RHEUMATIC FEVER AND HEART DISEASE

Introduction

Acute rheumatic fever is due to a delayed immune response which develops in response to a group A streptococcal throat infection (typically about 3 weeks after the sore throat). It usually occurs in school-age children and may affect the brain, heart, joints, skin or subcutaneous tissue [106]. Recurrent episodes of rheumatic fever may result in the development of rheumatic heart disease, a progressive condition leading to damage, scarring and deformities of the heart valves. Surgery to repair or replace damaged valves may be required [163].

While New Zealand's rheumatic fever rates have declined significantly during the past 30 years, they still remain higher than those of many other developed countries. Risk factors include age (school age children), ethnicity (Pacific>Māori>European), socioeconomic disadvantage and overcrowding [164]. Primary prevention focuses on the adequate treatment of streptococcal throat infections, while secondary prevention aims to ensure that those previously diagnosed with rheumatic fever receive monthly antibiotic prophylaxis, either for 10 years from their first diagnosis or until 21 years of age (whichever is longer), to prevent recurrent rheumatic fever [165].

The following section explores rheumatic fever and heart disease rates in children and young people using information from the National Minimum Dataset and Mortality Collection. The section concludes with a brief overview of policy and evidence-based review documents which consider interventions to prevent rheumatic fever and rheumatic heart disease at the population level.

Data Sources and Methods

Indicator

1. *Acute and Semi Acute Hospital Admissions for Children and Young People Aged 0–24 Years with Acute Rheumatic Fever or Rheumatic Heart Disease listed in any of their first 15 diagnoses.*

Numerator: National Minimum Dataset: Acute and semi-acute hospital admissions for children and young people aged 0–24 years with Acute Rheumatic Fever (ICD-10-AM I00–I02) or Chronic Rheumatic Heart Disease (I05–I09) listed in any of the first 15 diagnoses.

Denominator: Statistics NZ Estimated Resident Population (with linear extrapolation being used to calculate denominators between Census years).

2. Mortality from Acute Rheumatic Fever or Rheumatic Heart Disease in Children and Young People Aged 0–24 Years

Numerator: National Mortality Collection; Deaths in children and young people aged 0–24 years where the main underlying cause of death was Acute Rheumatic Fever or Rheumatic Heart Disease (I00–I09).

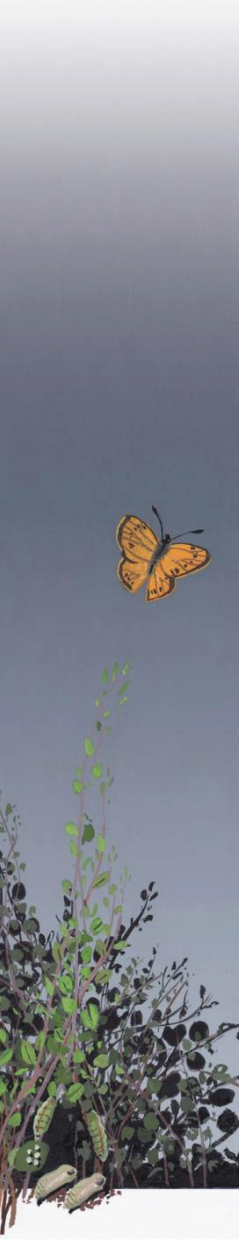
Denominator: Statistics NZ Estimated Resident Population (with linear extrapolation being used to calculate denominators between Census years).

Notes on Interpretation

Note 1: Unless otherwise specified, this analysis focuses on hospital admissions for children and young people with either acute rheumatic fever or chronic rheumatic heart disease listed in any of the first 15 diagnoses (rather than on the subset of admissions where these diagnoses were listed only as the primary diagnosis). The rationale for this wider focus was the fact that many children and young people with chronic rheumatic heart disease will not be hospitalised for their heart disease per se, but rather for one of its resulting complications. For example, during 2005–2009 only 39.0% of hospitalisations for children and young people with rheumatic heart disease had this listed as the primary diagnosis, with 11.8% being admitted for pregnancy and childbirth, and 11.0% for other cardiovascular diagnoses [145].

Note 2: An acute admission is an unplanned admission occurring on the day of presentation, while a semi-acute admission (referred to in the NMDS as an arranged admission) is a non-acute admission with an admission date <7 days after the date the decision was made that the admission was necessary.

Note 3: **Appendix 3** outlines the limitations of the hospital admission data used. The reader is urged to review this Appendix before interpreting any trends based on hospital admission data.



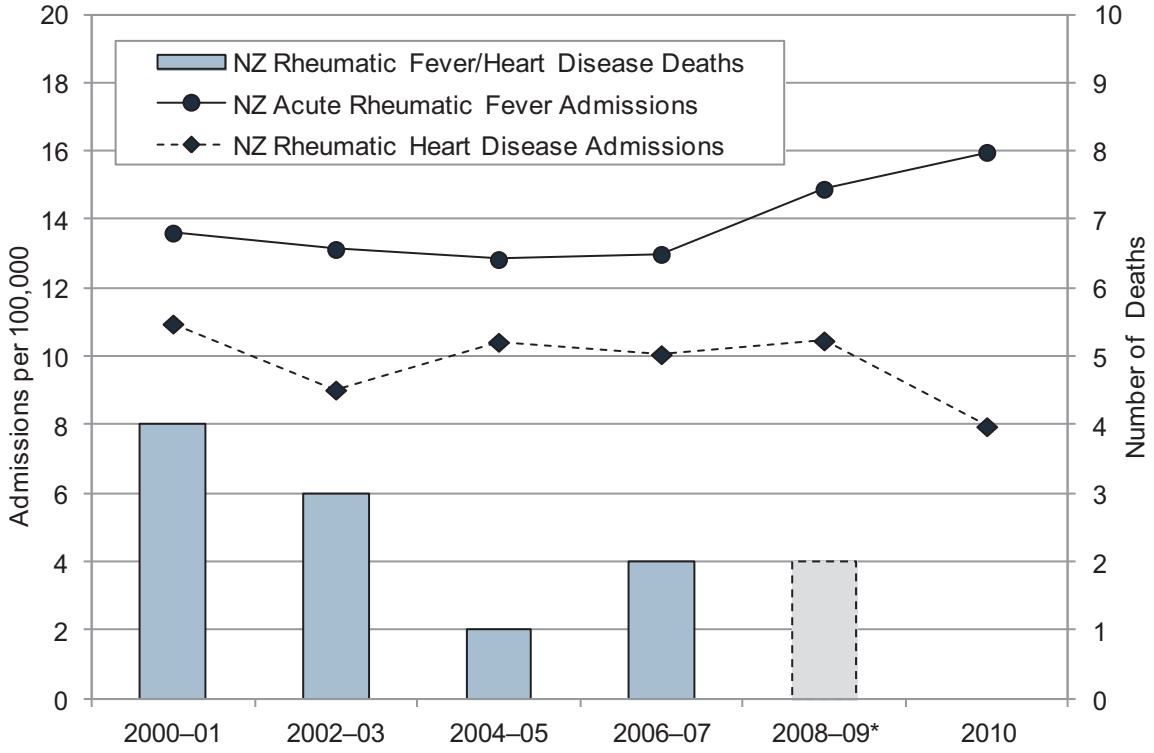
Note 4: 95% confidence intervals have been provided for the rate ratios in this section and where appropriate, the terms *significant* or not *significant* have been used to communicate the significance of the observed associations. Tests of statistical significance have not been applied to other data in this section, and thus (unless the terms *significant* or non-*significant* are specifically used) the associations described do not imply statistical significance or non-significance (see **Appendix 2** for further discussion of this issue).

New Zealand Distribution and Trends

New Zealand Trends

In New Zealand, hospital admissions for children and young people with acute rheumatic fever declined gradually during the early-mid 2000s, but then increased again after 2006–07. In contrast, admissions for those with rheumatic heart disease were relatively static during the mid-2000s, although a downswing in rates was evident in 2010. During 2000–2008, on average one child or young person each year died as the result of acute rheumatic fever or rheumatic heart disease (**Figure 88**).

Figure 88. Acute and Semi-Acute Hospital Admissions (2000−2010) and Deaths (2000−2008) from Acute Rheumatic Fever and Rheumatic Heart Disease in New Zealand Children and Young People Aged 0−24 Years

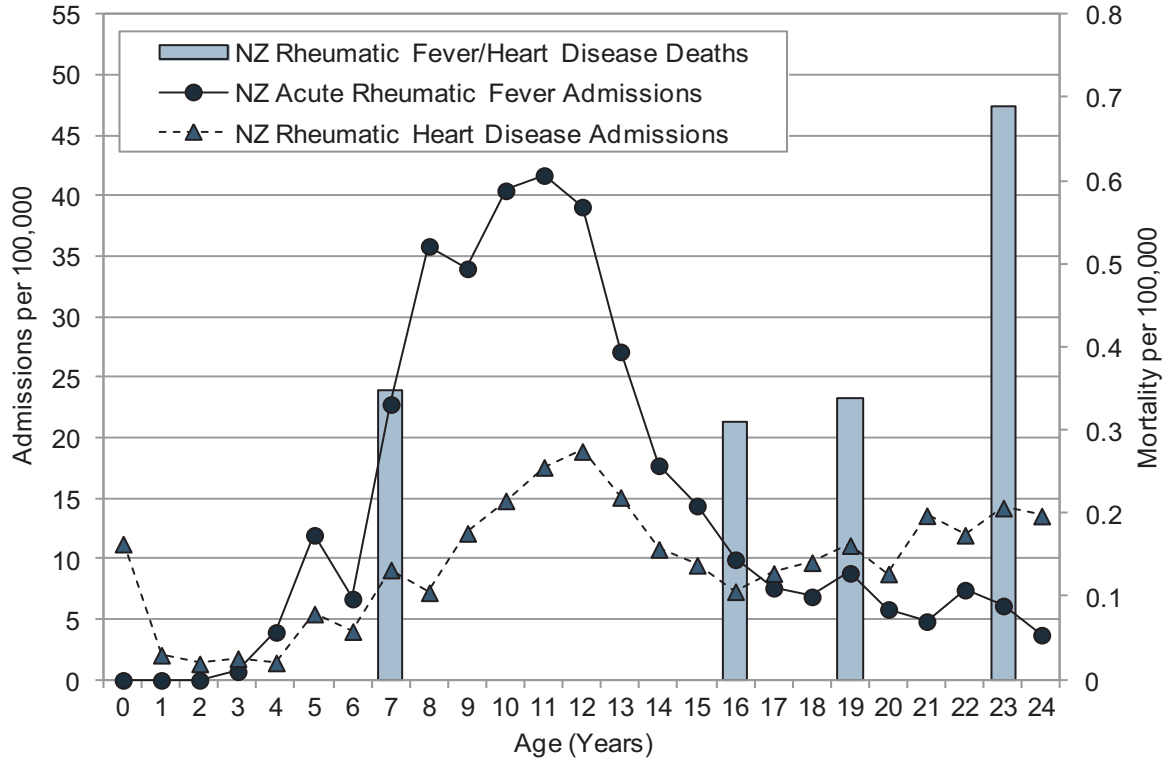


Source: Numerators: National Minimum Dataset (Acute and semi-acute admissions with Acute Rheumatic Fever or Rheumatic Heart Disease listed in any of the first 15 diagnoses) and National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population.*Note: Number of deaths is per 2 year period, with the exception of 2008–09, which is for a single year (2008) only.

New Zealand Distribution by Age

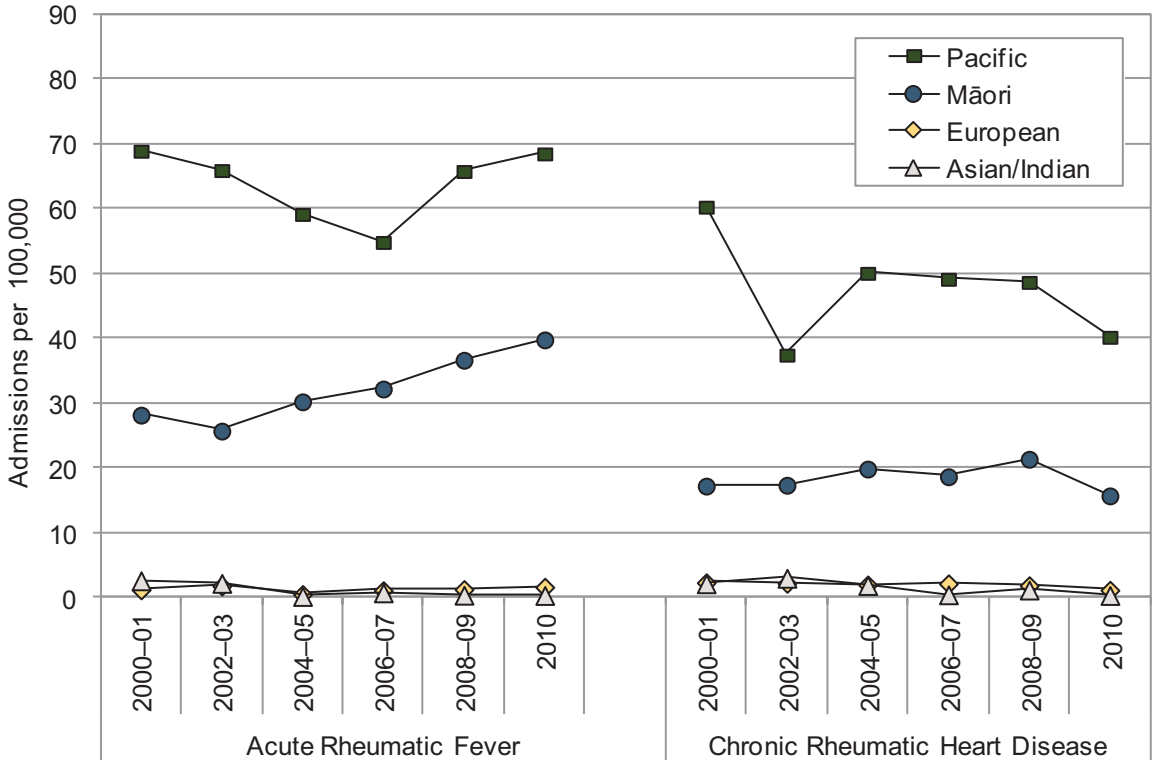
In New Zealand during 2006–2010, hospital admissions for acute rheumatic fever were relatively infrequent during infancy, but increased rapidly during childhood, to reach a peak at 11 years of age. Hospital admissions for rheumatic heart disease also increased during childhood, to reach a peak at 12 years of age. In contrast, during 2004–2008 mortality from acute rheumatic fever or rheumatic heart disease was more common amongst those in their late teens and early twenties (**Figure 89**).

Figure 89. Acute and Semi-Acute Hospital Admissions (2006−2010) and Deaths (2004−2008) from Acute Rheumatic Fever and Rheumatic Heart Disease in New Zealand Children and Young People by Age



Source: Numerators: National Minimum Dataset (Acute and semi-acute admissions with Acute Rheumatic Fever or Rheumatic Heart Disease listed in any of the first 15 diagnoses) and National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population

Figure 90. Acute and Semi-Acute Hospital Admissions for Acute Rheumatic Fever and Rheumatic Heart Disease in Children and Young People Aged 0–24 Years by Ethnicity, New Zealand 2000−2010



Source: Numerator: National Minimum Dataset (Acute and semi-acute admissions with Acute Rheumatic Fever or Rheumatic Heart Disease listed in any of the first 15 diagnoses); Denominator: Statistics NZ Estimated Resident Population. Note: Ethnicity is Level 1 Prioritised.

Table 89. Acute and Semi-Acute Hospital Admissions for Acute Rheumatic Fever and Rheumatic Heart Disease in Children and Young People Aged 0−24 Years by Ethnicity, NZ Deprivation Index Decile and Gender, New Zealand 2006−2010

Variable	Rate	Rate Ratio	95% CI	Variable	Rate	Rate Ratio	95% CI
Acute Rheumatic Fever 0–24 Years							
NZ Deprivation Index Quintile				Prioritised Ethnicity			
Decile 1–2	1.64	1.00		European	1.41	1.00	
Decile 3–4	3.52	2.15	1.31–3.53	Māori	35.6	25.3	19.4–33.0
Decile 5–6	4.73	2.89	1.80–4.64	Pacific	62.2	44.2	33.7–57.8
Decile 7–8	11.6	7.07	4.58–10.9	Asian/Indian	0.65	0.46	0.20–1.07
Decile 9–10	41.6	25.4	16.8–38.5				
Gender							
Female	12.3	1.00		Male	16.4	1.34	1.18–1.51
Rheumatic Heart Disease 0–24 Years							
NZ Deprivation Index Quintile				Prioritised Ethnicity			
Decile 1–2	1.14	1.00		European	1.97	1.00	
Decile 3–4	3.44	3.03	1.72–5.33	Māori	19.3	9.78	7.69–12.4
Decile 5–6	3.73	3.27	1.87–5.73	Pacific	47.2	23.9	18.8–30.4
Decile 7–8	7.84	6.89	4.09–11.6	Asian/Indian	0.87	0.44	0.21–0.91
Decile 9–10	26.0	22.8	13.9–37.5				
Gender							
Female	10.7	1.00		Male	8.89	0.83	0.72–0.96

Source: Numerator: National Minimum Dataset (Acute and semi-acute admissions with Acute Rheumatic Fever or Rheumatic Heart Disease listed in any of the first 15 diagnoses); Denominator: Statistics NZ Estimated Resident Population. Note: Rate is per 100,000; Ethnicity is Level 1 Prioritised; Decile is NZDep2001.

Figure 91. Average Number of Acute and Semi-Acute Hospital Admissions for Acute Rheumatic Fever and Rheumatic Heart Disease in Children and Young People Aged 0−24 Years by Month, New Zealand 2006−2010

Source: National Minimum Dataset (Acute and semi-acute admissions with Acute Rheumatic Fever or Rheumatic Heart Disease listed in any of the first 15 diagnoses).

New Zealand Distribution by Ethnicity, NZDep Index Decile and Gender

In New Zealand during 2006–2010, hospital admissions for acute rheumatic fever were *significantly* higher for males, Pacific > Māori > European and Asian/Indian children and young people and those from average-to-more deprived (NZDep decile 3–10) areas. Hospital admissions for rheumatic heart disease were *significantly* higher for females, Pacific > Māori > European > Asian/Indian children and young people and those from average-to-more deprived (NZDep decile 3–10) areas (**Table 89**). Similar ethnic differences were seen during 2000–2010 (**Figure 90**).

New Zealand Distribution by Season

In New Zealand during 2006–2010, hospital admissions for acute rheumatic fever and rheumatic heart disease were generally higher during the cooler months (**Figure 91**).

South Island Distribution and Trends

South Island DHBs vs. New Zealand

In Canterbury and Otago during 2006–2010, hospital admissions for children and young people with acute rheumatic fever and rheumatic heart disease were *significantly* lower than the New Zealand rate, while in the West Coast no admissions for either outcome occurred during this period, and in South Canterbury small numbers precluded a valid analysis. Rheumatic heart disease admissions in Nelson Marlborough and Southland were also *significantly* lower than the New Zealand rate, although small numbers precluded a valid analysis for acute rheumatic fever (**Table 90**).

Table 90. Acute and Semi-Acute Hospital Admissions for Acute Rheumatic Fever and Rheumatic Heart Disease in Children and Young People Aged 0–24 Years, South Island DHBs vs. New Zealand 2006–2010

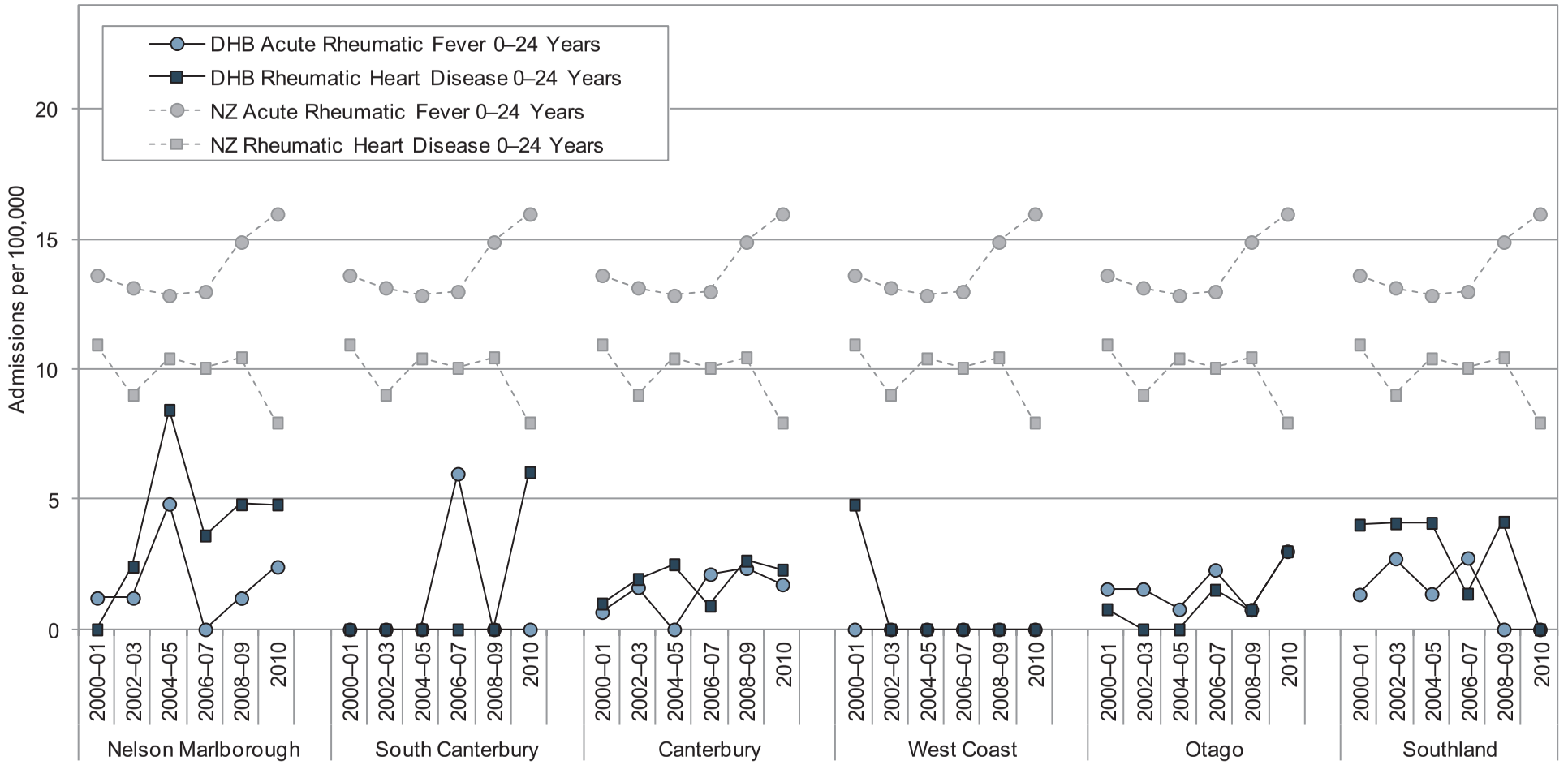
DHB	Number: Total 2006–2010	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI
Acute Rheumatic Fever 0–24 Years					
Nelson Marlborough	<3	s	s	s	s
West Coast	0	0.0	–	–	–
Canterbury	18	3.6	2.13	0.15	0.09–0.24
South Canterbury	<3	s	s	s	s
Otago	6	1.2	1.82	0.13	0.06–0.28
Southland	<3	s	s	s	s
New Zealand	1,096	219.2	14.4	1.00	
Rheumatic Heart Disease 0–24 Years					
Nelson Marlborough	9	1.8	4.33	0.44	0.23–0.85
West Coast	0	0.0	–	–	–
Canterbury	16	3.2	1.89	0.19	0.12–0.32
South Canterbury	<3	s	s	s	s
Otago	5	1.0	1.51	0.15	0.06–0.37
Southland	4	0.8	2.20	0.23	0.08–0.60
New Zealand	747	149.4	9.79	1.00	

Source: Numerator: National Minimum Dataset (Acute and semi-acute admissions with Acute Rheumatic Fever or Rheumatic Heart Disease listed in any of the first 15 diagnoses); Denominator: Statistics NZ Estimated Resident Population. Note: s: suppressed due to small numbers.

South Island Trends

In the South Island during 2000–2010, small numbers made trends in hospital admissions for children and young people with acute rheumatic fever and rheumatic heart disease difficult to interpret (**Figure 92**).

Figure 92. Acute and Semi-Acute Hospital Admissions for Acute Rheumatic Fever and Rheumatic Heart Disease in Children and Young People Aged 0−24 Years, South Island DHBs vs. New Zealand 2000−2010



Source: Numerator: National Minimum Dataset (Acute and semi-acute admissions with Acute Rheumatic Fever or Rheumatic Heart Disease listed in any of the first 15 diagnoses); Denominator: Statistics NZ Estimated Resident Population

Summary

In New Zealand, hospital admissions for children and young people with acute rheumatic fever declined gradually during the early-mid 2000s, but increased again after 2006–07. In contrast, admissions for those with rheumatic heart disease were relatively static during the mid-2000s, although a downswing in rates was evident in 2010. During 2006–2010, acute rheumatic fever and heart disease admissions were both relatively infrequent during infancy, but increased rapidly during childhood, to reach a peak at 11-12 years of age. Acute rheumatic fever admissions were *significantly* higher for males, Pacific > Māori > European and Asian/Indian children and young people and those from average-to-more deprived (NZDep decile 3–10) areas, while rheumatic heart disease admissions were *significantly* higher for females, Pacific > Māori > European > Asian/Indian children and young people and those from average-to-more deprived (NZDep decile 3–10) areas.

In Canterbury and Otago during 2006–2010, hospital admissions for children and young people with acute rheumatic fever and rheumatic heart disease were *significantly* lower than the New Zealand rate, while in the West Coast no admissions for either outcome occurred during this period, and in South Canterbury small numbers precluded a valid analysis. Rheumatic heart disease admissions in Nelson Marlborough and Southland were also *significantly* lower than the New Zealand rate, although small numbers precluded a valid analysis for acute rheumatic fever.

Local Guidelines and Evidence-Based Reviews Relevant to the Prevention and Management of Rheumatic Fever

The primary prevention of rheumatic fever focuses on the adequate treatment of streptococcal throat infections, while secondary prevention aims to ensure that all children and young people previously diagnosed with rheumatic fever receive monthly antibiotic prophylaxis. In New Zealand, while there are no Government policy documents which focus solely on rheumatic fever, the National Heart Foundation has developed a set of guidelines for the primary and secondary prevention of rheumatic fever. These are reviewed in **Table 91**, along with a range of other reviews and guidelines which consider these issues in the overseas context.

In addition, many of the measures previously reviewed in the context of respiratory and infectious diseases are likely to have a significant impact on rheumatic fever rates. These include:

1. **Generic Approaches to Infectious and Respiratory Disease:** Table 46 on Page 166
2. **The Prevention of Second Hand Smoke Exposure:** Table 47 on Page 168
3. **Interventions Aimed at Housing and Household Crowding:** Table 48 on Page 170
4. **Interventions to Improve Breastfeeding:** Table 27 on Page 107

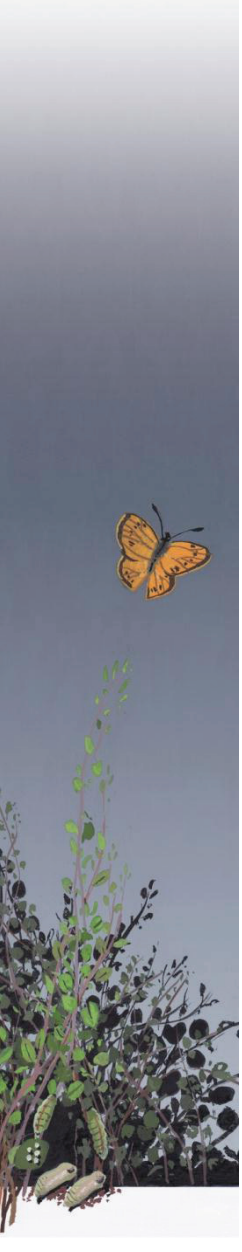


Table 91. Local Guidelines and Evidence-Based Reviews Relevant to the Prevention and Management of Acute Rheumatic Fever and Rheumatic Heart Disease

New Zealand Guidelines
The National Heart Foundation of New Zealand. 2006. **New Zealand Guidelines for Rheumatic Fever 1. Diagnosis, Management and Secondary Prevention**. Auckland: The National Heart Foundation of New Zealand. http://www.heartfoundation.org.nz/files/Rheumatic%20fever%20guideline%201.pdf These guidelines provide evidence-based guidance on the best practice for the diagnosis and management of acute rheumatic fever, for secondary prophylaxis (prevention of repeat attacks), and also for the standard of care that should be available to all people in New Zealand including those who are members of high-risk populations. Evidence is graded according to the system used in the National Heart Foundation of Australia Rheumatic Fever Guidelines (level 1 evidence is that obtained from a systematic review of a number of RCTs) and recommendations are graded based on the quality of the evidence on which they are based. A summary of the N.Z. guidelines has been published as: Atatoa-Carr P, Lennon D, Wilson N, et al. 2008. **Rheumatic fever diagnosis, management, and secondary prevention: a New Zealand guideline**. New Zealand Medical Journal, 121(1271), 59-69.
The National Heart Foundation of New Zealand. 2008. **New Zealand Guidelines for Rheumatic Fever 2. Group A Streptococcal Sore Throat Management**. Auckland: The National Heart Foundation of New Zealand. http://www.heartfoundation.org.nz/files/Rheumatic%20Fever%20Guideline%202.pdf The purpose of these guidelines is to provide evidence-based guidance for the diagnosis and treatment of Group A streptococcal sore throats in people aged 3 to 45 years to help ensure that those at highest risk of developing rheumatic fever receive the correct diagnosis and treatment while at the same time minimising unnecessary investigations and antibiotic use in those who are at the lowest risk. The levels of evidence and grades of recommendations used are adapted from the National Health and Medical Research Council levels of evidence and the U.S. National Institute of Health clinical guidelines. A summary of the N.Z. guidelines has been published as: Kerdemelidis M, Lennon D, Arroll B, et al. 2009. **Guidelines for sore throat management in New Zealand**. New Zealand Medical Journal, 122(1301), 10-8.
The New Zealand Heart Foundation. 2009. **New Zealand Guidelines for Rheumatic Fever 3. Proposed Rheumatic Fever Primary Prevention Programme**. Auckland: The National Heart Foundation of New Zealand. http://www.heartfoundation.org.nz/files/Rheumatic%20Fever%20Guideline%203.pdf These guidelines state that treating Group A Streptococcal sore throats reduces the rate of subsequent rheumatic fever and that school and community based programmes for detection and treatment are effective. There is a role for Māori and Pacific health care providers, school-based sore throat programmes and for primary health care reforms to improve access to health care for the people at highest risk of developing rheumatic fever. Household crowding is associated with an increased risk of developing rheumatic fever and some, but not all studies show a link with poverty. There is no convincing evidence of a genetic susceptibility to rheumatic fever or an association with skin infections (which can also be caused by Group A streptococcal infection). These guidelines use the same evidence grading system as the earlier National Heart Foundation guidelines.
The National Heart Foundation of New Zealand. 2008. **New Zealand Guideline for Prevention of Infective Endocarditis Associated with Dental and Other Medical Interventions**. Auckland: The National Heart Foundation of New Zealand. http://www.toiteorapublichealth.govt.nz/vdb/document/312 The introduction to these guidelines states that “There has never been a prospective clinical placebo-controlled trial of antibacterial prophylaxis in individuals with cardiac risk undergoing a potentially bacteraemia-producing procedure.” It is noted the 2007 American Heart Association recommendations advise prophylaxis only for those having dental procedures while the U.K. National Institute for Clinical Excellence recommendations advise no prophylaxis for anyone, for any procedure. The New Zealand guidelines recommend prophylaxis for people with rheumatic valvular heart disease and emphasise the importance of good oral health for all people at risk of endocarditis.
Systematic and Other Reviews from the International Literature
Kerdemelidis M, Lennon DR, Arroll B, et al. 2010. **The primary prevention of rheumatic fever**. Journal of Paediatrics & Child Health, 46(9), 534-48. This comprehensive review of the literature presents recommendations for prevention under the headings of Socio-economic factors, Biological factors, Lifestyle factors and Healthcare systems and services. The authors were members of the writing group responsible for the New Zealand guidelines and much of the material in this review is also in the third of the guidelines.

van Driel M L, De Sutter A I M, Keber N, et al. 2010. **Different antibiotic treatments for group A streptococcal pharyngitis**. Cochrane Database of Systematic Reviews, 2010(10), Art.No.:CD004406. DOI: 10.1002/14651858.CD004406.pub2.

Antibiotics are of limited benefit in treating sore throat unless patients have positive throat swabs for group A beta-haemolytic streptococci (GABHS). Seventeen RCTs (5352 participants) were included in this review. Sixteen compared penicillin with another antibiotic and one compared clindamycin with ampicillin. All of the trials were conducted in high income countries where the risk of rheumatic fever is low and they do not provide information on the effectiveness of different antibiotics for the prevention of complications (rheumatic fever and post-streptococcal glomerulonephritis). The authors found that there was insufficient evidence for clinically meaningful differences between antibiotics used to treat GABHS. They conclude that considering these results together with the low cost of penicillin and the lack of penicillin resistance by GABHS, penicillin can still be recommended as a first choice antibiotic. They state that there is a need for studies in specific communities at high risk for complications.

Lennon D, Kerdemelidis M, Arroll B. 2009. **Meta-analysis of trials of streptococcal throat treatment programs to prevent rheumatic fever**. Pediatric Infectious Disease Journal, 28(7), e259-64.

This study assessed prevention of rheumatic fever through treatment of streptococcal pharyngitis in school- and/or community- based programmes by doing a meta-analysis of relevant RCTs or before-and-after studies. Data from 6 studies which met the inclusion criteria were pooled in a meta-analysis to give a relative risk of 0.41 (95% CI 0.23 – 0.70) for the interventions. The authors state that this result indicates that a school and/or community based programmes could be expected to decrease the number of cases of acute rheumatic fever by about 60%.

Altamimi S, Khalil A, Khalaiwi KA, et al. 2009. **Short versus standard duration antibiotic therapy for acute streptococcal pharyngitis in children**. Cochrane Database of Systematic Reviews, 2009(1), Art. No.: CD004872. DOI: 10.1002/14651858.CD004872.pub2.

This review considered evidence for the efficacy of treatment of acute group A beta haemolytic streptococcus (GABHS) pharyngitis with two to six days of newer oral antibiotics compared to the standard treatment of 10 days of oral penicillin. The review included 20 RCTs with a total of 13102 cases. The authors concluded that three to six days of oral antibiotics had comparable efficacy to 10 days of penicillin however they noted that the primary reason for 10 days of penicillin is for prevention of rheumatic fever and they state “in areas where the prevalence of rheumatic fever is still high our results must be interpreted with caution.”

Lennon D, Al Tamimi SA. 2011. **Commentary on ‘Short versus standard duration antibiotic therapy for acute streptococcal pharyngitis in children**’. Evidence-Based Child Health: A Cochrane Review Journal, 6(2), 803-05.

In this commentary the authors outline of their concerns about the above review particularly the criteria chosen to indicate successful treatment and the heterogeneity of the trials included. They state that group A Streptococcus is the only common cause of acute pharyngitis requiring antibiotic treatment, it is highly sensitive to penicillin and that 10 days of treatment remains the gold standard.

Spinks A, Glasziou P, Del Mar C. 2006. **Antibiotics for Sore Throat**. Cochrane Database of Systematic Reviews, 2006(4), Art. No.: CD000023. DOI: 10.1002/14651858.CD000023.pub3.

This review assessed the benefits of antibiotics for sore throat. Sixteen of the 27 trials included (10101 participants) assessed the benefits of antibiotics in reducing the incidence of rheumatic fever within two months. A meta-analysis of these 16 studies gave a rheumatic fever risk ratio of 0.27 (95% CI 0.12 -0.60) for antibiotics vs. placebo. Meta-analyses looking at penicillin and pre-1975 studies separately gave similar results to the meta-analysis of all antibiotic studies together. (There were no cases of rheumatic fever in the post 1975 studies.) There was no distinction made in this review between adults and children. The authors concluded that antibiotic use may be justified in areas where rheumatic fever is common but that in other places practitioners need to weigh the modest symptom reductions against the hazards of antibiotic treatment.

Robertson KA, Volmink JA, Mayosi BM. 2005. **Antibiotics for the primary prevention of acute rheumatic fever: a meta-analysis**. BMC Cardiovascular Disorders, 5(1), 11.

This review included 10 random or quasi-randomised trials with a total of 7665 participants, generally considered to be of poor methodological quality. All were conducted between 1950 and 1961 and 8 of them involved young men in U.S. military bases. The results of the meta-analysis showed an overall protective effect for antibiotics in the prevention of rheumatic fever following sore throat (with or without confirmation of group A streptococcal infection) (RR 0.32, 95% CI 0.21 – 0.48). When only the 9 trials including intramuscular penicillin were included in the meta-analysis the protective effect was greater (an 80% reduction, RR 0.20, 95% CI 0.11 – 0.36). The authors state that their findings support the view that treating cases of suspected streptococcal pharyngitis with antibiotics is an effective and safe way to prevent rheumatic fever in children in poor socioeconomic conditions where rheumatic fever is common.

Manyemba J, Mayosi B M. 2002. **Penicillin for secondary prevention of rheumatic fever**. Cochrane Database of Systematic Reviews, 2002(3), Art. No.: CD002227. DOI: 10.1002/14651858.CD002227.

Recurrent (secondary) episodes of rheumatic fever are associated with a high risk of developing chronic rheumatic heart disease and also of worsening already existing rheumatic heart disease. Continuing treatment with penicillin can prevent recurrent attacks. This review included 9 studies (3008 participants in total), which the authors considered to be of generally poor quality, investigating various preventive penicillin regimens and formulations. Based on the findings from four trials (1098 participants) the authors concluded that intramuscular penicillin seemed to be more effective than oral penicillin in preventing rheumatic fever recurrence and streptococcal throat infections. There was limited evidence that two-weekly or three-weekly injections were more effective than four weekly injections (one trial for each).

Relevant New Zealand Publications and Websites

White H, Walsh W, Brown A, et al. 2010. **Rheumatic heart disease in indigenous populations**. Heart, Lung & Circulation, 19(5-6), 273-81. Proceedings of the Inaugural CSANZ Indigenous Cardiovascular Health Conference

The section of this conference presentation entitled: **Rheumatic Fever and Rheumatic Heart Disease in New Zealand (Nigel Wilson**) provides a useful outline of the topic and some of the New Zealand studies and initiatives. It explains that it is very important to ensure that national campaigns to educate the whole population that most sore throats do not require antibiotics and thus limit unnecessary prescribing (because most sore throats are due to viral infections) do not undermine efforts to encourage identification and treatment of streptococcal sore throats which can lead to rheumatic fever in vulnerable Māori and Pacific people.

The following publications and websites provide information on a variety of New Zealand studies and initiatives:

Spinetto H, Lennon D, Horsburgh M. 2011. **Rheumatic fever recurrence prevention: A nurse-led programme of 28-day penicillin in an area of high endemnicity**. Journal of Paediatrics and Child Health, 47(4), 228-34.

Jaine R, Baker M, Venugopal K. 2011. **Acute rheumatic fever associated with household crowding in a developed country**. Pediatric Infectious Disease Journal, 30(4), 315-9.

Webb RH, Wilson NJ, Lennon DR, et al. 2011. **Optimising echocardiographic screening for rheumatic heart disease in New Zealand: not all valve disease is rheumatic**. Cardiol Young, March 31, 1-8.

Northland District Health Board. 2010. **Preliminary Rheumatic Fever ResultsReleased**.http://www.northlanddhb.org.nz/media-releases/media-releases/preliminary-rheumatic-fever-results-released.html accessed 2/5/2011

White H, Walsh W, Brown A, et al. 2010. **Rheumatic heart disease in indigenous populations**. Heart, Lung & Circulation, 19(5-6), 273-81.

Lennon D, Stewart J, Farrell E, et al. 2009. **School-based prevention of acute rheumatic fever: a group randomized trial in New Zealand**. Pediatric Infectious Disease Journal, 28(9), 787-94

Emery Tepora. 2009. **Rheumatic Fever Awareness Campaign 2009 Evaluation Report**. Rotorua: Mātara Limited. http://www.toiteorapublichealth.govt.nz/vdb/document/275

Lennon DR, Farrell E, Martin DR, et al. 2008. **Once-daily amoxicillin versus twice-daily penicillin V in group A beta-haemolytic streptococcal pharyngitis.** Archives of Disease in Childhood, 93(6), 474-8.

Loring B. 2008. **Rheumatic Fever in the Bay of Plenty and Lakes District Health Boards. A Review of the Evidence and Recommendations for Action.** Toi Te Ora Public Health, Tauranga. http://www.toiteorapublichealth.govt.nz/vdb/document/150

Atatoa-Carr P, Bell A, Lennon DR. 2008. **Acute rheumatic fever in the Waikato District Health Board region of New Zealand: 1998-2004.** New Zealand Medical Journal, 121(1285), 96-105.

Yang L, Eriksson B, Harrington Z, et al. 2006. **Variations in the protective immune response against streptococcal superantigens in populations of different ethnicity.** Medical Microbiology & Immunology, 195(1), 37-43.

Thornley C, McNicholas A, Baker M, et al. 2001. **Rheumatic Fever Registers in New Zealand.** New Zealand Public Health Report, 8(6).

Dierksen KP, Inglis M, Tagg JR. 2000. **High pharyngeal carriage rates of Streptococcus pyogenes in Dunedin school children with a low incidence of rheumatic fever.** New Zealand Medical Journal, 113(1122), 496-9.

Harre N, Thomas D, Brown K, et al. 2000. **Communicating information about sore throats and rheumatic fever to South Auckland high-school students.** New Zealand Medical Journal, 113(1111), 215-7.

Martin DR, Voss LM, Walker SJ, et al. 1994. **Acute rheumatic fever in Auckland, New Zealand: spectrum of associated group A streptococci different from expected.** Pediatric Infectious Disease Journal, 13(4), 264-9.