

# High rates of acute rheumatic fever may be caused by household crowding

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New Zealand has one of the highest reported rates of acute rheumatic fever (ARF) amongst children and teenagers in the developed world; an infectious disease which can cause chronic rheumatic heart disease through damaged heart valves, and results in over 120 deaths a year.

The latest study into one of New Zealand's worst infectious disease by public health researchers at the University of Otago, Wellington has shown that household crowding is one of the key [risk factors](#) for ARF; particularly with Maori and Pacific families.

In the last few years of the study, Maori rates of ARF were 20 times, and Pacific rates 40 times, that of New Zealand European and others.

Lead researcher D.r Richard Jaime, and Associate Professor Michael Baker, looked at 1249 cases of acute rheumatic fever, hospitalized between 1996 and 2005, and related them to census data and household crowding.

“We found a clear and positive association between household crowding as a risk factor for ARF incidence,” Dr. Jaime says, “and this effect persisted after controlling for age, ethnicity, household income and density of children in the neighbourhood.”

Notwithstanding the very large ethnic disparities, Dr. Jaime says that perhaps the most telling result from this study is that the ARF rate for areas with the most crowded households are close to 90% higher than for

areas with the least crowded households, even taking into account age, ethnicity and household income. Crowded households are households where there are not enough bedrooms to sufficiently cater for the occupants of the house.

“It’s of serious concern that in other developed countries acute rheumatic fever is often not even recorded in health statistics because it’s almost non-existent, yet in New Zealand rates have remained persistently high over the last 10 to 20 years in Maori and Pacific families, and continue to rise,” says Dr. Jaine.

However, the study found that ARF incidence is not strongly related to low income. This is illustrated by the fact that low income Europeans and others have much lower rates of ARF than Maori and Pacific households. In fact approximately 90% of ARF cases are of Maori or Pacific ethnicity.

“This research is further evidence of the need for much more effective public health interventions in high risk areas regarding sore throats and ARF. Infection with Group A Streptococcus bacteria, or ‘strep’ throat, is a very serious matter as it is the cause of rheumatic fever in children.”

“New Zealand research has already shown that we should be able to reduce ARF by as much as 60% through well resourced school-based ‘strep’ throat treatment programs. This would avoid costly medical treatment, heart valve replacements and monthly penicillin injections in teenage years and later life.”

These latest research results on ARF also indicate the importance of appropriate social housing at affordable rents for low income families, avoiding high risk families ‘doubling-up’ in overcrowded homes.

The researchers say Maori and Pacific families may be at added risk of

being infected as ARF is now much more common in these groups, and in the North Island. This makes it more likely that exponential growth of this bacteria-induced disease will occur through multiple infection, increasing the risk of potentially fatal heart valve damage.

**More information:** This research has recently been published in *The Pediatric Infectious Diseases Journal*, and has been carried out within the He Kainga Oranga/Housing and Health Research Program, supported by the Health Research Council of New Zealand.

Provided by University of Otago

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