

1.06 Acute rheumatic fever and rheumatic heart disease

Age-standardised rate and ratio of incidence and prevalence of acute rheumatic fever and rheumatic heart disease among Aboriginal and Torres Strait Islander peoples by age group

Data sources

Northern Territory Acute Rheumatic Fever and Rheumatic Heart Disease Program data

Data for this measure come from the acute rheumatic fever and rheumatic heart disease (ARF/RHD) program in the Northern Territory. Published data on the incidence of acute rheumatic fever in North Queensland (Hanna & Clark 2010) are also summarised here.

Prior to 2009, data on ARF/RHD in the Northern Territory were collected from two programs. Data from the Top End program covered 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 program covered 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. This is due to difficulties in determining denominator populations for the calculation of rates.

Age-standardised rates and ratios have been used for data on acute ARF/RHD 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 structures.

Incidence data for acute rheumatic fever are for the period 2006–2009. Prevalence data for rheumatic heart disease are at 31 December 2009.

The 2006 estimated resident Indigenous populations for the Northern Territory, 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 available from the ABS for census years only. Caution should therefore be used in interpreting rates presented here.

Analyses

Incidence of acute rheumatic fever

- Between 2006 and 2009 there were 216 new and recurrent cases of acute rheumatic fever in the Northern Territory, of which 213 (98.6%) were Aboriginal and Torres Strait Islander peoples (Table 1.06.1).

Incidence by sex and age group

- During the 4-year period 2006–2009, Aboriginal and Torres Strait Islander children aged 5–14 years in the Northern Territory accounted for over half (62%) of new and recurrent cases of acute rheumatic fever in these regions. 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 Northern Territory was around 1.8 per 1,000 among males and 2.7 per 1,000 among females (Table 1.06.1).
- Approximately 39% of new and recurrent cases of acute rheumatic fever in the Indigenous population were of males and 61% were of females (Table 1.06.1).

Table 1.06.1: New and recurrent cases of acute rheumatic fever among Indigenous persons in the Northern Territory, by age group and sex, 2006–2009^(a)

	Males					Females					Persons				
	Number	Per cent	Number per 1,000 ^(b)	95% LCL ^(c)	95% UCL ^(d)	Number	Per cent	Number per 1,000 ^(b)	95% LCL ^(c)	95% UCL ^(d)	Number	Per cent	Number per 1,000 ^(b)	95% LCL ^(c)	95% UCL ^(d)
0–4	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
5–14	55	66.3	1.8	1.3	2.3	78	60.0	2.7	2.1	3.4	133	62.4	2.3	1.9	2.7
15–24	18	21.7	0.7	0.4	1.0	26	20.0	1.0	0.6	1.4	44	20.7	0.9	0.6	1.1
25–34	6	7.2	0.3	0.1	0.5	12	9.2	0.6	0.2	0.9	18	8.5	0.4	0.2	0.6
35–44	n.p.	n.p.	n.p.	n.p.	n.p.	6	4.6	0.3	0.1	0.6	7	3.3	0.2	0.1	0.4
45+	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Total	83	100.0	0.7	0.5	0.8	130	100.0	1.0	0.8	1.2	213	100.0	0.8	0.7	0.9

(a) Calendar year reporting. Data are presented in 4-year groupings because of small numbers each year.

(b) Age-specific rates calculated using the average number of registrations for 2005–2008 divided by the 2006 estimated resident Indigenous population for the Northern Territory.

(c) LCL = lower confidence limit.

(d) UCL = upper confidence limit.

Source: Northern Territory Rheumatic Heart Disease Program data.

Incidence by region

- During the 4-year period 2006–2009, there were over 150 new or recurrent cases of acute rheumatic fever in the Top End of the Northern Territory – 99% of these were Indigenous Australians. For the same period in Central Australia, there were over 60 cases of acute rheumatic fever registered – 98% of which were Indigenous Australians (Table 1.06.2).
- In 2006–2009, incidence of acute rheumatic fever among Indigenous Australians in the Top End of the Northern Territory and Central Australia was around 0.6 per 1,000 (Table 1.06.2).
- Incidence rates of acute rheumatic fever among Indigenous Australians in the Northern Territory were around 117 times those for non-Indigenous Australians, which is the result of the very small number of notifications among non-Indigenous Australians.
- Over the 5-year period 2004–2009, there were 203 notifications of acute rheumatic fever in 194 Indigenous Australians in North Queensland. This is a 41% increase over the total number of notifications in the preceding five years. From mid-2004 to mid-2009, the annual incidence rate of acute rheumatic fever in North Queensland was 59 per 100,000. The incidence rate for children aged 5–14 years was 155 per 100,000, 65% (131) of the total number of cases were in this age group (Hanna & Clark 2010).

Table 1.06.2: New or recurrent cases of acute rheumatic fever in the Top End of the Northern Territory, Central Australia and the Northern Territory, by Indigenous status and sex, 2006–2009^(a)

	Number		Per cent ^(b)		Indigenous			Non-Indigenous			Ratio ^(f)
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	No. per 1,000 ^(c)	95% LCL ^(d)	95% UCL ^(e)	No. per 1,000 ^(b)	95% LCL ^(d)	95% UCL ^(e)	
NT Top End											
Males	61	n.p.	98.4	1.6	0.4	0.3	0.5	n.p.	n.p.	n.p.	95.5*
Females	90	n.p.	98.9	1.1	0.7	0.6	0.9	n.p.	n.p.	n.p.	175.8*
Persons	151	n.p.	98.7	1.3	0.6	0.5	0.7	n.p.	n.p.	n.p.	132.9*
Central Australia^(g)											
Males	22	0	100.0	0.0	0.4	0.2	0.6	0.0	..	..	..
Females	40	n.p.	97.6	2.4	0.7	0.5	1.0	n.p.	n.p.	n.p.	43.4*
Persons	62	n.p.	98.4	1.6	0.6	0.4	0.7	n.p.	n.p.	n.p.	67.4*
Northern Territory											
Males	83	n.p.	98.8	1.2	0.4	0.3	0.5	n.p.	n.p.	n.p.	118.3*
Females	130	n.p.	98.5	1.5	0.7	0.6	0.8	n.p.	n.p.	n.p.	114.4*
Persons	213	n.p.	98.6	1.4	0.6	0.5	0.7	n.p.	n.p.	n.p.	116.7*

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

(a) Calendar year reporting. Data are presented in 4-year groupings because of small numbers each year.

(b) Proportion of total male, female and all persons cases in the period 2006–2009.

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

(d) LCL = lower confidence limit.

(e) UCL = upper confidence limit.

(f) Rate ratio Indigenous: non-Indigenous.

(g) Excludes cases in Western Australia and South Australia because of difficulties in ascertaining denominator populations.

Source: Northern Territory Rheumatic Heart Disease Program data.

Time series analyses by age

Incidence rates for acute rheumatic fever among Indigenous Australians in the Northern Territory are presented by age group and year for the period 2006 to 2009 in Table 1.06.3.

- Over the period 2006 to 2009 there were no significant changes in the incidence rates of acute rheumatic fever among Indigenous people in the Northern Territory.

Table 1.06.3: Rates^(a) of acute rheumatic fever in the Northern Territory, Indigenous Australians by age group, 2006 to 2009

	2006	2007	2008	2009	Annual change ^(b)	Per cent change over period ^(c)
0–4	n.p.	n.p.	n.p.	n.p.	–0.04	–45.0
5–14	1.6	3.3	1.9	2.3	0.05	8.8
15–24	0.9	1.1	0.9	0.5	–0.16	–50.0
25–34	0.6	0.7	n.p.	n.p.	–0.12	–60.0
35–44	n.p.	n.p.	0.0	n.p.	–0.08	–105.0
45+	n.p.	0.0	0.0	0.0	–0.12	–90.0
Total	0.8	1.2	0.7	0.7	–0.07	–28.2

* Represents significant increases or decreases over the period 2006 to 2009 at the $p < 0.05$ level.

(a) Age-specific rates calculated using the 2006 estimated resident Indigenous population for the Northern Territory.

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

(c) Per cent change between 2006 and 2009 based on the average annual change over the period.

Source: Northern Territory Rheumatic Heart Disease Program data.

Prevalence of rheumatic heart disease

- As at 31 December 2009, there were 1,479 cases of rheumatic heart disease in the Northern Territory, of which 1,374 (93%) were Indigenous peoples.

Prevalence by sex and age group

- The overall prevalence rate of rheumatic heart disease for Indigenous males in the Northern Territory was around 17 per 1,000. For Indigenous females, the prevalence rate was much higher at around 32 per 1,000 (Table 1.06.4).
- As at 31 December 2009, rates of rheumatic heart disease among Indigenous adults between the ages of 25 and 64 years in the Northern Territory were between 30 and 35 per 1,000 (Table 1.06.4).
- The biggest differences in rates of rheumatic heart disease between Indigenous and non-Indigenous Australians were in the 0–14 and 25–34 year age groups, where the respective rate ratios were around 178 and 108 (Table 1.06.4).
- Approximately 35% of cases of rheumatic heart disease in the Indigenous population were among Indigenous males and 65% among Indigenous females (Table 1.06.4).

Table 1.06.4: Rheumatic heart disease registrations for Indigenous persons in the Northern Territory, by age group and sex, as at 31 December 2009

	Males						Females						Persons					
	No.	%	No. per 1,000 ^(a)	95% LCL ^(b)	95% UCL ^(c)	Rate ratio ^(d)	No.	%	No. per 1,000 ^(a)	95% LCL ^(b)	95% UCL ^(c)	Rate ratio ^(d)	No.	%	No. per 1,000 ^(a)	95% LCL ^(b)	95% UCL ^(c)	Rate ratio ^(d)
0–14	56	11.8	4.9	3.6	6.1	72.9*	81	9.0	7.4	5.8	9.0	..	137	10.0	6.1	5.1	7.1	177.7*
15–24	133	27.9	20.9	17.3	24.4	110.0*	185	20.6	29.4	25.2	33.7	69.1*	318	23.1	25.1	22.4	27.9	83.5*
25–34	104	21.8	20.7	16.7	24.7	140.1*	205	22.8	38.0	32.8	43.2	91.6*	309	22.5	29.6	26.3	32.9	108.4*
35–44	87	18.3	21.3	16.9	25.8	96.3*	199	22.2	46.4	39.9	52.8	79.9*	286	20.8	34.2	30.2	38.1	87.5*
45–54	59	12.4	22.7	16.9	28.5	31.1*	131	14.6	45.0	37.3	52.7	32.8*	190	13.8	34.5	29.6	39.4	33.4*
55–64	24	5.0	19.7	11.8	27.6	29.3*	66	7.3	42.9	32.6	53.3	15.6*	90	6.6	32.6	25.9	39.4	21.1*
65+	13	2.7	18.5	8.5	28.6	6.9*	31	3.5	26.8	17.4	36.2	4.4*	44	3.2	23.7	16.7	30.7	5.7*
Total	476	100.0	15.1	13.7	16.5	33.6*	898	100.0	27.6	25.8	29.4	27.2*	1,374	100.0	21.5	20.3	22.6	30.0*
Total ASR^(e)	..	..	17.3	15.3	19.3	30.9*	..	..	31.6	29.2	33.9	21.4*	..	..	24.8	23.3	26.4	25.4*

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

(a) Age-specific rates calculated using the 2006 estimated resident Indigenous population for the Northern Territory.

(b) LCL = lower confidence limit.

(c) UCL = upper confidence limit.

(d) Rate ratio Indigenous: non-Indigenous.

(e) Total age-standardised rates.

Source: Northern Territory Rheumatic Heart Disease Program 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, Central Australia and the total Northern Territory as at 31 December 2009.

- As at 31 December 2009, there were 1,153 cases of rheumatic heart disease in the Top End of the Northern Territory, of which 93% (1,067) were Indigenous Australians (Table 1.06.5).
- For the same reference period, there were 326 cases of rheumatic heart disease in Central Australia, of which 94% (307) were Indigenous Australians (Table 1.06.5).
- 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 38 and 23 times the rates for non-Indigenous males and females respectively (Table 1.06.5).
- In 2009, the prevalence rate of rheumatic heart disease among Indigenous males and females in Central Australia was around 14 and 20 times the rates for non-Indigenous males and females respectively (Table 1.06.5).

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 2009

	Number		Per cent ^(a)		Indigenous			Non-Indigenous			Ratio ^(e)
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	No. per 1,000 ^(b)	95% LCL ^(c)	95% UCL ^(d)	No. per 1,000 ^(b)	95% LCL ^(c)	95% UCL ^(d)	
NT Top End											
Males	379	28	93.1	6.9	19.4	17.1	21.7	0.5	0.3	0.7	38.1*
Females	688	58	92.2	7.8	35.8	32.7	38.9	1.6	1.1	2.0	23.1*
Persons	1,067	86	92.5	7.5	28.1	26.1	30.1	1.0	0.7	1.2	28.7*
Central Australia^(f)											
Males	97	7	93.3	6.7	12.1	8.9	15.3	0.9	0.1	1.6	14.2*
Females	210	12	94.6	5.4	22.9	19.5	26.3	1.2	0.4	1.9	19.9*
Persons	307	19	94.2	5.8	17.7	15.4	20.0	1.0	0.8	1.1	18.2*
Northern Territory											
Males	476	35	93.2	6.8	17.3	15.3	19.3	0.6	0.3	0.8	30.9*
Females	898	70	92.8	7.2	31.6	29.2	33.9	1.5	1.1	1.9	21.4*
Persons	1,374	105	92.9	7.1	24.8	23.3	26.4	1.0	0.8	1.2	25.4*

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

(a) Proportion of total registrations for males, females and all 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 Western Australia and South Australia because of difficulties in ascertaining denominator populations.

Source: Northern Territory Rheumatic Heart Disease Program data.

Time series analyses

Incidence rates for rheumatic heart disease among Indigenous Australians in the Northern Territory are presented in Table 1.06.6 and Figure 1.06.1. Rates for non-Indigenous Australians are not presented because of the small number of cases each year.

Note that the 2006 estimated resident Indigenous population has been used as the denominator when calculating rates for all years as population data for the Top End and Central Australia are available for Census years only.

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

- Over the period 2006 to 2009 there was a significant decrease in the rate of rheumatic heart disease among Indigenous Australians in the Top End of the Northern Territory, but no significant change in Central Australia (Table 1.06.6; Figure 1.06.1). The fitted trend for the Top End of the Northern Territory implies an average yearly decrease in the rate of around 0.1.

Table 1.06.6: Numbers and rates^(a) of rheumatic heart disease registrations in the Top End of the Northern Territory, Central Australia and total Northern Territory, Indigenous Australians, 2006 to 2009

	2006	2007	2008	2009	Annual change ^(b)	Per cent change over period ^(c)
Top End NT						
Number	68	67	63	52	..	..
Rate ^(d)	1.6	1.5	1.4	1.2	-0.1*	-22.9
Central Australia						
Number	18	28	14	17	..	..
Rate ^(d)	0.9	1.4	0.7	0.8	-0.1	-28.3
Northern Territory						
Number	86	95	77	69	..	..
Rate ^(d)	1.3	1.5	1.2	1.1	-0.1	-24.1

* Represents significant increases or decreases over the period 2006 to 2009 at the $p < 0.05$ level.

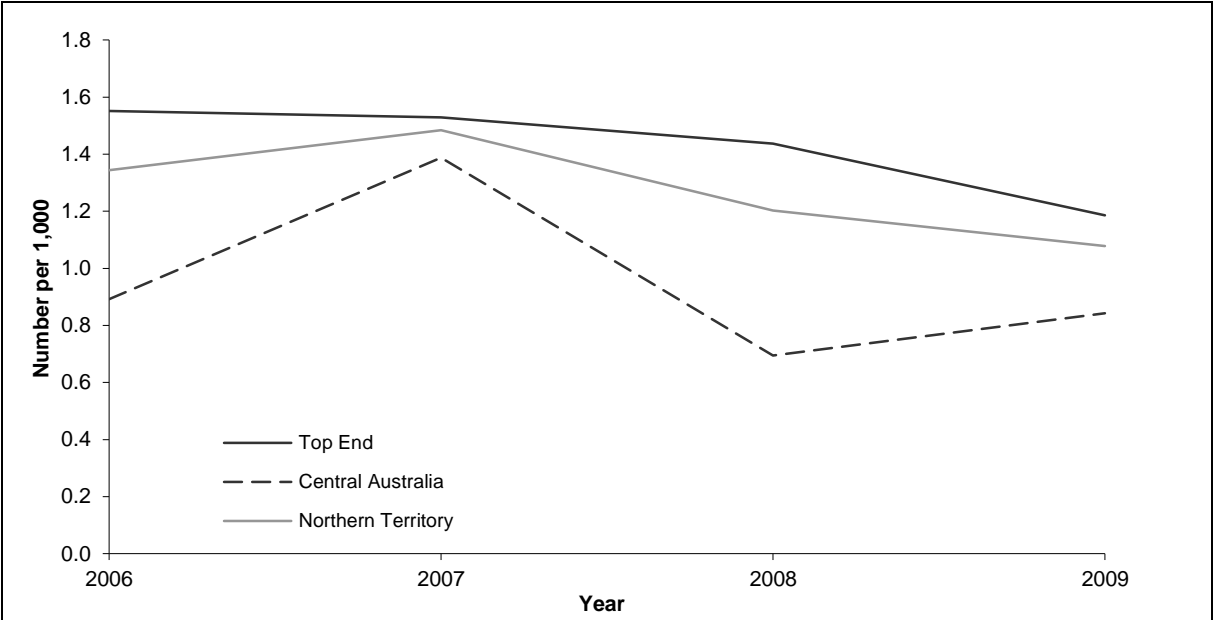
(a) Crude rates calculated using the 2006 estimated resident Indigenous population for the Top End, Central Australia and total Northern Territory.

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

(c) Per cent change between 2006 and 2009 based on the average annual change over the period.

(d) Rate per 1,000.

Source: Northern Territory Rheumatic Heart Disease Program data.



Source: Northern Territory Rheumatic Heart Disease Program data.

Figure 1.06.1: Rates of rheumatic heart disease registrations among Indigenous persons in the Top End of the Northern Territory, Central Australia and total Northern Territory, all ages, 2006 to 2009

Time series analyses by age

Incidence rates for rheumatic heart disease among Indigenous Australians in the Northern Territory are presented by age group for the period 2006 to 2009 in Table 1.06.7.

- Over the period 2006 to 2009 there were no significant changes in the rate of rheumatic heart disease in the Northern Territory for Indigenous Australians (Table 1.06.7).

Table 1.06.7: Rates^(a) of new rheumatic heart disease in the Northern Territory, Indigenous Australians by age group^(b), 2006 to 2009

	2006	2007	2008	2009	Annual change ^(c)	Per cent change over period ^(d)
0–14	0.7	1.2	1.4	1.1	0.1	52.5
15–24	2.1	1.5	1.3	1.6	–0.2	–23.1
25–34	1.6	1.8	1.6	0.8	–0.3	–51.2
35–44	1.1	1.7	1.2	0.8	–0.1	–33.3
45–54	2.2	2.4	n.p.	1.3	–0.5	–67.5
55–64	n.p.	n.p.	n.p.	n.p.	–0.2	–50
65+	n.p.	n.p.	n.p.	n.p.	–0.3	–60
Total	1.3	1.5	1.2	1.1	–0.1	–24.1

* Represents significant increases or decreases over the period 2005 to at the $p < 0.05$ level.

(a) Age-specific rates calculated using the 2006 estimated resident Indigenous population for the Northern Territory.

(b) All ages are as at 31 December 2009.

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

(d) Per cent change between 2006 and 2009 based on the average annual change over the period.

Source: Northern Territory Rheumatic Heart Disease Program data.

Adherence to secondary prophylaxis

Table 1.06.8 presents numbers and percentages for adherence to secondary prophylaxis in the last 12 months, by Indigenous status, for persons on the ARF/RHD program in the Northern Territory in 2009.

- Of the 1,083 Indigenous persons in the ARF/RHD program in 2009, 36% met less than 50% of their required doses in the previous 12 months, 41% met 50% to 80% of their required doses, and 23% met greater than 80% of their required doses. Comparisons with non-Indigenous persons are difficult due to the low number of non-Indigenous persons on the ARF/RHD program.

Table 1.06.8: Adherence to secondary prophylaxis in the last 12 months for persons on the ARF/RHD program, 2009

Percentage of required doses received in previous 12 months	Number		Per cent	
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous
NT Top End				
Less than 50%	259	n.p.	32.1	n.p.
50% to 80%	347	n.p.	43.1	n.p.
Greater than 80%	200	n.p.	24.8	n.p.
Central Australia^(a)				
Less than 50%	132	0	47.7	..
50% to 80%	97	0	35.0	..
Greater than 80%	48	0	17.3	..
Northern Territory				
Less than 50%	391	n.p.	36.1	n.p.
50% to 80%	444	n.p.	41.0	n.p.
Greater than 80%	248	n.p.	22.9	n.p.

(a) Excludes cases in Western Australia and South Australia because of difficulties in ascertaining denominator populations

Source: Northern Territory Rheumatic Heart Disease Program data.

Data quality issues

Northern Territory rheumatic heart disease program

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 custodian for the program will be needed to identify any particular data quality issues to be taken into account in the use of these data.

Data are presented in 4-year groupings because of small numbers each year.

Under-identification

The accurate identification of Aboriginal and Torres Strait Islander peoples within this data collection is less likely to be a problem. This is due to the high proportion of Aboriginal and Torres Strait Islander peoples in the Top End of the Northern Territory and in Central Australia, and the predominance of Aboriginal and Torres Strait Islander peoples with this disease. In north Queensland, between mid-2004 and mid-2009, there were 203 notifications of acute rheumatic fever between in 194 Indigenous persons (Hanna & Clark 2010).

List of symbols used in tables

- n.a. not available
- rounded to zero (including null cells)
- 0 zero
- .. not applicable
- n.e.c. not elsewhere classified
- n.f.d. not further defined
- n.p. not available for publication but included in totals where applicable, unless otherwise indicated

Reference

Hanna JN & Clark MF 2010. Acute rheumatic fever in Indigenous people in North Queensland: some good news at last? *The Medical Journal of Australia*, 192(10):581-584.

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