

1.09 End stage renal disease

The number of Aboriginal and Torres Strait Islander people with a principal diagnosis of end stage renal disease as registered by the Australia and New Zealand Dialysis and Transplant Registry (ANZDATA); expressed as a rate by age group, age-standardised rate and ratio

Data sources

Data for this indicator come from the Australia and New Zealand Dialysis and Transplant Registry (ANZDATA), the AIHW's National Hospital Morbidity Database and the AIHW National Mortality Database.

Australian and New Zealand Dialysis and Transplant Registry (ANZDATA)

Information is available on Indigenous persons with end stage renal disease (ESRD) from the Australia and New Zealand Dialysis and Transplant Registry (ANZDATA). In Australia, persons who develop ESRD and undertake dialysis or kidney transplantation are registered with ANZDATA. The registry is the most comprehensive and reliable source of information on persons treated for ESRD. It compiles data on incidence and prevalence, renal complications, co-morbidities and patient deaths. The current ANZDATA Registry began in 1977 and is coordinated by the Queen Elizabeth Hospital in Adelaide. All relevant hospitals and related satellite units in Australia and New Zealand participate.

Indigenous identification in the ANZDATA Registry is based on self-identification in hospital records. However, because of the heightened awareness of the extent of renal disease in Indigenous Australians and the prolonged and repeated contact with renal units in hospitals, it is believed that Indigenous identification in the ANZDATA registry is more complete than in general hospital data (Cass et al. 2001).

Registrations for which Indigenous status was not stated have been included under the 'other' category.

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).

Mortality

The National Mortality Database is a national collection of de-identified information for all deaths in Australia and is maintained by the AIHW. Information on the characteristics and causes of death of the deceased is provided by the Registrars of Births, Deaths and Marriages and coded nationally by the ABS. Information on the cause of death is supplied by the medical practitioner certifying the death, or by a coroner. The data are updated each calendar year.

While the identification of Indigenous deaths is incomplete in all state and territory registration systems, four jurisdictions (Queensland, Western Australia, South Australia and the Northern Territory) have been assessed by the ABS and the AIHW as having adequate identification. These four jurisdictions represent approximately 60% of the Indigenous population of Australia. Data are presented by state/territory of usual residence rather than state/territory where death occurs.

Deaths for which the Indigenous status of the deceased was not reported have been excluded from the analysis.

Data have been combined for the five-year period 2000–2004 due to the small number of deaths from some conditions each year. Data have been analysed using the year of occurrence of death for the period 2000–2003 and year of registration of death for 2004. This is because mortality data by year of occurrence of death is a more accurate reflection of mortality during a particular year than year of registration data, however year of occurrence data for 2004 is still incomplete owing to late registrations.

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.

Registration data

Information is available on Indigenous persons with end stage renal disease (ESRD) from the Australia and New Zealand Dialysis and Transplant Registry (ANZDATA).

End stage renal disease is a complete or near complete failure of the kidneys in their function to excrete wastes, concentrate urine, and regulate electrolytes. End stage renal disease occurs

when the kidneys are no longer able to function at a level that is necessary for day-to-day life. It usually occurs as chronic renal failure worsens to the point where kidney function is less than 10% of normal.

Incidence of end stage renal disease

- Between 2002 and 2004, there were 5,797 new patients registered with ANZDATA, of these 532 (9%) identified as Aboriginal or Torres Strait Islander. This is higher than the proportion of Indigenous people in the total population (2.4%).
- Indigenous people commencing ESRD treatment were substantially younger than other Australians commencing ESRD treatment. About two-thirds (63%) of new Indigenous patients registered with ANZDATA were aged less than 55 years, whereas only a third (33%) of other Australians registered were below that age (Table 1.09.1).
- Incidence rates of treated end stage kidney disease for Indigenous Australians were higher than for other Australians across all age groups with the exception of those aged 0–14 years where incidence rates were similar. The difference was marked at ages 45–54 years and 55–64 years where incidence rates for Indigenous Australians were between 14 and 18 times those for other Australians.
- After adjusting for differences in age structure, the incidence rate of treated ESRD for Indigenous Australians was more than eight times the incidence rate of other Australians.
- Between 2002 and 2004, Indigenous males and females were six and 11 times as likely to register for treatment of ESRD as other males and females (Table 1.09.2).
- Incidence rates of treated end stage kidney disease for Indigenous Australians were higher than for other Australians in all states and territories. Rate ratios ranged from 3 in New South Wales and Victoria to 17 in the Northern Territory (Table 1.09.3).
- Incidence rates for ESRD among Indigenous Australians were higher in remote areas of Australia than in major cities. Indigenous Australians were 26 times as likely to register for treatment of ESRD as other Australians in remote areas, 18 times as likely in outer regional areas and 12 times as likely in very remote areas. In major cities and inner regional areas, incidence rates for Indigenous Australians were four–five times those for other Australians living in these areas (Table 1.09.4).

The reasons for the high incidence of treated end stage kidney disease among Indigenous Australians are probably related to the high proportion of the Indigenous population with factors which contribute to the increased risk of kidney impairment and lack of access to services for detection and treatment of chronic kidney disease (AIHW 2005).

Table 1.09.1: Incidence of end stage renal disease, by Indigenous status and age group, 2002–2004^(a)

	Number		Per cent ^(b)		Indigenous	Other	Rate ratio ^(e)
	Indigenous	Other ^(c)	Indigenous	Other ^(c)	Rate per 1,000 ^(d)	Rate per 1,000 ^(d)	
0–24	13	216	2.4	4.1	—	—	1.4
25–44	123	768	23.1	14.6	0.3	—	7.0*
45–54	201	736	37.8	14.0	1.7	0.1	17.8*
55–64	132	1,012	24.8	19.2	2.2	0.2	14.1*
65+	63	2,533	11.8	48.1	1.6	0.3	4.7*
Total^(f)	532	5,265	100.0	100.0	0.7	0.1	8.3*

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

(a) Calendar year reporting. Data are presented in three-year groupings due to small numbers each year.

(b) Per cent of Indigenous and other patients in each age group.

(c) Includes non-Indigenous cases and cases for which Indigenous status was 'not stated'.

(d) Age-specific rates per 1,000 population.

(e) Rate ratio Indigenous:other.

(f) Total rates are directly age standardised using the Australian 2001 Standard population.

Source: AIHW analysis of ANZDATA data.

Table 1.09.2: Incidence of end stage renal disease for Indigenous Australians, by age group and sex, 2002–2004^(a)

Age group	Male						Female						Total					
	No.	% ^(b)	Rate per 1,000 ^(c)	LCL 95% ^(d)	UCL 95% ^(e)	Rate ratio ^(f)	No.	% ^(b)	Rate per 1,000 ^(c)	LCL 95% ^(d)	UCL 95% ^(e)	Rate ratio ^(f)	No.	% ^(b)	Rate per 1,000 ^(c)	LCL 95% ^(d)	UCL 95% ^(e)	Rate ratio ^(f)
0–4 years	0	0.0	0.0	0.0	0.0	..	0	0.0	0.0	0.0	0.0	..	0	0.0	0.0	0.0	0.0	..
5–9 years	2	0.8	0.0	0.0	0.1	2.8	0	0.0	0.0	0.0	0.0	..	2	0.4	0.0	0.0	0.0	1.5
10–14 years	0	0.0	0.0	0.0	0.0	..	0	0.0	0.0	0.0	0.0	..	0	0.0	0.0	0.0	0.0	..
15–19 years	0	0.0	0.0	0.0	0.0	..	8	2.8	0.1	0.0	0.2	8.2*	8	1.5	0.1	0.0	0.1	3.4*
20–24 years	2	0.8	0.0	0.0	0.1	1.2	1	0.4	0.0	0.0	0.0	1.2	3	0.6	0.0	0.0	0.1	1.2
25–44 years	63	25.3	0.3	0.3	0.4	6.2*	60	21.2	0.3	0.2	0.4	8.3*	123	23.1	0.3	0.3	0.4	7.0*
45–64 years	153	61.4	1.8	1.5	2.1	11.6*	180	63.6	2.0	1.7	2.3	21.0*	333	62.6	1.9	1.7	2.1	15.2*
65 +years	29	11.6	1.7	1.1	2.3	3.7*	34	12.0	1.5	1.0	2.0	6.3*	63	11.8	1.6	1.2	2.0	4.7*
Total^(g)	249	100.0	0.7	0.6	0.8	6.4*	283	100.0	0.7	0.6	0.8	11.3*	532	100.0	0.7	0.7	0.8	8.3*

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

- (a) Calendar year reporting. Data are presented in three-year groupings due to small numbers each year.
- (b) Percentage of male, female and total registration rates for Indigenous persons in the period 2002–2004.
- (c) Age-specific rates per 1,000 population.
- (d) LCL = lower confidence limit.
- (e) UCL = upper confidence limit.
- (f) Rate ratio Indigenous:other.
- (g) Total rates are directly age standardised using the Australian 2001 Standard population.

Source: AIHW analysis of ANZDATA data.

Table 1.09.3: Incidence of end stage renal disease, by Indigenous status, sex and state/territory, 2002–2004^(a)

	Males			Females			Persons		
	No.	Rate per 1,000 ^(b)	Ratio ^(c)	No.	Rate per 1,000 ^(b)	Ratio ^(c)	No.	Rate per 1,000 ^(b)	Ratio ^(c)
NSW									
Indigenous	30	0.3	3.3*	17	0.2	2.6*	47	0.2	3.0*
Other ^(d)	993	0.1		703	0.1		1,696	0.1	
Vic									
Indigenous	8	0.3	2.5*	6	0.3	4.3*	14	0.3	3.3*
Other ^(d)	866	0.1		496	0.1		1,362	0.1	
Qld									
Indigenous	76	0.9	7.2*	78	0.8	10.9*	154	0.8	8.7*
Other ^(d)	624	0.1		420	0.1		1,044	0.1	
WA									
Indigenous	47	0.8	6.9*	72	1.2	19.4*	119	1.1	11.5*
Other ^(d)	318	0.1		183	0.1		501	0.1	
SA									
Indigenous	14	0.8	7.5*	13	0.5	9.2*	27	0.6	7.9*
Other ^(d)	258	0.1		144	0.1		402	0.1	
Tas									
Indigenous	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Other ^(d)	59	0.1		45	0.1		104	0.1	
ACT									
Indigenous	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Other ^(d)	79	0.2		49	0.1		128	0.2	
NT									
Indigenous	71	1.7	14.3*	94	2.0	21.5*	165	1.8	17.4*
Other ^(d)	18	0.1		10	0.1		28	0.1	
Australia									
Indigenous	249	0.7	6.4*	283	0.7	11.3*	532	0.7	8.3*
Other^(d)	3,215	0.1		2,050	0.1		5,265	0.1	

* Represents results with statistically significant differences in the Indigenous/other Australian comparisons.

(a) Calendar year reporting. Data are presented in three-year groupings due to small numbers each year.

(b) Directly age standardised using the Australian 2001 Standard population.

(c) Rate ratio Indigenous:other.

(d) Other includes registrations for non-Indigenous people and those for whom Indigenous status was 'not stated'.

Source: AIHW analysis of ANZDATA data.

Table 1.09.4: Incidence of end stage renal disease, by Indigenous status and remoteness, 2002–2004^(a)

	Number		Per cent ^(b)		Indigenous	Other ^(c)	Rate ratio ^(e)
	Indigenous	Other ^(c)	Indigenous	Other ^(c)	Rate per 1,000 ^(d)	Rate per 1,000 ^(d)	
Major cities	77	3,663	14.6	71.1	0.4	0.1	4.3*
Inner regional	42	1,047	8.0	20.3	0.4	0.1	4.5*
Outer regional	173	380	32.8	7.4	1.1	0.1	17.5*
Remote	112	43	21.2	0.8	1.5	0.1	26.1*
Very remote	124	19	23.5	0.4	1.0	0.1	11.9*
Australia	532	5,265	100.0	100.0	0.7	0.1	8.3*

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

(a) Calendar year reporting. Data are presented in three-year groupings due to small numbers each year.

(b) Per cent of Indigenous and other patients in each age group.

(c) Other includes registrations for non-Indigenous people and those for whom Indigenous status was 'not stated'.

(d) Directly age standardised using the Australian 2001 Standard population.

(e) Rate ratio Indigenous:other.

Source: AIHW analysis of ANZDATA data.

Time series analysis

Data on the incidence of ESRD among Indigenous and other Australians for the period 1991–2004 are presented below.

- The number of Indigenous patients starting ESRD treatment has more than tripled over the last decade (from 54 in 1991 to 188 in 2004).
- Over the period 1991–2004, there were significant increases in the incidence rate of ESRD among Indigenous Australians. The fitted trend implies an average yearly increase in the rate of around 0.03 per 1,000 (or 3 per 100,000). The fitted trend showed significant increases in the incidence of ESRD for both Indigenous males and females.
- Over the same period, there were also significant increases in the incidence rates of ESRD among other males and females, however, these increases were not as rapid as in the Indigenous population.
- There were significant increases in both the incidence rate ratios and rate differences between Indigenous and other Australians for ESRD over the period 1991–2004, reflecting both a relative and absolute increase in the gap between incidence rates for Indigenous and other Australians for ESRD over the period.

The rapid increase in the incidence of ESRD in the Indigenous population may reflect both real growth in the incidence of ESRD among Indigenous people and the increasing availability and acceptability of kidney replacement therapy to Indigenous communities in recent years.

Fluctuations in the incidence rates of ESRD for Indigenous Australians over time may also reflect changing levels of identification of Indigenous registrations in the ANZDATA Registry and Indigenous population estimates. Caution should be exercised in assessing trends in Indigenous ESRD rates over time and comparisons with the non-Indigenous population.

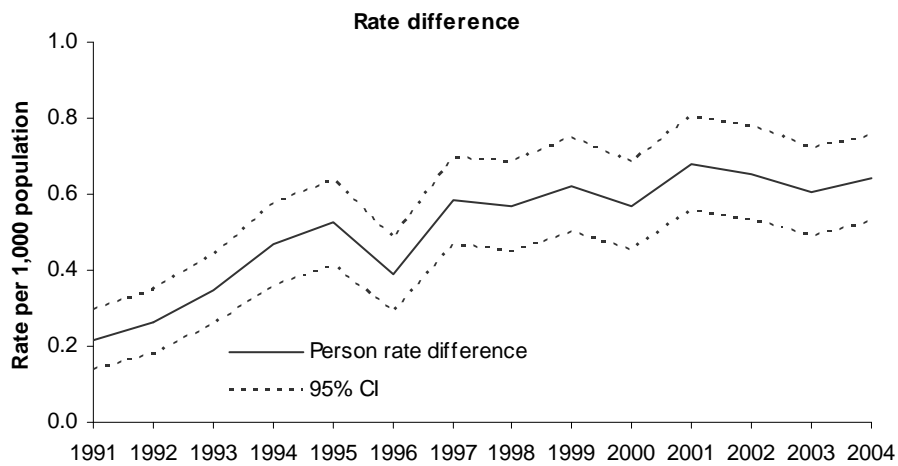
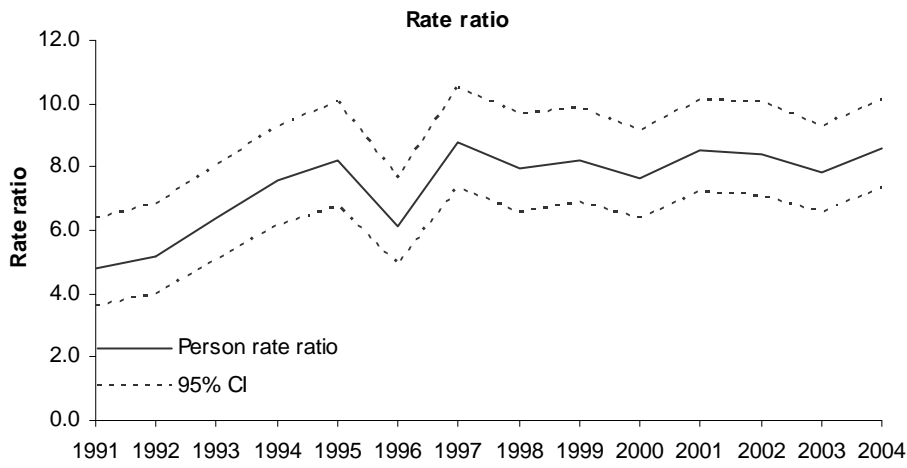
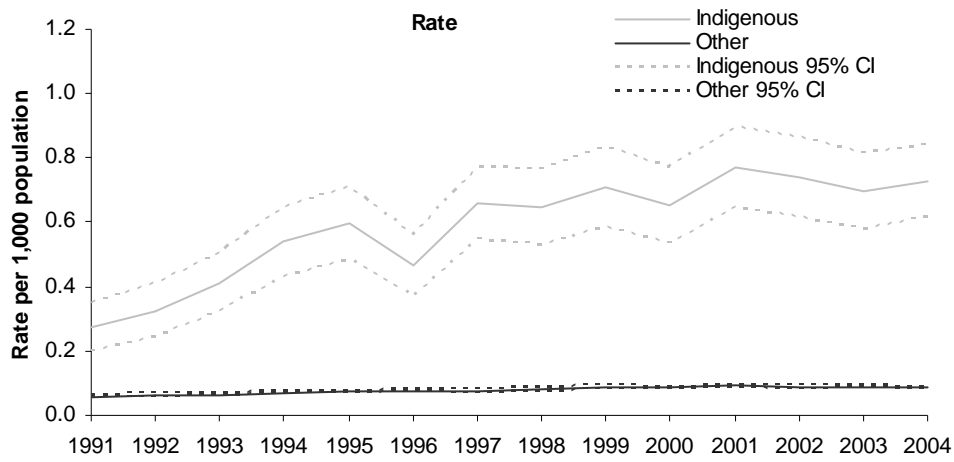
Table 1.09.5: Age-standardised incidence rates, rate ratios and rate differences for end stage renal disease, 1991–2004

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Annual change ^(a)
Indigenous rate per 1,000^(b)															
Males	0.2	0.2	0.4	0.5	0.6	0.4	0.5	0.7	0.5	0.6	0.6	0.7	0.7	0.7	0.03*
Females	0.3	0.4	0.4	0.6	0.6	0.5	0.8	0.6	0.9	0.7	0.9	0.8	0.7	0.8	0.03*
Persons	0.3	0.3	0.4	0.5	0.6	0.5	0.7	0.6	0.7	0.7	0.8	0.7	0.7	0.7	0.03*
Other^(c) rate per 1,000^(b)															
Males	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.00*
Females	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.00*
Persons	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.00*
Rate ratio^(d)															
Males	3.6	3.4	5.3	5.3	6.2	4.4	5.0	6.4	4.9	6.1	5.1	6.3	6.2	6.4	0.17*
Females	3.6	3.4	5.3	5.3	6.2	4.4	5.0	6.4	4.9	6.1	5.1	6.3	6.2	6.4	0.21*
Persons	4.8	5.2	6.4	7.6	8.2	6.1	8.8	8.0	8.2	7.6	8.5	8.4	7.8	8.6	0.23*
Rate difference^(e)															
Males	0.2	0.2	0.3	0.4	0.5	0.3	0.4	0.5	0.4	0.5	0.5	0.6	0.6	0.6	0.03*
Females	0.2	0.3	0.4	0.5	0.6	0.4	0.8	0.6	0.8	0.6	0.8	0.7	0.6	0.7	0.03*
Persons	0.2	0.3	0.3	0.5	0.5	0.4	0.6	0.6	0.6	0.6	0.7	0.7	0.6	0.6	0.03*

* Represents results with statistically significant increases or declines at the p<.05 level over the period 1991–2004.

- (a) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.
- (b) Rates have been directly age standardised using the 2001 Australian standard population.
- (c) Other includes registrations for non-Indigenous people and those for whom Indigenous status was not stated.
- (d) Incidence rate for non-Indigenous people divided by the rate for other Australians.
- (e) Incidence rate for non-Indigenous people minus the rate for other Australians.

Source: AIHW analysis of ANZDATA data



Source: AIHW analysis of ANZDATA data.

Figure 1.09.1: Age-standardised registration rates, rate ratios and differences for end stage renal disease, by Indigenous status, 1991-2004

Management of end stage renal disease

ESRD patients require either a kidney transplant or dialysis to maintain the functions normally performed by the kidneys. Patterns of treatment for ESRD differ between Indigenous and non-Indigenous patients.

- As at 31 December 2004, of all Indigenous ESRD patients registered, 87% were reliant on dialysis and only 13% had received a kidney transplant. In comparison, 54% of non-Indigenous Australians living with ESRD were reliant on dialysis and 46% had received a kidney transplant (Table 1.09.6).
- Indigenous Australians were 10 times as likely as other Australians to have ESRD and be reliant on dialysis.

Once dialysis treatment has commenced, Indigenous people are less likely to be placed on the active transplant waiting list and less likely to move from the waiting list to transplantation (McDonald & Russ 2003; Cass et al. 2003). Factors which may contribute to these disparities include miscommunication between Indigenous patients and health professionals, lack of understanding from Indigenous patients of their illness and its treatments, and lower rates of well-matched kidney donors for Indigenous patients than for other patients (Cass et al. 2003, McDonald & Russ 2003).

Table 1.09.6: Total patients with end stage renal disease, by Indigenous status and treatment, as at 31 December 2004^(a)

Treatment	Number		Per cent ^(b)		Rate per 1,000 ^(c)		Ratio ^(e)
	Indigenous	Other ^(d)	Indigenous	Other ^(d)	Indigenous	Other ^(d)	
Dialysis	828	7,124	86.7	53.6	3.4	0.3	9.7*
Transplant	127	6,159	13.3	46.4	0.4	0.3	1.4*
Total	955	13,283	100.0	100.0	3.8	0.7	5.8*

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

(a) Calendar year reporting. Data are presented in three-year groupings due to small numbers each year.

(b) Per cent of Indigenous and other patients receiving dialysis and transplants.

(c) Directly age standardised using the Australian 2001 Standard population.

(d) Other includes registrations for non-Indigenous people and those for whom Indigenous status was 'not stated'.

(e) Rate ratio Indigenous:other.

Source: AIHW analysis of ANZDATA data.

Hospitalisations

- Over the period June 2002 to July 2004, there were 606,320 hospitalisations for chronic kidney disease and its sequelae in Queensland, Western Australia, South Australia and the Northern Territory combined, 130,843 (21.6%) of which were hospitalisations of Indigenous Australians.
- Approximately 42% of total hospitalisations of Indigenous Australians were from chronic kidney disease.

Hospitalisations for chronic kidney disease

Chronic kidney disease includes diabetic nephropathy, hypertensive renal disease, glomerular disease, chronic renal failure and end stage renal disease (ESRD).

Hospitalisations of Indigenous Australians for chronic kidney disease and its sequelae in Queensland, Western Australia, South Australia and the Northern Territory combined over the period June 2002 to July 2004 are presented in Tables 1.09.7 and 1.09.8 below.

- Of all hospitalisations for chronic kidney disease among Aboriginal and Torres Strait Islander peoples, the large majority (98%) were for care involving dialysis.
- Overall, Indigenous Australians were hospitalised for chronic kidney disease with dialysis at 14 times the rate of other Australians (Table 1.09.7).
- Indigenous Australians were hospitalised for care involving dialysis at 15 times the rate of other Australians, diabetic nephropathy at 18 times the rate of other Australians and chronic renal failure at almost seven times the rate of other Australians.
- Approximately 41% of Indigenous Australians hospitalised for chronic kidney disease and its sequelae were males (54,179) and 59% were Indigenous females (76,570).
- Indigenous males were hospitalised for chronic kidney disease with dialysis at 10 times the rate of other males, and Indigenous females were hospitalised for chronic kidney disease at 21 times the rate of other females (Table 1.09.8).
- Over the period June 2002 to July 2004, there were 141,778 bed days associated with Indigenous chronic kidney disease hospitalisations in Queensland, Western Australia, South Australia and the Northern Territory combined at an average of 1.1 days per separation. Excluding same-day separations for dialysis (128,337 hospitalisations), the average length of stay in hospital for Indigenous people with chronic kidney disease was 5.1 days compared with 4.1 days for other Australians.

Table 1.09.7: Hospitalisations for chronic kidney disease and its sequelae, by Indigenous status and type of kidney disease, Qld, WA, SA and NT, July 2002–June 2004^{(a)(b)(c)(d)}

	Number		Per cent ^(e)		Indigenous			Other ^(f)			Rate Ratio ^(j)
	Indigenous	Other ^(f)	Indigenous	Other ^(f)	Rate per 1,000 ^(g)	95% LCL ^(h)	95% UCL ⁽ⁱ⁾	Rate per 1000 ^(g)	95% LCL ^(h)	95% UCL ⁽ⁱ⁾	
Care involving dialysis (ESRD)	128,684	460,181	98.3	96.8	455.4	452.6	458.1	31.4	31.4	31.5	14.5*
Diabetic nephropathy	757	2,207	0.6	0.5	2.8	2.5	3.0	0.2	0.1	0.2	18.4*
Renal-tubulo interstitial diseases	537	4,679	0.4	1.0	1.2	1.0	1.3	0.3	0.3	0.3	3.6*
Chronic renal failure	442	3,745	0.3	0.8	1.7	1.5	1.9	0.3	0.2	0.3	6.6*
Glomerular diseases	214	1,820	0.2	0.4	0.3	0.3	0.4	0.1	0.1	0.1	2.7*
Hypertensive renal disease	33	459	0.0	0.1	0.1	0.1	0.2	0.0	0.0	0.0	3.5*
Other chronic diseases	176	2,386	0.1	0.5	0.4	0.3	0.5	0.2	0.2	0.2	2.6*
Total	130,843	475,477	100.0	100.0	461.9	459.1	464.6	32.5	32.4	32.6	14.2*

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

- (a) Data are from public and most private hospitals. Data exclude private hospitals in the Northern Territory.
- (b) Categories are based on the ANZDATA for this measure. Other coding categories are based on the ICD-10-AM (National Centre for Classification of Health 2004); ICD-10-AM codes Z49; N18–N19; E102, E112, E132 and E142; N11–N12 and N14–N16; N00–N08; I12–I13, I150 and I151; N25–N28, N391, N392; Q60–Q63; T824, T861; and Z940.
- (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 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.
- (e) Per cent of hospitalisations of Indigenous and non-Indigenous people in the period 2002–03 to 2003–04.
- (f) Other includes registrations for non-Indigenous people and those for whom Indigenous status was 'not stated'.
- (g) Directly age standardised using the Australian 2001 Standard population.
- (h) LCL = lower confidence limit.
- (i) UCL = upper confidence limit.
- (j) Rate ratio Indigenous:other.
- (k) Other includes hospitalisations of non-Indigenous persons and those for whom Indigenous status was 'not stated'.

Source: AIHW analysis of AIHW National Hospital Morbidity Database.

Table 1.09.8: Hospitalisations of Indigenous Australians for chronic kidney disease and its sequelae, by sex and type of kidney disease, Qld, WA, SA and NT, July 2002–June 2004^{(a)(b)(c)(d)}

	Males						Females					
	No.	% ^(e)	Rate per 1,000 ^(f)	95% LCL ^(g)	95% UCL ^(h)	Rate ratio ⁽ⁱ⁾	No.	% ^(e)	Rate per 1,000 ^(f)	95% LCL ^(g)	95% UCL ^(h)	Rate ratio ⁽ⁱ⁾
Care involving dialysis (ESRD)	53,433	98.6	389.6	385.7	393.4	9.7*	75,157	98.2	510.7	506.7	514.6	21.4*
Chronic renal failure	186	0.3	1.4	1.2	1.7	4.5*	256	0.3	1.9	1.6	2.2	9.1*
Diabetic nephropathy	278	0.5	2.0	1.8	2.3	10.9*	479	0.6	3.4	3.0	3.7	28.1*
Renal-tubulo interstitial diseases	72	0.1	0.3	0.2	0.4	2.9*	465	0.6	1.9	1.7	2.1	3.5*
Glomerular diseases	99	0.2	0.3	0.2	0.4	2.1*	115	0.2	0.4	0.3	0.4	3.5*
Hypertensive renal disease	21	0.0	0.1	0.1	0.2	3.8*	12	0.0	0.1	0.0	0.1	3.2*
Other chronic diseases	90	0.2	0.4	0.3	0.5	2.3*	86	0.1	0.4	0.3	0.5	2.8*
Total	54,179	100.0	394.2	390.4	398.1	9.6*	76,570	100.0	518.7	514.7	522.7	20.7*

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

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

(b) Categories are based on the ANZDATA for this measure. Other coding categories are based on the ICD-10-AM (National Centre for Classification in Health 2004); ICD-10-AM codes Z49; N18–N19; E102, E112, E132 and E142; N11–N12 and N14–N16; N00–N08; I12–I13, I150 and I151; N25–N28, N391, N392; Q60–Q63; T824, T861; and Z940.

(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 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.

(e) Per cent of hospitalisations of Indigenous and non-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.

Source: AIHW analysis of AIHW National Hospital Morbidity Database.

Mortality

- Over the period 2000–2004, in Queensland, Western Australia, South Australia and the Northern Territory, there were 4,109 deaths for which chronic kidney disease was recorded as the underlying cause of death, 269 deaths (6.5%) of which were deaths of Indigenous Australians.
- Approximately 4% of all deaths of Indigenous Australians over this period were from chronic kidney disease.
- Deaths from chronic kidney disease occurred at younger ages among Indigenous Australians than among non-Indigenous Australians.
- Approximately 40% of all Indigenous Australians who died from chronic kidney disease were males and 60% were females.
- After adjusting for differences in age structure, Indigenous Australians were almost five times as likely as non-Indigenous Australians to have died from chronic kidney disease between 2001 and 2004.
- Indigenous males died from chronic kidney disease at four times the rate of non-Indigenous males and Indigenous females died from chronic kidney disease at six times the rate of non-Indigenous females.

Data quality issues

ANZDATA

Indigenous status question

Patients in the registry are identified according to 'racial origin'. Aboriginal people and Torres Strait Islanders are identified separately, but separate results are not always published for Torres Strait Islanders due to small numbers of patients.

Under-identification

The completeness of identification of Indigenous people in the registry is not known, but the nature of the illness means that treatment centres have prolonged contact with patients and, therefore, have a considerable opportunity to collect accurate information (Disney et al. 1997).

Indigenous identification is based upon self-identification and discussion with the treating physician. There is often significant concern about the quality of Indigenous identification in morbidity, mortality and demographic data sets. However, racial identification in the ANZDATA Registry is reported to be good. A survey form is completed every six months for all patients on maintenance dialysis or with functioning renal transplants. In this survey, question five is about 'Racial origin' and includes a prompt regarding Indigenous status. ESRD patients have regular contact with renal services from the time of diagnosis, through intensive maintenance therapy until death. There is heightened awareness of renal disease in Indigenous Australians and multiple opportunities exist to reconfirm data accuracy (Cass et al. 2001).

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 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 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.*

(continued)

Data quality issues (continued)

- *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).

Mortality data

Deaths

The mortality rate for Indigenous Australians can be influenced by identification of Indigenous deaths, late registration of deaths, and changes to death forms and/or processing systems. Due to the small size of the Indigenous population, these factors can significantly impact on trends over time and between jurisdictions.

Indigenous status question

All jurisdictions comply with the standard wording for the Indigenous status question and categories for their death registration forms. However, New South Wales, Victoria, South Australia, the Northern Territory and the Australian Capital Territory all have slightly different wording to the national standard for the instruction on those with both Aboriginal and Torres Strait Islander origin (ABS & AIHW 2005). While the wording is only slightly different, it would be ideal to have all jurisdictions asking the question in exactly the same way.

Under-identification

Almost all deaths in Australia are registered. However, the Indigenous status of the deceased is not always recorded/recorded correctly. The incompleteness of Indigenous identification means the number of deaths registered as Indigenous is an underestimate of deaths occurring in the Aboriginal and Torres Strait Islander population (ABS 1997). As a result, the observed differences between Indigenous and non-Indigenous mortality are under-estimates of the true differences.

While the identification of Indigenous deaths is incomplete in all state and territory registration systems, four jurisdictions (Queensland, Western Australia, South Australia and the Northern Territory) have been assessed by the ABS and the AIHW as having adequate identification. Longer term mortality trend data are limited to three jurisdictions (Western Australia, South Australia and the Northern Territory) with 10 years of adequate identification of Indigenous deaths in their recording systems (ABS & AIHW 2005). The quality of the time series data is also influenced by the late inclusion of a not stated category for Indigenous status in 1998. Prior to this time, the not stated responses were probably included with the non-Indigenous. The ABS calculated the implied coverage (identification) of Indigenous deaths for the period 2000–2004 using population estimates: New South Wales – 46%, Victoria – 35%, Queensland – 53%, South Australia – 66%, Western Australia – 72%, the Northern Territory – 94%, Tasmania and the Australian Capital Territory were not calculated due to small numbers, Australia – 57% (ABS 2005).

It should be noted that different causes may have different levels of under-identification that differ from the 'all cause' coverage estimates. It should also be noted that the quality of the cause of death data depends on every step of the process of recording and registering deaths (including the documentation available at each step of the process) from certification to coding of cause of death.

(continued)

Data quality issues (continued)

There are also current concerns about data quality for causes of death especially relating to external causes of death to all Australians (not just Indigenous) (ABS 2006).

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 death 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).

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