Equitable care for those with rheumatic heart disease

Nigel Wilson, Rachel Webb, John Malcolm, Geoff Cramp, Andrew Marshall, Andrew Aitken, Nikki Blair, Nicola Culliford-Semmens, Andrew Chan Mow, Ross Nicholson, Adrian Trenholme, Roger Tuck, Clair Mills

The editorial by Lennon and Stewart\(^1\) summarises recent efforts in New Zealand to prevent acute rheumatic fever (ARF) by primary prevention of group A streptococcal pharyngitis in a widely publicised primary prevention programme.\(^2\) We concur funding should continue till its evaluation in 2016–17, as a premature change may impact both programme delivery and outcomes. We all hope that this primary prevention programme is successful, like programmes in Cuba,\(^3\) Costa Rica,\(^4\) and inner-city Baltimore.\(^5\)

The long lasting consequence of ARF is rheumatic heart disease (RHD) and that is the reason why preventing ARF is important. In New Zealand, RHD causes 600–800 hospital admissions per year, mainly in young adults, and 150–200 premature deaths per year.\(^6\) RHD direct hospitalisation costs are conservatively estimated to be at least $12 million annually.\(^7\) Globally, around 40% of adults with RHD do not recall a past history of ARF.\(^8,9\) The recent study in Porirua suggested even higher rates of previously undiagnosed RHD, with 4 new cases for every known case of previous ARF. Mild or moderate carditis in the absence of arthritis, does not cause symptoms and hence these episodes of ARF go undetected. In the absence of secondary prophylaxis this can lead to permanent and worsening RHD. The WHO recommends active case finding for RHD\(^10\) and echocardiography is more sensitive and specific compared to auscultation.\(^11,12\) Over the past 8 years, the authors are among many involved in developing a model for detection of previously undetected RHD using portable echocardiography in high-ARF regions of New Zealand, mainly in schools targeting children aged 10–13 years. We have shown that such screening in the New Zealand setting is feasible,\(^13,13\) and is highly acceptable by families.\(^14\) We have identified 1–2% definite RHD in such high-incidence ARF populations,\(^15-14\) and as we hypothesised, no definite RHD in regions without ARF,\(^15\) so it is clear where to target the echocardiography. New Zealand researchers led international efforts to define the minimal criteria that constitute a diagnosis of RHD so that the threshold for diagnosis is appropriate.\(^16\) Echocardiography studies have now taken place in the Counties Manukau, Tairawhiti, Bay of Plenty, Northland and Capital and Coast DHBs, with partnerships involving community paediatricians, public health physicians, cardiologists, community nursing in consultation with local communities. Counselling of those with positive tests has been by senior paediatricians. Funding to date has been by research grants, and local DHB, PHO, Hauora (Māori-led health providers) and community initiatives. Follow-up of individuals with borderline RHD category\(^15\) is currently in progress to better understand the natural history. The accuracy of the test and threshold for treatment has been recently clarified by a case-control study from Australia.\(^17\) Those with borderline RHD had an 8.8 times relative risk of ARF and a 1 in 6 chance of progression to Definite RHD at follow-up compared to controls. However, as a proportion of individuals with isolated mitral regurgitation graded as borderline RHD may represent upper limit of physiological regurgitation,\(^15,18\) we currently recommend active surveillance with interval
follow-up and enhanced primary prevention for this group at first diagnosis. Secondary prophylaxis with penicillin is recommended for those with Definite RHD.

Screening programmes can cause harm, especially if inappropriate management or distress to patients results from a false positive result.19 Led by University of Otago researchers, and with HRC funding support, we are currently investigating the potential harm of echocardiographic screening. With a 1 in 150 chance of a child living in the most deprived regions of New Zealand having an ARF episode,20 another 1–2% having undetected RHD,12-14 and the high cost of RHD mainly due to cardiac surgery,7 the economic analysis of case detection using echocardiography is predicted to be favourable. Two recent modelling studies support this contention.21,22

Thus, the four broad key components of a public health programme12-14 are in place: there is a condition (latent RHD) that can best be detected by a test (portable echocardiography) and there is a treatment (penicillin) that prevents disease progression. Fourthly, the New Zealand health service has sufficient resources and infrastructure for such RHD case detection.12-14

Future funding for ARF/RHD control in New Zealand, as raised by Lennon and Stewart,1 should be equitable for all, and in addition to primary prevention, should include funding for those with RHD, both detected and undetected. We have shown that there is a significant group of children with RHD in New Zealand who are unaware of their diagnosis who would be identified by echocardiography. Primary prevention efforts will not benefit people with already established RHD. Both primary prevention and active case finding using echocardiography are logical ways to minimise overall RHD disease burden.

Establishing an echocardiography screening programme in high-risk ARF areas will also provide data of the true burden of RHD in New Zealand. This would be another robust measure to monitor the effects of the primary RF prevention strategies.1

A novel strategy to combine the health promotion messages of primary prevention and echocardiographic detection of unknown RHD in the future would be the implementation of a New Zealand ‘rheumatic fever bus’ similar to current mobile dental and ORL services. This could travel to high-incidence RF regions, visibly continuing a variety of primary prevention activities, and have the capability to perform echocardiography in local communities. This model is used in South Africa and is being implemented in Fiji.
LETTER

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Author information:
Nigel Wilson, Consultant Paediatric Cardiologist, Green Lane Paediatric & Congenital Cardiac Services, Starship Children's Hospital and Clinical Associate Professor, University of Auckland, Auckland; Rachel Webb, Consultant Paediatrician, Infectious Diseases, Starship Children's Hospital, Auckland; John Malcolm, Consultant Paediatrician, Whakatane Hospital, Whakatane; Geoff Cramp, Public Health Physician, Te Puna Waiora, Tairawhiti District Health, Gisborne; Andrew Marshall, Clinical Leader Paediatrics, Wellington Children's Hospital, Wellington; Andrew Aitken, Consultant Cardiologist, Wellington Hospital, Wellington; Nikki Blair, Consultant Community and General Paediatrician, Wellington Children's Hospital, Wellington; Andrew Marshall, Clinical Leader Paediatrics, Wellington Children's Hospital, Wellington; Nicola Culliford-Semmens, Research Fellow, Starship Children's Hospital, Auckland; Andrew Chan Mow, General Practitioner, South Seas Primary Healthcare, Otara, South Auckland; Ross Nicholson, Consultant Paediatrician, Middlemore Hospital, Auckland; Adrian Trenholme, Consultant Paediatrician, Kidz First Children's Hospital, Auckland; Roger Tuck, Consultant Community Paediatrician, Northland DHB Child Health, Whangarei; Claire Mills, Public Health Physician, Northland DHB Public Health Unit, Whangarei.

Corresponding author:
Nigel Wilson, Consultant Paediatric Cardiologist, Green Lane Paediatric & Congenital Cardiac Services, Starship Children's Hospital and Clinical Associate Professor, University of Auckland, Auckland, New Zealand
Nigel.Wilson@adhb.govt.nz

URL:

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