

1.05 Circulatory disease

Prevalence, incidence and number of hospital separations with a principal diagnosis of circulatory disease for Aboriginal and Torres Strait Islander people expressed as a rate by age group, age-standardised rate and rate ratio

Data sources

Data for this indicator come from the National Aboriginal and Torres Strait Islander Health Survey, the Bettering the Evaluation and Care of Health (BEACH) survey and the AIHW's National Hospital Morbidity Database.

National Aboriginal and Torres Strait Islander Health Survey (NATSIHS)

The 2004–05 NATSIHS collected information from 10,439 Indigenous Australians of all ages. This sample was considerably larger than the supplementary Indigenous samples in the 1995 and 2001 National Health Surveys. The survey was conducted in remote and non-remote areas of Australia and collected a range of information from Indigenous Australians about health-related issues including health-related actions, health risk factors, health status, socioeconomic circumstances and women's health. It is planned to repeat the NATSIHS at six-yearly intervals, with the next NATSIHS to be conducted in 2010–11. Selected non-Indigenous comparisons are available through the 2004–05 National health Survey (NHS).

Bettering the Evaluation and Care of Health (BEACH) survey

Information about encounters in general practice is available from the BEACH survey which is conducted by the AIHW and the University of Sydney. Information is collected from a random sample of approximately 1,000 general practitioners (GPs) from across Australia each year. A sample of 100 consecutive encounters is collected from each GP.

The number of Indigenous patients identified in the BEACH survey is likely to be underestimated. This is because some GPs might not ask about Indigenous status, or the patient may choose not to identify (AIHW 2002). The estimates presented here are also derived from a relatively small sample of GP encounters involving Indigenous Australians.

Due to a late inclusion of a 'not stated' category of Indigenous status in 2001–02 (before which not stated responses were included with non-Indigenous encounters), GP encounters for which Indigenous status was not reported have been included with encounters for non-Indigenous people under the 'other' category.

Data are presented for the five-year period 2000–01 to 2004–05, during which there were 7,296 GP encounters with Aboriginal and Torres Strait Islander patients recorded in the survey, representing 1.6% of total GP encounters.

Hospitalisations

The National Hospital Morbidity Database 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.

Data are presented for the four jurisdictions which 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 the patient 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 additional diagnosis is a condition or complaint either coexisting with the principal diagnosis or arising during the episode of care. 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 morbidity in the Indigenous population relative to other Australians. Ratios of this type illustrate differences between the rates of morbidity among Indigenous people and those of other Australians, taking into account differences in age distributions.

Self-reported prevalence

Self-reported data from the National Aboriginal and Torres Strait Islander Health Survey on the prevalence of heart and circulatory conditions among Aboriginal and Torres Strait Islander people are presented in Tables 1.05.1 and 1.05.2 below.

- In 2004–05 approximately 23% of Indigenous Australians reported having a heart or circulatory condition compared to 20% of non-Indigenous Australians.
- High blood pressure was the most common type of heart and circulatory condition reported by Indigenous and non-Indigenous Australians (15% and 11% respectively), followed by high cholesterol (7% for both population groups).
- Heart and circulatory conditions were most prevalent among those aged 55 years and over (57% for Indigenous Australians and 53% for non-Indigenous Australians).
- In 2004–05, the prevalence of heart/circulatory conditions was slightly higher among Aboriginal and Torres Strait Islander males and females in remote areas (12% and 17% respectively) than in non-remote areas (10% and 14% respectively) (Table 1.05.2).

- There has been little change in the prevalence of heart/circulatory conditions among Aboriginal and Torres Strait Islander peoples between 2001 and 2004–05.

Table 1.05.1: Persons reporting heart and circulatory conditions, by Indigenous status and age group, 2004–05^(a)

	0–24 years		25–44 years		45–54 years		55 years and over		Total ^(b)	
	Indig.	Non-Indig.	Indig.	Non-Indig.	Indig.	Non-Indig.	Indig.	Non-Indig.	Indig.	Non-Indig.
	%	%	%	%	%	%	%	%	%	%
Total with heart or circulatory condition	2	2	17	12	35	28	57	53	23*	20*
Has current and/or long-term high blood pressure	— ^(c)	— ^(c)	8*	4*	23*	14*	43*	34*	15*	11*
Heart murmur/heart valve disorder	1	1	3*	1*	2 ^(c)	2	4	3	2*	2*
Total persons	272,736	6,396,209	128,829	5,660,920	39,578	2,705,580	33,167	4,529,678	474,310	19,292,387

* Represents results with statistically significant differences in the Indigenous/non-Indigenous comparisons.

(a) Self-reported data from the National Aboriginal and Torres Strait Islander Health Survey 2004–05.

(b) Age-standardised proportions.

(c) Estimate has a relative standard error of 25% to 50% and should be used with caution.

Source: ABS and AIHW analysis of 2004–05 National Aboriginal and Torres Strait Islander Health Survey and 2004–05 National Health Survey.

Table 1.05.2: Indigenous persons reporting heart and circulatory problems/diseases,^(a) by sex and remoteness area, 1995, 2001 and 2004–05

	1995 ^(b)			2001			2004–05		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
Remote	n.a.	n.a.	n.a.	10	16	12	12	17	14
Non-remote	15	16	15	10	13	10	10	14	11
Total	n.a.	n.a.	n.a.	10	14	11	11	15	12
Total number	131,616	133,800	265,416	217,893	225,102	442,995	232,362	241,948	474,310

(a) ICD-10-AM based output classification.

(b) Non-remote data are not available from the 1995 National Health Survey.

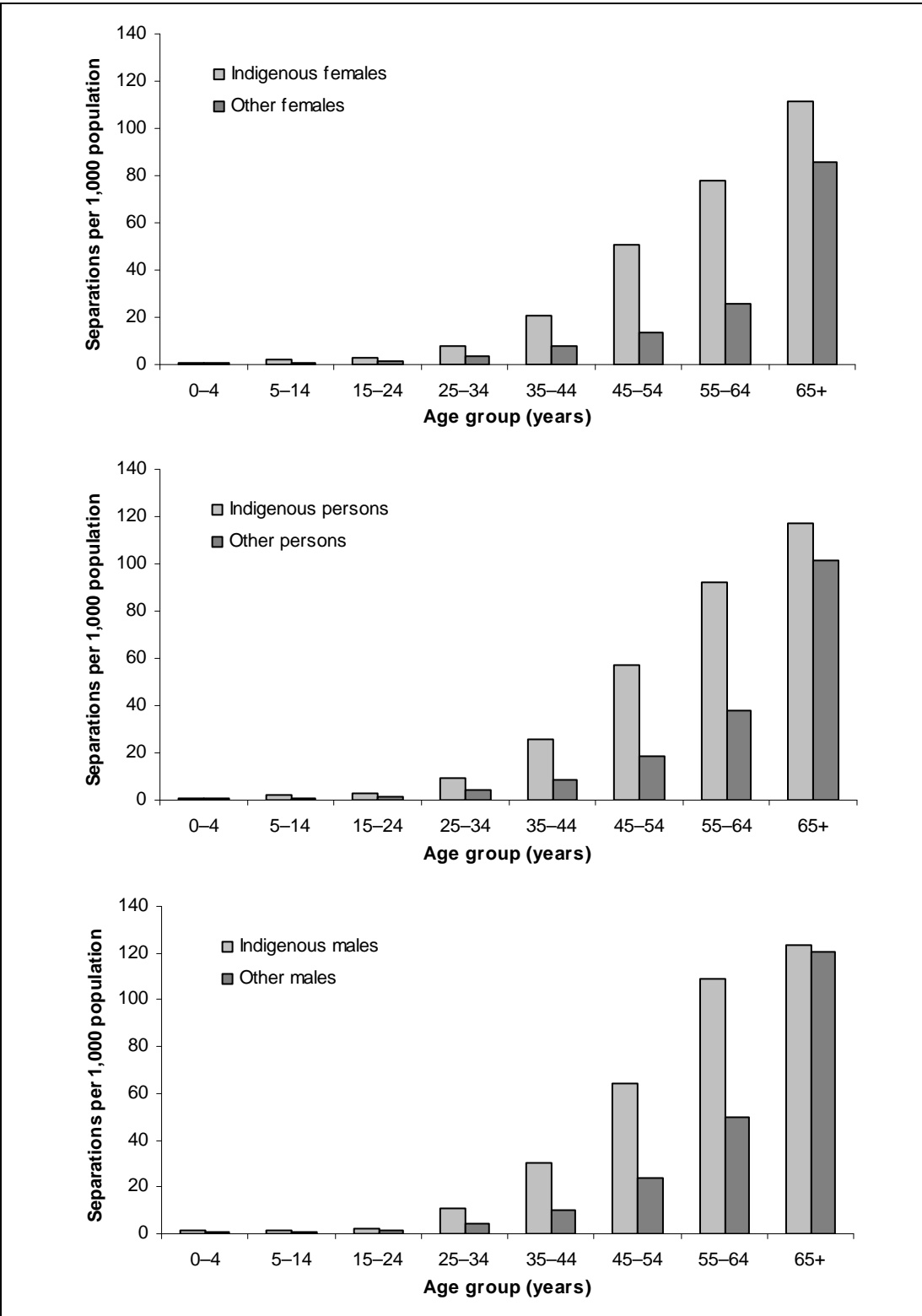
Sources: ABS 1995 National Health Survey (Indigenous supplement); 2001 National Health Survey (Indigenous supplement); 2004–05 National Aboriginal and Torres Strait Islander Health Survey.

Hospitalisations

- For the two-year period July 2002 to June 2004, there were 320,101 hospitalisations for circulatory diseases in Queensland, Western Australia, South Australia and the Northern Territory combined, 9,815 (3%) of which were hospitalisations of Aboriginal and Torres Strait Islander peoples.
- Circulatory disease is the eighth most common diagnosis for Aboriginal and Torres Strait Islander Australians admitted to hospital. Approximately 3% of all hospitalisations of Indigenous Australians were for circulatory diseases.

Hospitalisations by age and sex

- For the two-year period July 2002 to June 2004, in Queensland, Western Australia, South Australia and the Northern Territory, Indigenous males and females had higher hospitalisation rates for circulatory diseases than other males and females across all age groups (Figure 1.05.1).
- The greatest difference in hospitalisation rates occurred in the 25–34, 35–44 and 45–54 year age groups where Indigenous males and females were hospitalised at around three to four times the rate of other Australians.
- Hospitalisation rates for circulatory diseases increased with age for both Indigenous and other Australians.
- Approximately 53% of Indigenous Australians hospitalised for circulatory diseases were males (5,185) and 47% were females (4,630).



Source: AIHW analysis of AIHW National Hospital Morbidity Database.

Figure 1.05.1: Age-specific hospitalisation rates for a principal diagnosis of circulatory disease, by Indigenous status and sex, Qld, WA, SA and NT, July 2002-June 2004

Hospitalisations by state/territory

Table 1.05.3 presents hospitalisations for a principal diagnosis of diseases of the circulatory system for the two-year period July 2002 to June 2004.

- In all four jurisdictions, Indigenous males and females were hospitalised for circulatory diseases at around twice the rate of other males and females.

Table 1.05.3: Hospitalisations for principal diagnosis of diseases of the circulatory system, by Indigenous status and sex, Qld, WA, SA and NT, July 2002–June 2004^{(a)(b)(c)(d)}

	Indigenous				Other ^(e)				Ratio ⁽ⁱ⁾
	Number	Rate per 1,000 ^(f)	LCL 95% ^(g)	UCL 95% ^(h)	Number	Rate per 1,000 ^(f)	LCL 95% ^(g)	UCL 95% ^(h)	
Qld									
Males	2,176	43.5	41.3	45.8	93,490	27.0	26.8	27.1	1.6*
Females	2,050	36.3	34.5	38.2	68,642	17.6	17.5	17.7	2.1*
Persons	4,226	39.6	38.2	41.0	162,132	22.1	22.0	22.2	1.8*
WA									
Males	1,381	44.5	41.8	47.3	40,978	23.9	23.7	24.1	1.9*
Females	1,207	34.5	32.3	36.7	29,956	15.3	15.1	15.4	2.3*
Persons ^(j)	2,588	39.1	37.4	40.8	70,947	19.4	19.2	19.5	2.0*
SA									
Males	537	44.5	39.8	49.1	41,735	26.5	26.3	26.8	1.7*
Females	464	36.4	32.6	40.3	32,656	17.0	16.9	17.2	2.1*
Persons	1,001	40.3	37.3	43.2	74,391	21.5	21.3	21.6	1.9*
NT									
Males	1,091	35.6	32.9	38.2	1,917	19.4	18.3	20.4	1.8*
Females	909	26.7	24.6	28.7	899	12.3	11.4	13.2	2.2*
Persons	2,000	30.8	29.2	32.4	2,816	16.2	15.5	16.9	1.9*
Qld, WA, SA & NT^(d)									
Males	5,185	42.1	40.7	43.5	178,120	26.0	25.8	26.1	1.6*
Females	4,630	33.7	32.6	34.8	132,153	16.8	16.7	16.9	2.0*
Persons⁽ⁱ⁾	9,815	37.6	36.7	38.4	310,286	21.2	21.1	21.2	1.8*

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

- (a) Data are from public and most private hospitals. Data exclude private hospitals in the Northern Territory.
- (b) Categories are based on the ICD10-AM (National Centre for Classification in Health 2004); ICD-10-AM codes I00–I99.
- (c) Financial year reporting.
- (d) Data are reported by state/territory of usual residence of the patient hospitalised and are for Western Australia, South Australia, the Northern Territory and Queensland only. These four jurisdictions are considered to have adequate 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.
- (e) Other includes hospitalisations of non-Indigenous people and those for whom Indigenous status was not stated.
- (f) Directly age standardised using the Australian 2001 Standard population.
- (g) LCL = lower confidence limit.
- (h) UCL = upper confidence limit.
- (i) Rate ratio Indigenous:other.
- (j) Includes hospitalisations for which sex was 'indeterminate' or 'not stated'.

Source: AIHW analysis of AIHW National Hospital Morbidity Database.

Hospitalisations by principal diagnosis

Table 1.05.4 presents hospitalisations with a principal diagnosis of diseases of the circulatory system by type of circulatory disease for the two-year period July 2002 to June 2004 for the four jurisdictions.

- For the two-year period July 2002 to June 2004 in Queensland, Western Australia, South Australia and the Northern Territory combined, of all hospitalisations with a principal diagnosis of diseases of the circulatory system, ischaemic heart disease was the most common reason for hospitalisation among Aboriginal and Torres Strait Islander peoples (47%), followed by other heart disease (30%).
- In Queensland, Western Australia, South Australia and the Northern Territory, Indigenous males and females were hospitalised for rheumatic heart disease at much higher rates than other males and females (seven and 11 times higher respectively).
- Indigenous males and females were hospitalised for ischaemic heart disease at two and three times the rate of other males and females respectively.
- Indigenous Australians were hospitalised at around four times the rate of other Australians for hypertensive diseases.

Table 1.05.4: Hospitalisations of Indigenous persons for principal diagnosis of diseases of the circulatory system, by type of circulatory disease and sex, Qld, WA, SA and NT, July 2002–June 2004^{(a)(b)(c)(d)}

Principal diagnosis	Males						Females						Persons					
	No.	% ^(e)	Rate per 1,000 ^(f)	LCL 95% ^(g)	UCL 95% ^(h)	Ratio ⁽ⁱ⁾	No.	% ^(e)	Rate per 1,000 ^(f)	LCL 95% ^(g)	UCL 95% ^(h)	Ratio ⁽ⁱ⁾	No.	% ^(e)	Rate per 1,000 ^(f)	LCL 95% ^(g)	UCL 95% ^(h)	Ratio ⁽ⁱ⁾
Ischaemic heart disease (I20–I25)	2,415	46.6	19.5	18.6	20.4	1.8*	1,847	39.9	13.9	13.2	14.6	2.8*	4,262	43.4	16.5	15.9	17.1	2.2*
<i>Acute myocardial infarction (I21)</i>	831	16.0	6.3	5.8	6.8	2.2*	458	9.9	3.5	3.2	3.9	2.8*	1,289	13.1	4.8	4.5	5.1	2.3*
Other heart disease (I26–I52)	1,544	29.8	12.9	12.1	13.7	1.8*	1,320	28.5	10.5	9.8	11.1	2.1*	2,864	29.2	11.6	11.1	12.1	1.9*
Cerebrovascular disease (I60–I69)	383	7.4	4.1	3.6	4.6	2.0*	385	8.3	3.4	3.0	3.7	2.1*	768	7.8	3.7	3.4	4.0	2.0*
<i>Stroke (I60–I64)</i>	338	6.5	3.7	3.2	4.1	2.3*	363	7.8	3.2	2.8	3.6	2.5*	701	7.1	3.4	3.1	3.7	2.4*
Rheumatic heart disease (I00–I09)	204	3.9	0.7	0.5	0.8	6.6*	363	7.8	1.3	1.1	1.4	10.9*	567	5.8	1.0	0.9	1.1	9.0*
Hypertension disease (I10–I15)	166	3.2	1.2	1.0	1.4	4.0*	252	5.4	1.7	1.4	1.9	3.8*	418	4.3	1.4	1.3	1.6	3.8*
Other diseases of the circulatory system (I70–I99) ^(j)	473	9.1	3.7	3.3	4.2	0.7*	463	10.0	3.0	2.7	3.4	0.6*	936	9.5	3.3	3.1	3.6	0.6*
Total	5,185	100.0	42.1	40.7	43.5	1.6*	4,630	100.0	33.7	32.6	34.8	2.0*	9,815	100.0	37.6	36.7	38.4	1.8*

(continued)

Table 1.05.4 (continued): Hospitalisations of Indigenous persons for principal diagnosis of diseases of the circulatory system, by type of circulatory disease and sex, Qld, WA, SA and NT, July 2002–June 2004^{(a)(b)(c)(d)}

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

- (a) Data are from public and most private hospitals. Data exclude private hospitals in the Northern Territory.
- (b) Categories are based on the ICD10-AM (National Centre for Classification in Health 2004); ICD-10-AM codes I00–I99.
- (c) Financial year reporting.
- (d) Data are reported by state/territory of usual residence of the patient hospitalised and are for Western Australia, South Australia, the Northern Territory and Queensland only. These four jurisdictions are considered to have adequate 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.
- (e) Percentage of male, female and total hospitalisations of Indigenous persons in the period 2002–03 to 2003–04.
- (f) Directly age standardised using the Australian 2001 Standard population.
- (g) LCL = lower confidence limit.
- (h) UCL = upper confidence limit.
- (i) Rate ratio Indigenous:other.
- (j) Includes disease of arteries, arterioles and capillaries, diseases of veins, lymphatic vessels and lymph nodes and other unspecified disorders of the circulatory system.

Source: AIHW analysis of AIHW National Hospital Morbidity Database.

Hospitalisations by associated diagnosis

Table 1.05.5 presents hospitalisations for associated causes of diseases of the circulatory system for Aboriginal and Torres Strait Islander peoples in Queensland, Western Australia, South Australia and the Northern Territory combined.

- For the two-year period July 2002 to June 2004, hospitalisations of Indigenous Australians with a principal diagnosis of circulatory diseases were commonly reported with other diseases of the circulatory system (58%), the disease category 'contact with health services and factors influencing health status' which includes dialysis, and endocrine, metabolic and nutritional disorders (47%).
- In particular, hospitalisations with a principal diagnosis of ischaemic heart disease, cerebrovascular disease and other heart disease were commonly reported with an associated diagnosis of endocrine, metabolic and nutritional disorders (58%, 49% and 48% respectively).
- Indigenous Australians who were hospitalised with a principal diagnosis of cerebrovascular disease, which includes stroke, had diseases of the nervous system commonly reported as an associated diagnosis of hospitalisation (54%).

Table 1.05.5: Hospitalisations of Indigenous persons for principal diagnosis of circulatory disease, by associated causes of hospitalisation, Qld, WA, SA and NT, July 2002–June 2004^{(a)(b)(c)(d)}

Associated cause of hospitalisation	Reported with a principal diagnosis of circulatory disease								
	Ischaemic heart disease (I20–I25)	Acute myocardial infarction (I21)	Other heart disease (I26–I52)	Cerebro-vascular disease (I60–I69)	Stroke (I60–I64)	Rheumatic heart disease (I00–I09)	Hypertensive disease (I10–I15)	Other circulatory diseases (I70–I99) ^(e)	All circulatory diseases
	Per cent								
Diseases of the circulatory system (I00–I99)	70.3	75.4	60.7	55.6	56.2	40.9	18.4	24.4	58.1
Contact with health services & factors influencing health status (includes dialysis)	62.6	69.0	51.4	53.1	52.9	38.6	43.8	40.5	54.3
Endocrine, nutritional & metabolic diseases (E00–E90)	57.8	60.4	47.5	48.6	47.9	13.1	39.0	23.5	47.4
Diseases of the genitourinary system (N00–N99)	13.3	17.7	19.5	16.7	17.5	7.1	17.2	11.1	15.0
Diseases of the respiratory system (J00–J99)	10.1	12.6	23.1	14.2	14.3	12.3	7.4	4.7	13.7
Mental & behavioural disorders (F00–F99)	9.8	9.7	16.7	18.4	18.7	4.4	15.1	9.7	12.4
Symptoms, signs & abnormal clinical & laboratory findings (R00–R99)	6.2	8.5	13.2	35.0	36.1	8.1	15.8	7.6	11.1
Diseases of the nervous system (G00–G99)	4.4	5.4	5.5	54.4	57.5	1.6	4.1	3.2	8.4
Diseases of the digestive system (K00–K93)	4.8	5.8	7.7	7.0	7.6	7.6	4.5	12.8	6.7
Diseases of the blood and disorders involving immune mechanism (D50–D89)	5.2	7.1	6.7	4.8	4.9	15.0	4.5	9.1	6.5

(continued)

Table 1.05.5 (continued): Hospitalisations of Indigenous persons for principal diagnosis of circulatory disease, by associated causes of hospitalisation, Qld, WA, SA and NT, July 2002–June 2004^{(a)(b)(c)(d)}

Associated cause of hospitalisation	Reported with a principal diagnosis of circulatory disease								
	Ischaemic heart disease (I20–I25)	Acute myocardial infarction (I21)	Other heart disease (I26–I52)	Cerebro-vascular disease (I60–I69)	Stroke (I60–I64)	Rheumatic heart disease (I00–I09)	Hypertensive disease (I10–I15)	Other circulatory diseases (I70–I99) ^(e)	All circulatory diseases
	Per cent								
Certain infectious and parasitic diseases (A00–B99)	4.1	7.2	7.6	12.1	12.7	11.1	4.3	7.2	6.5
Diseases of the eye and adnexa (H00–H59)	3.8	4.3	3.8	8.5	8.6	0.4	5.7	1.8	3.9
Injury & poisoning (S00–T98)	3.3	4.3	3.3	3.9	3.7	3.7	3.1	6.1	3.6
Other ^(f)	4.7	6.1	9.8	9.1	9.6	11.3	9.8	13.6	8.0
Total number	4,262	1,289	2,864	768	701	567	418	936	9,815

(a) Data are from public and most private hospitals. Data exclude private hospitals in the Northern Territory.

(b) Categories are based on the ICD10-AM (National Centre for Classification in Health 2004); ICD-10-AM codes I00–I99.

(c) Financial year reporting.

(d) Indigenous data are reported by state/territory of usual residence of the patient hospitalised and are for Western Australia, South Australia, the Northern Territory and Queensland only. These four jurisdictions are considered to have adequate 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.

(e) Includes diseases of arteries, arterioles and capillaries, diseases of veins, lymphatic vessels and lymph nodes and other unspecified disorders of the circulatory system.

(f) Includes: diseases of the musculoskeletal system and connective tissue; diseases of the skin and subcutaneous tissue; neoplasms; congenital malformations, deformations and chromosomal abnormalities; diseases of the ear and mastoid process; pregnancy, childbirth and the puerperium; and certain conditions originating in the perinatal period.

Note: Sum of components may exceed 100% as more than one associated diagnosis can be reported for each hospitalisation.

Source: AIHW analysis of AIHW National Hospital Morbidity Database.

Time series analysis

Hospitalisation rates, rate ratios and rate differences between Indigenous and other Australians for diseases of the circulatory system over the five-year period 1998–99 to 2003–04 are presented in Table 1.05.6 and Figure 1.05.2.

- In Queensland, Western Australia, South Australia and the Northern Territory, there were significant increases in hospitalisation rates for circulatory diseases among Indigenous males during the period 1998–99 to 2003–04. There was no significant change in the hospitalisation rates for Indigenous females.
- There were significant declines in hospitalisation rates among other Australian males, females and persons during the same period, with an average yearly decrease in the rate of around 0.5 per 1,000 population.
- There were significant increases in the hospitalisation rate ratios and rate differences between Indigenous and other Australians for circulatory diseases over the period 1998–99 to 2003–04. The fitted trend implies an average yearly increase of 0.1 in the rate ratio and 0.8 per 1,000 in the rate difference between Indigenous and other Australians for the period 1998–99 to 2003–04. This reflects a relative and absolute increase in the gap between hospitalisation rates for Indigenous and other Australians for circulatory diseases.

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 separations 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 hospitalisation rates may reflect better access to hospitals rather than a worsening of health.

Table 1.05.6: Age-standardised hospitalisation rates, rate ratios and rate differences from circulatory diseases, Qld, WA, SA and NT, 1998–99 to 2003–04

	1998–99	1999–00	2000–01	2001–02	2002–03	2003–04	Annual change ^(a)
Indigenous rate per 1,000							
Males	37.3	39.8	37.3	38.6	40.8	43.5	1.0*
Females	34.5	35.5	32.3	34.4	34.3	33.0	-0.2
Persons	35.9	37.6	34.7	36.4	37.4	37.8	0.3
Other Australian^(b) rate per 1,000							
Males	28.9	28.7	27.6	27.0	26.4	25.8	-0.6*
Females	18.6	18.4	18.0	17.7	17.1	16.7	-0.4*
Persons	23.5	23.2	22.5	22.1	21.5	21.0	-0.5*
Rate ratio^(c)							
Males	1.3	1.4	1.4	1.4	1.5	1.7	0.1*
Females	1.5	1.5	1.4	1.6	1.6	1.6	0.0*
Persons	1.5	1.6	1.5	1.6	1.7	1.8	0.1*
Rate difference^(d)							
Males	8.4	11.2	9.7	11.6	14.4	17.6	1.7*
Females	11.0	12.2	9.7	12.3	12.7	12.0	0.3
Persons	12.4	14.3	12.1	14.3	15.8	16.7	0.8*

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

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

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

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

(d) Hospitalisation rates for Indigenous Australians minus the hospitalisation rates for other Australians.

Note: Rates have been directly age standardised using the 2001 Australian standard population.

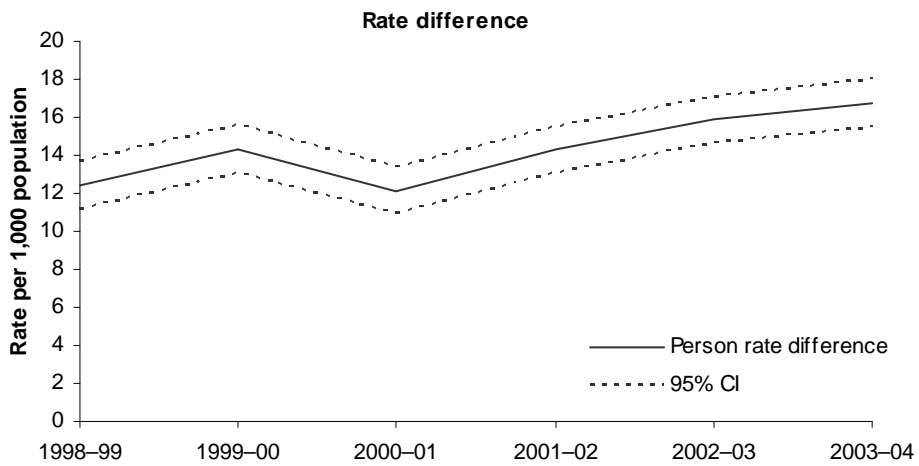
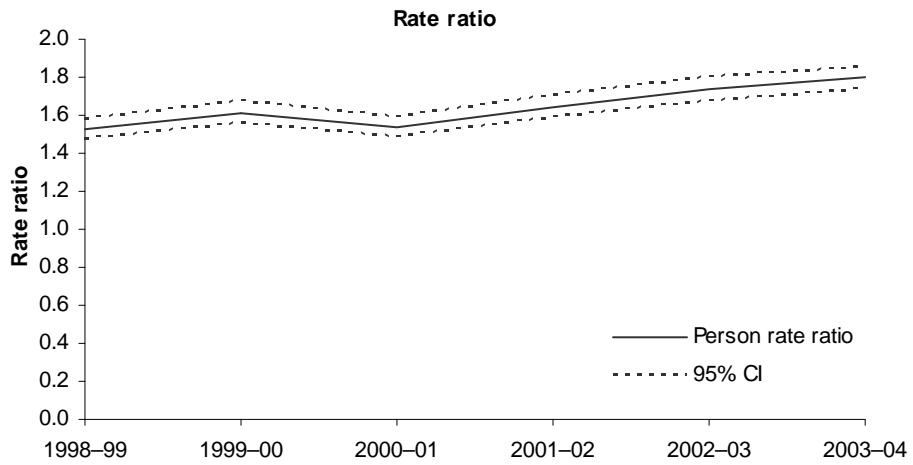
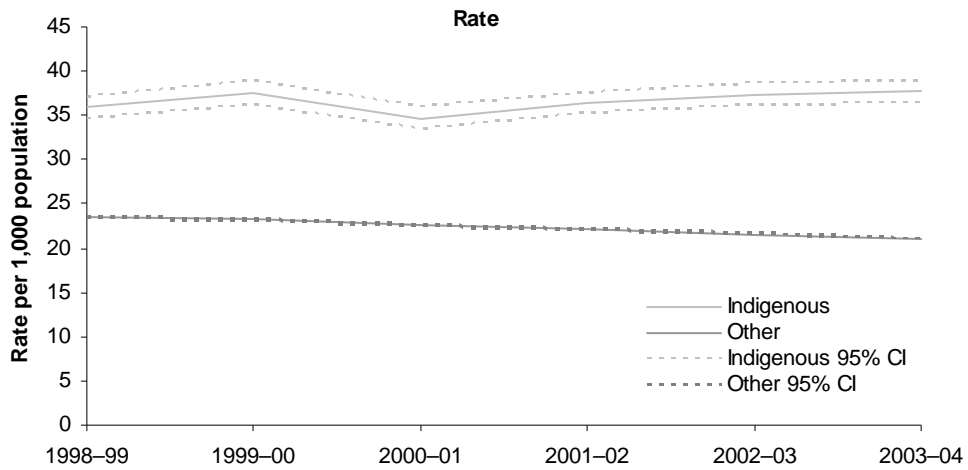
Source: AIHW analysis of AIHW National Hospital Morbidity Database.

Sensitivity of hospitalisation trends to changes in identification

- The fitted trends described above have been examined for their sensitivity to changes in Indigenous identification. Three scenarios for identification were posted – constant identification, increasing identification and decreasing identification.
 - Under the constant identification scenario, the number of hospitalisations for the period under study were adjusted using the following identification factors:
 - Qld 80%
 - WA 94%
 - SA 90%
 - NT 98%
 - Under the increasing identification scenario, hospitalisations were adjusted by linearly increasing the identification through the period under study – from 70% in 1998–99 to 80% in 2003–04 for Queensland; from 90% to 94% for Western Australia,

from 85% to 90% for South Australia, and from 96% to 98% for the Northern Territory.

- Under the decreasing identification scenario, hospitalisations were adjusted by linearly decreasing the identification from 90% in 1998–99 to 80% in 2003–04 for Queensland, from 98% to 94% for Western Australia, from 95% to 90% for South Australia, and from 100% to 98% for the Northern Territory.
- The adjustments in the latter two scenarios were based on judgements about the largest plausible shifts in identification during the period; of course if any actual shift in identification were more extreme than has been posted under these scenarios, then the observed trends in hospitalisations might not persist.
- The increases in hospitalisation rates for Indigenous males over the period 1998–99 to 2003–04 remained significant under the constant and decreasing identification scenarios.
- The decreases in hospitalisation rates for other Australian males, females and persons remained significant under all three scenarios.
- The increases in hospitalisation rate ratios for males remained significant under all three scenarios, for females remained significant only under the decreasing identification scenario, and for persons remained significant under the constant and decreasing identification scenarios.
- The increases in the hospitalisation rate differences between Indigenous and other males remained significant under all three scenarios, while for persons the increase in rate differences remained significant under the constant and decreasing identification scenarios.



Source: AIHW analysis of AIHW National Hospital Morbidity database.

Figure 1.05.2: Hospitalisation rates, rate ratios and rate differences between Indigenous and other Australians from circulatory diseases, Qld, WA, SA and NT, 1998-99 to 2003-04

General practitioner encounters

Information about general practitioner encounters is available from the Bettering the Evaluation and Care of Health (BEACH) survey. Data for the five-year period 2000–01 to 2004–05 are presented below. Circulatory problems are among the five most common types of problems managed at GP encounters with Indigenous patients.

- In the period 2000–01 to 2004–05 there were a total of 7,296 GP encounters with Aboriginal and Torres Strait Islander patients recorded in the survey, at which 10,955 problems were managed. Of these, 9.1% (997) were circulatory problems (Table 1.05.7).
- Circulatory problems were managed at a rate of around 14 per 100 encounters among Indigenous patients.
- After adjusting for differences in age distribution, circulatory problems were managed at GP encounters with Indigenous patients at 1.2 times the rate at encounters with other patients.
- There were around twice as many GP encounters for heart failure and ischaemic heart disease with Indigenous patients than with other patients.

Table 1.05.7: Circulatory problems managed by general practitioners, by Indigenous status of the patient, 2000–01 to 2004–05^{(a)(b)(c)}

Problem managed	Number		Per cent		Crude rate per 100 encounters						Age-standardised rate per 100 encounters ^(d)		
	Indigenous	Other ^(e)	Indigenous	Other ^(e)	Indigenous	95% LCL ^(f)	95% UCL ^(g)	Other	95% LCL ^(f)	95% UCL ^(g)	Indigenous	Other ^(e)	Ratio ^(h)
Hypertension ⁽ⁱ⁾ (K86, K87)	486	44,345	4.4	6.1	6.7	5.4	8.0	9.5	9.3	17.8	9.8	9.4	1.0
Ischaemic heart disease ⁽ⁱ⁾ (K74, K76)	100	6,114	0.9	0.8	1.4	1.0	1.8	1.3	1.3	138.2	2.1	1.3	1.6*
Heart failure (K77)	62	3,628	0.6	0.5	0.8	0.6	1.1	0.8	0.7	2.7	1.7	0.8	2.2*
Cardiac check-up ⁽ⁱ⁾ (K30, K31)	53	5,704	0.5	0.8	0.7	0.5	1.0	1.2	1.2	2.5	1.2	1.2	1.0
Atrial fibrillation/ flutter (K78)	31	3,546	0.3	0.5	0.4	0.2	0.6	0.8	0.7	0.3	0.9	0.8	1.2
Total circulatory problems	997	81,462	9.1	11.3	13.7	11.3	16.1	17.5	17.2	17.8	20.9	17.3	1.2*
Other problems managed	9,997	641,025	90.9	88.7	137.0	116.3	157.7	137.5	136.7	138.2	139.7	137.4	1.0
Total problems	10,994	722,487	100.0	100.0	150.7	127.6	173.7	154.9	153.9	156.0	160.5	154.8	1.0

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

- (a) These survey results are likely to undercount the number of Indigenous Australians visiting doctors.
- (b) Combined financial year data for five years.
- (c) Data for Indigenous and Other Australians have not been weighted.
- (d) Directly age-standardised rate per 100 encounters. Figures do not add to 100 as more than one problem can be managed at each encounter.
- (e) 'Other' includes non-Indigenous patients and patients for whom Indigenous status was 'not stated'.
- (f) LCL = lower confidence interval.
- (g) UCL = upper confidence interval.
- (h) Rate ratio Indigenous:other.
- (i) Includes multiple ICPC–2 or ICPC–2 PLUS codes.

Source: AIHW analysis of BEACH data.

Data quality issues

National Aboriginal and Torres Strait Islander Health Survey (NATSIHS)

The NATSIHS uses the standard Indigenous status question. The NATSIHS sample was specifically designed to select a representative sample of Aboriginal and Torres Strait Islander Australians and thus overcomes the problem inherent in most national surveys with small and unrepresentative Indigenous samples. As with other surveys, the NATSIHS is subject to sampling and non-sampling errors. Calculations of standard errors and significance testing help to identify the accuracy of the estimates and differences.

Information recorded in this survey is essentially 'as reported' by respondents. The ABS makes every effort to collect accurate information from respondents, particularly through careful questionnaire design, pre-testing of questionnaires, use of trained interviewers and assistance from Indigenous facilitators. Nevertheless, some responses may be affected by imperfect recall or individual interpretation of survey questions.

Non-Indigenous comparisons are available through the National Health Survey (NHS). The NHS was conducted in major cities, regional and remote areas, but very remote areas were excluded from the sample. Time series comparisons are available through the 1995 and 2001 National Health Survey.

In remote communities there were some modifications to the NATSIHS content in order to address language and cultural appropriateness in traditional communities, as well as to assist respondents in understanding the concepts. Some questions were excluded and some reworded. Also, paper forms were used in communities in remote areas and computer-assisted interview (CAI) instruments were used in non-remote areas. The CAI process included built in edit checks and sequencing.

Further information on NATSIHS data quality issues can be found in the national publication (ABS 2006).

Hospital separations 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 peoples. 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 better 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%.

(continued)

Data quality issues (continued)

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 ABS's Experimental estimates and projections: Aboriginal and Torres Strait Islander Australians 1991 to 2009 (ABS 2004).

General Practitioner data (BEACH)

Information about general practitioner encounters is available from the 'Bettering the Evaluation and Care of Health' (BEACH) survey. The BEACH data on Indigenous Australians should be treated with care. First, the sample frame has not been designed to produce statistically significant results for population subgroups such as Indigenous Australians. Second, the identification of Indigenous Australians is not complete. In the BEACH survey, 'not stated' responses to the Indigenous identification question are often higher than the 'yes' responses. It can be assumed, therefore, that the survey consistently undercounts the number of Indigenous Australians visiting general practitioners, but the extent of this undercount is not measurable.

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