Rheumatic Fever
Epidemiology

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Outline

• Global Context

• New Zealand experience

• Risk factor distribution
Disappearing Disease?

Chicago 1969-1977

Copenhagen 1862-1962


2005 Estimated Global Burden
(new cases per year in 5-14 year olds)

- Acute RF no carditis: 188,000
- Acute RF with RHD: 282,000
- GAS Pharyngitis: 616,000,000

Total: 471,000

ARF Global Distribution
Median Incidence of ARF

Sub-Saharan Africa
South Central Asia
Asia Other
Latin America
Middle East / North Africa
Eastern Europe
Established Market Economies
China
Indigenous and Pacific Australia/New Zealand

New Zealand Data

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New Zealand Trends

Acute Rheumatic Fever Hospitalisations 1970-2010

New Zealand Child and Youth Epidemiology Service  www.otago.ac.nz/nzcyes
National Burden

- **Acute Rheumatic Fever**
  - first admission rate 4.2 / 100,000
  - ~180 first admissions per year (closer to 120)
  - ~1,500 children and young people on prophylaxis (in Auckland Region ~1,000)

- **Rheumatic Heart Disease**
  - ~550 hospital admissions per year
  - ~140 deaths
Better Public Services Target

• Reduce the incidence of first episodes of acute rheumatic fever by two thirds

• From 4.2 per 100,000 (2010/11) to 1.4 per 100,000 by June 2017

reduction in the total population hospital admission rate

North-South Gradient

ARF Admissions 2006/10
0-24 Year Olds
Rate per 100,000

- 0-1
- 2-5
- 6-15
- 16-25
- >25

New Zealand Child and Youth Epidemiology Service  www.otago.ac.nz/nzcyes
ARF Admissions by Ethnicity
0-24 Year Olds, NZ 2006-2010

Admissions per 100,000

Hospital Admissions due to ARF in Children and Young People 0-24 Years by Ethnicity, New Zealand 2000-2010

- Pacific
- Maori
- European
- Asian / Indian

NZCYES 2012 www.otago.ac.nz/nzcyes
ARF Admissions by Deprivation 0-24 Year Olds, NZ 2006-2010

NZCYES 2012 www.otago.ac.nz/nzcyes
Relative ARF Admission Rates
0-24 Year Olds, NZ 2006-2010

NZCYES 2012 www.otago.ac.nz/nzcyes
Average ARF Admission per Month
0-24 Year Olds, NZ 2006-2010

Average Number of Admissions
Hospital Admissions due to ARF in Children and Young People 0-24 Years by Ethnicity, New Zealand 2000-2010

NZCYES 2012 www.otago.ac.nz/nzcyes
Household Crowding

- NZ Ecological Study – Jaine et al
  - PIDJ 2011 Apr;30(4):315-9
  - Weak association between HH crowding at CAU level and ARF rate

- European Study – Case Control
Socioeconomic factors in the aetiology of rheumatic fever

Household Crowding in NZ
0-24 Year Olds, 2006 Census

Note: Households that require 1+ additional bedrooms (CNOS)
Access to Primary Healthcare

- Baltimore Study 1960s
  - Improving access to healthcare reduced ARF
  - Gordis L  *NEJM* 1973;289(7):331-335
Postponed Child’s Doctors Visit
NZ Living Standards Survey

Conclusion

- Among world’s highest rates of RF in NZ
- Burden is borne by Māori, Pacific, and the most socio-economically disadvantaged
  - 1,500 on monthly penicillin injections
  - 550 admissions for rheumatic heart disease
  - 140 deaths annually
- Burden is inequitable