for Indigenous Australians minus hospitalisation rates for other Australians.

Notes:

Rates have been directly age standardised using the Australian 2001 Standard population.

Excludes procedures for haemodialysis (block no. 1060 for 2002-03 to 2003-04 and block no. 1059 for 1998-99 to 2001-02).

Source: AIHW analysis of AIHW National Hospital Morbidity Database.



Source: AIHW analysis of AIHW National Hospital Morbidity Database.

**Figure 3.05.2: Hospital procedure rates, rate ratios and rate differences between Indigenous and other Australians, Qld, WA, SA and NT, 1998-99 to 2003-04**

## Additional information

### Coronary heart disease hospital procedures

The AIHW report *Aboriginal and Torres Strait Islander people with coronary heart disease: further perspectives on health status and treatment* (AIHW 2006) looked at the disparities between Aboriginal and Torres Strait Islander people and other Australians in the health status and treatment of coronary heart disease including the use of coronary procedures in hospital. The key findings from this report are outlined below.

- In 2002–03, among those Australians hospitalised with coronary heart disease, Indigenous Australians were less likely to receive coronary procedures such as coronary angiography and revascularisation procedures than other Australians. This was evident across all age groups (Table 3.05.4). The detailed age-specific rates indicate that, in both relative and absolute terms, the largest differences for both angiography and revascularisation occurred in the 55–64 and 65–74 year age groups. The rates for other Australians were around double that of Indigenous Australians and the rate difference was over 20 percentage points for angiography and over 10 percentage points for revascularisation. Revascularisation procedures include percutaneous coronary intervention (PCI) and coronary artery bypass grafts (CABG).
- After taking the different population age structures into account, the angiography and revascularisation rate for Aboriginal and Torres Strait Islanders was 40% lower than the rate for other Australians (rate ratio of 0.6 for both).
- Similar results were observed when PCI and CABG were analysed separately, with Indigenous Australians generally less likely to receive these procedures than other Australians across all age groups for those hospitalised for coronary heart disease (Table 3.05.5). The age-adjusted procedure rate for PCI is around 40% lower than other Australians, while the age-adjusted rate for CABG is 20% lower (age-standardised rate ratio of 0.6 and 0.8 respectively).
- Indigenous Australians with coronary heart disease tended to be more complex cases (measured by the number of comorbidities). In 2002–03 Aboriginal and Torres Strait Islander people with coronary heart disease 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 just over half as likely to have a coronary procedure.
- The complexity of cases did not explain the lower procedure rate in Indigenous Australians compared with other Australians.

**Table 3.05.4: Use of coronary procedures for those hospitalised with coronary heart disease, by Indigenous status, Qld, WA, SA and NT, 2002-03**

Age group	Indigenous Australians		Other Australians		Inequality measures	
	Number	Per cent <sup>(a)</sup>	Number	Per cent <sup>(a)</sup>	Rate ratio <sup>(b)</sup>	Rate difference <sup>(c)</sup>
<b>Coronary angiography</b>						
25-34	53	23.8	222	39.2	0.6*	-15.4
35-44	241	27.7	1,664	39.5	0.7*	-11.8
45-54	344	26.1	6,746	44.8	0.6*	-18.6
55-64	247	24.4	11,905	45.9	0.5*	-21.6
65-74	100	20.7	13,081	42.5	0.5*	-21.7
75+	28	13.4	9,471	25.9	0.5*	-12.5
<b>All ages<sup>(d)</sup></b>						
Crude	1,016	24.6	43,106	38.1	0.6*	-13.5
ASR <sup>(e)</sup>	—	—	—	—	0.6*	—
<b>Revascularisation (PCI and CABG)</b>						
25-34	33	14.8	91	16.0	0.9	-1.3
35-44	135	15.5	954	22.7	0.7*	-7.1
45-54	211	16.0	4,036	26.8	0.6*	-10.8
55-64	160	15.8	7,153	27.6	0.6*	-11.8
65-74	58	12.0	7,688	25.0	0.5*	-12.9
75+	12	5.7	5,379	14.7	0.4*	-9.0
<b>All ages<sup>(d)</sup></b>						
Crude	609	14.8	25,306	22.4	0.7*	-7.6
ASR <sup>(e)</sup>	—	—	—	—	0.6*	—

\* Represents results with statistically significant differences in the Indigenous/other comparisons at the p<.05 level.

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

(b) Rate ratio—Indigenous:other.

(c) Rate difference—hospitalisation rate for Indigenous Australians divided by hospitalisation rate for other Australians.

(d) Includes those aged less than 25 years.

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

Source: AIHW 2006.

**Table 3.05.5: Inequalities in the use of PCI and CABG procedures for those hospitalised with a principal diagnosis of coronary heart disease, Qld, WA, SA and NT, 2002–03**

	Age group (years)						All ages <sup>(a)</sup>	
	25–34	35–44	45–54	55–64	65–74	75+	Crude	ASR <sup>(b)</sup>
<b>PCI</b>								
Rate ratio <sup>(c)</sup>	0.9	0.6*	0.5*	0.5*	0.4*	0.4*	0.6*	0.6*
Rate difference <sup>(d)</sup> (%)	–2.0	–6.2	–9.6	–8.8	–9.2	–6.0	–5.3	—
<b>CABG</b>								
Rate ratio <sup>(c)</sup>	1.6	0.8	0.9	0.7*	0.7*	0.4	0.7*	0.8*
Rate difference <sup>(d)</sup> (%)	1.2	–0.9	–1.1	–3.1	–3.7	–3.0	–2.3	—

\* Represents results with statistically significant differences in the Indigenous/other comparisons at the p<.05 level.

(a) Includes those aged less than 25 years.

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

(c) Rate ratio—Indigenous:other.

(d) Rate difference—hospitalisation rate for Indigenous Australians divided by hospitalisation rate for other Australians.

Source: AIHW 2006.

## Cancer research work

A recent study of 815 Indigenous and 810 non-Indigenous patients diagnosed with cancer in Queensland between 1997 and 2002 found that after adjustment for stage at diagnosis, treatment and comorbidities, non-Indigenous Australians had better survival than Indigenous patients (hazard ratio = 1.3, 95% CI 1.1–1.5). Indigenous patients were less likely to have had treatment for cancer (surgery, chemotherapy, radiotherapy) and waited longer for surgery (hazard ratio = 0.84, 95% CI 0.72–0.97) than non-Indigenous patients (Valery et al. 2006).

A study in Western Australian of patients who had a cancer registration in the state between 1982 and 2001 found that Indigenous people were less likely to receive surgery for their lung cancer and prostate cancer, but not breast cancer (Hall et al. 2004).

## **Data quality issues**

### **Hospital separation data**

#### ***Separations***

*The number and pattern of hospitalisations can be affected by differing admission practices among the jurisdictions and from year to year, and differing levels and patterns of service delivery.*

#### ***Indigenous status question***

*Some jurisdictions have slightly different approaches to the collection and storage of the standard Indigenous status question and categories in their hospital collections. The not stated category is missing from several collections. It is recommended that the standard wording and categories be used in all jurisdictions (AIHW 2005).*

#### ***Under-identification***

*The incompleteness of Indigenous identification means the number of hospital separations recorded as Indigenous is an underestimate of hospitalisations of Aboriginal and Torres Strait Islander people. While the identification of Indigenous people in hospitalisations is incomplete in all states and territories, four jurisdictions (Queensland, Western Australia, South Australia and the Northern Territory) have been assessed as having adequate identification in 2003–04 (AIHW 2005). It has therefore been recommended that reporting of Indigenous hospital separations be limited to aggregated information from Queensland, Western Australia, South Australia and the Northern Territory. The proportion of the Indigenous population covered by these four jurisdictions is 60%. The following caveats have also been recommended:*

- *Interpretation of results should take into account the relative quality of the data from the jurisdictions included (currently a degree of Indigenous under-identification in Western Australia and relatively marked Indigenous under-identification in Queensland data).*
- *Data for these four jurisdictions over-represent Indigenous populations in less urbanised and more remote locations.*
- *Hospitalisation data for four jurisdictions should not be assumed to represent the hospitalisation experience in other jurisdictions (ABS & AIHW 2005).*

#### ***Numerator and denominator***

*Rate and ratio calculations rely on good numerator and denominator data. The changes in the completeness of identification of Indigenous people in hospital records may take place at different rates than changes in the identification of Indigenous people in other administrative collections and population censuses. Denominators used here are sourced from the ABS's Experimental estimates and projections: Aboriginal and Torres Strait Islander Australians 1001 to 2009 (ABS 2004).*

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