1.02 Top reasons for hospitalisation

Hospital admissions for the leading ICD-10-AM (International Classification of Diseases) categories 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 measure come from the AIHW 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 six jurisdictions which have been assessed by the AIHW as having adequate identification of Indigenous hospitalisations in 2004–05—New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory. These six jurisdictions represent approximately 96% 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 2-year period July 2004 to June 2006. An aggregate of 2 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 portion of a hospital stay beginning or ending a change in a type of care (for example, from acute to rehabilitation). 'Separation' also means the process by which an admitted patient completes an episode of care by being discharged, dying, transferring to another hospital or changing type of care.

Analyses

Age-standardised rates and ratios have been used 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

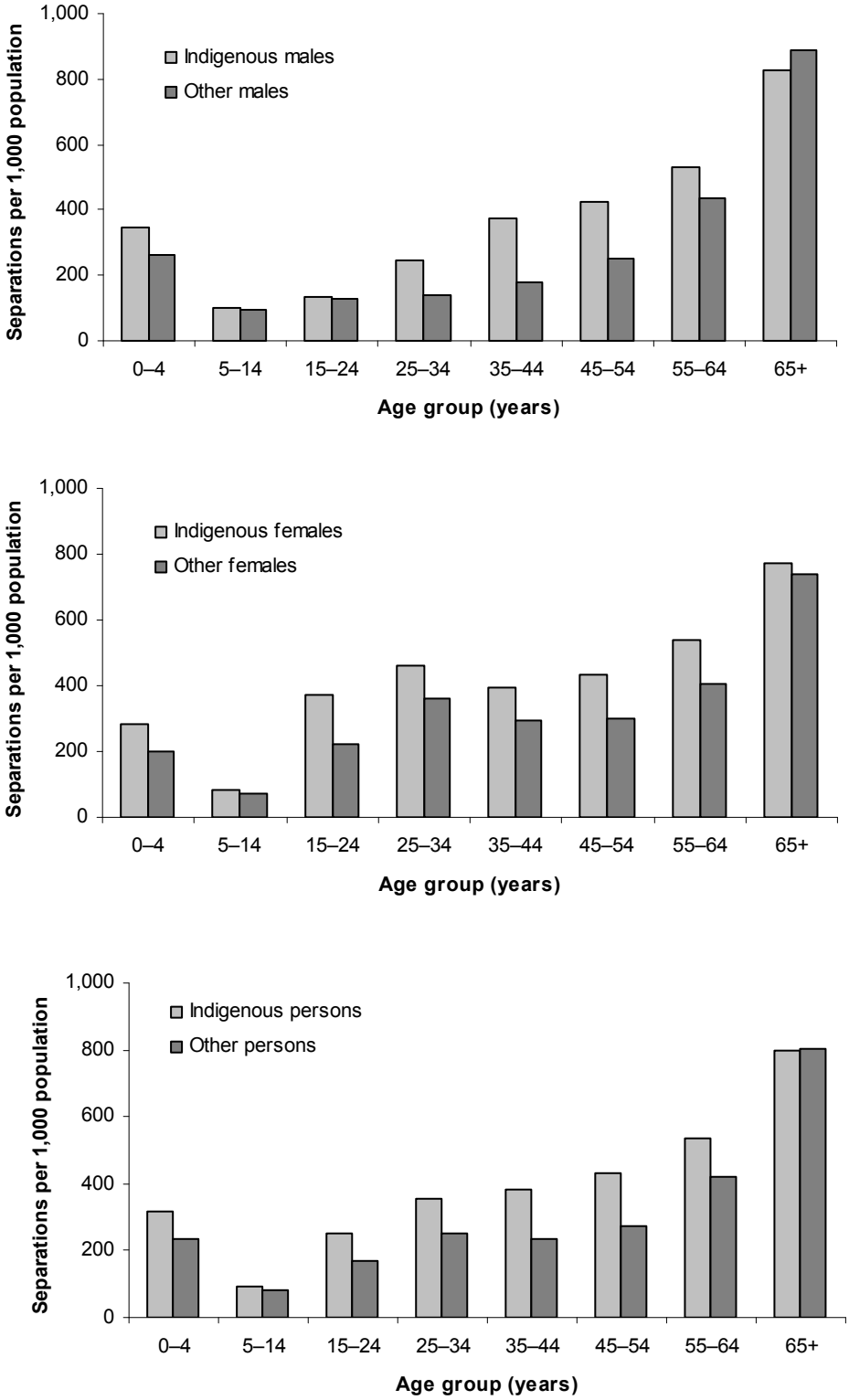
- In the 2-year period July 2004 to June 2006 there were a total of 13,783,538 hospitalisations in New South Wales, Victoria, Queensland, Western Australia, South

Australia and the Northern Territory. Of these, 467,822 or 3% were hospitalisations of Indigenous Australians.

- Excluding hospitalisations for dialysis, there were 12,126,332 hospitalisations in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined, 277,186 (2.3%) of which were hospitalisations of Indigenous Australians (Table 1.02.1).
- For all hospitalisations, the average number of diagnoses on separation for Indigenous Australians was 3.0 and for other Australians was 2.9. Excluding hospitalisations for care involving dialysis, the average number of diagnoses on separation for Indigenous Australians was 3.6 and for other Australians was 3.0.

Hospitalisations by age and sex

- For the 2-year period July 2004 to June 2006, in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory, when hospitalisations for dialysis are excluded, Indigenous males had higher hospitalisation rates than other males across all age groups with the exception of those aged 65 years and over. Indigenous females had higher hospitalisation rates than other females across all age groups (Figure 1.02.1).
- The greatest difference in hospitalisation rates occurred in the 25–34, 35–44, and 45–54 year age groups for males and in the 15–24 and 45–54 year age groups for females. Indigenous males and females were hospitalised at between 1.5 and 2 times the rate of other males and females in these age groups.



Source: AIHW analysis of National Hospital Morbidity Database.

Figure 1.02.1: Age-specific hospitalisation rates (excluding dialysis), by Indigenous status and sex, NSW, Vic, Qld, WA, SA and NT, July 2004 to June 2006

Hospitalisations by state/territory

Table 1.02.1 presents hospitalisations excluding dialysis for the 2-year period July 2004 to June 2006 for New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory. As well as rates and ratios for the six jurisdictions which have been assessed as having adequate identification of Indigenous hospitalisations in 2004–05, unadjusted and adjusted national level data are included in the table. The Australia data are adjusted by applying a completeness factor of 89.4%, which is an estimate of the level of Indigenous under-identification in hospital separations data.

- Over the period July 2004 to June 2006, excluding hospitalisations for dialysis, Indigenous Australians in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined were hospitalised at 1.3 times the rate of other Australians.
- When hospital rates are adjusted at the national level for Indigenous under-identification, Indigenous persons were hospitalised at 1.4 times the rate of other Australians.
- Indigenous Australians were hospitalised (excluding dialysis) at 0.8 times the rate of other Australians in Victoria, at 1.2 times the rate of other Australians in New South Wales and at 1.3 times the rate of other Australians in Queensland. In Western Australia, South Australia and the Northern Territory, Indigenous Australians were hospitalised at up to twice the rate of other Australians (Table 1.02.1).
- For all hospitalisations, including those with a principal diagnosis of care involving dialysis, Indigenous Australians were hospitalised at about the same rate as other Australians in Victoria, at two to three times the rate of other Australians in New South Wales, Queensland, Western Australia and South Australia, and at almost six times the rate of other Australians in the Northern Territory.

Table 1.02.1: Hospitalisations (excluding dialysis), by Indigenous status and sex, NSW, Vic, Qld, WA, SA and NT, July 2004 to June 2006[(a)(b)(c)(d)]

	Indigenous				Other[(e)]				
	Number	No. per 1,000[(f)]	LCL 95%[(g)]	UCL 95%[(h)]	Number	No. per 1,000[(f)]	LCL 95%[(g)]	UCL 95%[(h)]	Ratio[(i)]
NSW									
Males	31,536	316.3	311.1	321.6	1,746,399	266.2	265.8	266.6	1.2*
Females	40,063	359.1	354.5	363.7	2,056,593	291.8	291.4	292.2	1.2*
Persons	71,604	337.4	334.0	340.8	3,803,072	277.7	277.4	278.0	1.2*
Vic									
Males	5,266	255.8	245.6	266.0	1,504,389	306.0	305.5	306.5	0.8*
Females	7,273	293.9	285.5	302.4	1,896,343	355.2	354.7	355.7	0.8*
Persons	12,539	272.0	265.6	278.3	3,400,751	329.2	328.8	329.5	0.8*
Qld									
Males	32,164	386.0	379.9	392.0	1,112,409	294.2	293.7	294.8	1.3*
Females	44,523	427.4	422.1	432.6	1,324,338	334.3	333.7	334.9	1.3*
Persons	76,687	406.3	402.4	410.3	2,436,747	312.9	312.5	313.3	1.3*
WA									
Males	22,335	432.8	425.3	440.2	526,417	278.4	277.6	279.2	1.6*
Females	30,446	519.5	512.4	526.6	625,396	317.0	316.3	317.8	1.6*
Persons	52,781	477.0	471.9	482.1	1,151,814	296.1	295.5	296.6	1.6*
SA									
Males	8,245	432.6	420.3	444.9	459,659	292.8	291.9	293.6	1.5*
Females	10,972	486.9	475.7	498.0	549,642	328.8	327.9	329.7	1.5*
Persons	19,221	459.4	451.2	467.7	1,009,307	308.9	308.3	309.5	1.5*
NT									
Males	18,971	403.9	396.3	411.6	23,460	189.6	186.7	192.6	2.1*
Females	25,383	485.4	478.2	492.7	23,995	196.7	193.8	199.6	2.5*
Persons	44,354	444.7	439.5	450.0	47,455	194.2	192.1	196.3	2.3*
NSW, Vic, Qld, WA, SA and NT[(d)]									
Males	**118,517**	**366.1**	**363.1**	**369.0**	**5,372,733**	**285.0**	**284.8**	**285.3**	**1.3***
Females	**158,660**	**421.8**	**419.2**	**424.4**	**6,476,307**	**321.9**	**321.7**	**322.2**	**1.3***
Persons	**277,186**	**393.9**	**391.9**	**395.8**	**11,849,146**	**302.1**	**301.9**	**302.2**	**1.3***
Australia unadjusted[(j)]									
Males	121,578	359.0	356.2	361.9	5,600,715	285.4	285.2	285.7	1.3*
Females	162,624	413.6	411.0	416.2	6,742,671	321.9	321.6	322.1	1.3*
Persons	284,208	386.2	384.3	388.1	12,343,547	302.2	302.1	302.4	1.3*
Australia adjusted[(j)(k)]									
Males	135,863	401.2	398.2	404.2	5,586,430	284.7	284.5	284.9	1.4*
Females	181,732	462.2	459.5	464.9	6,723,563	320.9	320.7	321.2	1.4*
Persons	317,603	431.6	429.6	433.6	12,310,152	301.4	301.2	301.6	1.4*

(continued)

Table 1.02.1 (continued): Hospitalisations (excluding dialysis), by Indigenous status and sex, NSW, Vic, Qld, WA, SA and NT, July 2004 to June 2006[(a)(b)(c)(d)]

* Represents results with statistically significant differences in the Indigenous/other comparisons at the $p < 0.05$ level.

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

(b) Categories are based on the ICD-10-AM fifth edition (National Centre for Classification in Health 2006).

(c) Financial year reporting.

(d) Data are reported by state/territory of usual residence of the patient hospitalised and are for New South Wales, Victoria, Western Australia, South Australia, the Northern Territory and Queensland only. These six jurisdictions are considered to have adequate levels of Indigenous identification, although the level of accuracy varies by jurisdiction and hospital. Hospitalisation data for these six 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 all eight states and territories, including the Australian Capital Territory and Tasmania; Other Territories and Residence State not applicable (e.g. overseas, at sea, no fixed address).

(k) Australian hospitalisation numbers and rates have been adjusted for Indigenous under-identification using a national adjustment factor of 0.89. This factor was derived from a study undertaken by the AIHW in 2007 which assessed the level of Indigenous under-identification in hospital data in all states and territories by comparing information gathered from face-to face interviews in public hospitals with results from hospital records. By applying this factor, the number of Indigenous hospitalisations was increased by 11% and these additional hospitalisations then subtracted from the number of hospitalisations for Other Australians.

Source: AIHW analysis of National Hospital Morbidity Database.

Hospitalisations by principal diagnosis

Table 1.02.2 presents data on the most common principal diagnoses for hospitalisations involving Aboriginal and Torres Strait Islander peoples for the 2-year period July 2004 to June 2006 in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined.

- In absolute terms the most common principal diagnosis among Indigenous Australians was care involving dialysis (41%), followed by injury and poisoning (8%), pregnancy (8%), diseases of the respiratory system (7%) and diseases of the digestive system (5%). However, when the younger age structure of the Indigenous population is taken into account, circulatory disease becomes a significant cause of hospitalisation among Indigenous people. Diseases of the digestive system were the most common diagnosis for other Australians in these six jurisdictions, responsible for 12% of hospitalisations.
- Overall, in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory, Indigenous Australians were hospitalised at twice the rate of other Australians. Excluding dialysis, Indigenous Australians were hospitalised at 1.3 times the rate of other Australians.
- The greatest differences in rates between Indigenous and other Australians were for care involving dialysis, endocrine, nutritional and metabolic diseases, caused mainly by diabetes, and diseases of the respiratory system. Indigenous Australians were hospitalised at 11 times the rate of other Australians for dialysis and three times the rate of other Australians for endocrine, nutritional and metabolic diseases and respiratory diseases.

Table 1.02.2: Hospitalisations, by principal diagnosis and Indigenous status, NSW, Vic, Qld, WA, SA and NT, July 2004 to June 2006[(a)(b)(c)(d)]

	Number		Per cent		Indigenous			Other[(e)]			
Principal diagnosis	Indigenous	Other[(e)]	Indigenous	Other[(e)]	No. per 1,000[(f)]	95% UCL[(g)]	95% UCL[(h)]	No. per 1,000[(f)]	95% UCL[(g)]	95% UCL[(h)]	Ratio[(i)]
Injury & poisoning & certain other consequences of external causes	36,505	869,960	7.8	6.5	43.9	43.4	44.5	22.5	22.4	22.5	2.0*
Pregnancy, childbirth and the puerperium[(j)]	34,936	849,957	7.5	6.4	31.7	31.4	32.1	22.8	22.8	22.9	1.4*
Diseases of the respiratory system	30,604	607,720	6.5	4.6	45.2	44.5	45.9	15.7	15.7	15.8	2.9*
Diseases of the digestive system	25,059	1,529,651	5.4	11.5	36.9	36.4	37.5	38.9	38.9	39.0	0.9*
Symptoms, signs and abnormal clinical and laboratory findings	20,286	831,397	4.3	6.2	32.3	31.7	32.9	21.1	21.0	21.1	1.5*
Mental and behavioural disorders	19,709	537,945	4.2	4.0	24.6	24.2	25.0	13.9	13.8	13.9	1.8*
Diseases of the circulatory system	15,314	857,107	3.3	6.4	35.4	34.7	36.1	21.2	21.2	21.3	1.7*
Diseases of the genitourinary system	12,248	680,026	2.6	5.1	20.0	19.5	20.4	17.4	17.3	17.4	1.2*
Diseases of the skin & subcutaneous tissue	10,897	220,754	2.3	1.7	13.3	13.0	13.6	5.6	5.6	5.7	2.4*
Certain infectious and parasitic diseases	9,708	166,930	2.1	1.3	9.8	9.5	10.1	4.4	4.4	4.4	2.2*

(continued)

Table 1.02.2 (continued): Hospitalisations, by principal diagnosis and Indigenous status, NSW, Vic, Qld, WA, SA and NT, July 2004–June 2006[(a)(b)(c)(d)]

	Number		Per cent		Indigenous			Other[(e)]			
Principal diagnosis	**Indigenous**	**Other[(e)]**	**Indigenous**	**Other[(e)]**	**No. per 1,000[(f)]**	**95% UCL[(g)]**	**95% UCL[(h)]**	**No. per 1,000[(f)]**	**95% UCL[(g)]**	**95% UCL[(h)]**	**Ratio[(i)]**
Endocrine, nutritional and metabolic diseases	9,030	232,477	1.9	1.7	18.7	18.2	19.1	5.9	5.8	5.9	3.2*
Other[(k)]	52,890	4,465,222	11.3	33.5	82.0	81.0	82.9	112.7	112.6	112.8	0.7*
Total	*277,186*	*11,849,146*	*59.3*	*89.0*	*393.9*	*391.9*	*395.8*	*302.1*	*301.9*	*302.2*	*1.3**
Care involving dialysis	190,489	1,461,917	40.7	11.0	402.0	399.9	404.0	36.5	36.4	36.5	11.0*
Total[(l)]	**467,822**	**13,315,716**	**100.0**	**100.0**	**796.1**	**793.3**	**798.9**	**338.7**	**338.5**	**338.9**	**2.4***

* Represents results with statistically significant differences in the Indigenous/other comparisons at the $p < 0.05$ level.

(a) Data are from public and most private hospitals. Data exclude private hospitals in the Northern Territory.
(b) Categories are based on the ICD-10-AM fifth edition (National Centre for Classification in Health 2006).
(c) Financial year reporting.
(d) Data are reported by state/territory of usual residence of the patient hospitalised and are for New South Wales, Victoria, Western Australia, South Australia, the Northern Territory and Queensland only. These six jurisdictions are considered to have adequate levels of Indigenous identification, although the level of accuracy varies by jurisdiction and hospital.
(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) Rates and rate ratios are for females only.
(k) Includes: diseases of the musculoskeletal system and connective tissue; neoplasms; diseases of the nervous system; certain conditions originating in the perinatal period; diseases of the ear and mastoid process; diseases of the eye and adnexa; diseases of the blood and blood-forming organs and certain disorders involving the immune system; congenital malformations, deformations and chromosomal abnormalities; and factors influencing health status and contact with health services (except dialysis).
(l) Includes hospitalisations for which no principal diagnosis was recorded.

Source: AIHW analysis of National Hospital Morbidity Database.

Hospitalisations by additional diagnosis

Table 1.02.3 presents hospitalisations for selected principal diagnoses by additional diagnoses, for Aboriginal and Torres Strait Islander peoples in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined.

- For the 2-year period July 2004 to June 2006, the majority of hospitalisations with a principal diagnosis of care involving dialysis were reported with an additional diagnosis of diseases of the genitourinary system (78%) followed by endocrine, metabolic and nutritional disorders (19%).
- Approximately 24% of hospitalisations with a principal diagnosis of injury and poisoning were reported with an additional diagnosis of mental and behavioural disorders and to a lesser extent with endocrine, metabolic and nutritional disorders (11%).
- Hospitalisations with a principal diagnosis of circulatory diseases were most commonly reported with an additional diagnosis of endocrine, metabolic and nutritional diseases (50%).
- Hospitalisations with a principal diagnosis of infectious and parasitic diseases, respiratory diseases, diseases of the digestive system, and skin diseases were all commonly reported with an additional diagnosis of endocrine, metabolic and nutritional disorders (39%, 22%, 20% and 19% respectively).
- Hospitalisations with a principal diagnosis of endocrine, nutritional and metabolic diseases were commonly reported with an additional diagnosis of diseases of the circulatory system (50%).

Table 1.02.3: Hospitalisations of Indigenous persons: principal diagnosis chapter by additional diagnosis chapter of hospitalisation, NSW, Vic, Qld, WA, SA, and NT, July 2004 to June 2006[(a)(b)(c)(d)]

Additional diagnosis of hospitalisation	Principal diagnosis														
	Dialysis (Z49)	Injury & poisoning (S00-Y98)	Pregnancy (O00-O99)	Respiratory (J00-J99)	Digestive (K00-K93)	Abnormal findings (R00-R99)	Mental disorders (F00-F99)	Circulatory (I00-I99)	Genito -urinary (N00-N99)	Skin (L00-L99)	Infectious (A00-B99)	Endocrine (E00-E90)	Other[(e)]	*Total (excl. dialysis)*	Total[(f)]
	Per cent														
Genitourinary diseases (N00–N99)	78.3	5.3	4.4	7.6	6.8	7.9	2.3	18.0	26.2	5.8	14.3	40.1	6.9	8.9	37.2
Endocrine, nutritional & metabolic (E00–E90)	18.5	11.2	3.1	21.8	20.4	23.2	9.8	50.3	22.2	19.0	39.4	60.5	14.2	19.1	18.8
Diseases of the circulatory system (I00–I99)	4.1	8.3	2.0	16.5	14.9	19.3	5.2	64.3	15.6	11.6	9.9	49.8	11.7	15.2	10.7
Mental and behavioural disorders (F00–F99)	0.1	23.5	4.8	12.2	19.8	16.3	51.8	12.8	6.7	9.1	6.8	12.2	9.0	15.4	9.2
Symptoms, signs and abnormal findings (R00–R99)	0.2	7.3	5.7	11.1	9.3	16.4	15.2	13.6	9.5	6.8	16.0	15.5	8.8	10.2	6.1
Infectious and parasitic diseases (A00–B99)	0.0	8.4	5.9	12.9	7.7	5.3	3.4	7.1	22.5	39.9	20.4	16.7	7.0	10.1	6.0

(continued)

Table 1.02.3 (continued): Hospitalisations of Indigenous persons: principal diagnosis chapter by additional diagnosis chapter of hospitalisation, NSW, Vic, Qld, WA, SA, and NT, July 2004 to June 2006[(a)(b)(c)(d)]

Additional diagnosis of hospitalisation	Principal diagnosis														
	Dialysis (Z49)	Injury & poisoning (S00-Y98)	Pregnancy (O00-O99)	Respiratory (J00-J99)	Digestive (K00-K93)	Abnormal findings (R00-R99)	Mental disorders (F00-F99)	Circulatory (I00-I99)	Genito -urinary (N00-N99)	Skin (L00-L99)	Infectious (A00-B99)	Endocrine (E00-E90)	Other[(e)]	*Total (excl. dialysis)*	Total[(f)]
	Per cent														
Injury & poisoning (S00-Y98)	0.1	41.4	0.8	2.1	2.8	2.4	6.4	4.2	3.2	17.0	3.4	6.7	6.4	9.3	5.5
Respiratory diseases (J00-J99)	0.1	4.1	2.8	20.9	6.3	6.6	3.5	15.2	5.8	3.9	13.1	10.0	6.0	7.7	4.6
Digestive diseases (K00-K93)	0.0	3.4	2.6	5.0	27.2	8.6	4.3	8.0	6.2	3.4	7.4	9.5	5.8	7.3	4.3
Pregnancy, childbirth (O00-O99)	0.0	0.2	55.7	0.1	0.1	0.2	0.2	0.1	0.3	0.0	0.1	0.0	0.6	7.2	4.3
Skin diseases (L00-L99)	0.0	3.8	0.6	2.9	2.0	1.8	1.4	3.0	2.4	17.0	9.1	14.2	3.1	3.6	2.1
Care involving dialysis (Z49)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.3	0.0	0.1	0.0
Other[(e)]	4.7	39.5	73.9	43.5	46.3	47.8	59.3	68.3	47.8	44.8	39.4	70.9	57.6	53.6	33.7
Total number[(g)]	**190,489**	**36,505**	**34,936**	**30,604**	**25,059**	**20,286**	**19,709**	**15,314**	**12,248**	**10,897**	**9,708**	**9,030**	**52,890**	**277,186**	**467,822**

(continued)

Table 1.02.3 (continued): Hospitalisations of Indigenous persons: principal diagnosis chapter by additional diagnosis chapter of hospitalisation, NSW, Vic, Qld, WA, SA, and NT, July 2004 to June 2006[(a)(b)(c)(d)]

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

(b) Categories are based on the ICD-10-AM fifth edition (National Centre for Classification in Health 2006).

(c) Financial year reporting.

(d) Indigenous data are reported by state/territory of usual residence of the patient hospitalised and are for New South Wales, Victoria, Western Australia, South Australia, the Northern Territory and Queensland only. These six jurisdictions are considered to have adequate levels of Indigenous identification, although the level of accuracy varies by jurisdiction and hospital. Hospitalisation data for these six jurisdictions should not be assumed to represent the hospitalisation experience in the other jurisdictions.

(e) Includes: diseases of the musculoskeletal system and connective tissue; neoplasms; diseases of the nervous system; certain conditions originating in the perinatal period; diseases of the ear and mastoid process; diseases of the eye and adnexa; diseases of the blood and blood-forming organs and certain disorders involving the immune system; congenital malformations, deformations and chromosomal abnormalities; and factors influencing health status and contact with health services (except dialysis).

(f) Includes hospitalisations for which no principal diagnosis was recorded.

(g) Total number of hospitalisations for each principal diagnosis.

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

Source: AIHW analysis of National Hospital Morbidity Database.

Time series analysis

All hospitalisations

Time series data are presented for the four jurisdictions that have been assessed as having adequate identification of Indigenous hospitalisations for all years from 1998–99 to 2005–06—Queensland, Western Australia, South Australia and the Northern Territory. These four jurisdictions represent approximately 60% of the Indigenous Australian population. New South Wales and Victoria were identified as having adequate identification of Indigenous hospitalisations from 2004–05 onwards, therefore they were included as part of the current period analysis (2004–05 to 2005–06) but not as part of the time series analyses.

Hospitalisation rates, rate ratios and rate differences between Indigenous and other Australians over the period 1998–99 to 2005–06 are presented in Table 1.02.4 and Figure 1.02.2.

- In Queensland, Western Australia, South Australia and the Northern Territory combined, there were significant increases in hospitalisation rates among Indigenous males and females during the 7-year period 1998–99 to 2005–06. The fitted trend implies an average yearly increase in the rate of around 48 per 1,000 for Indigenous persons which is equivalent to a 46% increase in the rate over the period.
- There were also significant increases in hospitalisation rates among other Australian males and females during the same period, with an average yearly increase in the rate of 4 per 1,000 for other Australians. This is equivalent to a 9% increase in the rate over the period.
- There were significant increases in the hospitalisation rate ratios and rate differences between Indigenous and other Australians. The fitted trend implies an average yearly increase of 0.1 in the rate ratio (34% increase over the period) and 44 per 1,000 in the hospitalisation rate differences between Indigenous and other Australians in the 7-year period 1998–99 to 2005–06 (76% increase). This indicates a relative and absolute increase in the gap between hospitalisation rates for Indigenous and other Australians.

Note 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 affect 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 also reflect increased use of admitted patient hospital services rather than a worsening of health.

Table 1.02.4: Age-standardised hospitalisation rates, rate ratios and rate differences, Qld, WA, SA and NT, 1998–99 to 2005–06[(a)]

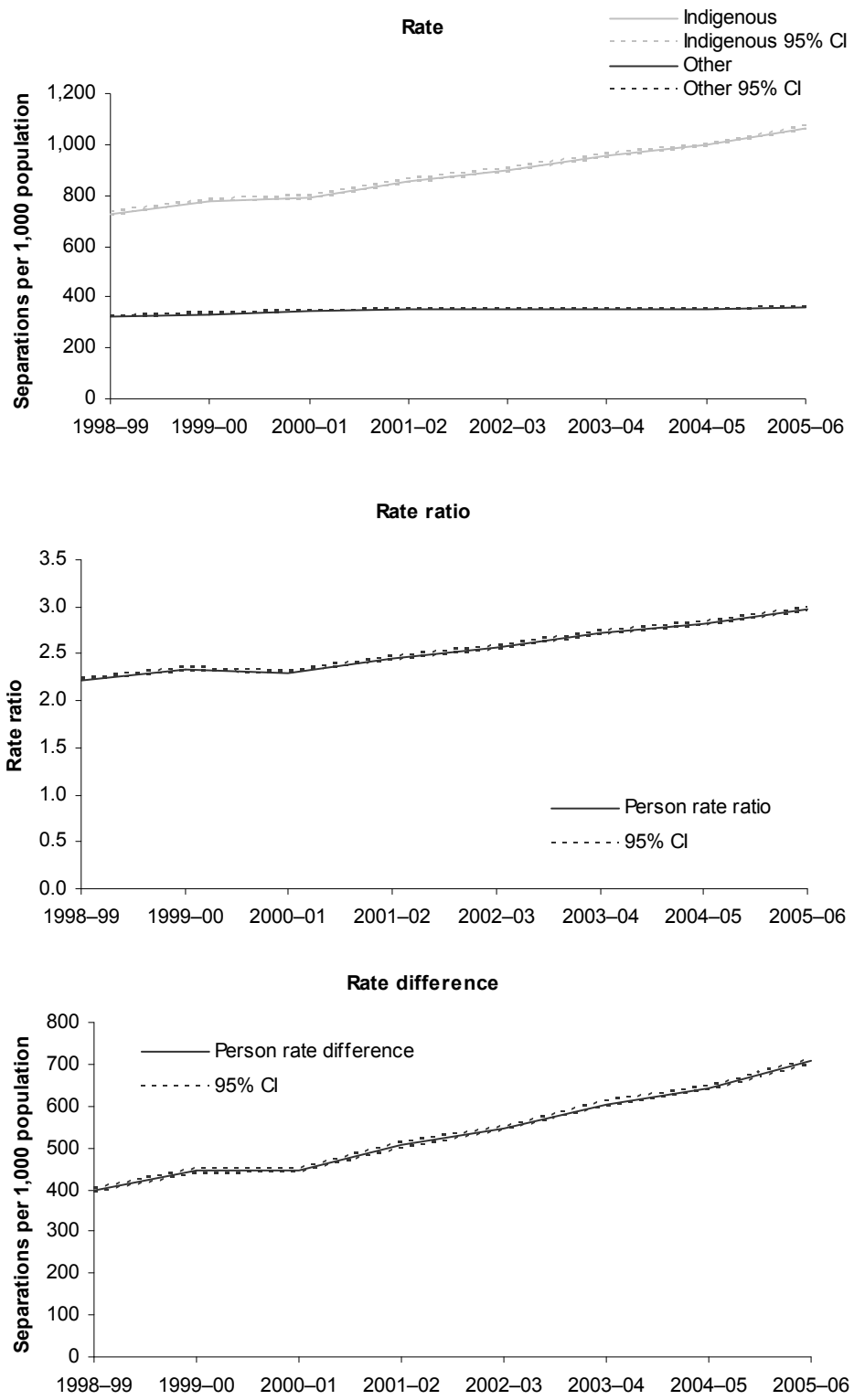
	1998–99	1999–00	2000–01	2001–02	2002–03	2003–04	2004–05	2005–06	Annual change[(b)]	% change over period[(c)]
Indigenous rate (separations per 1,000)										
Males	648.8	661.6	648.8	734.5	734.5	840.1	893.4	949.7	44.6*	48.1
Females	797.7	882.8	797.7	961.1	961.1	1,063.9	1,089.8	1,167.2	50.2*	44.1
Persons	726.0	777.9	726.0	854.8	854.8	957.3	995.8	1,064.1	47.6*	45.9
Other Australian[(d)] rate (separations per 1,000)										
Males	318.1	324.9	318.1	338.6	338.6	342.9	343.8	348.1	4.0*	8.7
Females	339.5	347.0	339.5	364.2	364.2	366.3	366.3	370.6	4.1*	8.4
Persons	326.5	333.7	326.5	349.4	349.4	352.5	352.8	357.1	4.0*	8.6
Rate ratio[(e)]										
Males	2.0	2.0	2.0	2.2	2.2	2.4	2.6	2.7	0.1*	36.2
Females	2.3	2.5	2.3	2.6	2.6	2.9	3.0	3.1	0.1*	32.6
Persons	2.2	2.3	2.2	2.4	2.4	2.7	2.8	3.0	0.1*	34.1
Rate difference[(f)]										
Males	330.7	336.8	330.7	396.0	396.0	497.2	549.6	601.6	40.6*	86.0
Females	458.2	535.8	458.2	596.9	596.9	697.6	723.5	796.6	46.2*	70.5
Persons	399.5	444.2	399.5	505.4	505.4	604.8	643.0	707.0	43.6*	76.4

* Represents results with statistically significant increases or declines at the $p < 0.05$ level over the period 1998–99 to 2005–06.

(a) Data are from public and most private hospitals. Data exclude private hospitals in the Northern Territory.
(b) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.
(c) Per cent change between 1998–99 and 2005–06 based on the average annual change over the period.
(d) 'Other' includes hospitalisations of non-Indigenous people and those for whom Indigenous status was not stated.
(e) Hospitalisation rates for Indigenous Australians divided by the hospitalisation rates for other Australians.
(f) 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 National Hospital Morbidity Database.



Source: AIHW analysis of National Hospital Morbidity Database.

Figure 1.02.2: Hospitalisation rates, rate ratios and rate differences between Indigenous and other Australians, Qld, WA, SA and NT, 1998–99 to 2005–06

All hospitalisations excluding dialysis

Hospitalisation rates, rate ratios and rate differences (excluding dialysis) between Indigenous and other Australians over the period 1998–99 to 2005–06 are presented in Table 1.02.5 and Figure 1.02.3.

- In Queensland, Western Australia, South Australia and the Northern Territory combined, there were significant increases in hospitalisation rates among Indigenous males and females during the 7-year period 1998–99 to 2005–06. The fitted trend implies an average yearly increase in the rate of around 5 per 1,000 for Indigenous persons. This is equivalent to a 7% increase in the rate over the period.
- There were also significant increases in hospitalisation rates among other Australian males and females during the same period, with an average yearly increase in the rate of 2 per 1,000 for other Australian persons. This is equivalent to a 4% increase in the rate over the period.
- There were significant increases in the hospitalisation rate ratios between Indigenous males and other males—the fitted trend implies an average yearly increase of 0.01 per 1,000 in the 7-year period 1998–99 to 2005–06 (7% increase). Over the same period, there were no significant changes in the rate ratios for females or persons overall.
- There were significant increases in the hospitalisation rate differences between Indigenous and other Australians. The fitted trend implies an average yearly increase of 3 per 1,000 in the hospitalisation rate differences between Indigenous and other Australians in the 7-year period 1998–99 to 2005–06 (13% increase over the period).

Table 1.02.5: Age-standardised hospitalisation rates, rate ratios and rate differences (excluding dialysis), Qld, WA, SA and NT, 1998–99 to 2005–06[(a)]

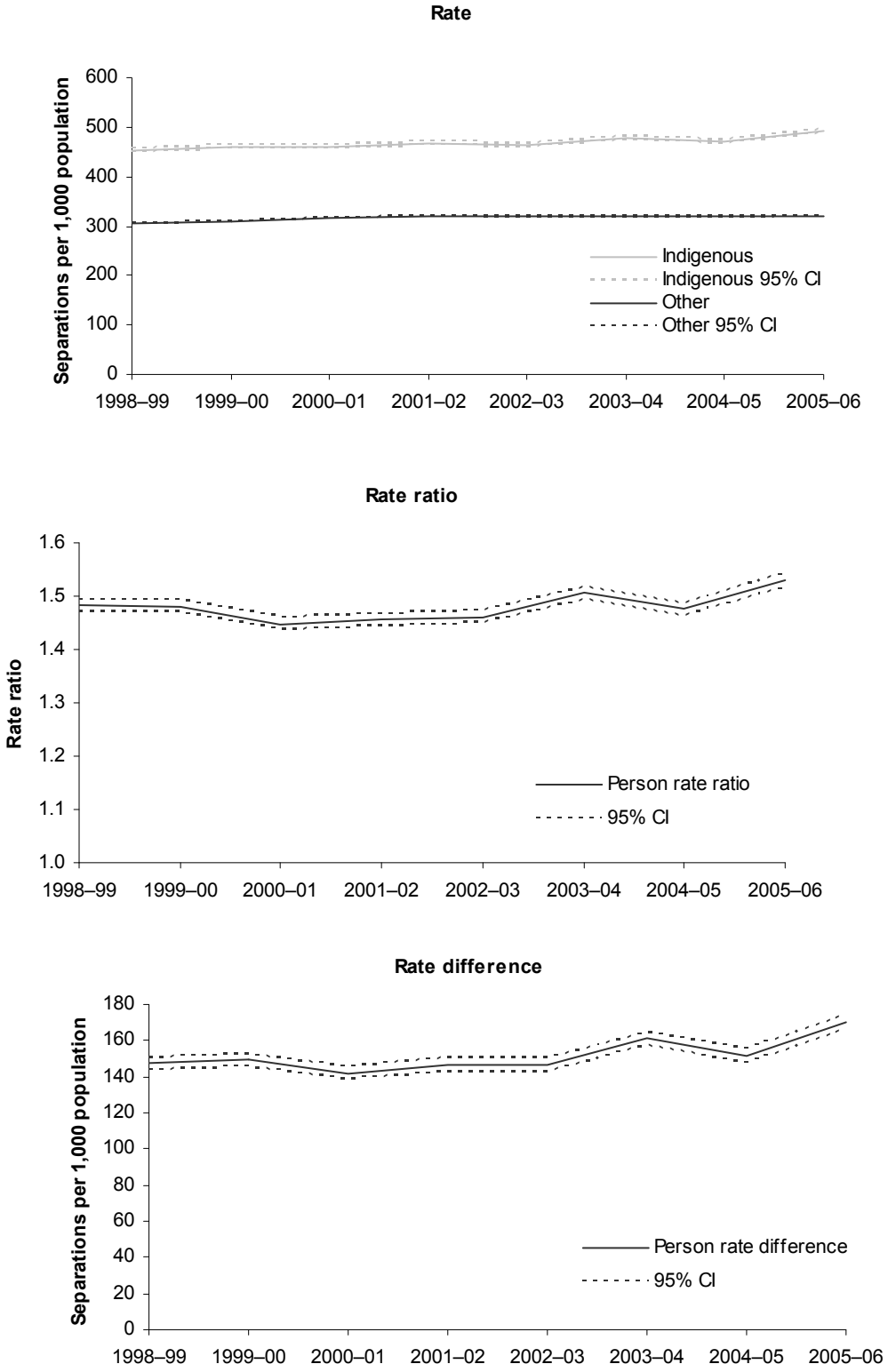
	1998–99	1999–00	2000–01	2001–02	2002–03	2003–04	2004–05	2005–06	Annual change[(b)]	% change over period[(c)]
Indigenous rate (separations per 1,000)										
Males	392.8	398.9	392.7	400.6	402.0	423.7	412.1	434.6	5.4*	9.6
Females	507.2	515.2	520.3	529.8	523.8	533.0	525.1	545.6	4.2*	5.8
Persons	451.8	459.0	458.4	467.6	464.6	479.1	469.5	490.9	4.6*	7.1
Other Australian[(d)] rate (separations per 1,000)										
Males	290.9	295.3	300.8	304.0	299.7	299.7	299.4	301.6	1.0*	2.5
Females	322.5	328.4	335.7	341.3	339.5	339.8	340.1	343.3	2.6*	5.6
Persons	304.7	310.0	316.6	321.1	318.1	318.2	318.2	320.9	1.9*	4.3
Rate ratio[(e)]										
Males	1.4	1.4	1.3	1.3	1.3	1.4	1.4	1.4	0.01*	6.9
Females	1.6	1.6	1.5	1.6	1.5	1.6	1.5	1.6	—	0.2
Persons	1.5	1.5	1.4	1.5	1.5	1.5	1.5	1.5	0.01	2.7
Rate difference[(f)]										
Males	101.8	103.6	91.9	96.6	102.3	124.0	112.7	133.0	4.4*	29.9
Females	184.8	186.9	184.6	188.5	184.2	193.2	185.0	202.3	1.6*	6.1
Persons	147.1	149.0	141.9	146.6	146.6	161.0	151.3	170.0	2.7*	13.0

* Represents results with statistically significant increases or declines at the $p < 0.05$ level over the period 1998–99 to 2005–06.

(a) Data are from public and most private hospitals. Data exclude private hospitals in the Northern Territory.
(b) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.
(c) Per cent change between 1998–99 and 2005–06 based on the average annual change over the period.
(d) 'Other' includes hospitalisations of non-Indigenous people and those for whom Indigenous status was not stated.
(e) Hospitalisation rates for Indigenous Australians divided by the hospitalisation rates for other Australians.
(f) 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 National Hospital Morbidity Database.



Source: AIHW analysis of National Hospital Morbidity Database.

Figure 1.02.3: Hospitalisation rates, rate ratios and rate differences (excluding dialysis) between Indigenous and other Australians, Qld, WA, SA and NT, 1998–99 to 2005–06

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 was adjusted using the following identification factors:
    - Queensland 87%
    - Western Australia 97%
    - South Australia 82%
    - Northern Territory 96%.
  - Under the increasing identification scenario, hospitalisations were adjusted by linearly increasing the identification through the period under study—from 82% in 1998–99 to 87% in 2005–06 for Queensland, from 95% to 97% for Western Australia, from 76% to 82% for South Australia, and from 94% to 96% for the Northern Territory.
  - Under the decreasing identification scenario, hospitalisations were adjusted by linearly decreasing the identification from 92% in 1998–99 to 87% in 2005–06 for Queensland, from 99% to 97% for Western Australia, from 88% to 82% for South Australia, and from 98% to 96% for the Northern Territory.
- The adjustments in the latter two scenarios were based on judgments about the largest plausible shifts in identification during the period; of course, if any actual shift in identification was more extreme than has been posted under these scenarios, then the observed trends in hospitalisations might not persist.
- For all hospitalisations including dialysis, the increases in hospitalisation rates, rate ratios and rate differences during the period 1998–99 to 2005–06 remained significant under all three identification scenarios.
- For all hospitalisations excluding dialysis, all the observed significant increases in hospitalisation rates, rate ratios and rate differences during the period 1998–99 to 2005–06 remained statistically significant under the constant identification scenario. All the observed significant trends except the increase in the rate for other males remained significant under the decreasing identification scenario. Only the observed increases in other Australian hospitalisation rates and hospitalisation rates for Indigenous males remained statistically significant under the increasing identification scenario.

Time series by principal diagnosis

Hospitalisation rates by principal diagnosis were compared for the four jurisdictions that have been assessed as having adequate identification of Indigenous hospitalisations for all years from 1998–99 to 2005–06—Queensland, Western Australia, South Australia and the Northern Territory.

- Hospitalisation rates among Indigenous Australians for most principal diagnoses for the period June 1998 to July 2000 were similar to those for the period June 2004 to July 2006. Hospitalisation rates of Indigenous Australians for care involving dialysis; symptoms, signs and abnormal clinical findings; diseases of the digestive system; and endocrine, nutritional and metabolic diseases increased between the two periods. Hospitalisation rates of Indigenous Australians for mental and behavioural disorders declined between the two periods (Table 1.02.6).

Table 1.02.6: Hospitalisations, by principal diagnosis and Indigenous status, Qld, WA, SA and NT, July 1998 to June 2000 and July 2004 to June 2006[(a)(b)(c)(d)]

	1998–99 to 1999–00			2004–05 to 2005–06		
Principal diagnosis	**Indigenous no. per 1,000[(f)]**	**Other[(e)] no. per 1,000[(f)]**	**Ratio[(g)]**	**Indigenous no. per 1,000[(f)]**	**Other[(e)] no. per 1,000[(f)]**	**Ratio[(g)]**
Injury & poisoning & certain other consequences of external causes	51.4	22.7	2.3*	51.1	22.5	2.3*
Pregnancy, childbirth and the puerperium	34.0	21.4	1.6*	34.6	23.1	1.5*
Diseases of the respiratory system	54.1	17.0	3.2*	52.1	15.7	3.3*
Diseases of the digestive system	34.2	37.5	0.9*	39.0	39.3	1.0
Symptoms, signs and abnormal clinical and laboratory findings	20.3	12.7	1.6*	34.1	19.6	1.7*
Mental and behavioural disorders	27.1	16.3	1.7*	21.8	12.6	1.7*
Diseases of the circulatory system	36.7	22.7	1.6*	39.4	20.5	1.9*
Diseases of the genitourinary system	25.0	18.2	1.4*	22.4	17.0	1.3*
Diseases of the skin & subcutaneous tissue	19.1	5.9	3.2*	16.9	6.1	2.8*
Certain infectious and parasitic diseases	12.7	4.6	2.8*	12.0	4.1	2.9*
Endocrine, nutritional and metabolic diseases	15.8	3.4	4.7*	23.5	5.9	4.0*
Other[(h)]	124.8	114.8	1.1*	88.4	119.0	0.7*
Total	*455.4*	*297.2*	*1.5**	*435.3*	*305.4*	*1.4**
Care involving dialysis	296.9	22.4	13.3*	550.1	35.5	15.5*
Total[(i)]	**752.3**	**319.5**	**2.4***	**985.4**	**340.9**	**2.9***

* Represents results with statistically significant differences in the Indigenous/other comparisons at the $p < 0.05$ level.

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

(b) Categories are based on the ICD-10-AM fifth edition (National Centre for Classification in Health 2006).

(c) Financial year reporting.

(d) Data are reported by state/territory of usual residence of the patient hospitalised and are for Queensland, Western Australia, South Australia and the Northern Territory only. These four jurisdictions are considered to have adequate levels of Indigenous identification from 1998–99, 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 these 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) Rate ratio Indigenous:other.

(h) Includes: diseases of the musculoskeletal system and connective tissue; neoplasms; diseases of the nervous system; certain conditions originating in the perinatal period; diseases of the ear and mastoid process; diseases of the eye and adnexa; diseases of the blood and blood-forming organs and certain disorders involving the immune system; congenital malformations, deformations and chromosomal abnormalities; and factors influencing health status and contact with health services (except dialysis).

(i) Includes hospitalisations for which no principal diagnosis was recorded.

Source: AIHW analysis of National Hospital Morbidity Database.

Data quality issues

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 involving Aboriginal and Torres Strait Islander peoples. For several years, Queensland, South Australia, Western Australia and the Northern Territory reported that Indigenous status in their hospital separations data was of acceptable quality (AIHW 2007). The AIHW, however, has recently completed an assessment of the level of Indigenous under-identification in hospital data in all states and territories. Results from this assessment indicate that New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory have adequate Indigenous identification (20% or less overall under-identification of Indigenous patients) in their hospital separations data (AIHW unpublished data). It has therefore been recommended that reporting of Indigenous hospital separations data be limited to aggregated information from New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory. The proportion of the Indigenous population covered by these six jurisdictions is 96%. The following caveats have also been recommended for analysis of hospitalisation data from selected jurisdictions (ABS & AIHW 2005):

- *Interpretation of results should take into account the relative quality of the data from the jurisdictions included (currently a small degree of Indigenous under-identification in data from Western Australia and the Northern Territory and relatively marked Indigenous under-identification in data from South Australia and Victoria).*
- *Data for these six jurisdictions over-represent Indigenous populations in less urbanised and more remote locations.*
- *Hospitalisation data for these six jurisdictions are not necessarily representative of the jurisdictions not included.*

From the AIHW study it was possible to produce correction factors for the level of Indigenous under-identification in hospital data for each jurisdiction and at the national level.

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 from changes in the identification of Indigenous people in other administrative collections and population censuses. Denominators used here are sourced from Experimental estimates and projections: Aboriginal and Torres Strait Islander Australians 1991 to 2009 *(ABS 2004).*

References

ABS (Australian Bureau of Statistics) 2004. Experimental estimates and projections: Aboriginal and Torres Strait Islander Australians 1991 to 2009. ABS cat. no. 3238.0. Canberra: ABS.

ABS & AIHW (Australian Institute of Health and Welfare) 2005. The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples 2005. ABS cat. no. 4704.0, Cat. no. IHW 14. Canberra: ABS & AIHW.

AIHW 2005. Improving the quality of Indigenous identification in hospital statistics. Health services series no. 25. Cat. no. HSE 101. Canberra: AIHW.

AIHW 2007. Australian hospital statistics 2005–06. Health services series no. 30. Cat. no. HSE 50. Canberra: AIHW.

National Centre for Classification in Health 2006 International statistical classification of diseases and related health problems, 10th revision, Australian modification. 5th edition. National Centre for Classification in Health.