

## 1.06 Acute rheumatic fever and rheumatic heart disease

*Incidence and prevalence of acute rheumatic fever and rheumatic heart disease among Aboriginal and Torres Strait Islander people expressed as a rate by age group, age-standardised rate and ratio*

### Data sources

Data for this measure come from the registers of acute rheumatic fever and rheumatic heart disease in the Top End of the Northern Territory and Central Australia. Published data on the incidence of acute rheumatic fever in North Queensland (Hanna & Heazlewood 2005) are also summarised here.

Data from the Top End registry cover the northern part of the Northern Territory including Darwin, East Arnhem, Lower Top End (Katherine region), Alligator, Daly, Finnis and Bathurst-Melville. Data from the Central Australian registry cover the Barkley region and Central Northern Territory (Alice Springs region). Although Central Australia also covers parts of Western Australia and South Australia, data from these areas have not been included due to difficulties in determining denominator populations for the calculation of rates.

Due to small numbers of registrations for acute rheumatic fever among the non-Indigenous population, incidence rates have not been calculated for non-Indigenous Australians. Rates presented for Indigenous Australians are therefore crude rates (that is, not age standardised). Age-standardised rates and ratios have been used for data on rheumatic heart disease as a measure of morbidity in the Indigenous population relative to non-Indigenous 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. Incidence data for acute rheumatic fever are for the period 2002–2005. Prevalence data for rheumatic heart disease are at 31 December 2005.

The 2001 estimated resident Indigenous populations for the Top End and Central Australia have been used as the denominator for rates. This is because data for the Top End and Central Australia are only available from the ABS for Census years. Caution should therefore be used in interpreting rates presented here.

Hospitalisation data on rheumatic heart disease from the AIHW National Hospital Morbidity Database and prevalence data from the National Aboriginal and Torres Strait Islander Health Survey are presented in Measure 1.05: Prevalence of circulatory disease.

# Analyses

## Incidence of acute rheumatic fever

- Between 2002 and 2005 there were 291 new cases of acute rheumatic fever in the Top End of the Northern Territory and Central Australia, 286 (98.3%) of which were of Aboriginal and Torres Strait Islander peoples.

## Incidence by sex and age group

- For the four-year period 2002–2005, Aboriginal and Torres Strait Islander children aged 5–14 years in the Top End of the Northern Territory and Central Australia accounted for over half (57%) of new and recurrent cases of acute rheumatic fever in these regions (Table 1.06.1). There are very few cases of acute rheumatic fever in non-Indigenous children of the same age.
- The incidence of acute rheumatic fever among Aboriginal and Torres Strait Islander children aged 5–14 years in the Top End of the Northern Territory and Central Australia was around 2.4 per 1,000 among males and 3.7 per 1,000 among females.
- Approximately 44% of new cases of acute rheumatic fever in the Indigenous population were of males and 56% were of females.

**Table 1.06.1: New and recurrent cases of acute rheumatic fever among Indigenous persons in the Top End of the Northern Territory and Central Australia, by age group and sex, 2002–2005<sup>(a)</sup>**

	Males					Females					Persons				
	No.	%	Rate per 1,000 <sup>(b)</sup>	95% LCL <sup>(c)</sup>	95% UCL <sup>(d)</sup>	No.	%	Rate per 1,000 <sup>(b)</sup>	95% LCL <sup>(c)</sup>	95% UCL <sup>(d)</sup>	No.	%	Rate per 1,000 <sup>(b)</sup>	95% LCL <sup>(c)</sup>	95% UCL <sup>(d)</sup>
0–4	n.p.	2.4	n.p.	—	—	n.p.	1.3	n.p.	—	—	5	1.7	0.2	0.0	0.3
5–14	68	54.0	2.4	1.8	3.0	94	58.8	3.7	2.9	4.4	162	56.6	3.0	2.5	3.5
15–24	38	30.2	1.6	1.1	2.2	32	20.0	1.4	0.9	1.9	70	24.5	1.5	1.2	1.9
25–34	10	7.9	0.5	0.2	0.8	18	11.3	0.9	0.5	1.3	28	9.8	0.7	0.4	1.0
35–44	6	4.8	0.4	0.1	0.8	10	6.3	0.7	0.3	1.1	16	5.6	0.6	0.3	0.8
45+	n.p.	0.8	n.p.	—	—	n.p.	2.5	n.p.	—	—	5	1.7	0.2	0.0	0.3
<b>Total</b>	<b>126</b>	<b>100.0</b>	<b>1.1</b>	<b>0.9</b>	<b>1.3</b>	<b>160</b>	<b>100.0</b>	<b>1.4</b>	<b>1.2</b>	<b>1.6</b>	<b>286</b>	<b>100.0</b>	<b>1.3</b>	<b>1.1</b>	<b>1.4</b>

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

(b) Age-specific rates calculated using the average number of registrations for 2002–2005 divided by the 2001 estimated resident Indigenous population for the Top End and Central Australia.

(c) LCL = lower confidence limit.

(d) UCL = upper confidence limit.

Source: AIHW analysis of Top End Rheumatic Heart Disease Register and Central Australian Rheumatic Heart Disease Register data.

## Incidence by region

- In the four-year period 2002–2005, there were 183 new or recurrent cases of acute rheumatic fever in the Top End of the Northern Territory, 97% (178) of these were Indigenous Australians. For the same period in Central Australia, there were 108 cases of acute rheumatic fever registered, all of whom were Indigenous Australians (Table 1.06.2).
- In 2002–2005, incidence of acute rheumatic fever among Indigenous Australians in the Top End of the Northern Territory was around 1.1 per 1,000 and in Central Australia the incidence rate was around 1.5 per 1,000 (Table 1.06.2).

**Table 1.06.2: New or recurrent cases of acute rheumatic fever in the Top End of the Northern Territory and Central Australia, by sex, 2002–2005<sup>(a)</sup>**

	Number		Per cent <sup>(b)</sup>		Indigenous		
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Rate per 1,000 <sup>(c)</sup>	95% LCL <sup>(d)</sup>	95% UCL <sup>(e)</sup>
<b>NT Top End</b>							
Males	81	n.p.	98.8	1.2	1.0	0.8	1.3
Females	97	n.p.	96.0	4.0	1.3	1.0	1.5
Persons	178	5	97.3	2.7	1.1	1.0	1.3
<b>Central Australia<sup>(f)</sup></b>							
Males	45	—	100.0	—	1.2	0.9	1.6
Females	63	—	100.0	—	1.7	1.3	2.2
Persons	108	—	100.0	—	1.5	1.2	1.8

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

(b) Percentage of total male, female and person cases in the period 2002–2005.

(c) Crude rate per 1,000 using the average number of registrations over the period 2002–05 divided by the 2001 estimated resident Indigenous population for the Top End and Central Australia.

(d) LCL = lower confidence limit.

(e) UCL = upper confidence limit.

(f) Excludes cases in WA and SA due to difficulties in ascertaining denominator populations.

Source: AIHW analysis of Top End Rheumatic Heart Disease Register and Central Australian Rheumatic Heart Disease Register data.

- Over the five-year period 1999–2004, there were 144 episodes of acute rheumatic fever among Indigenous Australians in the seven Health Service Districts in North Queensland. The annual incidence rate of acute rheumatic fever among Indigenous people in these seven districts was 61 per 100,000 and throughout North Queensland the incidence rate was 54 per 100,000. Incidence rates were highest in the Cape York and the Torres Strait and Northern Peninsula Area Districts. More than three-quarters (76%) of cases of acute rheumatic fever occurred in children aged less than 15 years and the median age of cases was 12 years. The incidence rate for Indigenous children aged 5–14 years in North Queensland over the five years was 133 per 100,000 (Hanna & Heazlewood 2005).

## Time series analyses

Incidence rates for acute rheumatic fever among Indigenous Australians in the Top End, Northern Territory and Central Australia are presented in two–three year groupings for the period 1995–1997 to 2004–2005 in Table 1.06.3. Rates for non-Indigenous Australians are not presented due to the small number of cases each year.

It should be noted that as population data for the Top End and Central Australia are only available for Census years, the 1996 estimated resident Indigenous population for these areas has been used as the denominator for rates for 1995–1997 and 1998–2000 and the 2001 estimated resident Indigenous population for these areas has been used as the denominator for rates for 2001–2003 and 2004–2005.

- Over the periods 1995–1997 to 1998–2000 and 2001–2003 to 2004–2005, there were no significant changes in the number of cases or rates of acute rheumatic fever among Indigenous Australians in the Top End of the Northern Territory or Central Australia (Table 1.06.3; Figure 1.06.1).

It should also be noted that changes in the level of accuracy of Indigenous identification in registration data will result in changes in the level of reported cases of acute rheumatic fever for Indigenous Australians. Caution should therefore be used in interpreting rates and changes over time.

**Table 1.06.3: Numbers and rates<sup>(a)</sup> of acute rheumatic fever in the Top End of the Northern Territory and Central Australia, Indigenous Australians, 1995–1997 to 1998–2000 and 2001–2003 to 2004–2005**

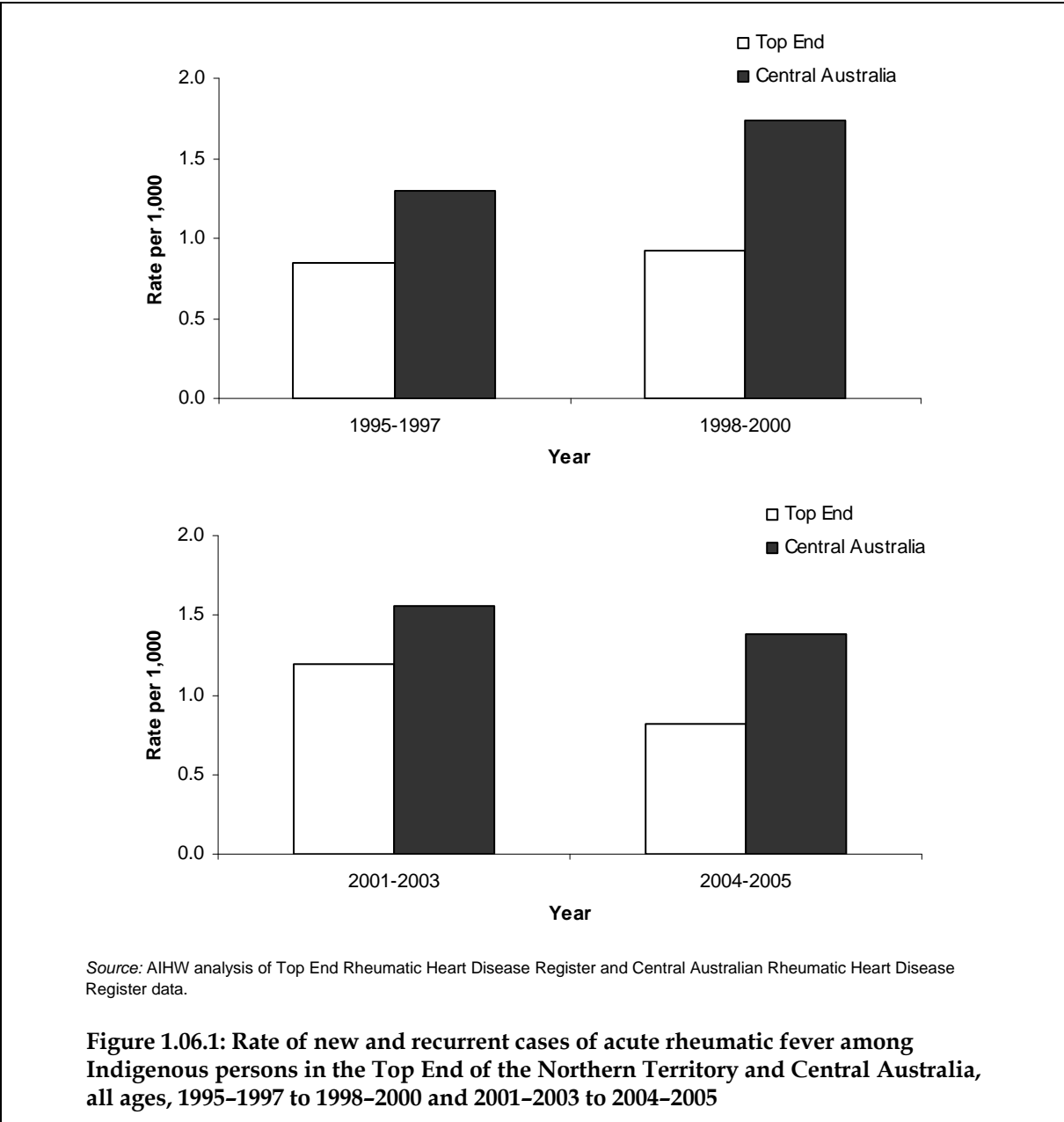
	1995–97	1998–2000	Difference in rates <sup>(b)</sup>	2001–03	2004–05	Difference in rates <sup>(b)</sup>
<b>Top End NT</b>						
Number	88	96	..	139	63	..
Rate	0.8	0.9	0.1	1.2	0.8	-0.4
<b>Central Australia</b>						
Number	67	90	..	85	50	..
Rate	1.3	1.7	0.4	1.6	1.4	-0.2

\* Represents significant increases or decreases over the period 1995–1997 to 1998–2000 and 2001–03 to 2004–2005 at the p<.05 level.

(a) Crude rates per 1,000 population calculated using the 1996 estimated resident Indigenous population for the Top End and Central Australia for 1995–1997 and 1998–2000 and the 2001 estimated resident Indigenous population for the Top End and Central Australia for 2001–2003 and 2004–2005.

(b) Average annual change in rates determined using linear regression analysis.

Source: AIHW analysis of Top End Rheumatic Heart Disease Register and Central Australian Rheumatic Heart Disease Register data.



### Prevalence of rheumatic heart disease

- As at 31 December 2005, there were 1,209 cases of rheumatic heart disease in the Top End of the Northern Territory and Central Australia, 1,110 (91.8%) of whom were of Indigenous people.

### Prevalence by sex and age group

- As at 31 December 2005, rates of rheumatic heart disease in the Top End of the Northern Territory and Central Australia were between 28 per 1,000 and 33 per 1,000 among Indigenous adults between the ages of 25 and 64 years (Table 1.06.4).

- The biggest differences in rates of rheumatic heart disease between Indigenous and non-Indigenous Australians were in the 15–24, 25–34 and 35–44 year age groups, where rate ratios were between 77 and 98.
- Approximately 35% of cases of rheumatic heart disease in the Indigenous population were among Indigenous males and 65% among Indigenous females.
- The overall prevalence rate for Indigenous males in the Top End of the Northern Territory and Central Australia was around 14 per 1,000. For Indigenous females, the prevalence rate was much higher at around 25 per 1,000.

**Table 1.06.4: Rheumatic heart disease registrations for Indigenous persons in the Top End of the Northern Territory and Central Australia, by age group and sex, as at 31 December 2005**

	Males						Females						Persons					
	No.	%	Rate per 1,000 <sup>(a)</sup>	95% LCL <sup>(b)</sup>	95% UCL <sup>(c)</sup>	Rate ratio <sup>(d)</sup>	No.	%	Rate per 1,000 <sup>(a)</sup>	95% LCL <sup>(b)</sup>	95% UCL <sup>(c)</sup>	Rate ratio <sup>(d)</sup>	No.	%	Rate per 1,000 <sup>(a)</sup>	95% LCL <sup>(b)</sup>	95% UCL <sup>(c)</sup>	Rate ratio <sup>(d)</sup>
0–14	45	11.5	4.2	3.0	5.5	33.7*	54	7.5	5.5	4.1	7.0	82.8*	99	8.9	4.9	3.9	5.8	25.0*
15–24	107	27.2	18.6	15.0	22.1	—	163	22.7	29.0	24.5	33.4	44.2*	270	24.3	23.7	20.9	26.5	77.0*
25–34	97	24.7	19.6	15.7	23.5	68.3*	192	26.8	38.5	33.1	44.0	126.0*	289	26.0	29.1	25.8	32.5	98.3*
35–44	85	21.6	25.0	19.7	30.4	56.7*	150	20.9	41.2	34.6	47.8	98.7*	235	21.2	33.4	29.1	37.7	77.6*
45–54	27	6.9	13.1	8.1	18.0	19.0*	93	13.0	41.7	33.2	50.2	19.5*	120	10.8	27.9	22.9	32.9	20.7*
55–64	24	6.1	22.7	13.6	31.8	24.3*	43	6.0	36.0	25.2	46.8	13.0*	67	6.0	29.8	22.6	36.9	17.8*
65+	8	2.0	12.0	3.7	20.3	5.5*	22	3.1	23.2	13.5	32.9	3.5*	30	2.7	18.6	11.9	25.2	4.5*
<b>Total</b>	<b>393</b>	<b>100</b>	<b>13.8</b>	<b>12.4</b>	<b>15.2</b>	<b>31.3*</b>	<b>717</b>	<b>100.0</b>	<b>25.3</b>	<b>23.4</b>	<b>27.1</b>	<b>25.2*</b>	<b>1,110</b>	<b>100.0</b>	<b>19.5</b>	<b>18.4</b>	<b>20.7</b>	<b>27.8*</b>

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

(a) Age-specific rates calculated using the 2001 estimated resident Indigenous population for the Top End and Central Australia.

(b) LCL = lower confidence limit.

(c) UCL = upper confidence limit.

(d) Rate ratio Indigenous:non-Indigenous.

Source: AIHW analysis of Top End Rheumatic Heart Disease Register and Central Australian Rheumatic Heart Disease Register data.

## Prevalence by region

Table 1.06.5 presents numbers and rates of rheumatic heart disease among Indigenous and non-Indigenous Australians in the Top End of the Northern Territory and Central Australia as at 31 December 2005.

- As at 31 December 2005, there were 962 cases of rheumatic heart disease in the Top End of the Northern Territory, 91% (876) of whom were Indigenous Australians.
- For the same reference period, there were 247 cases of rheumatic heart disease in Central Australia, 94.7% (234) of whom were Indigenous Australians.
- After adjusting for differences in age structures, rates of rheumatic heart disease among Indigenous males and females in the Top End of the Northern Territory were around 28 and 17 times the rates for non-Indigenous males and females respectively.
- In 2005, the prevalence rate of rheumatic heart disease among Indigenous Australians in Central Australia was around 29 times the rate for non-Indigenous Australians.

**Table 1.06.5: Total number of rheumatic heart disease registrations in the Top End of the Northern Territory and Central Australia, by Indigenous status and sex, as at 31 December 2005**

	Number		Per cent <sup>(a)</sup>		Indigenous			Non-Indigenous			Ratio <sup>(e)</sup>
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Rate per 1,000 <sup>(b)</sup>	95% LCL <sup>(c)</sup>	95% UCL <sup>(d)</sup>	Rate per 1,000 <sup>(b)</sup>	95% LCL <sup>(c)</sup>	95% UCL <sup>(d)</sup>	
<b>NT Top End</b>											
Males	308	29	91.4	8.6	18.2	15.8	20.6	0.6	0.3	0.9	28.4*
Females	568	57	90.9	9.1	34.0	30.7	37.2	1.8	1.3	2.4	18.6*
Persons	876	86	91.1	8.9	26.4	24.3	28.4	1.2	0.7	1.7	22.3*
<b>Central Australia<sup>(f)</sup></b>											
Males	85	n.p.	95.5	4.5	9.8	7.3	12.3	n.p.	n.p.	n.p.	n.p.
Females	149	9	94.3	5.7	19.4	15.8	22.9	0.6	0.2	1.1	30.4*
Persons	234	13	94.7	5.3	14.9	12.7	17.1	0.6	0.5	0.8	24.4*

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

(a) Percentage of total registrations for males, females and persons.

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

(c) LCL = lower confidence limit.

(d) UCL = upper confidence limit.

(e) Rate ratio Indigenous:non-Indigenous.

(f) Excludes cases in WA and SA due to difficulties in ascertaining denominator populations.

Source: AIHW analysis of Top End Rheumatic Heart Disease Register and Central Australian Rheumatic Heart Disease Register data.

## Time series analyses

The registration of cases of rheumatic heart disease among Indigenous and non-Indigenous Australians has only been accurately ascertained in recent years since the Top End and Central Australian registries have become fully operational (June 2002 in Central Australia and June 1998 in the Top End). Trends have therefore not been presented here and any increase in prevalence over this period is likely to be due to an improvement in reporting and case finding, and better awareness of the condition and its symptoms rather than an actual rise in the number of cases.

### **Data quality issues**

#### **Registrars of acute rheumatic fever and rheumatic heart disease**

##### ***Registrations***

*Registrations do not measure the incidence or prevalence of conditions in a population. Under-reporting of these conditions can occur at a number of stages. A person infected may not feel ill or may not seek medical care. The condition may not be diagnosed or a registration may not occur.*

*Liaison with the data custodians for these registers will be needed to identify any particular data quality issues to be taken into account in the use of these data.*

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

*The accurate identification of Aboriginal and Torres Strait Islander people within this data collection is less likely to be a problem given the high proportion of Aboriginal and Torres Strait Islander people in the Top End of the Northern Territory and in Central Australia and the predominance of Aboriginal and Torres Strait Islander people with this disease. Only eight of the 153 cases of acute rheumatic fever registered in North Queensland from mid-1999 to mid-2004 were identified as non-Indigenous and three of these were of Pacific Island descent (Hanna & Heazlewood 2005).*

## References

Hanna JN & Heazlewood RJ 2005. The epidemiology of acute rheumatic fever in Indigenous people in north Queensland. Australian and New Zealand Journal of Public Health 29(4):313-17.